UCSF Health
Clinical Laboratories

(HCVSP) Hepatitis C Antibody with reflex to HCV RT-PCR

HCVSP

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
See individual tests - Hepatitis C Antibody (HCV) and Hepatitis C RNA, Quantitative (HCVRT) for additional information

Additional Information:
See individual tests - Hepatitis C Antibody (HCV) and Hepatitis C RNA, Quantitative (HCVRT) for additional information

Reflex Testing:
Positive HCV Antibody will automatically reflex to HCVRT test. Additional charge applies.

Synonyms:

- HCV
- Hepatitis C Antibody
- Hepatitis
- anti-HCV antibody
- HCVAB
- Hep C Ab

COLLECTION

Sample Type:
Serum and EDTA Plasma

Collect:
Gold Top or Red Top and Pearl White Top

Amount to Collect:
1 mL blood for Gold Top or Red Top
8.5 mL blood for Pearl White Top

Preferred Volume:
0.5 mL serum and3 mL plasma

Minimum Volume:
See individual test for details

Rejection Criteria:
See individual tests - Hepatitis C Antibody (HCV) and Hepatitis C RNA, Quantitative (HCVRT) for additional information

PROCESSING

Test Code:
HCVSP

Performing Lab:
Immunology

Specimen Preparation:
See individual tests - Hepatitis C Antibody (HCV) and Hepatitis C RNA, Quantitative (HCVRT) for additional information

Preferred Volume:
0.5 mL serum and3 mL plasma

Minimum Volume:
See individual test for details

Rejection Criteria:
See individual tests - Hepatitis C Antibody (HCV) and Hepatitis C RNA, Quantitative (HCVRT) for additional information

RESULT INTERPRETATION

Additional Information:
See individual tests - Hepatitis C Antibody (HCV) and Hepatitis C RNA, Quantitative (HCVRT) for additional information

ADMINISTRATIVE

CPT Codes:
HCV - 86803, HCVRT - 87522

LOINC Codes:
HCV - 13955-0, HCVRT - 38180-6

COMPLETE VIEW

Available Stat:
No

Test Code:
HCVSP

Performing Lab:
Immunology

Performed:
See individual tests - Hepatitis C Antibody (HCV) and Hepatitis C RNA, Quantitative (HCVRT) for additional information

Collect:
Gold Top or Red Top and Pearl White Top

Amount to Collect:
1 mL blood for Gold Top or Red Top
8.5 mL blood for Pearl White Top

Sample Type:
Serum and EDTA Plasma

Preferred Volume:
0.5 mL serum and3 mL plasma

Minimum Volume:
See individual test for details

Rejection Criteria:
See individual tests - Hepatitis C Antibody (HCV) and Hepatitis C RNA, Quantitative (HCVRT) for additional information

Specimen Preparation:
See individual tests - Hepatitis C Antibody (HCV) and Hepatitis C RNA, Quantitative (HCVRT) for additional information

Synonyms:

- HCV
- Hepatitis C Antibody
- Hepatitis
- anti-HCV antibody
- HCVAB
- Hep C Ab

Reflex Testing:
Positive HCV Antibody will automatically reflex to HCVRT test. Additional charge applies.

Additional Information:
See individual tests - Hepatitis C Antibody (HCV) and Hepatitis C RNA, Quantitative (HCVRT) for additional information

CPT Codes:
HCV - 86803, HCVRT - 87522

LOINC Codes:
HCV - 13955-0, HCVRT - 38180-6

Bartonella henselae & *B. quintana* Antibodies, IgG & IgM

BART

ORDERING

Ordering Recommendations:
May confirm a current or past exposure to B. henselae or B. quintana in patient with typical signs and symptoms and a compatible exposure history.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Mon, Thu

Methodology:
Semi-Quantitative Indirect Fluorescent Antibody (IFA)

Reported:
1-8 days

Synonyms:

- BA
- Bacillary angiomatosis
- Cat Scratch Disease
- CSD
- peliosis hepatitis
- Rickettsia henselae
- Rickettsia quintana
- Rochalimea
- B henselae IgG
- B henselae IgM
- B quintana IgG
- B quintana IgM
- Bartonella henselae Abs
- Bartonella Quintana, IgG/IgM

COLLECTION

Sample Type:
Serum

Collect:
Serum separator tube.

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Contaminated, hemolyzed, or severely lipemic specimens.

PROCESSING

Test Code:
BART

ARUP Test Code:
2002280

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate serum from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP standard transport tube. (Min: 0.4 mL) Parallel testing is preferred and convalescent specimens must be received within 30 days from receipt of the acute specimens. Mark specimens plainly as "acute" or "convalescent."

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Contaminated, hemolyzed, or severely lipemic specimens.

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Interpretive Data:

Component	Interpretation
Bartonella henselae Antibody, IgG by IFA	<1:64 Negative - No significant level of Bartonella henselae IgG antibody detected. 1:64-1:128 Equivocal - Questionable presence of Bartonella henselae IgG antibody detected. Repeat testing in 10-14 days may be helpful. >=1:256 Positive - Presence of IgG antibody to Bartonella henselae detected, suggestive of current or past infection.
Bartonella henselae Antibody, IgM by IFA	< 1:16 Negative - No significant level of Bartonella henselae IgM antibody detected. >=1:16 Positive - Presence of IgM antibody to Bartonella henselae detected, suggestive of current or recent infection.
Bartonella quintana Antibody, IgG by IFA	< 1:64 Negative - No significant level of Bartonella quintana IgG antibody detected. 1:64-1:128 Equivocal - Questionable presence of Bartonella quintana IgG antibody detected. Repeat testing in 10-14 days may be helpful. >=1:256 Positive - Presence of IgG antibody to Bartonella quintana detected, suggestive of current or past infection.
Bartonella quintana Antibody, IgM by IFA	< 1:16 Negative - No significant level of Bartonella quintana IgM antibody detected. >=1:16 Positive - Presence of IgM antibody to Bartonella quintana detected, suggestive of current or recent infection.

ADMINISTRATIVE

CPT Codes:
86611 x4

LOINC:

- 9360-9
- 6954-2
- 9361-7
- 6955-9

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
May confirm a current or past exposure to B. henselae or B. quintana in patient with typical signs and symptoms and a compatible exposure history.

Test Code:
BART

ARUP Test Code:
2002280

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Mon, Thu

Methodology:
Semi-Quantitative Indirect Fluorescent Antibody (IFA)

Collect:
Serum separator tube.

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Contaminated, hemolyzed, or severely lipemic specimens.

Specimen Preparation:
Separate serum from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP standard transport tube. (Min: 0.4 mL) Parallel testing is preferred and convalescent specimens must be received within 30 days from receipt of the acute specimens. Mark specimens plainly as "acute" or "convalescent."

Interpretive Data:

Component	Interpretation
Bartonella henselae Antibody, IgG by IFA	<1:64 Negative - No significant level of Bartonella henselae IgG antibody detected. 1:64-1:128 Equivocal - Questionable presence of Bartonella henselae IgG antibody detected. Repeat testing in 10-14 days may be helpful. >=1:256 Positive - Presence of IgG antibody to Bartonella henselae detected, suggestive of current or past infection.
Bartonella henselae Antibody, IgM by IFA	< 1:16 Negative - No significant level of Bartonella henselae IgM antibody detected. >=1:16 Positive - Presence of IgM antibody to Bartonella henselae detected, suggestive of current or recent infection.
Bartonella quintana Antibody, IgG by IFA	< 1:64 Negative - No significant level of Bartonella quintana IgG antibody detected. 1:64-1:128 Equivocal - Questionable presence of Bartonella quintana IgG antibody detected. Repeat testing in 10-14 days may be helpful. >=1:256 Positive - Presence of IgG antibody to Bartonella quintana detected, suggestive of current or past infection.
Bartonella quintana Antibody, IgM by IFA	< 1:16 Negative - No significant level of Bartonella quintana IgM antibody detected. >=1:16 Positive - Presence of IgM antibody to Bartonella quintana detected, suggestive of current or recent infection.

Synonyms:

- BA
- Bacillary angiomatosis
- Cat Scratch Disease
- CSD
- peliosis hepatitis
- Rickettsia henselae
- Rickettsia quintana
- Rochalimea
- B henselae IgG
- B henselae IgM
- B quintana IgG
- B quintana IgM
- Bartonella henselae Abs
- Bartonella Quintana, IgG/IgM

Storage/Transport Temperature:
Refrigerated.

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

Reported:
1-8 days

CPT Codes:
86611 x4

LOINC:

- 9360-9
- 6954-2
- 9361-7
- 6955-9

Borrelia Species by PCR (Lyme Disease)

MOLT

ORDERING

Ordering Recommendations:
Not a first-line test for Lyme disease. May be useful if strong suspicion of Lyme disease persists in spite of persistent negative serologic testing. Blood and CSF specimens have poor clinical sensitivity for detection of Borrelia burgdorferi by PCR.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Mon, Wed, Fri

Methodology:
Qualitative Polymerase Chain Reaction

Reported:
1-4 days

Synonyms:

- Borreliosis
- Borrelia burgdorferi
- B. burgdorferi DNA detection
- Lyme Disease
- Lyme Disease PCR
- Tick Borne Disease

COLLECTION

Sample Type:
Blood, CSF, synovial fluid, tissue

Collect:
Lavender (EDTA), pink (K_2EDTA) or serum separator tube. OR CSF, synovial fluid or tissue.

Amount to Collect:
2 mL blood or 1 mL fluid

Preferred Volume:
1 mL plasma/serum or fluid

Minimum Volume:
0.5 mL plasma/serum or fluid

Remarks:
Specimen source required.

Stability (from collection to initiation):
Tissue: Ambient: Unacceptable; Refrigerated: Unacceptable; Frozen: 1 year
All Others: Ambient: 8 hours; Refrigerated: 72 hours; Frozen: 1 year

Storage/Transport Temperature:
Frozen.

Unacceptable Conditions:
Heparinized specimens, tissues in optimal cutting temperature compound.

PROCESSING

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

ARUP Test Code:
0055570

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate serum or plasma from cells. Transfer 1 mL serum, plasma, CSF or synovial fluid to a sterile container. (Min: 0.5 mL). Tissue: Transfer to a sterile container and freeze immediately.

Preferred Volume:
1 mL plasma/serum or fluid

Minimum Volume:
0.5 mL plasma/serum or fluid

Unacceptable Conditions:
Heparinized specimens, tissues in optimal cutting temperature compound.

Stability (from collection to initiation):
Tissue: Ambient: Unacceptable; Refrigerated: Unacceptable; Frozen: 1 year
All Others: Ambient: 8 hours; Refrigerated: 72 hours; Frozen: 1 year

Storage/Transport Temperature:
Frozen.

RESULT INTERPRETATION

Interpretive Data:
This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:
87476

LOINC:

- 31208-2
- 4991-6

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Not a first-line test for Lyme disease. May be useful if strong suspicion of Lyme disease persists in spite of persistent negative serologic testing. Blood and CSF specimens have poor clinical sensitivity for detection of Borrelia burgdorferi by PCR.

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

ARUP Test Code:
0055570

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Mon, Wed, Fri

Methodology:
Qualitative Polymerase Chain Reaction

Remarks:
Specimen source required.

Collect:
Lavender (EDTA), pink (K_2EDTA) or serum separator tube. OR CSF, synovial fluid or tissue.

Amount to Collect:
2 mL blood or 1 mL fluid

Sample Type:
Blood, CSF, synovial fluid, tissue

Preferred Volume:
1 mL plasma/serum or fluid

Minimum Volume:
0.5 mL plasma/serum or fluid

Unacceptable Conditions:
Heparinized specimens, tissues in optimal cutting temperature compound.

Specimen Preparation:

Separate serum or plasma from cells. Transfer 1 mL serum, plasma, CSF or synovial fluid to a sterile container. (Min: 0.5 mL). Tissue: Transfer to a sterile container and freeze immediately.

Interpretive Data:

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Synonyms:

- Borreliosis
- Borrelia burgdorferi
- B. burgdorferi DNA detection
- Lyme Disease
- Lyme Disease PCR
- Tick Borne Disease

Storage/Transport Temperature:

Frozen.

Stability (from collection to initiation):

Tissue: Ambient: Unacceptable; Refrigerated: Unacceptable; Frozen: 1 year
All Others: Ambient: 8 hours; Refrigerated: 72 hours; Frozen: 1 year

Reported:

1-4 days

CPT Codes:

87476

LOINC:

- 31208-2
- 4991-6

Brucella Antibody (Total) by Agglutination

BRUCA

ORDERING

Ordering Recommendations:
Recommended serology test to detect recent infection from Brucella in the context of a clinically compatible illness and exposure history.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Mon-Fri

Methodology:
Semi-Quantitative Agglutination

Reported:
2-4 days

Synonyms:

- Brucella Serology
- Brucella Total Antibody Agglutination, Serum
- Febrile Agglutinins

COLLECTION

Sample Type:
Serum (gold top)

Collect:
Serum Separator Tube (SST).

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Remarks:
Mark specimens plainly as "acute" or "convalescent."

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 6 months (avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Contaminated, heat-inactivated, hemolyzed, or severely lipemic specimens.

PROCESSING

Test Code:
BRUCA

ARUP Test Code:
0050135

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate serum from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min: 0.3 mL) Parallel testing is preferred and convalescent specimens must be received within 30 days from receipt of the acute specimens.

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Unacceptable Conditions:
Contaminated, heat-inactivated, hemolyzed, or severely lipemic specimens.

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 6 months (avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:
Less than 1:20 Negative

Interpretive Data:
Cross-reactions may occur between Brucella and F. tularensis antigens and antisera; therefore, parallel tests should be run with these antigens. A fourfold rise in titer is considered diagnostic. A single serum titer of 1:80 or 1:160 is suggestive of brucellosis when accompanied by a compatible clinical course in a patient with a history of potential exposures.

ADMINISTRATIVE

CPT Codes:
86622

LOINC:

- 19053-8

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Recommended serology test to detect recent infection from Brucella in the context of a clinically compatible illness and exposure history.

Test Code:
BRUCA

ARUP Test Code:
0050135

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Mon-Fri

Methodology:
Semi-Quantitative Agglutination

Remarks:
Mark specimens plainly as "acute" or "convalescent."

Collect:
Serum Separator Tube (SST).

Amount to Collect:
2 mL blood

Sample Type:
Serum (gold top)

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Unacceptable Conditions:
Contaminated, heat-inactivated, hemolyzed, or severely lipemic specimens.

Specimen Preparation:

Separate serum from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min: 0.3 mL) Parallel testing is preferred and convalescent specimens must be received within 30 days from receipt of the acute specimens.

Reference Interval:

Less than 1:20 Negative

Interpretive Data:

Cross-reactions may occur between Brucella and F. tularensis antigens and antisera; therefore, parallel tests should be run with these antigens. A fourfold rise in titer is considered diagnostic. A single serum titer of 1:80 or 1:160 is suggestive of brucellosis when accompanied by a compatible clinical course in a patient with a history of potential exposures.

Synonyms:

- Brucella Serology
- Brucella Total Antibody Agglutination, Serum
- Febrile Agglutinins

Storage/Transport Temperature:

Refrigerated.

Stability (from collection to initiation):

After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 6 months (avoid repeated freeze/thaw cycles)

Reported:

2-4 days

CPT Codes:

86622

LOINC:

- 19053-8

Coccidioides Antibodies by Complement Fixation

COCF

ORDERING

Ordering Recommendations:
Use to monitor coccidioidal antibody titer in serum in response to treatment. For initial diagnosis of coccidioidomycosis, refer to Coccidioides Antibodies Reflexive Panel, Serum (3001982).

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Semi-Quantitative Complement Fixation

Reported:
2-5 days

Synonyms:

- Cocci IgG, IgM CF
- Coccidioidomycosis IgG/IgM
- San Joaquin Fever Antibody
- Valley Fever antibodies
- Coccidioides immitis
- Coccidioidomycosis
- Valley Fever

COLLECTION

Sample Type:
Serum

Collect:
Serum separator tube (SST).

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.15 mL serum

Remarks:
Mark specimens plainly as "acute" or "convalescent."

Stability (from collection to initiation):
Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Other body fluids. Contaminated, hemolyzed, icteric, or lipemic specimens.

PROCESSING

Test Code:
COCF

ARUP Test Code:
0050170

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP standard transport tube. (Min: 0.6 mL) Parallel testing is preferred and convalescent specimens must be received within 30 days from receipt of acute specimens..

Preferred Volume:
1 mL serum

Minimum Volume:
0.15 mL serum

Unacceptable Conditions:
Other body fluids. Contaminated, hemolyzed, icteric, or lipemic specimens.

Stability (from collection to initiation):
Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:
Less than 1:2

Interpretive Data:
A titer of 1:2 or greater suggests past or current infection. However, greater than 30 percent of cases with chronic residual pulmonary disease have negative complement fixation (CF) tests. Titers of less than 1:32 (even as low as 1:2) may indicate past infection or self-limited disease; anticoccidioidal CF antibody titers in excess of 1:16 may indicate disseminated infection. CF serology may be used to follow therapy. Antibody in CSF is considered diagnostic for coccidioidal meningitis, although 10 percent of patients with coccidioidal meningitis will not have antibody in CSF.

ADMINISTRATIVE

CPT Codes:
86635

LOINC:

- 33380-7

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Use to monitor coccidioidal antibody titer in serum in response to treatment. For initial diagnosis of coccidioidomycosis, refer to Coccidioides Antibodies Reflexive Panel, Serum (3001982).

Test Code:
COCF

ARUP Test Code:
0050170

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Semi-Quantitative Complement Fixation

Remarks:
Mark specimens plainly as "acute" or "convalescent."

Collect:
Serum separator tube (SST).

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.15 mL serum

Unacceptable Conditions:
Other body fluids. Contaminated, hemolyzed, icteric, or lipemic specimens.

Specimen Preparation:

Separate from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP standard transport tube. (Min: 0.6 mL) Parallel testing is preferred and convalescent specimens must be received within 30 days from receipt of acute specimens..

Reference Interval:

Less than 1:2

Interpretive Data:

A titer of 1:2 or greater suggests past or current infection. However, greater than 30 percent of cases with chronic residual pulmonary disease have negative complement fixation (CF) tests. Titers of less than 1:32 (even as low as 1:2) may indicate past infection or self-limited disease; anticoccidioidal CF antibody titers in excess of 1:16 may indicate disseminated infection. CF serology may be used to follow therapy. Antibody in CSF is considered diagnostic for coccidioidal meningitis, although 10 percent of patients with coccidioidal meningitis will not have antibody in CSF.

Synonyms:

- Cocci IgG, IgM CF
- Coccidioidomycosis IgG/IgM
- San Joaquin Fever Antibody
- Valley Fever antibodies
- Coccidioides immitis
- Coccidioidomycosis
- Valley Fever

Storage/Transport Temperature:

Refrigerated.

Stability (from collection to initiation):

Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

Reported:

2-5 days

CPT Codes:

86635

LOINC:

- 33380-7

Coccidioides Antibodies by Complement Fixation, CSF

COCFC

ORDERING

Ordering Recommendations:
Aids in the diagnosis of coccidioidal meningitis and in monitoring of coccidioidal antibody titer in CSF in response to treatment. For comprehensive diagnostic testing that includes immunoassay (IgM and IgG), complement fixation, and immunodiffusion, refer to Coccidioides Antibodies Panel, CSF (3000061).

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Semi-Quantitative Complement Fixation

Reported:
2-4 days

Synonyms:

- Cocci IgG, IgM CF
- Coccidioidomycosis IgG/IgM
- San Joaquin Fever Antibody
- Valley Fever antibodies
- CF
- Coccidioides immitis
- TP
- Coccidioidomycosis
- Precipitin
- Valley Fever

COLLECTION

Sample Type:
CSF in sterile tube

Collect:
CSF

Preferred Volume:
1 mL

Minimum Volume:
0.6 mL

Remarks:
Mark specimens plainly as "acute" or "convalescent."

Stability (from collection to initiation):
Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Other body fluids. Contaminated, hemolyzed, xanthochromic, or severely lipemic specimens.

PROCESSING

Test Code:
COCFC

ARUP Test Code:
3000059

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transfer 1 mL CSF to an ARUP standard transport tube. (Min 0.6 mL) Parallel testing is preferred and convalescent specimens must be received within 30 days from receipt of acute specimens.

Preferred Volume:
1 mL

Minimum Volume:
0.6 mL

Unacceptable Conditions:
Other body fluids. Contaminated, hemolyzed, xanthochromic, or severely lipemic specimens.

Stability (from collection to initiation):
Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:
Less than 1:2

Interpretive Data:
A titer of 1:2 or greater suggests past or current infection. However, greater than 30 percent of cases with chronic residual pulmonary disease have negative complement fixation (CF) tests. Titers of less than 1:32 (even as low as 1:2) may indicate past infection or self-limited disease; anticoccidioidal CF antibody titers in excess of 1:16 may indicate disseminated infection. CF serology may be used to follow therapy. Antibody in CSF is considered diagnostic for coccidioidal meningitis, although 10 percent of patients with coccidioidal meningitis will not have antibody in CSF.

ADMINISTRATIVE

CPT Codes:
86635

LOINC:

- 13917-0

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Aids in the diagnosis of coccidioidal meningitis and in monitoring of coccidioidal antibody titer in CSF in response to treatment. For comprehensive diagnostic testing that includes immunoassay (IgM and IgG), complement fixation, and immunodiffusion, refer to Coccidioides Antibodies Panel, CSF (3000061).

Test Code:
COCFC

ARUP Test Code:
3000059

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Semi-Quantitative Complement Fixation

Remarks:
Mark specimens plainly as "acute" or "convalescent."

Collect:
CSF

Sample Type:
CSF in sterile tube

Preferred Volume:
1 mL

Minimum Volume:
0.6 mL

Unacceptable Conditions:
Other body fluids. Contaminated, hemolyzed, xanthochromic, or severely lipemic specimens.

Specimen Preparation:

Transfer 1 mL CSF to an ARUP standard transport tube. (Min 0.6 mL) Parallel testing is preferred and convalescent specimens must be received within 30 days from receipt of acute specimens.

Reference Interval:

Less than 1:2

Interpretive Data:

A titer of 1:2 or greater suggests past or current infection. However, greater than 30 percent of cases with chronic residual pulmonary disease have negative complement fixation (CF) tests. Titers of less than 1:32 (even as low as 1:2) may indicate past infection or self-limited disease; anticoccidioidal CF antibody titers in excess of 1:16 may indicate disseminated infection. CF serology may be used to follow therapy. Antibody in CSF is considered diagnostic for coccidioidal meningitis, although 10 percent of patients with coccidioidal meningitis will not have antibody in CSF.

Synonyms:

- Cocci IgG, IgM CF
- Coccidioidomycosis IgG/IgM
- San Joaquin Fever Antibody
- Valley Fever antibodies
- CF
- Coccidioides immitis
- TP
- Coccidioidomycosis
- Precipitin
- Valley Fever

Storage/Transport Temperature:

Refrigerated.

Stability (from collection to initiation):

Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

Reported:

2-4 days

CPT Codes:

86635

LOINC:

- 13917-0

Coccidioides Antigen Quantitative by EIA

COCCA

ORDERING

Ordering Recommendations:
Aids in the diagnosis and monitoring of Coccidioides infection in serum, plasma, and body fluids.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Varies

Methodology:
Quantitative Enzyme Immunoassay (EIA)

Reported:
3-4 days

Synonyms:

- Cocci Antigen
- Cocci Ag

COLLECTION

Sample Type:
Urine, serum/plasma, CSF, BAL

Collect:
Plain red, serum separator tube (SST), lavender (K2 or K3 EDTA), pink (K2 EDTA), green (sodium or lithium heparin), or light blue (sodium citrate). Also acceptable: Urine, CSF, or BAL.

Preferred Volume:
Urine and BAL: 1 mL
Serum/plasma: 2 mL
CSF: 1 mL

Minimum Volume:
Urine and BAL: 0.5 mL
Serum/plasma: 1.2 mL
CSF: 0.8 mL

Remarks:
Specimen source required.

Stability (from collection to initiation):
Ambient: 2 weeks; Refrigerated: 2 weeks; Frozen: Indefinitely

Storage/Transport Temperature:
Frozen. Also acceptable: Room temperature or refrigerated.

PROCESSING

Test Code:
COCCA

ARUP Test Code:
2011075

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transfer 2 mL serum or plasma to an ARUP standard transport tube. (Min: 1.2 mL)
Transfer 1 mL urine or BAL to an ARUP standard transport tube. (Min: 0.5 mL)
Transfer 1 mL CSF to an ARUP standard transport tube. (Min: 0.8 mL)
Test is not performed at ARUP; separate specimens must be submitted when multiple tests are ordered.

Preferred Volume:
Urine and BAL: 1 mL
Serum/plasma: 2 mL
CSF: 1 mL

Minimum Volume:
Urine and BAL: 0.5 mL
Serum/plasma: 1.2 mL
CSF: 0.8 mL

Stability (from collection to initiation):
Ambient: 2 weeks; Refrigerated: 2 weeks; Frozen: Indefinitely

Storage/Transport Temperature:
Frozen. Also acceptable: Room temperature or refrigerated.

RESULT INTERPRETATION

Reference Interval:
By Report

ADMINISTRATIVE

CPT Codes:
87449

LOINC:

- 93226-9
- 31208-2

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Aids in the diagnosis and monitoring of Coccidioides infection in serum, plasma, and body fluids.

Test Code:
COCCA

ARUP Test Code:
2011075

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Varies

Methodology:
Quantitative Enzyme Immunoassay (EIA)

Remarks:
Specimen source required.

Collect:
Plain red, serum separator tube (SST), lavender (K2 or K3 EDTA), pink (K2 EDTA), green (sodium or lithium heparin), or light blue (sodium citrate). Also acceptable: Urine, CSF, or BAL.

Sample Type:
Urine, serum/plasma, CSF, BAL

Preferred Volume:
Urine and BAL: 1 mL
Serum/plasma: 2 mL
CSF: 1 mL

Minimum Volume:
Urine and BAL: 0.5 mL
Serum/plasma: 1.2 mL
CSF: 0.8 mL

Specimen Preparation:
Transfer 2 mL serum or plasma to an ARUP standard transport tube. (Min: 1.2 mL)
Transfer 1 mL urine or BAL to an ARUP standard transport tube. (Min: 0.5 mL)
Transfer 1 mL CSF to an ARUP standard transport tube. (Min: 0.8 mL)
Test is not performed at ARUP; separate specimens must be submitted when multiple tests are ordered.

Reference Interval:
By Report

Synonyms:

- Cocci Antigen
- Cocci Ag

Storage/Transport Temperature:
Frozen. Also acceptable: Room temperature or refrigerated.

Stability (from collection to initiation):
Ambient: 2 weeks; Refrigerated: 2 weeks; Frozen: Indefinitely

Reported:
3-4 days

CPT Codes:
87449

LOINC:

- 93226-9
- 31208-2

Histoplasma Antibodies by Immunodiffusion

HSTO

ORDERING

Ordering Recommendations:
Aids in the diagnosis of histoplasmosis. Not recommended as a standalone test. For more complete serologic testing, refer to Histoplasma Antibodies by Complement Fixation and Immunodiffusion (0050627).

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Immunodiffusion

Reported:
3-6 days

Synonyms:

- H. capsulatum
- Histoplasma ID
- Histoplasma Precipitin
- Histoplasma spp Ab
- Histoplasmosis Antibody
- Histoplasmosis
- H antigen
- Histoplasma capsulatum
- M antigen
- Precipitin

COLLECTION

Sample Type:
Serum

Collect:
Serum separator tube.

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.15 mL serum

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Contaminated, hemolyzed, or severely lipemic specimens.

PROCESSING

Test Code:
HSTO

ARUP Test Code:
0050174

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate serum from cells ASAP or within 2 hours of collection. Transfer 0.5 mL serum to an ARUP Standard Transport Tube. (Min 0.15 mL) Parallel testing is preferred and convalescent specimens must be received within 30 days from receipt of the acute specimens. Mark specimens plainly as "acute" or "convalescent."

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.15 mL serum

Unacceptable Conditions:
Contaminated, hemolyzed, or severely lipemic specimens.

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:
Not Detected

Interpretive Data:
Refer to report.

ADMINISTRATIVE

CPT Codes:
86698

LOINC:

- 5218-3

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Aids in the diagnosis of histoplasmosis. Not recommended as a standalone test. For more complete serologic testing, refer to Histoplasma Antibodies by Complement Fixation and Immunodiffusion (0050627).

Test Code:
HSTO

ARUP Test Code:
0050174

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Immunodiffusion

Collect:
Serum separator tube.

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.15 mL serum

Unacceptable Conditions:
Contaminated, hemolyzed, or severely lipemic specimens.

Specimen Preparation:
Separate serum from cells ASAP or within 2 hours of collection. Transfer 0.5 mL serum to an ARUP Standard Transport Tube. (Min 0.15 mL) Parallel testing is preferred and convalescent specimens must be received within 30 days from receipt of the acute specimens. Mark specimens plainly as "acute" or "convalescent."

Reference Interval:
Not Detected

Interpretive Data:
Refer to report.

Synonyms:

- H. capsulatum
- Histoplasma ID
- Histoplasma Precipitin
- Histoplasma spp Ab
- Histoplasmosis Antibody
- Histoplasmosis
- H antigen
- Histoplasma capsulatum
- M antigen
- Precipitin

Storage/Transport Temperature:
Refrigerated.

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

Reported:
3-6 days

CPT Codes:
86698

LOINC:

- 5218-3

Notes:
This immunodiffusion test detects total antibodies against the H and M antigens of Histoplasma capsulatum.

JAK2 (V617F) Mutation by ddPCR, Quantitative

MOLT

ORDERING

Ordering Recommendations:
Aids in the workup of suspected myeloproliferative neoplasms. Use to detect the JAK2 V617F mutation in peripheral blood or bone marrow.

Available Stat:
No

Performed:
Varies

Methodology:
Droplet Digital PCR (ddPCR)

Reported:
2-9 days

Synonyms:

- BCR-ABL1-negative tesing
- Classic BCR-ABL1-negative MPN testing
- MPN JAK 2
- mutant JAK 2 V617F allelic burden
- BCR-ABL1 negative testing
- Classic BCR-ABL1-negative testing
- MPN JAK2
- mutant JAK2 V617F allelic burden

COLLECTION

Collect:
Whole blood or bone marrow in lavender (EDTA). Also acceptable: Whole blood in green (sodium heparin).

Preferred Volume:
Whole Blood: 5 mL
Bone Marrow: 3 mL

Minimum Volume:
Whole Blood: 1 mL
Bone Marrow: 1 mL

Stability (from collection to initiation):
Refrigerated: 7 days; Frozen: Unacceptable

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Plasma, serum, FFPE tissue blocks/slides, or fresh or frozen tissue. Specimens collected in anticoagulants other than EDTA or sodium heparin. Clotted or grossly hemolyzed specimens.

PROCESSING

Test Code:
MOLT

ARUP Test Code:
3003751

Sendout:
Yes

Specimen Preparation:
Whole Blood: Do not freeze. Transport 5 mL whole blood. (Min: 1 mL)
Bone Marrow: Do not freeze. Transport 3 mL bone marrow. (Min: 1 mL)

Additional Processing Instructions:
This is a specialized send out test for quantitative JAK2 V617F allele frequency. For the standard in-house qualitative assay, please see Janus kinase 2 Mutation, Qualitative (test code JAK2).

Preferred Volume:
Whole Blood: 5 mL
Bone Marrow: 3 mL

Minimum Volume:
Whole Blood: 1 mL
Bone Marrow: 1 mL

Unacceptable Conditions:
Plasma, serum, FFPE tissue blocks/slides, or fresh or frozen tissue. Specimens collected in anticoagulants other than EDTA or sodium heparin. Clotted or grossly hemolyzed specimens.

Stability (from collection to initiation):
Refrigerated: 7 days; Frozen: Unacceptable

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Interpretive Data:
Refer to report.

ADMINISTRATIVE

CPT Codes:
81270

LOINC:

- 31208-2
- 43399-5
- 53761-3

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Aids in the workup of suspected myeloproliferative neoplasms. Use to detect the JAK2 V617F mutation in peripheral blood or bone marrow.

Test Code:
MOLT

ARUP Test Code:
3003751

Sendout:
Yes

Performed:
Varies

Methodology:
Droplet Digital PCR (ddPCR)

Collect:
Whole blood or bone marrow in lavender (EDTA). Also acceptable: Whole blood in green (sodium heparin).

Preferred Volume:
Whole Blood: 5 mL
Bone Marrow: 3 mL

Minimum Volume:
Whole Blood: 1 mL
Bone Marrow: 1 mL

Unacceptable Conditions:
Plasma, serum, FFPE tissue blocks/slides, or fresh or frozen tissue. Specimens collected in anticoagulants other than EDTA or sodium heparin. Clotted or grossly hemolyzed specimens.

Specimen Preparation:
Whole Blood: Do not freeze. Transport 5 mL whole blood. (Min: 1 mL)
Bone Marrow: Do not freeze. Transport 3 mL bone marrow. (Min: 1 mL)

Additional Processing Instructions:
This is a specialized send out test for quantitative JAK2 V617F allele frequency. For the standard in-house qualitative assay, please see Janus kinase 2 Mutation, Qualitative (test code JAK2).

Interpretive Data:
Refer to report.

Synonyms:

- BCR-ABL1-negative tesing
- Classic BCR-ABL1-negative MPN testing
- MPN JAK 2
- mutant JAK 2 V617F allelic burden
- BCR-ABL1 negative testing
- Classic BCR-ABL1-negative testing
- MPN JAK2
- mutant JAK2 V617F allelic burden

Storage/Transport Temperature:
Refrigerated.

Stability (from collection to initiation):
Refrigerated: 7 days; Frozen: Unacceptable

Reported:
2-9 days

CPT Codes:
81270

LOINC:

- 31208-2
- 43399-5
- 53761-3

KIT (D816V) Mutation by ddPCR, Quantitative

KITDQ

ORDERING

Ordering Recommendations:
Aids in the diagnosis of mastocytosis. Provides prognostic and predictive information for tyrosine kinase inhibitor (TKI) therapy planning.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Varies

Methodology:
Droplet Digital PCR (ddPCR)

Reported:
2-9 days

Synonyms:

- allergy
- Asp816Val
- C-KIT
- CKIT
- D816V
- KIT exon 17
- systemic mastocytosis

COLLECTION

Sample Type:
Blood or bone marrow

Collect:
Whole blood or bone marrow in lavender (EDTA) preferred. Also acceptable: Green (sodium heparin)

Amount to Collect:
5 mL blood
3 mL bone marrow

Minimum Volume:
1 mL blood
1 mL bone marrow

Stability (from collection to initiation):
Refrigerated: 7 days; Frozen: Unacceptable

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Plasma, serum, FFPE tissue blocks/slides, or fresh or frozen tissue. Specimens collected in anticoagulants other than EDTA or sodium heparin. Clotted or grossly hemolyzed specimens.

PROCESSING

Test Code:
KITDQ

ARUP Test Code:
3002956

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Whole Blood: Do not freeze. Transport 5 mL whole blood. (Min: 1 mL)
Bone Marrow: Do not freeze. Transport 3 mL bone marrow. (Min: 1 mL)

Minimum Volume:
1 mL blood
1 mL bone marrow

Unacceptable Conditions:
Plasma, serum, FFPE tissue blocks/slides, or fresh or frozen tissue. Specimens collected in anticoagulants other than EDTA or sodium heparin. Clotted or grossly hemolyzed specimens.

Stability (from collection to initiation):
Refrigerated: 7 days; Frozen: Unacceptable

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Interpretive Data:
Refer to report.

ADMINISTRATIVE

CPT Codes:
81273

LOINC:

- 88519-4
- 81258-6
- 31208-2

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Aids in the diagnosis of mastocytosis. Provides prognostic and predictive information for tyrosine kinase inhibitor (TKI) therapy planning.

Test Code:
KITDQ

ARUP Test Code:
3002956

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Varies

Methodology:
Droplet Digital PCR (ddPCR)

Collect:
Whole blood or bone marrow in lavender (EDTA) preferred. Also acceptable: Green (sodium heparin)

Amount to Collect:
5 mL blood
3 mL bone marrow

Sample Type:
Blood or bone marrow

Minimum Volume:
1 mL blood
1 mL bone marrow

Unacceptable Conditions:
Plasma, serum, FFPE tissue blocks/slides, or fresh or frozen tissue. Specimens collected in anticoagulants other than EDTA or sodium heparin. Clotted or grossly hemolyzed specimens.

Specimen Preparation:
Whole Blood: Do not freeze. Transport 5 mL whole blood. (Min: 1 mL)
Bone Marrow: Do not freeze. Transport 3 mL bone marrow. (Min: 1 mL)

Interpretive Data:
Refer to report.

Synonyms:

- allergy
- Asp816Val
- C-KIT
- CKIT
- D816V
- KIT exon 17
- systemic mastocytosis

Storage/Transport Temperature:
Refrigerated.

Stability (from collection to initiation):
Refrigerated: 7 days; Frozen: Unacceptable

Reported:
2-9 days

CPT Codes:
81273

LOINC:

- 88519-4
- 81258-6
- 31208-2

Legionella pneumophila Antibodies (Types 1-6), IgG, IgM, and IgA by ELISA

LEGAB

ORDERING

Ordering Recommendations:
May aid in the diagnosis of legionellosis caused by infection with L. pneumophila.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Mon, Fri

Methodology:
Semi-Quantitative Enzyme-Linked Immunosorbent Assay (ELISA)

Reported:
1-6 days

Synonyms:

- Legionnaire's disease, legionellosis
- Legionnaire's disease, legionellosis

COLLECTION

Sample Type:
Serum

Collect:
Serum separator tube (SST) or plain red.

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month

Storage/Transport Temperature:
Preferred transport temp: Refrigerated. Also acceptable: Frozen

Unacceptable Conditions:
Contaminated, heat-inactivated, hemolyzed, icteric, or lipemic specimens.

PROCESSING

Test Code:
LEGAB

ARUP Test Code:
3005200

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transfer 1 mL serum to an ARUP standard transport tube. (Min: 0.3 mL)

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Contaminated, heat-inactivated, hemolyzed, icteric, or lipemic specimens.

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month

Storage/Transport Temperature:
Preferred transport temp: Refrigerated. Also acceptable: Frozen

RESULT INTERPRETATION

Reference Interval:

Components	Reference Interval
L. pneumophila (Types 1-6), Antibodies	0.90 IV or less

Interpretive Data:

Component	Interpretation
L. pneumophila (Types 1-6), Antibodies	<=0.90 IV Negative: No significant amount of IgG/IgM/IgA antibodies to L. pneumophila detected. 0.91 to 1.09 IV Equivocal: Recommend repeat testing in 1-3 weeks with fresh sample. >=1.10 IV Positive: IgG/IgM/IgA antibodies specific to L. pneumophila suggesting current or prior infection. A positive result cannot distinguish between previous or active infection, therefore this result alone cannot be used to establish a diagnosis.

ADMINISTRATIVE

CPT Codes:
86713

LOINC:

- 30046-7

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
May aid in the diagnosis of legionellosis caused by infection with L. pneumophila.

Test Code:
LEGAB

ARUP Test Code:
3005200

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Mon, Fri

Methodology:
Semi-Quantitative Enzyme-Linked Immunosorbent Assay (ELISA)

Collect:
Serum separator tube (SST) or plain red.

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Contaminated, heat-inactivated, hemolyzed, icteric, or lipemic specimens.

Specimen Preparation:
Transfer 1 mL serum to an ARUP standard transport tube. (Min: 0.3 mL)

Reference Interval:

Components	Reference Interval
L. pneumophila (Types 1-6), Antibodies	0.90 IV or less

Interpretive Data:

Component	Interpretation
L. pneumophila (Types 1-6), Antibodies	<=0.90 IV Negative: No significant amount of IgG/IgM/IgA antibodies to L. pneumophila detected. 0.91 to 1.09 IV Equivocal: Recommend repeat testing in 1-3 weeks with fresh sample. >=1.10 IV Positive: IgG/IgM/IgA antibodies specific to L. pneumophila suggesting current or prior infection. A positive result cannot distinguish between previous or active infection, therefore this result alone cannot be used to establish a diagnosis.

Synonyms:

- Legionnaire's disease, legionellosis
- Legionnaire's disease, legionellosis

Storage/Transport Temperature:
Preferred transport temp: Refrigerated. Also acceptable: Frozen

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month

Reported:
1-6 days

CPT Codes:
86713

LOINC:

- 30046-7

Leptospira Antibody, IgM by Dot Blot

LEPTM

ORDERING

Ordering Recommendations:
Aids in the detection of acute leptospirosis.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Mon, Thu

Methodology:
Qualitative Immunoblot

Reported:
1-5 days

Synonyms:

- Leptospira IgM antibody
- Leptospira IgM Dot Blot

COLLECTION

Collect:
Serum Separator Tube (SST) or Green (Sodium or Lithium Heparin).

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Any other body fluid. Contaminated, heat-inactivated, hemolyzed, severely lipemic specimens.

PROCESSING

Test Code:
LEPTM

ARUP Test Code:
0055233

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.2 mL) Parallel testing is preferred and convalescent specimens must be received within 30 days from receipt of the acute specimens. Please mark specimen plainly as acute or convalescent.

Unacceptable Conditions:
Any other body fluid. Contaminated, heat-inactivated, hemolyzed, severely lipemic specimens.

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:
Negative: No significant level of Leptospira IgM antibody detected.
Equivocal: Questionable presence of Leptospira IgM antibody detected. Repeat testing in 10-14 days may be helpful.
Positive: Presence of IgM antibody to Leptospira detected, suggestive of a current or recent infection.

Interpretive Data:

Samples interpreted as negative indicate that antibody is not present in the sample, or is below the detection level of the method. Since antibodies may not be present during early disease, confirmation two to three weeks later is recommended. An initially-negative result followed by a positive result indicates IgM seroconversion.

Equivocal specimens should be cautiously interpreted. Further testing with an additional specimen is recommended. If the specimen remains equivocal, a second serological method should be considered if leptospirosis infection is still suspected.

Samples interpreted as positive may indicate the specific antibody. Antibody presence alone cannot be used for diagnosis of acute infection, however, because antibodies from prior exposure may circulate for a prolonged period of time.

ADMINISTRATIVE

CPT Codes:

86720

LOINC:

- 23202-5

COMPLETE VIEW

Available Stat:

No

Ordering Recommendations:

Aids in the detection of acute leptospirosis.

Test Code:

LEPTM

ARUP Test Code:

0055233

Performing Lab:

ARUP

Sendout:

Yes

Performed:

Mon, Thu

Methodology:

Qualitative Immunoblot

Collect:

Serum Separator Tube (SST) or Green (Sodium or Lithium Heparin).

Unacceptable Conditions:

Any other body fluid. Contaminated, heat-inactivated, hemolyzed, severely lipemic specimens.

Specimen Preparation:

Separate from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.2 mL) Parallel testing is preferred and convalescent specimens must be received within 30 days from receipt of the acute specimens. Please mark specimen plainly as acute or convalescent.

Reference Interval:

Negative: No significant level of Leptospira IgM antibody detected.
Equivocal: Questionable presence of Leptospira IgM antibody detected. Repeat testing in 10-14 days may be helpful.
Positive: Presence of IgM antibody to Leptospira detected, suggestive of a current or recent infection.

Interpretive Data:

Samples interpreted as negative indicate that antibody is not present in the sample, or is below the detection level of the method. Since antibodies may not be present during early disease, confirmation two to three weeks later is recommended. An initially-negative result followed by a positive result indicates IgM seroconversion.

Equivocal specimens should be cautiously interpreted. Further testing with an additional specimen is recommended. If the specimen remains equivocal, a second serological method should be considered if leptospirosis infection is still suspected.

Samples interpreted as positive may indicate the specific antibody. Antibody presence alone cannot be used for diagnosis of acute infection, however, because antibodies from prior exposure may circulate for a prolonged period of time.

Synonyms:

- Leptospira IgM antibody
- Leptospira IgM Dot Blot

Storage/Transport Temperature:
Refrigerated.

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

Reported:
1-5 days

CPT Codes:
86720

LOINC:

- 23202-5

Notes:
A negative result does not rule out the possibility of leptospirosis.

MPL Mutation Detection by Capillary Electrophoresis

MPL

ORDERING

Ordering Recommendations:
May be useful when essential thrombocythemia or idiopathic myelofibrosis is suspected in JAK2 V617F-negative individuals.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Varies

Methodology:
Capillary Electrophoresis

Reported:
7-12 days

Synonyms:

- JAK-2 negative MPN diagnosis
- JAK2 V617 negative testing
- MPL 1p34

COLLECTION

Sample Type:
Blood or bone marrow

Collect:
Whole blood or bone marrow in lavender (EDTA).

Preferred Volume:
Whole Blood: 5 mL
Bone Marrow: 3 mL

Minimum Volume:
Whole Blood: 1 mL
Bone Marrow: 1 mL

Stability (from collection to initiation):
Refrigerated: 7 days; Frozen: Unacceptable

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Plasma, serum, FFPE tissue blocks/slides, or frozen tissue. Specimens collected in anticoagulants other than EDTA. Clotted or grossly hemolyzed specimens.

PROCESSING

Test Code:
MPL

ARUP Test Code:
2005545

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Whole Blood: Do not freeze. Transport 5 mL whole blood. (Min: 1 mL)
Bone Marrow: Transport 3 mL bone marrow. (Min: 1 mL)

Preferred Volume:
Whole Blood: 5 mL
Bone Marrow: 3 mL

Minimum Volume:
Whole Blood: 1 mL
Bone Marrow: 1 mL

Unacceptable Conditions:
Plasma, serum, FFPE tissue blocks/slides, or frozen tissue. Specimens collected in anticoagulants other than EDTA. Clotted or grossly hemolyzed specimens.

Stability (from collection to initiation):
Refrigerated: 7 days; Frozen: Unacceptable

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Interpretive Data:
Refer to report.

ADMINISTRATIVE

CPT Codes:
81338

LOINC:

- 62948-5
- 31208-2

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
May be useful when essential thrombocythemia or idiopathic myelofibrosis is suspected in JAK2 V617F-negative individuals.

Test Code:
MPL

ARUP Test Code:
2005545

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Varies

Methodology:
Capillary Electrophoresis

Collect:
Whole blood or bone marrow in lavender (EDTA).

Sample Type:
Blood or bone marrow

Preferred Volume:
Whole Blood: 5 mL
Bone Marrow: 3 mL

Minimum Volume:
Whole Blood: 1 mL
Bone Marrow: 1 mL

Unacceptable Conditions:
Plasma, serum, FFPE tissue blocks/slides, or frozen tissue. Specimens collected in anticoagulants other than EDTA. Clotted or grossly hemolyzed specimens.

Specimen Preparation:
Whole Blood: Do not freeze. Transport 5 mL whole blood. (Min: 1 mL)
Bone Marrow: Transport 3 mL bone marrow. (Min: 1 mL)

Interpretive Data:
Refer to report.

Synonyms:

- JAK-2 negative MPN diagnosis
- JAK2 V617 negative testing
- MPL 1p34

Storage/Transport Temperature:
Refrigerated.

Stability (from collection to initiation):
Refrigerated: 7 days; Frozen: Unacceptable

Reported:
7-12 days

CPT Codes:
81338

LOINC:

- 62948-5
- 31208-2

Notes:
The test will detect MPL mutations W515K, W515L, W515A, and S505N.

SLCO1B1, 1 Variant

SCO1B1

ORDERING

Ordering Recommendations:
Identify individuals at increased risk for statin-related muscle toxicity.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Mon, Thu

Methodology:
Polymerase Chain Reaction (PCR)/Fluorescence Monitoring

Reported:
5-10 days

Synonyms:

- Simvastatin myotoxicity assay
- Statin-induced myopathy assay

COLLECTION

Sample Type:
Whole blood

Collect:
Lavender (EDTA) or pink (K_2EDTA), or yellow (ACD Solution A or B).

Amount to Collect:
3 mL

Minimum Volume:
1 mL

Stability (from collection to initiation):
Ambient: 72 hours; Refrigerated: 1 week; Frozen: 1 month

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Plasma or serum. Heparinized specimens. Frozen specimens in glass collection tubes.

PROCESSING

Test Code:
SCO1B1

ARUP Test Code:
2008426

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transport 3 mL whole blood. (Min: 1 mL)

Minimum Volume:
1 mL

Unacceptable Conditions:
Plasma or serum. Heparinized specimens. Frozen specimens in glass collection tubes.

Stability (from collection to initiation):
Ambient: 72 hours; Refrigerated: 1 week; Frozen: 1 month

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:
By report

Interpretive Data:
Background Information for SLCO1B1, 1 Variant:
Characteristics: Simvastatin is a commonly prescribed hypolipidemic drug used for cholesterol reduction and control. Approximately 1-5 percent of exposed individuals may experience a dose-dependent myopathy (skeletal muscle toxicity). Symptoms may include pain, muscle weakness, and cramps. The organic anion transporter polypeptide 1B1, encoded by SLCO1B1, transports active simvastatin acid from the blood stream into the liver. This test detects a common variant that reduces the function of the transporter, resulting in an increased plasma concentration of the drug.
Inheritance: Autosomal co-dominant.
Cause: Simvastatin hypersensitivity reaction is strongly associated with the SLCO1B1*5 allele. The mechanism is related to changes in the activity of organic anion-transporter polypeptide 1B1 (OATP1B1). The *1 allele (normal transporter function) is presumed when the *5 allele is not detected. One copy of the *5 allele predicts decreased transporter function; two copies of the *5 allele predicts poor transporter function.
Allele Tested: SLCO1B1*5 (rs4149056, c.521T>C).
Allele Frequency: Middle Eastern 5 percent, Caucasian 1-3 percent, African 0-2 percent, Asian 0-2 percent, Less than 1 percent in other populations.
Clinical Sensitivity: Drug-dependent.
Methodology: Polymerase Chain Reaction (PCR) and Fluorescence Monitoring.
Analytical Sensitivity and Specificity: Greater than 99 percent.
Limitations: Only the targeted SLCO1B1 variant will be detected. Diagnostic errors can occur due to rare sequence variations. Risk of therapeutic failure or adverse reactions with statins may be affected by genetic and non-genetic factors that are not detected by this test. This result does not replace the need for therapeutic or clinical monitoring.

Please note the information contained in this report does not contain medication recommendations, and should not be interpreted as recommending any specific medications. Any dosage adjustments or other changes to medications should be evaluated in consultation with a medical provider.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Counseling and informed consent are recommended for genetic testing. Consent forms are available online.

ADMINISTRATIVE

CPT Codes:
81328

LOINC:

- 93412-5
- 66746-9
- 11526-1

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Identify individuals at increased risk for statin-related muscle toxicity.

Test Code:
SCO1B1

ARUP Test Code:
2008426

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Mon, Thu

Methodology:
Polymerase Chain Reaction (PCR)/Fluorescence Monitoring

Collect:
Lavender (EDTA) or pink (K_2EDTA), or yellow (ACD Solution A or B).

Amount to Collect:
3 mL

Sample Type:
Whole blood

Minimum Volume:
1 mL

Unacceptable Conditions:
Plasma or serum. Heparinized specimens. Frozen specimens in glass collection tubes.

Specimen Preparation:
Transport 3 mL whole blood. (Min: 1 mL)

Reference Interval:
By report

Interpretive Data:
Background Information for SLCO1B1, 1 Variant:
Characteristics: Simvastatin is a commonly prescribed hypolipidemic drug used for cholesterol reduction and control. Approximately 1-5 percent of exposed individuals may experience a dose-dependent myopathy (skeletal muscle toxicity). Symptoms may include pain, muscle weakness, and cramps. The organic anion transporter polypeptide 1B1, encoded by SLCO1B1, transports active simvastatin acid from the blood stream into the liver. This test detects a common variant that reduces the function of the transporter, resulting in an increased plasma concentration of the drug.
Inheritance: Autosomal co-dominant.
Cause: Simvastatin hypersensitivity reaction is strongly associated with the SLCO1B1*5 allele. The mechanism is related to changes in the activity of organic anion-transporter polypeptide 1B1 (OATP1B1). The *1 allele (normal transporter function) is presumed when the *5 allele is not detected. One copy of the *5 allele predicts decreased transporter function; two copies of the *5 allele predicts poor transporter function.
Allele Tested: SLCO1B1*5 (rs4149056, c.521T>C).
Allele Frequency: Middle Eastern 5 percent, Caucasian 1-3 percent, African 0-2 percent, Asian 0-2 percent, Less than 1 percent in other populations.
Clinical Sensitivity: Drug-dependent.
Methodology: Polymerase Chain Reaction (PCR) and Fluorescence Monitoring.
Analytical Sensitivity and Specificity: Greater than 99 percent.
Limitations: Only the targeted SLCO1B1 variant will be detected. Diagnostic errors can occur due to rare sequence variations. Risk of therapeutic failure or adverse reactions with statins may be affected by genetic and non-genetic factors that are not detected by this test. This result does not replace the need for therapeutic or clinical monitoring.

Please note the information contained in this report does not contain medication recommendations, and should not be interpreted as recommending any specific medications. Any dosage adjustments or other changes to medications should be evaluated in consultation with a medical provider.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Counseling and informed consent are recommended for genetic testing. Consent forms are available online.

Synonyms:

- Simvastatin myotoxicity assay
- Statin-induced myopathy assay

Storage/Transport Temperature:
Refrigerated.

Stability (from collection to initiation):
Ambient: 72 hours; Refrigerated: 1 week; Frozen: 1 month

Reported:
5-10 days

CPT Codes:
81328

LOINC:

- 93412-5
- 66746-9
- 11526-1

Strongyloides Antibody, IgG by ELISA, Serum

STRONG

ORDERING

Ordering Recommendations:
Aid in the diagnosis of Strongyloides infection. Positive results in patients from endemic areas may not represent active infection.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Semi-Quantitative Enzyme-Linked Immunosorbent Assay

Reported:
1-3 days

Synonyms:

- Ova and Parasite Exam
- Strongyloides IgG

COLLECTION

Sample Type:
Serum

Collect:
Serum Separator Tube (SST) or Plain Red.

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Bacterially contaminated, heat-inactivated, hemolyzed, icteric, or lipemic specimens.

PROCESSING

Test Code:
STRONG

Test Group:
Strongyloides

ARUP Test Code:
0099564

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min. 0.3 mL)

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Bacterially contaminated, heat-inactivated, hemolyzed, icteric, or lipemic specimens.

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:
Effective August 20, 2018

0.9 IV or less	Negative - No significant level of Strongyloides IgG antibody detected.
1.0 IV	Equivocal - The Strongyloides IgG antibody result is borderline and therefore inconclusive. Recommend retesting the patient in 2-4 weeks, if clinically indicated.
1.1 IV or greater	Positive - IgG antibodies to Strongyloides detected, which may suggest current or past infection.

Interpretive Data:
False-positive results may occur with prior exposure to other helminth infections. Testing low-prevalence populations may also result in false-positive results.

ADMINISTRATIVE

CPT Codes:
86682

LOINC:

- 34376-4

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Aid in the diagnosis of Strongyloides infection. Positive results in patients from endemic areas may not represent active infection.

Test Code:
STRONG

Test Group:
Strongyloides

ARUP Test Code:
0099564

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Semi-Quantitative Enzyme-Linked Immunosorbent Assay

Collect:
Serum Separator Tube (SST) or Plain Red.

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Bacterially contaminated, heat-inactivated, hemolyzed, icteric, or lipemic specimens.

Specimen Preparation:
Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min. 0.3 mL)

Reference Interval:
Effective August 20, 2018

0.9 IV or less	Negative - No significant level of Strongyloides IgG antibody detected.
1.0 IV	Equivocal - The Strongyloides IgG antibody result is borderline and therefore inconclusive. Recommend retesting the patient in 2-4 weeks, if clinically indicated.
1.1 IV or greater	Positive - IgG antibodies to Strongyloides detected, which may suggest current or past infection.

Interpretive Data:
False-positive results may occur with prior exposure to other helminth infections. Testing low-prevalence populations may also result in false-positive results.

Synonyms:

- Ova and Parasite Exam
- Strongyloides IgG

Storage/Transport Temperature:
Refrigerated.

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year

Reported:
1-3 days

CPT Codes:
86682

LOINC:

- 34376-4

Trypanosoma cruzi Antibody, IgG

TCAB

ORDERING

Ordering Recommendations:
Aid in the diagnosis of non-acute (chronic phase) Chagas disease (T. cruzi).

Available Stat:
No

Performing Lab:
ARUP

Performed:
Wed

Methodology:
Semi-Quantitative Enzyme-Linked Immunosorbent Assay

Reported:
1-8 days

Synonyms:

- Chagas
- Chagas Antibody, IgG
- Tcruzi IgG Ab
- Trypanosoma cruzi Antibody, Total

COLLECTION

Sample Type:
Serum

Collect:
Serum separator tube.

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year

Storage/Transport Temperature:
Refrigerated. Also acceptable: Room temperature or frozen.

Unacceptable Conditions:
Plasma. Bacterially contaminated, heat-inactivated, hemolyzed, icteric, lipemic, or turbid specimens.

PROCESSING

Test Code:
TCAB

Test Group:
Trypanosoma

ARUP Test Code:
0051076

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate serum from cells ASAP or within 2 hours of collection. Transfer 0.5 mL serum to an ARUP Standard Transport Tube. (Min: 0.3 mL) Parallel testing is preferred and convalescent specimens must be received within 30 days of the acute specimens. Mark specimens plainly as "acute" or "convalescent."

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Plasma. Bacterially contaminated, heat-inactivated, hemolyzed, icteric, lipemic, or turbid specimens.

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year

Storage/Transport Temperature:
Refrigerated. Also acceptable: Room temperature or frozen.

RESULT INTERPRETATION

Reference Interval:

Components	Reference Interval
Trypanosoma cruzi Antibody, IgG	1.0 IV or less

Interpretive Data:
This assay should not be used for blood donor screening or associated re-entry protocols, or for screening Human Cell and Cellular Tissue-Based Products (HCT/Ps). According to the CDC, at least two different serologic tests should be used to make the laboratory diagnosis of chronic Chagas Disease, as no single serologic test is sufficiently sensitive and specific.

Component	Unit Of Measure	Interpretation
Trypanosoma cruzi Antibody, IgG	1.0 IV or less 1.1 IV 1.2 IV or greater	Negative - No significant level of Trypanosoma cruzi IgG antibody detected. Equivocal - Questionable presence of Trypanosoma cruzi IgG antibody detected. Repeat testing in 10-14 days may be helpful. Positive - IgG antibodies to Trypanosoma cruzi detected, which may suggest current or past infection.

ADMINISTRATIVE

CPT Codes:
86753

LOINC:

- 59387-1

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Aid in the diagnosis of non-acute (chronic phase) Chagas disease (T. cruzi).

Test Code:
TCAB

Test Group:
Trypanosoma

ARUP Test Code:
0051076

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Wed

Methodology:
Semi-Quantitative Enzyme-Linked Immunosorbent Assay

Collect:
Serum separator tube.

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Plasma. Bacterially contaminated, heat-inactivated, hemolyzed, icteric, lipemic, or turbid specimens.

Specimen Preparation:
Separate serum from cells ASAP or within 2 hours of collection. Transfer 0.5 mL serum to an ARUP Standard Transport Tube. (Min: 0.3 mL) Parallel testing is preferred and convalescent specimens must be received within 30 days of the acute specimens. Mark specimens plainly as "acute" or "convalescent."

Reference Interval:

Components	Reference Interval
Trypanosoma cruzi Antibody, IgG	1.0 IV or less

Interpretive Data:
This assay should not be used for blood donor screening or associated re-entry protocols, or for screening Human Cell and Cellular Tissue-Based Products (HCT/Ps). According to the CDC, at least two different serologic tests should be used to make the laboratory diagnosis of chronic Chagas Disease, as no single serologic test is sufficiently sensitive and specific.

Component	Unit Of Measure	Interpretation
Trypanosoma cruzi Antibody, IgG	1.0 IV or less 1.1 IV 1.2 IV or greater	Negative - No significant level of Trypanosoma cruzi IgG antibody detected. Equivocal - Questionable presence of Trypanosoma cruzi IgG antibody detected. Repeat testing in 10-14 days may be helpful. Positive - IgG antibodies to Trypanosoma cruzi detected, which may suggest current or past infection.

Synonyms:

- Chagas
- Chagas Antibody, IgG
- Tcruzi IgG Ab
- Trypanosoma cruzi Antibody, Total

Storage/Transport Temperature:
Refrigerated. Also acceptable: Room temperature or frozen.

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year

Reported:
1-8 days

CPT Codes:
86753

LOINC:

- 59387-1

Mitotane, Serum or Plasma

MITN

ORDERING

Ordering Recommendations:
Optimize drug therapy.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Varies

Methodology:
Quantitative Gas Chromatography

Reported:
7-10 days

Synonyms:

- Lysodren

COLLECTION

Sample Type:
Serum or plasma

Collect:
Plain Red, Lavender (K_2EDTA), or Pink (K_2EDTA).

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

Stability (from collection to initiation):
Ambient: 2 weeks; Refrigerated: 2 weeks; Frozen: 28 days

Storage/Transport Temperature:
Refrigerated. Also acceptable: Room temperature or frozen.

Unacceptable Conditions:
Separator tubes.

PROCESSING

Test Code:
MITN

ARUP Test Code:
2013014

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.3 mL)
Test is not performed at ARUP; separate specimens must be submitted when multiple tests are ordered.

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

Unacceptable Conditions:
Separator tubes.

Stability (from collection to initiation):
Ambient: 2 weeks; Refrigerated: 2 weeks; Frozen: 28 days

Storage/Transport Temperature:
Refrigerated. Also acceptable: Room temperature or frozen.

RESULT INTERPRETATION

Reference Interval:
By report

ADMINISTRATIVE

CPT Codes:
80375 (Alt code: G0480)

LOINC:

- 13626-7

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Optimize drug therapy.

Test Code:
MITN

ARUP Test Code:
2013014

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Varies

Methodology:
Quantitative Gas Chromatography

Collect:
Plain Red, Lavender (K_2EDTA), or Pink (K_2EDTA).

Amount to Collect:
2 mL blood

Sample Type:
Serum or plasma

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

Unacceptable Conditions:
Separator tubes.

Specimen Preparation:
Separate from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.3 mL)
Test is not performed at ARUP; separate specimens must be submitted when multiple tests are ordered.

Reference Interval:
By report

Synonyms:

- Lysodren

Storage/Transport Temperature:
Refrigerated. Also acceptable: Room temperature or frozen.

Stability (from collection to initiation):
Ambient: 2 weeks; Refrigerated: 2 weeks; Frozen: 28 days

Reported:
7-10 days

CPT Codes:
80375 (Alt code: G0480)

LOINC:

- 13626-7

1- hour 50 gram Glucose Loading Screen

GLT1

ORDERING

Available Stat:
No

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Parnassus ACC, 0730-1530 weekdays
Mission Bay, 0700-1530 weekdays
Mount Zion 2330 Post St. 0800-1530 weekdays

Methodology:
Hexokinase/G-6-PDH

Additional Information:
This 1-hour glucose loading screen is part of a two-step screening approach used to screen pregnant patients for gestational diabetes (GDM). When this step is abnormal, it is followed by the second step "3 hour 100 gram Glucose Tolerance Test, Pregnancy."

Synonyms:

- Diabetes mellitus
- GCT
- Glucose challenge test

COLLECTION

Sample Type:
Serum

Collect:
Gray top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Remarks:
This screening test may be given at any time of day, without regard to prior meals.

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 7 days, frozen at -20C 3 months

PROCESSING

Test Code:
GLT1

Test Group:
Glucose

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 7 days, frozen at -20C 3 months

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:
1 hour post-50 g po glucose, without regard to whether patient had been fasting: 70 -129 mg/dL

Additional Information:
This 1-hour glucose loading screen is part of a two-step screening approach used to screen pregnant patients for gestational diabetes (GDM). When this step is abnormal, it is followed by the second step "3 hour 100 gram Glucose Tolerance Test, Pregnancy."

ADMINISTRATIVE

CPT Codes:
82950

LOINC Codes:
1504-0

COMPLETE VIEW

Available Stat:
No

Test Code:
GLT1

Test Group:
Glucose

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Parnassus ACC, 0730-1530 weekdays
Mission Bay, 0700-1530 weekdays
Mount Zion 2330 Post St. 0800-1530 weekdays

Methodology:
Hexokinase/G-6-PDH

Remarks:
This screening test may be given at any time of day, without regard to prior meals.

Collect:
Gray top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Units:
mg/dL

Reference Interval:
1 hour post-50 g po glucose, without regard to whether patient had been fasting: 70 -129 mg/dL

Synonyms:

- Diabetes mellitus
- GCT
- Glucose challenge test

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 7 days, frozen at -20C 3 months

Additional Information:
This 1-hour glucose loading screen is part of a two-step screening approach used to screen pregnant patients for gestational diabetes (GDM). When this step is abnormal, it is followed by the second step "3 hour 100 gram Glucose Tolerance Test, Pregnancy."

CPT Codes:
82950

LOINC Codes:
1504-0

1,25-Dihydroxy Vitamin D

VD125

ORDERING

Available Stat:
No

Performing Lab:
Chemistry China Basin

Performed:
Test performed once a week (Wednesday)

Methodology:
Chemiluminescent Immunoassay - Diasorin Liaison XL

Synonyms:

- DHD
- calcitriol

COLLECTION

Sample Type:
Serum

Collect:
Gold top or Red top

Amount to Collect:
3 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
400 uL serum

Stability (from collection to initiation):
Room Temperature: 7 days
Refrigerated (2-8°C): 14 days
Frozen (-20°C or colder): 6 months

PROCESSING

Test Code:
VD125

Performing Lab:
Chemistry China Basin

Specimen Preparation:
Refrigerate serum aliquot.

Preferred Volume:
1 mL serum

Minimum Volume:
400 uL serum

Stability (from collection to initiation):
Room Temperature: 7 days
Refrigerated (2-8°C): 14 days
Frozen (-20°C or colder): 6 months

RESULT INTERPRETATION

Units:
pg/mL

Reference Interval:

Pediatrics:

Age	Reference Interval (pg/mL)
0 to < 1 year	30 - 181
1 to < 3 years	43 - 140
3 to < 19 years	42 - 95

Adults: 20 - 79 pg/mL

Adult reference range adopted from vendor and verified in-house.

Pediatric reference interval adopted from: Higgins et al, Pediatric reference intervals for 1,25-dihydroxyvitamin D using the DiaSorin LIAISON XL assay in the healthy CALIPER cohort. Clin Chem Lab Med 2018; 56(6): 964-972.

ADMINISTRATIVE

CPT Codes:

82652

LOINC Codes:

1649-3

COMPLETE VIEW

Available Stat:

No

Test Code:

VD125

Performing Lab:

Chemistry China Basin

Performed:

Test performed once a week (Wednesday)

Methodology:

Chemiluminescent Immunoassay - Diasorin Liaison XL

Collect:

Gold top or Red top

Amount to Collect:

3 mL blood

Sample Type:

Serum

Preferred Volume:

1 mL serum

Minimum Volume:

400 uL serum

Specimen Preparation:

Refrigerate serum aliquot.

Units:

pg/mL

Reference Interval:

Pediatrics:

Age	Reference Interval (pg/mL)
0 to < 1 year	30 - 181
1 to < 3 years	43 - 140
3 to < 19 years	42 - 95

Adults: 20 - 79 pg/mL

Adult reference range adopted from vendor and verified in-house.

Pediatric reference interval adopted from: Higgins et al, Pediatric reference intervals for 1,25-dihydroxyvitamin D using the DiaSorin LIAISON XL assay in the healthy CALIPER cohort. Clin Chem Lab Med 2018; 56(6): 964-972.

Synonyms:

- DHD
- calcitriol

Stability (from collection to initiation):

Room Temperature: 7 days
Refrigerated (2-8°C): 14 days
Frozen (-20°C or colder): 6 months

CPT Codes:

82652

LOINC Codes:

1649-3

11- Ketotestosterone

MOLT

ORDERING

Available Stat:
No

Performing Lab:
LabCorp (via ARUP)

Methodology:
LC-MS/MS

Reported:
11-15 days

COLLECTION

Sample Type:
Serum or plasma

Collect:
Serum from red-top tube or EDTA plasma tube or heparin plasma tube

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL serum of plasma

Minimum Volume:
0.6 mL serum or plasma

Remarks:
Collect into vacutainer and separate within 2 hours. Send serum in a plastic transport tube.

Stability (from collection to initiation):
Room temperature: 14 days

Refrigerated: 14 days

Frozen: 441 days

Freeze/thaw cycle: Stable x6

Storage/Transport Temperature:
Frozen

Unacceptable Conditions:
Gross hemolysis, gross lipemia, incorrect specimen type

PROCESSING

Test Code:
MOLT

Sendout:
Yes

Performing Lab:
LabCorp (via ARUP)

Preferred Volume:
2 mL serum of plasma

Minimum Volume:
0.6 mL serum or plasma

Unacceptable Conditions:
Gross hemolysis, gross lipemia, incorrect specimen type

Stability (from collection to initiation):
Room temperature: 14 days

Refrigerated: 14 days

Frozen: 441 days

Freeze/thaw cycle: Stable x6

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Units:
ng/dL

Reference Interval:
5.0-60.6 ng/dL

Interpretive Data:
11-oxo-androgens are emerging biomarkers for androgen production of adrenal origin. These biomarkers will be useful in disease in men and women and children. Although the presence of androgens with oxygen at the 11 position of the steroid backbone have been known for some time, the clinical utility and prevalence of these androgens have only recently come to light. As has been the case historically, the research has been enhanced with availability of good assay techniques, in this case HPLC MS/MS. 11-ketotestosterone and 11-ketodihydrotestosterone bind the androgen receptor as well as testosterone and DHT.1 The 11-oxo-androgens also follow the same metabolic pathways as androgens without oxygen at 11. Interestingly, the origin of 11-oxo-androgens is entirely adrenal. All of this is important because 11-oxo-androgens appear to play a significant role in some endocrine diseases.

PCOS: Polycystic ovary syndrome (PCOS) is a disease characterized by amenorrhea or oligomenorrhea and excess androgens. Although this syndrome is found in 5-10% of women, the disease is not well understood. 11-ketotestosterone has been shown to be in excess in PCOS patients, and levels in those patients are in fact higher than levels of testosterone.3 This finding significantly points to the adrenal as a source of the excess androgens. This idea is supported by the similarity of the levels found in adult men and women. 11-ketotestosterone may be a better biomarker than testosterone or androstenedione for androgen excess in women with PCOS.

CAH: Congenital adrenal hyperplasia (CAH) due to 21-hydroxylase deficiency is a genetic disease affecting about 1/10,000 people.4 The enzyme defect that causes the disease causes excess adrenal androgen production driven by ACTH, and the major androgens are 11-oxygenated.2 Therefore, 11-oxoandrogens are important to monitor for control of CAH, especially in children and women. In men, 11-oxo-androgens are proposed to be biomarkers for disease activity because they are of adrenal origin. Although excess androgens are a lesser problem for adult men with CAH, these patients are subject to other sequelae of CAH, especially TARTS (testicular adrenal-rest tumors). Following 11-oxo-androgens is expected to be a uniquely useful biomarker since testosterone is not useful as an adrenal androgen for adult men.6

Puberty: Adrenarche is a stage of development that precedes puberty; clinically it is defined by axillary hair and body odor; biochemically it is defined by a rise in adrenal androgens, such as DHEA-sulfate. Testosterone levels do not rise significantly during adrenarche. Recent academic research shows that during adrenarche both DHEA-sulfate and 11-ketotestosterone rise.7 However, DHEA-sulfate is not an active androgen, while 11-ketotestosterone is fully active. Therefore, 11-ketotestosterone may be measured along with DHEA-sulfate when investigating premature adrenarche and premature puberty.

Prostate Cancer: The goal of GnRH agonist treatment, antiandrogens and 17-hydroxylase blockade is to minimize androgens in prostate cancer. Eliminating adrenal androgens has been helpful in castration-resistant prostate cancer, and it now appears that 11-ketotestosterone is an important adrenal androgen to control in castration-resistant prostate cancer.1,5 11-ketotestosterone may be an effective adrenal androgen biomarker to monitor in castration-resistant prostate cancer.

ADMINISTRATIVE

CPT Codes:
82542

LOINC Codes:
93242-6

COMPLETE VIEW

Available Stat:
No

Test Code:
MOLT

Performing Lab:
LabCorp (via ARUP)

Sendout:
Yes

Methodology:
LC-MS/MS

Remarks:
Collect into vacutainer and separate within 2 hours. Send serum in a plastic transport tube.

Collect:
Serum from red-top tube or EDTA plasma tube or heparin plasma tube

Amount to Collect:
4 mL blood

Sample Type:
Serum or plasma

Preferred Volume:
2 mL serum of plasma

Minimum Volume:
0.6 mL serum or plasma

Unacceptable Conditions:
Gross hemolysis, gross lipemia, incorrect specimen type

Units:
ng/dL

Reference Interval:
5.0-60.6 ng/dL

Interpretive Data:
11-oxo-androgens are emerging biomarkers for androgen production of adrenal origin. These biomarkers will be useful in disease in men and women and children. Although the presence of androgens with oxygen at the 11 position of the steroid backbone have been known for some time, the clinical utility and prevalence of these androgens have only recently come to light. As has been the case historically, the research has been enhanced with availability of good assay techniques, in this case HPLC MS/MS. 11-ketotestosterone and 11-ketodihydrotestosterone bind the androgen receptor as well as testosterone and DHT.1 The 11-oxo-androgens also follow the same metabolic pathways as androgens without oxygen at 11. Interestingly, the origin of 11-oxo-androgens is entirely adrenal. All of this is important because 11-oxo-androgens appear to play a significant role in some endocrine diseases.

PCOS: Polycystic ovary syndrome (PCOS) is a disease characterized by amenorrhea or oligomenorrhea and excess androgens. Although this syndrome is found in 5-10% of women, the disease is not well understood. 11-ketotestosterone has been shown to be in excess in PCOS patients, and levels in those patients are in fact higher than levels of testosterone.3 This finding significantly points to the adrenal as a source of the excess androgens. This idea is supported by the similarity of the levels found in adult men and women. 11-ketotestosterone may be a better biomarker than testosterone or androstenedione for androgen excess in women with PCOS.

CAH: Congenital adrenal hyperplasia (CAH) due to 21-hydroxylase deficiency is a genetic disease affecting about 1/10,000 people.4 The enzyme defect that causes the disease causes excess adrenal androgen production driven by ACTH, and the major androgens are 11-oxygenated.2 Therefore, 11-oxoandrogens are important to monitor for control of CAH, especially in children and women. In men, 11-oxo-androgens are proposed to be biomarkers for disease activity because they are of adrenal origin. Although excess androgens are a lesser problem for adult men with CAH, these patients are subject to other sequelae of CAH, especially TARTS (testicular adrenal-rest tumors). Following 11-oxo-androgens is expected to be a uniquely useful biomarker since testosterone is not useful as an adrenal androgen for adult men.6

Puberty: Adrenarche is a stage of development that precedes puberty; clinically it is defined by axillary hair and body odor; biochemically it is defined by a rise in adrenal androgens, such as DHEA-sulfate. Testosterone levels do not rise significantly during adrenarche. Recent academic research shows that during adrenarche both DHEA-sulfate and 11-ketotestosterone rise.7 However, DHEA-sulfate is not an active androgen, while 11-ketotestosterone is fully active. Therefore, 11-ketotestosterone may be measured along with DHEA-sulfate when investigating premature adrenarche and premature puberty.

Prostate Cancer: The goal of GnRH agonist treatment, antiandrogens and 17-hydroxylase blockade is to minimize androgens in prostate cancer. Eliminating adrenal androgens has been helpful in castration-resistant prostate cancer, and it now appears that 11-ketotestosterone is an important adrenal androgen to control in castration-resistant prostate cancer.1,5 11-ketotestosterone may be an effective adrenal androgen biomarker to monitor in castration-resistant prostate cancer.

Storage/Transport Temperature:
Frozen

Stability (from collection to initiation):
Room temperature: 14 days

Refrigerated: 14 days

Frozen: 441 days

Freeze/thaw cycle: Stable x6

Reported:
11-15 days

CPT Codes:
82542

LOINC Codes:
93242-6

11-Deoxycorticosterone Quantitative by HPLC-MS/MS, Serum or Plasma

DOC

ORDERING

Available Stat:
No

Performing Lab:
ARUP

Performed:
Mon, Wed, Fri

Methodology:
Quantitative High Performance Liquid Chromatography-Tandem Mass Spectrometry

Reported:
1-8 days

Synonyms:

- DOC

COLLECTION

Sample Type:
Serum or plasma

Collect:
Serum separator tube. Also acceptable: Plain red, pink (K_2EDTA), plasma separator tube, green (sodium heparin), or green (lithium heparin).

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum/plasma

Minimum Volume:
0.3 mL serum/plasma

Stability (from collection to initiation):
After separation from cells: Ambient: Unacceptable; Refrigerated: 1 week; Frozen: 6 months

Storage/Transport Temperature:
Refrigerated. Also acceptable: Frozen.

Unacceptable Conditions:
Grossly hemolyzed specimens.

PROCESSING

Test Code:
DOC

ARUP Test Code:
2008458

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transfer 1 mL serum or plasma to an ARUP standard transport tube. (Min: 0.3 mL)

Preferred Volume:
1 mL serum/plasma

Minimum Volume:
0.3 mL serum/plasma

Unacceptable Conditions:
Grossly hemolyzed specimens.

Stability (from collection to initiation):
After separation from cells: Ambient: Unacceptable; Refrigerated: 1 week; Frozen: 6 months

Storage/Transport Temperature:
Refrigerated. Also acceptable: Frozen.

RESULT INTERPRETATION

Units:
ng/dL

Reference Interval:

Components	Reference Interval	
11-Deoxycorticosterone, HPLC-MS/MS	**Age**	**ng/dL**
	Premature (26-28 weeks)	20-105
	Premature (29-33 weeks)	Not Applicable
	Premature (34-36 weeks)	28-78
	Full Term Newborn	Elevated at birth; decreases to 7- 49 ng/dL during first week
	1-11 months	7-49
	Prepubertal Children	Less than or equal to 34
	Adults	Less than or equal to 19

ADMINISTRATIVE

CPT Codes:
82633

LOINC:

- 1656-8

LOINC Codes:
1656-8

COMPLETE VIEW

Available Stat:
No

Test Code:
DOC

ARUP Test Code:
2008458

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Mon, Wed, Fri

Methodology:
Quantitative High Performance Liquid Chromatography-Tandem Mass Spectrometry

Collect:
Serum separator tube. Also acceptable: Plain red, pink (K_2EDTA), plasma separator tube, green (sodium heparin), or green (lithium heparin).

Amount to Collect:
2 mL blood

Sample Type:
Serum or plasma

Preferred Volume:
1 mL serum/plasma

Minimum Volume:
0.3 mL serum/plasma

Unacceptable Conditions:
Grossly hemolyzed specimens.

Specimen Preparation:
Transfer 1 mL serum or plasma to an ARUP standard transport tube. (Min: 0.3 mL)

Units:
ng/dL

Reference Interval:

Components	Reference Interval	
11-Deoxycorticosterone, HPLC-MS/MS	**Age**	**ng/dL**
	Premature (26-28 weeks)	20-105
	Premature (29-33 weeks)	Not Applicable
	Premature (34-36 weeks)	28-78
	Full Term Newborn	Elevated at birth; decreases to 7- 49 ng/dL during first week
	1-11 months	7-49
	Prepubertal Children	Less than or equal to 34
	Adults	Less than or equal to 19

Synonyms:

- DOC

Storage/Transport Temperature:
Refrigerated. Also acceptable: Frozen.

Stability (from collection to initiation):
After separation from cells: Ambient: Unacceptable; Refrigerated: 1 week; Frozen: 6 months

Reported:
1-8 days

CPT Codes:
82633

LOINC:

- 1656-8

LOINC Codes:
1656-8

11-Deoxycortisol Quantitative by HPLC-MS/MS, Serum or Plasma

CSPE

ORDERING

Available Stat:
No

Performing Lab:
ARUP

Performed:
Mon, Wed, Fri

Methodology:
Quantitative High Performance Liquid Chromatography-Tandem Mass Spectrometry

Reported:
1-8 days

Synonyms:

- Deoxycortisol, 11- post extraction
- Adrenogenital syndrome
- 11-deoxy-17-Hydroxycorticosterone
- Cortodoxone

COLLECTION

Sample Type:
Serum or plasma

Collect:
Serum separator tube. Also acceptable: Plain red, pink (K_2EDTA), plasma separator tube, green (sodium heparin), or green (lithium heparin).

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
After separation from cells: Ambient: Unacceptable; Refrigerated: 1 week; Frozen: 6 months

Storage/Transport Temperature:
Refrigerated. Also acceptable: Frozen.

Unacceptable Conditions:
Grossly hemolyzed specimens.

PROCESSING

Test Code:
CSPE

Test Group:
Deoxycortisol, 11-

ARUP Test Code:
0092331

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transfer 1 mL serum or plasma to an ARUP standard transport tube. (Min: 0.3 mL)

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Grossly hemolyzed specimens.

Stability (from collection to initiation):
After separation from cells: Ambient: Unacceptable; Refrigerated: 1 week; Frozen: 6 months

Storage/Transport Temperature:
Refrigerated. Also acceptable: Frozen.

RESULT INTERPRETATION

Reference Interval:
Effective August 19, 2013

Age	Female	Male
Premature (26-28 weeks)	110-1376 ng/dL	110-1376 ng/dL
Premature (29-36 weeks)	70-455 ng/dL	70-455 ng/dL
Full Term (1-5 months)	10-200 ng/dL	10-200 ng/dL
6-11 months	10-276 ng/dL	10-276 ng/dL
1-3 years	7-247 ng/dL	7-202 ng/dL
4-6 years	8-291 ng/dL	8-235 ng/dL
7-9 years	Less than or equal to 94 ng/dL	Less than or equal to 120 ng/dL
10-12 years	Less than or equal to 123 ng/dL	Less than or equal to 92 ng/dL
13-15 years	Less than or equal to 107 ng/dL	Less than or equal to 95 ng/dL
16-17 years	Less than or equal to 47 ng/dL	Less than or equal to 106 ng/dL
18 years and older	Less than 33 ng/dL	Less than 50 ng/dL
Tanner Stage I	Less than or equal to 94 ng/dL	Less than or equal to 105 ng/dL
Tanner Stage II	Less than or equal to 136 ng/dL	Less than or equal to 108 ng/dL
Tanner Stage III	Less than or equal to 99 ng/dL	Less than or equal to 111 ng/dL
Tanner Stage IV & V	Less than or equal to 50 ng/dL	Less than or equal to 83 ng/dL
After metyrapone stimulation	Greater than 8000 ng/dL	Greater than 8000 ng/dL

ADMINISTRATIVE

CPT Codes:
82634

LOINC:

- 1657-6

COMPLETE VIEW

Available Stat:
No

Test Code:
CSPE

Test Group:
Deoxycortisol, 11-

ARUP Test Code:
0092331

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Mon, Wed, Fri

Methodology:
Quantitative High Performance Liquid Chromatography-Tandem Mass Spectrometry

Collect:
Serum separator tube. Also acceptable: Plain red, pink (K_2EDTA), plasma separator tube, green (sodium heparin), or green (lithium heparin).

Amount to Collect:
2 mL blood

Sample Type:
Serum or plasma

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Grossly hemolyzed specimens.

Specimen Preparation:
Transfer 1 mL serum or plasma to an ARUP standard transport tube. (Min: 0.3 mL)

Reference Interval:
Effective August 19, 2013

Age	Female	Male
Premature (26-28 weeks)	110-1376 ng/dL	110-1376 ng/dL
Premature (29-36 weeks)	70-455 ng/dL	70-455 ng/dL
Full Term (1-5 months)	10-200 ng/dL	10-200 ng/dL
6-11 months	10-276 ng/dL	10-276 ng/dL
1-3 years	7-247 ng/dL	7-202 ng/dL
4-6 years	8-291 ng/dL	8-235 ng/dL
7-9 years	Less than or equal to 94 ng/dL	Less than or equal to 120 ng/dL
10-12 years	Less than or equal to 123 ng/dL	Less than or equal to 92 ng/dL
13-15 years	Less than or equal to 107 ng/dL	Less than or equal to 95 ng/dL
16-17 years	Less than or equal to 47 ng/dL	Less than or equal to 106 ng/dL
18 years and older	Less than 33 ng/dL	Less than 50 ng/dL
Tanner Stage I	Less than or equal to 94 ng/dL	Less than or equal to 105 ng/dL
Tanner Stage II	Less than or equal to 136 ng/dL	Less than or equal to 108 ng/dL
Tanner Stage III	Less than or equal to 99 ng/dL	Less than or equal to 111 ng/dL
Tanner Stage IV & V	Less than or equal to 50 ng/dL	Less than or equal to 83 ng/dL
After metyrapone stimulation	Greater than 8000 ng/dL	Greater than 8000 ng/dL

Synonyms:

- Deoxycortisol, 11- post extraction
- Adrenogenital syndrome
- 11-deoxy-17-Hydroxycorticosterone
- Cortodoxone

Storage/Transport Temperature:
Refrigerated. Also acceptable: Frozen.

Stability (from collection to initiation):
After separation from cells: Ambient: Unacceptable; Refrigerated: 1 week; Frozen: 6 months

Reported:
1-8 days

CPT Codes:
82634

LOINC:

- 1657-6

14Q32 IGH Rearrangement FISH

IGHQ32, BIGH

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Fluorescent in-situ hybridization (break apart FISH)

Reported:
7-14 days

Synonyms:

- IGH Rearragement
- IGHQ32
- BIGH

COLLECTION

Sample Type:
Heparinized whole blood, bone marrow, bone core

Collect:
Dark Green top

Amount to Collect:
See preferred volume.

Preferred Volume:
Bone marrow: 2 mL
Blood: 2 mL
Bone core: 2 cm

Minimum Volume:
Bone marrow: 1 mL
Blood: 1 mL
?Bone core: 1 cm

Remarks:
Mix sample well by gentle inversion.

Stability (from collection to initiation):
48 hours

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

PROCESSING

Test Code:
BIGH: Blood
IGHQ32: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Specimen Preparation:
Maintain sample at room temperature. Transport to CB Cytogenetics within 24 hours

Preferred Volume:
Bone marrow: 2 mL
Blood: 2 mL
Bone core: 2 cm

Minimum Volume:
Bone marrow: 1 mL
Blood: 1 mL
?Bone core: 1 cm

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

Stability (from collection to initiation):
48 hours

RESULT INTERPRETATION

Reference Interval:
Not detected

ADMINISTRATIVE

CPT Codes:
88271 x2, 88275 x1

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BIGH: Blood
IGHQ32: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Fluorescent in-situ hybridization (break apart FISH)

Remarks:
Mix sample well by gentle inversion.

Collect:
Dark Green top

Amount to Collect:
See preferred volume.

Sample Type:
Heparinized whole blood, bone marrow, bone core

Preferred Volume:
Bone marrow: 2 mL
Blood: 2 mL
Bone core: 2 cm

Minimum Volume:
Bone marrow: 1 mL
Blood: 1 mL
?Bone core: 1 cm

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

Specimen Preparation:
Maintain sample at room temperature. Transport to CB Cytogenetics within 24 hours

Reference Interval:
Not detected

Synonyms:

- IGH Rearragement
- IGHQ32
- BIGH

Stability (from collection to initiation):
48 hours

Reported:
7-14 days

CPT Codes:
88271 x2, 88275 x1

LDT or Modified FDA:
Yes

17-Hydroxypregnenolone Quantitative by LC-MS/MS, Serum or Plasma

HPRE

ORDERING

Available Stat:
No

Performing Lab:
ARUP

Performed:
Mon-Fri

Methodology:
Quantitative High Performance Liquid Chromatography-Tandem Mass Spectrometry

Reported:
1-5 days

COLLECTION

Sample Type:
Serum

Collect:
Serum separator tube. Also acceptable: Plain red, lavender (EDTA), pink (K_2EDTA), or green (sodium or lithium heparin).

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.25 mL serum

Stability (from collection to initiation):
After separation from cells: Ambient: Unacceptable; Refrigerated: Unacceptable; Frozen: 6 months

Storage/Transport Temperature:
CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

Unacceptable Conditions:
Refrigerated or room temperature specimens.

PROCESSING

Test Code:
HPRE

ARUP Test Code:
0092333

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer two 0.5 mL serum or plasma specimens to an ARUP Standard Transport Tube and freeze immediately. (Min: 0.25 mL/container)

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.25 mL serum

Unacceptable Conditions:
Refrigerated or room temperature specimens.

Stability (from collection to initiation):
After separation from cells: Ambient: Unacceptable; Refrigerated: Unacceptable; Frozen: 6 months

Storage/Transport Temperature:
CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

RESULT INTERPRETATION

Reference Interval:

Age	Female	Male
Premature (26-28 weeks)	1219-9799 ng/dL	1219-9799 ng/dL
Premature (29-36 weeks)	346-8911 ng/dL	346-8911 ng/dL
Full Term (1-5 months)	229-3104 ng/dL	229-3104 ng/dL
6-12 months	less than or equal to 917ng/dL	less than or equal to 917ng/dL
13-23 months	less than or equal to 592 ng/dL	less than or equal to 592 ng/dL
2-4 years	less than or equal to 280 ng/dL	less than or equal to 249 ng/dL
5-6 years	less than or equal to 350 ng/dL	less than or equal to 319 ng/dL
7-9 years	less than or equal to 212 ng/dL	less than or equal to 187 ng/dL
10-12 years	less than or equal to 398 ng/dL	less than or equal to 392 ng/dL
13-15 years	less than or equal to 407 ng/dL	35-465 ng/dL
16-17 years	less than or equal to 423 ng/dL	32-478 ng/dL
18 years and older	Less than 226 ng/dL	Less than 442 ng/dL
Tanner Stage I	less than or equal to 235 ng/dL	less than or equal to 208 ng/dL
Tanner Stage II	less than or equal to 367 ng/dL	less than or equal to 355 ng/dL
Tanner Stage III	less than or equal to 430 ng/dL	less than or equal to 450 ng/dL
Tanner Stage IV-V	less than or equal to 412 ng/dL	35-478 ng/dL

Interpretive Data:

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:

84143

LOINC:

- 6765-2

COMPLETE VIEW

Available Stat:

No

Test Code:

HPRE

ARUP Test Code:

0092333

Performing Lab:

ARUP

Sendout:

Yes

Performed:

Mon-Fri

Methodology:

Quantitative High Performance Liquid Chromatography-Tandem Mass Spectrometry

Collect:

Serum separator tube. Also acceptable: Plain red, lavender (EDTA), pink (K_2EDTA), or green (sodium or lithium heparin).

Amount to Collect:

1 mL blood

Sample Type:

Serum

Preferred Volume:

0.5 mL serum

Minimum Volume:

0.25 mL serum

Unacceptable Conditions:
Refrigerated or room temperature specimens.

Specimen Preparation:
Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer two 0.5 mL serum or plasma specimens to an ARUP Standard Transport Tube and freeze immediately. (Min: 0.25 mL/container)

Reference Interval:

Age	Female	Male
Premature (26-28 weeks)	1219-9799 ng/dL	1219-9799 ng/dL
Premature (29-36 weeks)	346-8911 ng/dL	346-8911 ng/dL
Full Term (1-5 months)	229-3104 ng/dL	229-3104 ng/dL
6-12 months	less than or equal to 917ng/dL	less than or equal to 917ng/dL
13-23 months	less than or equal to 592 ng/dL	less than or equal to 592 ng/dL
2-4 years	less than or equal to 280 ng/dL	less than or equal to 249 ng/dL
5-6 years	less than or equal to 350 ng/dL	less than or equal to 319 ng/dL
7-9 years	less than or equal to 212 ng/dL	less than or equal to 187 ng/dL
10-12 years	less than or equal to 398 ng/dL	less than or equal to 392 ng/dL
13-15 years	less than or equal to 407 ng/dL	35-465 ng/dL
16-17 years	less than or equal to 423 ng/dL	32-478 ng/dL
18 years and older	Less than 226 ng/dL	Less than 442 ng/dL
Tanner Stage I	less than or equal to 235 ng/dL	less than or equal to 208 ng/dL
Tanner Stage II	less than or equal to 367 ng/dL	less than or equal to 355 ng/dL
Tanner Stage III	less than or equal to 430 ng/dL	less than or equal to 450 ng/dL
Tanner Stage IV-V	less than or equal to 412 ng/dL	35-478 ng/dL

Interpretive Data:
This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Storage/Transport Temperature:
CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

Stability (from collection to initiation):
After separation from cells: Ambient: Unacceptable; Refrigerated: Unacceptable; Frozen: 6 months

Reported:
1-5 days

CPT Codes:
84143

LOINC:

- 6765-2

2 Hour, 75 gram Glucose Tolerance Test, Non-pregnancy

OGT, NP120

ORDERING

Ordering Recommendations:

THIS TEST IS NO LONGER RECOMMENDED FOR ROUTINE USE.

See Additional Information.

Available Stat:

No

Performing Lab:

Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:

Test available 24 hours per day 7 days per week

Methodology:

Hexokinase/G-6-PDH

Additional Information:

Based on 75 g dose ingested over 5 minutes.

THIS TEST IS NO LONGER RECOMMENDED FOR ROUTINE USE.

When performed it is abbreviated to a single 2 hour post-glucose specimen.

All patients should be screened with a fasting glucose: Do not perform this test if the fasting glucose exceeds 125!

90% of patients whose 2 hour level is > 199 mg/dL have fasting hyperglycemia, obviating the need for tolerance testing.

Reference values from position statement of the American Diabetes Association on Diagnosis and Classification of Diabetes (Diabetes Care, Volume 34, Supplement 1, January 2011).

Synonyms:

- Diabetes mellitus

COLLECTION

Patient Preparation:

The patient should be instructed by the care-giver to eat a normal diet containing at least 150 g of carbohydrate and carry out normal physical activity for at least 3 days prior to the morning of the test. An overnight fast of between 8 to 14 hours is required before initial baseline sample collection.

Sample Type:

Serum

Collect:

Gray top

Amount to Collect:

1 mL blood

Preferred Volume:

0.5 mL serum

Minimum Volume:

0.2 mL serum

Remarks:

Outpatient testing at ACC available 0730-1400 weekdays, Mission Bay from 0700-1400 and at 2330 Post St. 0800-1400 weekdays.

The patient should be seated for the test and should not smoke.

A gray top tube should be used.

For patients < 18 years of age, obtain the patient's weight and give the patient 1.75 g of glucose per kg of body weight. If the weight is in pounds, divide by 2.2 to get kg. Do not provide more than 75 g dose regardless of body weight.

Stability (from collection to initiation):

Room temperature 2 days, refrigerated 7 days, frozen at -20C 3 months

PROCESSING

Test Code:
OGT, NP120

Test Group:
Glucose

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 7 days, frozen at -20C 3 months

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:

Fasting	70-99 mg/dL
Normal (post glucose)	< 140 mg/dL
Impaired glucose tolerance (post glucose)	140-199 mg/dL
Diabetes mellitus (post glucose)	> 199 mg/dL*

* If confirmed on another day by repeat OGT, or a diagnostic elevation of the fasting or non-fasting glucose.

Additional Information:
Based on 75 g dose ingested over 5 minutes.

THIS TEST IS NO LONGER RECOMMENDED FOR ROUTINE USE.

When performed it is abbreviated to a single 2 hour post-glucose specimen.

All patients should be screened with a fasting glucose: Do not perform this test if the fasting glucose exceeds 125!

90% of patients whose 2 hour level is > 199 mg/dL have fasting hyperglycemia, obviating the need for tolerance testing.

Reference values from position statement of the American Diabetes Association on Diagnosis and Classification of Diabetes (Diabetes Care, Volume 34, Supplement 1, January 2011).

ADMINISTRATIVE

CPT Codes:
82947

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
THIS TEST IS NO LONGER RECOMMENDED FOR ROUTINE USE.

See Additional Information.

Test Code:
OGT, NP120

Test Group:
Glucose

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Hexokinase/G-6-PDH

Patient Preparation:
The patient should be instructed by the care-giver to eat a normal diet containing at least 150 g of carbohydrate and carry out normal physical activity for at least 3 days prior to the morning of the test. An overnight fast of between 8 to 14 hours is required before initial baseline sample collection.

Remarks:

Outpatient testing at ACC available 0730-1400 weekdays, Mission Bay from 0700-1400 and at 2330 Post St. 0800-1400 weekdays.

The patient should be seated for the test and should not smoke.

A gray top tube should be used.

For patients < 18 years of age, obtain the patient's weight and give the patient 1.75 g of glucose per kg of body weight. If the weight is in pounds, divide by 2.2 to get kg. Do not provide more than 75 g dose regardless of body weight.

Collect:

Gray top

Amount to Collect:

1 mL blood

Sample Type:

Serum

Preferred Volume:

0.5 mL serum

Minimum Volume:

0.2 mL serum

Units:

mg/dL

Reference Interval:

Fasting	70-99 mg/dL
Normal (post glucose)	< 140 mg/dL
Impaired glucose tolerance (post glucose)	140-199 mg/dL
Diabetes mellitus (post glucose)	> 199 mg/dL*

* If confirmed on another day by repeat OGT, or a diagnostic elevation of the fasting or non-fasting glucose.

Synonyms:

- Diabetes mellitus

Stability (from collection to initiation):

Room temperature 2 days, refrigerated 7 days, frozen at -20C 3 months

Additional Information:

Based on 75 g dose ingested over 5 minutes.

THIS TEST IS NO LONGER RECOMMENDED FOR ROUTINE USE.

When performed it is abbreviated to a single 2 hour post-glucose specimen.

All patients should be screened with a fasting glucose: Do not perform this test if the fasting glucose exceeds 125!

90% of patients whose 2 hour level is > 199 mg/dL have fasting hyperglycemia, obviating the need for tolerance testing.

Reference values from position statement of the American Diabetes Association on Diagnosis and Classification of Diabetes (Diabetes Care, Volume 34, Supplement 1, January 2011).

CPT Codes:

82947

2 Hour, 75 gram Glucose Tolerance Test, Pregnancy

OGTP2, GT60 & GT120

ORDERING

Available Stat:
No

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Parnassus ACC 0730-1400 weekdays.
Mission Bay 0700-1400 weekdays
Mount Zion 2230 Post St. 0800-1400 weekdays.

Methodology:
Hexokinase/G-6-PDH

Additional Information:
For further information on the "2 Hour, 75 gram Glucose Tolerance Test, Pregnancy," refer to the UpToDate section on screening and diagnosis of diabetes mellitus during pregnancy and also the International Association of Diabetes and Pregnancy Study Groups Recommendations on the Diagnosis and Classification of Hyperglycemia in Pregnancy, Diabetes Care, 33:676-682, 2010

Synonyms:

- Diabetes mellitus
- OGTP2
- GT60
- GT120

COLLECTION

Patient Preparation:
The patient should be instructed by the care-giver to eat a normal diet containing at least 150 g of carbohydrate per day and carry out normal physical activity for at least 3 days prior to the morning of the test. An 8-10 hour fast is required before initial baseline sample collection.

Sample Type:
Serum

Collect:
Gray top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Remarks:
The patient should be seated for the test and should not smoke.

Collect all samples in Gray top tubes

Obtain a fasting sample and send to lab for stat glucose testing. If the fasting glucose result is >=92 mg/dL, the glucose dose is not given to the patient. The outpatient personnel must contact the Diabetes Clinic (3-2868) to inform them of the fasting glucose result and ask for instructions to provide to the patient.

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 7 days, frozen at -20C 3 months

PROCESSING

Test Code:
OGTP2. GT60 & GT120

Test Group:
Glucose

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 7 days, frozen at -20C 3 months

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:
Fasting: 70-91 mg/dL 1
1 hour (post glucose): < 180 mg/dL
2 hour (post glucose): < 153 mg/dL

Additional Information:
For further information on the "2 Hour, 75 gram Glucose Tolerance Test, Pregnancy," refer to the UpToDate section on screening and diagnosis of diabetes mellitus during pregnancy and also the International Association of Diabetes and Pregnancy Study Groups Recommendations on the Diagnosis and Classification of Hyperglycemia in Pregnancy, Diabetes Care, 33:676-682, 2010

ADMINISTRATIVE

CPT Codes:
82947

COMPLETE VIEW

Available Stat:
No

Test Code:
OGTP2. GT60 & GT120

Test Group:
Glucose

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Parnassus ACC 0730-1400 weekdays.
Mission Bay 0700-1400 weekdays
Mount Zion 2230 Post St. 0800-1400 weekdays.

Methodology:
Hexokinase/G-6-PDH

Patient Preparation:
The patient should be instructed by the care-giver to eat a normal diet containing at least 150 g of carbohydrate per day and carry out normal physical activity for at least 3 days prior to the morning of the test. An 8-10 hour fast is required before initial baseline sample collection.

Remarks:
The patient should be seated for the test and should not smoke.

Collect all samples in Gray top tubes

Obtain a fasting sample and send to lab for stat glucose testing. If the fasting glucose result is >=92 mg/dL, the glucose dose is not given to the patient. The outpatient personnel must contact the Diabetes Clinic (3-2868) to inform them of the fasting glucose result and ask for instructions to provide to the patient.

Collect:
Gray top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Units:
mg/dL

Reference Interval:

Fasting: 70-91 mg/dL 1
1 hour (post glucose): < 180 mg/dL
2 hour (post glucose): < 153 mg/dL

Synonyms:

- Diabetes mellitus
- OGTP2
- GT60
- GT120

Stability (from collection to initiation):

Room temperature 2 days, refrigerated 7 days, frozen at -20C 3 months

Additional Information:

For further information on the "2 Hour, 75 gram Glucose Tolerance Test, Pregnancy," refer to the UpToDate section on screening and diagnosis of diabetes mellitus during pregnancy and also the International Association of Diabetes and Pregnancy Study Groups Recommendations on the Diagnosis and Classification of Hyperglycemia in Pregnancy, Diabetes Care, 33:676-682, 2010

CPT Codes:

82947

2,3-dinor 11B-Prostaglandin F2a

23BPG

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
LC-MS/MS

Additional Information:
2,3-Dinor-11beta-prostaglandin F2 alpha is the most abundant metabolic product of prostaglandins released by activated mast cells. Systemic mastocytosis (SM) is a disease in which clonally derived mast cells accumulate in peripheral tissues. Degranulation of these mast cells releases large amounts of histamines, prostaglandins, leukotrienes, and tryptase.

Synonyms:

- 11 Beta-Prostaglandin F2
- 11BPG
- 2,3 11 Beta-Prostaglandin F2 Alpha
- 23BPG
- BPG2
- Mastocytosis
- Prostaglandin
- 23BPT
- 23
- BPT23

COLLECTION

Sample Type:
Random/24 hour urine

Collect:
Urine container

Amount to Collect:
4 mL

Preferred Volume:
4 mL

Minimum Volume:
4 mL

Remarks:
Random or 24 hour urine acceptable. No preservative preferred.

Stability (from collection to initiation):
Refrigerated (preferred): 14 days
Frozen: 30 days
Ambient: 8 hours

PROCESSING

Test Code:
23BPG

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Aliquot and freeze specimen. Transport to CB frozen. Order Mayo test code 23BPG.

Preferred Volume:
4 mL

Minimum Volume:
4 mL

Stability (from collection to initiation):
Refrigerated (preferred): 14 days
Frozen: 30 days
Ambient: 8 hours

RESULT INTERPRETATION

Units:
pg/mg Cr

Reference Interval:
<5205 pg/mg Cr

Additional Information:
2,3-Dinor-11beta-prostaglandin F2 alpha is the most abundant metabolic product of prostaglandins released by activated mast cells. Systemic mastocytosis (SM) is a disease in which clonally derived mast cells accumulate in peripheral tissues. Degranulation of these mast cells releases large amounts of histamines, prostaglandins, leukotrienes, and tryptase.

ADMINISTRATIVE

CPT Codes:
84150-90

COMPLETE VIEW

Available Stat:
No

Test Code:
23BPG

Performing Lab:
Mayo

Sendout:
Yes

Methodology:
LC-MS/MS

Remarks:
Random or 24 hour urine acceptable. No preservative preferred.

Collect:
Urine container

Amount to Collect:
4 mL

Sample Type:
Random/24 hour urine

Preferred Volume:
4 mL

Minimum Volume:
4 mL

Specimen Preparation:
Aliquot and freeze specimen. Transport to CB frozen. Order Mayo test code 23BPG.

Units:
pg/mg Cr

Reference Interval:
<5205 pg/mg Cr

Synonyms:

- 11 Beta-Prostaglandin F2
- 11BPG
- 2,3 11 Beta-Prostaglandin F2 Alpha
- 23BPG
- BPG2
- Mastocytosis
- Prostaglandin
- 23BPT
- 23
- BPT23

Stability (from collection to initiation):
Refrigerated (preferred): 14 days
Frozen: 30 days
Ambient: 8 hours

Additional Information:

2,3-Dinor-11beta-prostaglandin F2 alpha is the most abundant metabolic product of prostaglandins released by activated mast cells. Systemic mastocytosis (SM) is a disease in which clonally derived mast cells accumulate in peripheral tissues. Degranulation of these mast cells releases large amounts of histamines, prostaglandins, leukotrienes, and tryptase.

CPT Codes:

84150-90

21-Hydroxylase Antibody

21HA

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Radiobinding

Reported:
5-7 days

Additional Information:
Used in the diagnosis of Autoimmune Polyglandular Syndrome (APS), Type 1 or 2. and/or Addison's disease.

COLLECTION

Sample Type:
Serum

Collect:
Gold or Red top vacutainer

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature 1 day, refrigerated 1 week, frozen 6 months

PROCESSING

Test Code:
21HA

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot and freeze serum. Transport to CB frozen. Order Quest test code 177816P

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature 1 day, refrigerated 1 week, frozen 6 months

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
Used in the diagnosis of Autoimmune Polyglandular Syndrome (APS), Type 1 or 2. and/or Addison's disease.

ADMINISTRATIVE

CPT Codes:
83519-90

COMPLETE VIEW

Available Stat:
No

Test Code:
21HA

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Radiobinding

Collect:
Gold or Red top vacutainer

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Specimen Preparation:
Aliquot and freeze serum. Transport to CB frozen. Order Quest test code 177816P

Reference Interval:
Negative

Stability (from collection to initiation):
Room temperature 1 day, refrigerated 1 week, frozen 6 months

Reported:
5-7 days

Additional Information:
Used in the diagnosis of Autoimmune Polyglandular Syndrome (APS), Type 1 or 2. and/or Addison's disease.

CPT Codes:
83519-90

3 hour 100 gram Glucose Tolerance Test, Pregnancy

OGTP, 3GT60, 3GT120, 3GT180

ORDERING

Available Stat:
No

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Parnassus ACC 0730-1330 weekdays.
Mission Bay 0700-1330 weekdays.
Mount Zion 2230 Post St. 0800-1330 weekdays.

Methodology:
Hexokinase/G-6-PDH

Additional Information:
Glucose tolerance screening for gestational diabetes mellitus (GDM) may be performed as a one step approach or as a two step approach. This "3 hour 100 gram glucose tolerance test, pregnancy" is the second test in the two step screening approach for GDM. For the first test in the two step screening approach, see the "1 hour 50 gram glucose loading screen." A positive diagnosis in this second step test requires that two or more reference range thresholds be met or exceeded. For a discussion on the reference range for this test, see UpToDate section on "Screening for and diagnosis of diabetes mellitus during pregnancy."

For the one step approach to screening for GDM, see " 2 Hour, 75 gram Glucose Tolerance Test, Pregnant."

"Glucose tolerance beverages are available in 100 g bottles (10 g/fl. oz. at 10 oz.) at ACC, and 100 g and 50 g bottles (10 g/fl. oz., 5 g/fl. oz.both 10 oz.) at Post St.

Source of reference range: UpToDate and the 4th International Workshop on Gestational Diabetes

Synonyms:

- Diabetes mellitus
- OGTP
- 3GT60
- 3GT120
- 3GT180

COLLECTION

Patient Preparation:
The patient should be instructed by the care-giver to eat a normal diet containing at least 150 g of carbohydrate and carry out normal physical activity for at least 3 days prior to the morning of the test, which is administered after an 8-14 hour. fast.

Sample Type:
Plasma

Collect:
Gray top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL plasma

Minimum Volume:
0.2 mL plasma

Remarks:
The patient should be seated for the test and should not smoke.

Collect all samples in Gray top tubes

An 8-14 hour fast is required to perform this test. If the patient did not fast for this period, cancel the test and inform the patient to return after fasting for the required time.

Obtain a fasting sample and send to lab for stat testing and follow the 3 hour glucose tolerance testing procedure for the remaining samples.

Note: The fasting glucose result must be <110 mg/dL to proceed with the glucose tolerance test. If the fasting glucose result is 110 mg/dL or higher, cancel the glucose tolerance test.

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 7 days, frozen at -20C 3 months

PROCESSING

Test Code:
OGTP, 3GT60, 3GT120, 3GT180

Test Group:
Glucose

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Preferred Volume:
0.5 mL plasma

Minimum Volume:
0.2 mL plasma

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 7 days, frozen at -20C 3 months

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:

Fasting	70-94 mg/dL
1 hour (post glucose)	< 180 mg/dL
2 hour (post glucose)	< 155 mg/dL
3 hour (post glucose)	< 140 mg/dL

Additional Information:
Glucose tolerance screening for gestational diabetes mellitus (GDM) may be performed as a one step approach or as a two step approach. This "3 hour 100 gram glucose tolerance test, pregnancy" is the second test in the two step screening approach for GDM. For the first test in the two step screening approach, see the "1 hour 50 gram glucose loading screen." A positive diagnosis in this second step test requires that two or more reference range thresholds be met or exceeded. For a discussion on the reference range for this test, see UpToDate section on "Screening for and diagnosis of diabetes mellitus during pregnancy."

For the one step approach to screening for GDM, see " 2 Hour, 75 gram Glucose Tolerance Test, Pregnant."

"Glucose tolerance beverages are available in 100 g bottles (10 g/fl. oz. at 10 oz.) at ACC, and 100 g and 50 g bottles (10 g/fl. oz., 5 g/fl. oz.both 10 oz.) at Post St.

Source of reference range: UpToDate and the 4th International Workshop on Gestational Diabetes

ADMINISTRATIVE

CPT Codes:
82947

COMPLETE VIEW

Available Stat:
No

Test Code:
OGTP, 3GT60, 3GT120, 3GT180

Test Group:
Glucose

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Parnassus ACC 0730-1330 weekdays.
Mission Bay 0700-1330 weekdays.
Mount Zion 2230 Post St. 0800-1330 weekdays.

Methodology:
Hexokinase/G-6-PDH

Patient Preparation:

The patient should be instructed by the care-giver to eat a normal diet containing at least 150 g of carbohydrate and carry out normal physical activity for at least 3 days prior to the morning of the test, which is administered after an 8-14 hour. fast.

Remarks:

The patient should be seated for the test and should not smoke.

Collect all samples in Gray top tubes

An 8-14 hour fast is required to perform this test. If the patient did not fast for this period, cancel the test and inform the patient to return after fasting for the required time.

Obtain a fasting sample and send to lab for stat testing and follow the 3 hour glucose tolerance testing procedure for the remaining samples.

Note: The fasting glucose result must be <110 mg/dL to proceed with the glucose tolerance test. If the fasting glucose result is 110 mg/dL or higher, cancel the glucose tolerance test.

Collect:

Gray top

Amount to Collect:

1 mL blood

Sample Type:

Plasma

Preferred Volume:

0.5 mL plasma

Minimum Volume:

0.2 mL plasma

Units:

mg/dL

Reference Interval:

Fasting	70-94 mg/dL
1 hour (post glucose)	< 180 mg/dL
2 hour (post glucose)	< 155 mg/dL
3 hour (post glucose)	< 140 mg/dL

Synonyms:

- Diabetes mellitus
- OGTP
- 3GT60
- 3GT120
- 3GT180

Stability (from collection to initiation):

Room temperature 2 days, refrigerated 7 days, frozen at -20C 3 months

Additional Information:

Glucose tolerance screening for gestational diabetes mellitus (GDM) may be performed as a one step approach or as a two step approach. This "3 hour 100 gram glucose tolerance test, pregnancy" is the second test in the two step screening approach for GDM. For the first test in the two step screening approach, see the "1 hour 50 gram glucose loading screen." A positive diagnosis in this second step test requires that two or more reference range thresholds be met or exceeded. For a discussion on the reference range for this test, see UpToDate section on "Screening for and diagnosis of diabetes mellitus during pregnancy."

For the one step approach to screening for GDM, see " 2 Hour, 75 gram Glucose Tolerance Test, Pregnant."

"Glucose tolerance beverages are available in 100 g bottles (10 g/fl. oz. at 10 oz.) at ACC, and 100 g and 50 g bottles (10 g/fl. oz., 5 g/fl. oz.both 10 oz.) at Post St.

Source of reference range: UpToDate and the 4th International Workshop on Gestational Diabetes

CPT Codes:

82947

3-Hydroxy-3-Methylglutaryl Coenzyme A Reductase (HMGCR) Antibody, IgG

HMGCR

ORDERING

Ordering Recommendations:
Differential diagnosis of myositis in patients with or without statin exposure.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Fri

Methodology:
Semi-Quantitative Enzyme-Linked Immunosorbent Assay (ELISA)

Reported:
1-15 days

Synonyms:

- HMG antibody
- HMG

COLLECTION

Sample Type:
Serum (Gold top tube)

Collect:
Serum separator tube (SST).

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.15 mL serum

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
Refrigerated. Also acceptable: Frozen.

Unacceptable Conditions:
Contaminated, heat-inactivated, clots, fibrin, gross red blood cells, severely lipemic, severely hemolyzed, or severely icteric specimens.

PROCESSING

Test Code:
HMGCR

ARUP Test Code:
2013101

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate serum from cells ASAP or within 2 hours of collection. Transfer 0.5 mL serum (Min: 0.3 mL) to an ARUP standard transport tube.

Additional Processing Instructions:
Aliquot and freeze specimen. Transport to CB frozen. Order ARUP test code 2013101.

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.15 mL serum

Unacceptable Conditions:
Contaminated, heat-inactivated, clots, fibrin, gross red blood cells, severely lipemic, severely hemolyzed, or severely icteric specimens.

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
Refrigerated. Also acceptable: Frozen.

RESULT INTERPRETATION

Reference Interval:
0-19 Units: Negative

Interpretive Data:
IgG antibodies to 3-hydroxy-3-methylglutaryl-coenzyme A reductase (HMGCR) are mainly associated with necrotizing autoimmune myopathy (NAM) in a subset of statin-treated patients. Although infrequent, these antibodies may also be observed in statin-naive patients with NAM. Strong clinical correlation is recommended in the absence of muscle fiber necrosis, elevated serum creatine kinase, perimysial pathology, and/or statin exposure.

ADMINISTRATIVE

CPT Codes:
83516

LOINC:

- 93493-5

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Differential diagnosis of myositis in patients with or without statin exposure.

Test Code:
HMGCR

ARUP Test Code:
2013101

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Fri

Methodology:
Semi-Quantitative Enzyme-Linked Immunosorbent Assay (ELISA)

Collect:
Serum separator tube (SST).

Amount to Collect:
1 mL blood

Sample Type:
Serum (Gold top tube)

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.15 mL serum

Unacceptable Conditions:
Contaminated, heat-inactivated, clots, fibrin, gross red blood cells, severely lipemic, severely hemolyzed, or severely icteric specimens.

Specimen Preparation:
Separate serum from cells ASAP or within 2 hours of collection. Transfer 0.5 mL serum (Min: 0.3 mL) to an ARUP standard transport tube.

Additional Processing Instructions:
Aliquot and freeze specimen. Transport to CB frozen. Order ARUP test code 2013101.

Reference Interval:
0-19 Units: Negative

Interpretive Data:
IgG antibodies to 3-hydroxy-3-methylglutaryl-coenzyme A reductase (HMGCR) are mainly associated with necrotizing autoimmune myopathy (NAM) in a subset of statin-treated patients. Although infrequent, these antibodies may also be observed in statin-naive patients with NAM. Strong clinical correlation is recommended in the absence of muscle fiber necrosis, elevated serum creatine kinase, perimysial pathology, and/or statin exposure.

Synonyms:

- HMG antibody
- HMG

Storage/Transport Temperature:
Refrigerated. Also acceptable: Frozen.

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

Reported:
1-15 days

CPT Codes:
83516

LOINC:

- 93493-5

5-a-Dihydrotestosterone by Tandem Mass Spectrometry, Serum

DHT

ORDERING

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun, Wed, Thu, Fri, Sat

Methodology:
Quantitative High Performance Liquid Chromatography-Tandem Mass Spectrometry

Reported:
1-5 days

Synonyms:

- DHT
- DHT (5-a-Dihydrotestosterone by Tandem Mass Spectrometry, Serum)
- Dihydrotestosterone, LC/MS/MS (5-a-Dihydrotestosterone by Tandem Mass Spectrometry, Serum)

COLLECTION

Sample Type:
Serum

Collect:
Plain red or serum separator tube (SST).

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.6 mL serum

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 5 days; Frozen: 6 months

Storage/Transport Temperature:
Frozen.

Unacceptable Conditions:
Hemolyzed or lipemic specimens.

PROCESSING

Test Code:
DHT

ARUP Test Code:
2002349

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate serum from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP standard transport tube and freeze immediately. (Min: 0.6 mL)

Preferred Volume:
1 mL serum

Minimum Volume:
0.6 mL serum

Unacceptable Conditions:
Hemolyzed or lipemic specimens.

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 5 days; Frozen: 6 months

Storage/Transport Temperature:
Frozen.

RESULT INTERPRETATION

Reference Interval:

Components	Reference Interval		
5-a-Dihydrotestosterone, LC-MS/MS	**Age**	**Male (pg/mL)**	**Female (pg/mL)**
	Premature	100.0-530.0	20.0-130.0
	Full Term	50.0-600.0	20.0-150.0
	1 week-6 months	120.0-850.0	Not Applicable
	1 week-9 years	Not Applicable	0.0-49.9
	7 months-9 years	0.0-49.9	Not Applicable
	10-19 years	0.0-533.0	50.0-170.0
	20 years and older	106.0-719.0	24.0-208.0
	Tanner Stage I	1.0-47.6	1.0-64.3
	Tanner Stage II	3.5-397.9	5.5-95.9
	Tanner Stage III	14.8-574.6	11.4-158.3
	Tanner Stage IV-V	44.9-511.8	18.7-193.8

ADMINISTRATIVE

CPT Codes:
82642

LOINC:

- 1848-1

COMPLETE VIEW

Available Stat:
No

Test Code:
DHT

ARUP Test Code:
2002349

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun, Wed, Thu, Fri, Sat

Methodology:
Quantitative High Performance Liquid Chromatography-Tandem Mass Spectrometry

Collect:
Plain red or serum separator tube (SST).

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.6 mL serum

Unacceptable Conditions:
Hemolyzed or lipemic specimens.

Specimen Preparation:
Separate serum from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP standard transport tube and freeze immediately. (Min: 0.6 mL)

Reference Interval:

Components	Reference Interval		
5-a-Dihydrotestosterone, LC-MS/MS	**Age**	**Male (pg/mL)**	**Female (pg/mL)**
	Premature	100.0-530.0	20.0-130.0
	Full Term	50.0-600.0	20.0-150.0
	1 week-6 months	120.0-850.0	Not Applicable
	1 week-9 years	Not Applicable	0.0-49.9
	7 months-9 years	0.0-49.9	Not Applicable
	10-19 years	0.0-533.0	50.0-170.0
	20 years and older	106.0-719.0	24.0-208.0
	Tanner Stage I	1.0-47.6	1.0-64.3
	Tanner Stage II	3.5-397.9	5.5-95.9
	Tanner Stage III	14.8-574.6	11.4-158.3
	Tanner Stage IV-V	44.9-511.8	18.7-193.8

Synonyms:

- DHT
- DHT (5-a-Dihydrotestosterone by Tandem Mass Spectrometry, Serum)
- Dihydrotestosterone, LC/MS/MS (5-a-Dihydrotestosterone by Tandem Mass Spectrometry, Serum)

Storage/Transport Temperature:
Frozen.

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 5 days; Frozen: 6 months

Reported:
1-5 days

CPT Codes:
82642

LOINC:

- 1848-1

5-Hydroxyindoleacetic acid, 24 hour urine

5HQT

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
HPLC

Reported:
Test run Monday-Friday. Turnaround: 2-5 days.

Additional Information:
To convert mg to µmol (SI units) multiply by 5.2.

Synonyms:

- HIAA

COLLECTION

Patient Preparation:
Patient should avoid food high in indoles: avocados, bananas, berries, eggplant, nuts, passion fruit, pineapple and its juice, plantains, plums, and tomatoes. Patient should also avoid alcohol, tobacco, tea and coffee three days prior to and during specimen collection.

Sample Type:
24 hour urine collection

Collect:
Preferred: Plain Container

Acceptable: Amber Container, 30mL 6N HCL

Amount to Collect:
Entire 24 urine output

Preferred Volume:
10 mL urine

Minimum Volume:
5 mL urine

Remarks:
72 hours prior to and throughout the entire period of specimen collection avoid avocados, bananas, berries, eggplant, nuts, passion fruit, pineapple and its juice, plantains, plums, and tomatoes, as well as alcohol, coffee, tea and tobacco. Obtain container with preservative at Specimen Receiving. Refrigerate sample while collecting.

PROCESSING

Test Code:
5HQT

Test Group:
HIAA

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Order Quest # 9936N

If pH > 6, add a few drops of 6N HCl to acidify urine aliquot to pH 6 or less before shipping frozen.

Preferred Volume:
10 mL urine

Minimum Volume:
5 mL urine

RESULT INTERPRETATION

Units:
mg/24 h or mg/g creat.

Reference Interval:
2-10 years: < 8.0 mg/d
> 10 years: < 6.0 mg/d

Additional Information:
To convert mg to µmol (SI units) multiply by 5.2.

ADMINISTRATIVE

CPT Codes:
82570-90, 83497-90

LOINC Codes:
31203-3

COMPLETE VIEW

Available Stat:
No

Test Code:
5HQT

Test Group:
HIAA

Performing Lab:
Quest

Sendout:
Yes

Methodology:
HPLC

Patient Preparation:
Patient should avoid food high in indoles: avocados, bananas, berries, eggplant, nuts, passion fruit, pineapple and its juice, plantains, plums, and tomatoes. Patient should also avoid alcohol, tobacco, tea and coffee three days prior to and during specimen collection.

Remarks:
72 hours prior to and throughout the entire period of specimen collection avoid avocados, bananas, berries, eggplant, nuts, passion fruit, pineapple and its juice, plantains, plums, and tomatoes, as well as alcohol, coffee, tea and tobacco. Obtain container with preservative at Specimen Receiving. Refrigerate sample while collecting.

Collect:
Preferred: Plain Container

Acceptable: Amber Container, 30mL 6N HCL

Amount to Collect:
Entire 24 urine output

Sample Type:
24 hour urine collection

Preferred Volume:
10 mL urine

Minimum Volume:
5 mL urine

Specimen Preparation:
Order Quest # 9936N

If pH > 6, add a few drops of 6N HCl to acidify urine aliquot to pH 6 or less before shipping frozen.

Units:
mg/24 h or mg/g creat.

Reference Interval:
2-10 years: < 8.0 mg/d
> 10 years: < 6.0 mg/d

Synonyms:

- HIAA

Reported:
Test run Monday-Friday. Turnaround: 2-5 days.

Additional Information:

To convert mg to µmol (SI units) multiply by 5.2.

CPT Codes:

82570-90, 83497-90

LOINC Codes:

31203-3

5-Hydroxyindoleacetic acid, random urine

5HQTR

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
HPLC with electrochemical detection

Reported:
Set up 5x per week, turnaround 3-5 days

Additional Information:
5-HIAA is the end product of serotonin (5-hydroxytryptophan) and tyrptophan metabolism. Patients with carcinoid tumors of the midgut, e.g., ileum, produce high concentrations of 5-HIAA. Patients with carcinoid tumors of the foregut and hindgut may produce little or no 5-HIAA or do so intermittently.

Synonyms:

- HIAA

COLLECTION

Patient Preparation:
Patient should avoid food high in indoles: avocados, bananas, berries, eggplant, nuts, passion fruit, pineapple and its juice, plantains, plums, and tomatoes. Patient should also avoid alcohol, tobacco, tea and coffee three days prior to and during specimen collection.

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
20 mL urine

Preferred Volume:
10 mL urine

Minimum Volume:
5 mL urine

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 1 month, frozen at -20C 1 month

PROCESSING

Test Code:
5HQTR

Test Group:
HIAA

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliqout sample and adjust urine pH to < 3.0 using 6N HCl. Refrigerate. Order Quest test # 84871N

Preferred Volume:
10 mL urine

Minimum Volume:
5 mL urine

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 1 month, frozen at -20C 1 month

RESULT INTERPRETATION

Units:
mg/g creatinine

Reference Interval:
2-10 years: <= 12.0 mg/g creatinine
> 10 years: <= 10.0 mg/g creatinine

Additional Information:
5-HIAA is the end product of serotonin (5-hydroxytryptophan) and tyrptophan metabolism. Patients with carcinoid tumors of the midgut, e.g., ileum, produce high concentrations of 5-HIAA. Patients with carcinoid tumors of the foregut and hindgut may produce little or no 5-HIAA or do so intermittently.

ADMINISTRATIVE

CPT Codes:
82570-90, 83497-90

LOINC Codes:
11145-0

COMPLETE VIEW

Available Stat:
No

Test Code:
5HQTR

Test Group:
HIAA

Performing Lab:
Quest

Sendout:
Yes

Methodology:
HPLC with electrochemical detection

Patient Preparation:
Patient should avoid food high in indoles: avocados, bananas, berries, eggplant, nuts, passion fruit, pineapple and its juice, plantains, plums, and tomatoes. Patient should also avoid alcohol, tobacco, tea and coffee three days prior to and during specimen collection.

Collect:
Urine cup

Amount to Collect:
20 mL urine

Sample Type:
Random urine

Preferred Volume:
10 mL urine

Minimum Volume:
5 mL urine

Specimen Preparation:
Aliqout sample and adjust urine pH to < 3.0 using 6N HCl. Refrigerate. Order Quest test # 84871N

Units:
mg/g creatinine

Reference Interval:
2-10 years: <= 12.0 mg/g creatinine
> 10 years: <= 10.0 mg/g creatinine

Synonyms:

- HIAA

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 1 month, frozen at -20C 1 month

Reported:
Set up 5x per week, turnaround 3-5 days

Additional Information:
5-HIAA is the end product of serotonin (5-hydroxytryptophan) and tyrptophan metabolism. Patients with carcinoid tumors of the midgut, e.g., ileum, produce high concentrations of 5-HIAA. Patients with carcinoid tumors of the foregut and hindgut may produce little or no 5-HIAA or do so intermittently.

CPT Codes:
82570-90, 83497-90

LOINC Codes:
11145-0

7-Dehydrocholesterol

DHC7

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
GCMS

Reported:
Batched 1-2 times per week. Turnaround 7-14 days

Additional Information:
Deficiency of 7-dehydrocholesterol reductase leads to accumulation of this compound in Smith-Lemli-Opitz Syndrome.

This laboratory is not eligible for MediCal reimbursement. Specimens on MediCal patients must be charged either to a budget account or paid for in advance in cash.

Synonyms:

- Smith-Lemli-Opitz syndrome
- Dehydrocholesterol,7-

COLLECTION

Sample Type:
EDTA Plasma

Collect:
Lavender top (Green top accceptable)

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL plasma

Minimum Volume:
0.1 mL plasma

Stability (from collection to initiation):
Room temperature unacceptable, refrigerated 48 hours, frozen at -20C indefinite.

PROCESSING

Test Code:
DHC7

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze at -20C. Ship frozen to China Basin. Order Quest # 17664X

Preferred Volume:
1 mL plasma

Minimum Volume:
0.1 mL plasma

Stability (from collection to initiation):
Room temperature unacceptable, refrigerated 48 hours, frozen at -20C indefinite.

RESULT INTERPRETATION

Reference Interval:
See Additional Information

Additional Information:
Deficiency of 7-dehydrocholesterol reductase leads to accumulation of this compound in Smith-Lemli-Opitz Syndrome.

This laboratory is not eligible for MediCal reimbursement. Specimens on MediCal patients must be charged either to a budget account or paid for in advance in cash.

ADMINISTRATIVE

CPT Codes:
82542-90

LOINC Codes:
33275-9

COMPLETE VIEW

Available Stat:
No

Test Code:
DHC7

Performing Lab:
Quest

Sendout:
Yes

Methodology:
GCMS

Collect:
Lavender top (Green top accceptable)

Amount to Collect:
2 mL blood

Sample Type:
EDTA Plasma

Preferred Volume:
1 mL plasma

Minimum Volume:
0.1 mL plasma

Specimen Preparation:
Freeze at -20C. Ship frozen to China Basin. Order Quest # 17664X

Reference Interval:
See Additional Information

Synonyms:

- Smith-Lemli-Opitz syndrome
- Dehydrocholesterol,7-

Stability (from collection to initiation):
Room temperature unacceptable, refrigerated 48 hours, frozen at -20C indefinite.

Reported:
Batched 1-2 times per week. Turnaround 7-14 days

Additional Information:
Deficiency of 7-dehydrocholesterol reductase leads to accumulation of this compound in Smith-Lemli-Opitz Syndrome.

This laboratory is not eligible for MediCal reimbursement. Specimens on MediCal patients must be charged either to a budget account or paid for in advance in cash.

CPT Codes:
82542-90

LOINC Codes:
33275-9

AB42/Tau Analysis, CSF

ABTAU

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Performed:
Tuesday and Thursday

Methodology:
Electrochemiluminescent Immunoassay

Reported:
8 days

Synonyms:

- AB42
- Altzheimer's
- Amyloid beta

COLLECTION

Patient Preparation:
For 12 hours before specimen collection do not take multivitamins or dietary supplements containing biotin (vitamin B7), which is commonly found in hair, skin, and nail supplements and multivitamins.

Sample Type:
CSF

Collect:
Alzheimer's Disease Evaluation (ADEVL) Collection Kit (SUPPLIED BY CLINIC)

Amount to Collect:
2 mL

Preferred Volume:
2 mL

Minimum Volume:
2 mL

Remarks:
1. Perform lumbar puncture and discard the first 1 to 2 mL of cerebrospinal fluid (CSF).

2. Collect 2 mL of CSF directly into CSF AD Biomarker Tube. Do not aliquot. Analysis needs to be performed using collection tube.

Stability (from collection to initiation):
Frozen (preferred) 30 days
Refrigerated 14 days
Ambient 12 hours

Storage/Transport Temperature:
Frozen

Unacceptable Conditions:
Gross hemolysis
Gross icterus
Any tube other than CSF AD Biomarker Tube

PROCESSING

Test Code:
ABTAU

Sendout:
Yes

Performing Lab:
Mayo

Preferred Volume:
2 mL

Minimum Volume:
2 mL

Unacceptable Conditions:
Gross hemolysis
Gross icterus
Any tube other than CSF AD Biomarker Tube

Stability (from collection to initiation):
Frozen (preferred) 30 days
Refrigerated 14 days
Ambient 12 hours

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Interpretive Data:
Assessment of adults with cognitive impairment being evaluated for Alzheimer disease (AD) and other causes of cognitive impairment.

ADMINISTRATIVE

CPT Codes:
83520 x 3

COMPLETE VIEW

Available Stat:
No

Test Code:
ABTAU

Performing Lab:
Mayo

Sendout:
Yes

Performed:
Tuesday and Thursday

Methodology:
Electrochemiluminescent Immunoassay

Patient Preparation:
For 12 hours before specimen collection do not take multivitamins or dietary supplements containing biotin (vitamin B7), which is commonly found in hair, skin, and nail supplements and multivitamins.

Remarks:
1. Perform lumbar puncture and discard the first 1 to 2 mL of cerebrospinal fluid (CSF).

2. Collect 2 mL of CSF directly into CSF AD Biomarker Tube. Do not aliquot. Analysis needs to be performed using collection tube.

Collect:
Alzheimer's Disease Evaluation (ADEVL) Collection Kit (SUPPLIED BY CLINIC)

Amount to Collect:
2 mL

Sample Type:
CSF

Preferred Volume:
2 mL

Minimum Volume:
2 mL

Unacceptable Conditions:
Gross hemolysis
Gross icterus
Any tube other than CSF AD Biomarker Tube

Interpretive Data:
Assessment of adults with cognitive impairment being evaluated for Alzheimer disease (AD) and other causes of cognitive impairment.

Synonyms:

- AB42
- Altzheimer's
- Amyloid beta

Storage/Transport Temperature:
Frozen

Stability (from collection to initiation):
Frozen (preferred) 30 days
Refrigerated 14 days
Ambient 12 hours

Reported:
8 days

CPT Codes:
83520 x 3

ABL1 Break Apart Rearrangement FISH

BABL1R, ABL1R

ORDERING

Available Stat:
No

Performing Lab:
Cytogenetics

Performed:
Mon - Fri 9 am to 5 pm

Methodology:
FISH

Reported:
7~14 days

Synonyms:

- ABL1 FISH
- 9q34 BA FISH
- BABL1R
- ABL1R

COLLECTION

Sample Type:
Blood, bone marrow aspirate, bone marrow core

Collect:
Blood: Dark Green top Sodium Heparin tube
Bone marrow: Dark Green Top Sodium Heparin tube for Bone Marrow, Sterile container with medium for Bone Core

Amount to Collect:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Room temperature

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

PROCESSING

Test Code:
Blood: BABL1R
Bone marrow: ABL1R

Performing Lab:
Cytogenetics

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Room temperature

ADMINISTRATIVE

CPT Codes:
88271x2, 88275x1

COMPLETE VIEW

Available Stat:
No

Test Code:
Blood: BABL1R
Bone marrow: ABL1R

Performing Lab:
Cytogenetics

Performed:
Mon - Fri 9 am to 5 pm

Methodology:
FISH

Collect:
Blood: Dark Green top Sodium Heparin tube
Bone marrow: Dark Green Top Sodium Heparin tube for Bone Marrow, Sterile container with medium for Bone Core

Amount to Collect:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Sample Type:
Blood, bone marrow aspirate, bone marrow core

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

Synonyms:

- ABL1 FISH
- 9q34 BA FISH
- BABL1R
- ABL1R

Storage/Transport Temperature:
Room temperature

Stability (from collection to initiation):
2 days

Reported:
7~14 days

CPT Codes:
88271x2, 88275x1

ABL2 Break Apart Rearrangement FISH

BABL2R, ABL2R

ORDERING

Available Stat:
No

Performing Lab:
Cytogenetics

Performed:
Mon-Fri 9 am to 5 pm

Methodology:
FISH

Reported:
7-14 days

Synonyms:

- BABL2R
- ABL2R
- ABL2 1q25 BA FISH

COLLECTION

Sample Type:
Blood, bone marrow aspirate, bone marrow core

Collect:
Blood: Dark Green Top Sodium Heparin tube for Blood
Bone marrow: Dark Green Top Sodium Heparin tube for Bone Marrow, Sterile container with medium for Bone Core

Amount to Collect:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Room Temperature

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen

PROCESSING

Test Code:
Blood: BABL2R
Bone marrow ABL2R

Performing Lab:
Cytogenetics

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Room Temperature

ADMINISTRATIVE

CPT Codes:
88271x2, 88275x1

COMPLETE VIEW

Available Stat:
No

Test Code:
Blood: BABL2R
Bone marrow ABL2R

Performing Lab:
Cytogenetics

Performed:
Mon-Fri 9 am to 5 pm

Methodology:
FISH

Collect:
Blood: Dark Green Top Sodium Heparin tube for Blood
Bone marrow: Dark Green Top Sodium Heparin tube for Bone Marrow, Sterile container with medium for Bone Core

Amount to Collect:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Sample Type:
Blood, bone marrow aspirate, bone marrow core

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen

Synonyms:

- BABL2R
- ABL2R
- ABL2 1q25 BA FISH

Storage/Transport Temperature:
Room Temperature

Stability (from collection to initiation):
2 days

Reported:
7-14 days

CPT Codes:
88271x2, 88275x1

ABO and Rh Typing Panel

ABRH

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay and MtZ Blood Banks

Performed:
Test available 24 hours per day 7 days per week

Reported:
STAT 1 hour, ASAP 2 hours Routine 4 hours

Additional Information:
When and if following bone marrow or liver transplantation there is disagreement between the results of ABO or Rh results based on testing of RBCs ("forward" testing) and results based on testing of plasma ("reverse" testing), the discrepancy will be reported.

Reflex Testing:
Cord blood: If baby and mother are both Rh Negative on initial testing, weak D testing will be automatically performed on the cord sample and charged for.

Synonyms:

- Blood grouping
- Blood typing
- Rh typing
- cord blood tests

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top (6 mL size preferred)

Amount to Collect:
6 mL blood

Preferred Volume:
6 mL blood

Minimum Volume:
3 mL blood

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Unacceptable Conditions:
Unsigned, mislabeled, unlabeled or hemolyzed sample.

PROCESSING

Test Code:
ABRH

Test Group:
ABO / Rh

Performing Lab:
Parnassus, Mission Bay and MtZ Blood Banks

Specimen Preparation:
Maintain samples at room temperature and provide to Blood Bank asap.

Preferred Volume:
6 mL blood

Minimum Volume:
3 mL blood

Unacceptable Conditions:
Unsigned, mislabeled, unlabeled or hemolyzed sample.

RESULT INTERPRETATION

Additional Information:
When and if following bone marrow or liver transplantation there is disagreement between the results of ABO or Rh results based on testing of RBCs ("forward" testing) and results based on testing of plasma ("reverse" testing), the discrepancy will be reported.

ADMINISTRATIVE

CPT Codes:
86900,86901

LOINC Codes:
34530-6

COMPLETE VIEW

Available Stat:
Yes

Test Code:
ABRH

Test Group:
ABO / Rh

Performing Lab:
Parnassus, Mission Bay and MtZ Blood Banks

Performed:
Test available 24 hours per day 7 days per week

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Collect:
Lavender top (6 mL size preferred)

Amount to Collect:
6 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
6 mL blood

Minimum Volume:
3 mL blood

Unacceptable Conditions:
Unsigned, mislabeled, unlabeled or hemolyzed sample.

Specimen Preparation:
Maintain samples at room temperature and provide to Blood Bank asap.

Synonyms:

- Blood grouping
- Blood typing
- Rh typing
- cord blood tests

Reported:
STAT 1 hour, ASAP 2 hours Routine 4 hours

Reflex Testing:
Cord blood: If baby and mother are both Rh Negative on initial testing, weak D testing will be automatically performed on the cord sample and charged for.

Additional Information:
When and if following bone marrow or liver transplantation there is disagreement between the results of ABO or Rh results based on testing of RBCs ("forward" testing) and results based on testing of plasma ("reverse" testing), the discrepancy will be reported.

CPT Codes:
86900,86901

LOINC Codes:
34530-6

ABO only

ABO

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay and MtZ Blood Banks

Performed:
Test available 24 hours per day 7 days per week

Reported:
STAT 1 hour, ASAP 2 hours Routine 4 hours

Additional Information:
When and if following bone marrow or liver transplantation there is disagreement between the results of ABO or Rh results based on testing of RBCs ("forward" testing) and results based on testing of plasma ("reverse" testing), the discrepancy will be reported. Samples must be signed and dated by the person who obtained the sample.

Synonyms:

- Blood grouping
- Blood typing
- cord blood tests

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top (6 mL size preferred)

Amount to Collect:
6 mL blood

Preferred Volume:
6 mL blood

Minimum Volume:
3 mL blood

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Unacceptable Conditions:
Unsigned, mislabeled, unlabeled or hemolyzed sample.

PROCESSING

Test Code:
ABO

Test Group:
ABO / Rh

Performing Lab:
Parnassus, Mission Bay and MtZ Blood Banks

Specimen Preparation:
Maintain samples at room temperature and provide to Blood Bank asap.

Preferred Volume:
6 mL blood

Minimum Volume:
3 mL blood

Unacceptable Conditions:
Unsigned, mislabeled, unlabeled or hemolyzed sample.

RESULT INTERPRETATION

Additional Information:
When and if following bone marrow or liver transplantation there is disagreement between the results of ABO or Rh results based on testing of RBCs ("forward" testing) and results based on testing of plasma ("reverse" testing), the discrepancy will be reported. Samples must be signed and dated by the person who obtained the sample.

ADMINISTRATIVE

CPT Codes:
86900

COMPLETE VIEW

Available Stat:
Yes

Test Code:
ABO

Test Group:
ABO / Rh

Performing Lab:
Parnassus, Mission Bay and MtZ Blood Banks

Performed:
Test available 24 hours per day 7 days per week

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Collect:
Lavender top (6 mL size preferred)

Amount to Collect:
6 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
6 mL blood

Minimum Volume:
3 mL blood

Unacceptable Conditions:
Unsigned, mislabeled, unlabeled or hemolyzed sample.

Specimen Preparation:
Maintain samples at room temperature and provide to Blood Bank asap.

Synonyms:

- Blood grouping
- Blood typing
- cord blood tests

Reported:
STAT 1 hour, ASAP 2 hours Routine 4 hours

Additional Information:
When and if following bone marrow or liver transplantation there is disagreement between the results of ABO or Rh results based on testing of RBCs ("forward" testing) and results based on testing of plasma ("reverse" testing), the discrepancy will be reported. Samples must be signed and dated by the person who obtained the sample.

CPT Codes:
86900

Acanthamoeba Culture and smear

P417

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Monday-Friday day shift

Methodology:
Culture, and exam of smear by microscopy

Reported:
Culture: 7-10 days, Smear: 1-3 days

Reflex Testing:
A culture for Acanthamoeba will be performed on all specimen types.

An additional charge is billed for the smear.

For ophthalmology specimens, a smear is stained and examined when a slide is received, and when contact lens solution or contact lens case with fluid or lens is received.

Synonyms:

- Acanthamoeba, Naegleria, Balamuthia, Amoeba

COLLECTION

Sample Type:
Corneal scraping/biopsy
Contact lens solution
Contact lens case with fluid or lens
CSF
Brain tissue
Skin abscess

Collect:
Corneal scraping/biopsy: Non-nutrient agar plate
Contact lens solution: Sterile container
Contact lens case with solution or lens
CSF/Tissue: CSF tube or sterile collection tube

Amount to Collect:
Contact lens solution: 0.5 mL
CSF: 5 mL
Tissue: approximately 6 mm

Preferred Volume:
Contact lens solution: 0.5 mL
CSF: 5 mL
Tissue: approximately 6 mm

Minimum Volume:
Contact lens solution: 0.5 mL
CSF: 2 mL
Tissue: 3 mL

Remarks:
Transport specimens to Microbiology as soon as possible.

Corneal scrapings or biopsy: Place specimen directly onto the center of a non-nutrient agar plate. Label the plates at the edge so as not to interfere with microscopic analysis. Tape the plate closed and transport in a sealed specimen bag. If a stain is requested, submit a slide with a centered dime-sized smear, frosted side face up, labeled, and in a slide transport container.

Contact lens solution: Submit in original container or sterile container.

Contact lens case: Submit with fluid or with lenses.

Unacceptable Conditions:
Dry contact lens case without contact lens

PROCESSING

Test Code:
P417

Test Group:
Parasitology

Performing Lab:
Microbiology

Specimen Preparation:
Store samples (including tissues) at room temperature on the parasitology workbench near the microscopes. Notify a parasitology CLS, if present.

Preferred Volume:
Contact lens solution: 0.5 mL
CSF: 5 mL
Tissue: approximately 6 mm

Minimum Volume:
Contact lens solution: 0.5 mL
CSF: 2 mL
Tissue: 3 mL

Unacceptable Conditions:
Dry contact lens case without contact lens

RESULT INTERPRETATION

Reference Interval:
No Acanthamoeba spp. present/isolated
No Parasites Seen

ADMINISTRATIVE

CPT Codes:
Culture: 87081, Smear: 87207

COMPLETE VIEW

Available Stat:
No

Test Code:
P417

Test Group:
Parasitology

Performing Lab:
Microbiology

Performed:
Monday-Friday day shift

Methodology:
Culture, and exam of smear by microscopy

Remarks:
Transport specimens to Microbiology as soon as possible.

Corneal scrapings or biopsy: Place specimen directly onto the center of a non-nutrient agar plate. Label the plates at the edge so as not to interfere with microscopic analysis. Tape the plate closed and transport in a sealed specimen bag. If a stain is requested, submit a slide with a centered dime-sized smear, frosted side face up, labeled, and in a slide transport container.

Contact lens solution: Submit in original container or sterile container.

Contact lens case: Submit with fluid or with lenses.

Collect:
Corneal scraping/biopsy: Non-nutrient agar plate
Contact lens solution: Sterile container
Contact lens case with solution or lens
CSF/Tissue: CSF tube or sterile collection tube

Amount to Collect:
Contact lens solution: 0.5 mL
CSF: 5 mL
Tissue: approximately 6 mm

Sample Type:
Corneal scraping/biopsy
Contact lens solution
Contact lens case with fluid or lens
CSF
Brain tissue
Skin abscess

Preferred Volume:
Contact lens solution: 0.5 mL
CSF: 5 mL
Tissue: approximately 6 mm

Minimum Volume:
Contact lens solution: 0.5 mL
CSF: 2 mL
Tissue: 3 mL

Unacceptable Conditions:
Dry contact lens case without contact lens

Specimen Preparation:
Store samples (including tissues) at room temperature on the parasitology workbench near the microscopes. Notify a parasitology CLS, if present.

Reference Interval:
No Acanthamoeba spp. present/isolated
No Parasites Seen

Synonyms:

- Acanthamoeba, Naegleria, Balamuthia, Amoeba

Reported:
Culture: 7-10 days, Smear: 1-3 days

Reflex Testing:
A culture for Acanthamoeba will be performed on all specimen types.

An additional charge is billed for the smear.

For ophthalmology specimens, a smear is stained and examined when a slide is received, and when contact lens solution or contact lens case with fluid or lens is received.

CPT Codes:
Culture: 87081, Smear: 87207

Acetaminophen

AAPH

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
24-hours per day, 7-days per week

Methodology:

Enzymatic/Colorimetric on Abbott Architect c8000

Reported:
STAT 1 hour, Routine 1-3 days

Additional Information:
In suspected intoxication, at least 4 hours must have elapsed post-ingestion before a serum level can assist in determining the need to initiate N-acetylcysteine therapy; earlier levels are uninterpretable for this purpose. For additional emergency information, you may call the San Francisco regional poison center, 1-800-876-4766 (from UCSF dial 47-28600)

Note: Some monoclonal proteins may cause falsely low acetaminophen results. Testing for acetaminophen levels in parallel dilution studies and with a different assay may be useful in cases where interference by a monoclonal protein or abnormal immunoglobulin is suspected.

Synonyms:

- Tylenol
- Datril
- Paracetamol

COLLECTION

Sample Type:
Serum

Collect:
Preferred tube type: Gold top (SST)
Acceptable tube type: Light Green top (lithium heparin) or Red top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Stability (from collection to initiation):
Room Temperature (20-25°C): 24 hours
Refrigerated (2-8°C): 24 days
Frozen (-20°C or colder): 50 days

PROCESSING

Test Code:
AAPH

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Stability (from collection to initiation):
Room Temperature (20-25°C): 24 hours
Refrigerated (2-8°C): 24 days
Frozen (-20°C or colder): 50 days

RESULT INTERPRETATION

Units:
mg/L

Reference Interval:
Therapeutic: 10-20 mg/L
Toxic: > 150 mg/L (4 hours post ingestion)

Critical Values:
> 50 mg/L

Additional Information:
In suspected intoxication, at least 4 hours must have elapsed post-ingestion before a serum level can assist in determining the need to initiate N-acetylcysteine therapy; earlier levels are uninterpretable for this purpose. For additional emergency information, you may call the San Francisco regional poison center, 1-800-876-4766 (from UCSF dial 47-28600)

Note: Some monoclonal proteins may cause falsely low acetaminophen results. Testing for acetaminophen levels in parallel dilution studies and with a different assay may be useful in cases where interference by a monoclonal protein or abnormal immunoglobulin is suspected.

ADMINISTRATIVE

CPT Codes:
80143

LOINC Codes:
3298-7

COMPLETE VIEW

Available Stat:
Yes

Test Code:
AAPH

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
24-hours per day, 7-days per week

Methodology:

Enzymatic/Colorimetric on Abbott Architect c8000

Collect:
Preferred tube type: Gold top (SST)
Acceptable tube type: Light Green top (lithium heparin) or Red top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Units:
mg/L

Reference Interval:
Therapeutic: 10-20 mg/L
Toxic: > 150 mg/L (4 hours post ingestion)

Critical Values:
> 50 mg/L

Synonyms:

- Tylenol
- Datril
- Paracetamol

Stability (from collection to initiation):

Room Temperature (20-25°C): 24 hours
Refrigerated (2-8°C): 24 days
Frozen (-20°C or colder): 50 days

Reported:

STAT 1 hour, Routine 1-3 days

Additional Information:

In suspected intoxication, at least 4 hours must have elapsed post-ingestion before a serum level can assist in determining the need to initiate N-acetylcysteine therapy; earlier levels are uninterpretable for this purpose. For additional emergency information, you may call the San Francisco regional poison center, 1-800-876-4766 (from UCSF dial 47-28600)

Note: Some monoclonal proteins may cause falsely low acetaminophen results. Testing for acetaminophen levels in parallel dilution studies and with a different assay may be useful in cases where interference by a monoclonal protein or abnormal immunoglobulin is suspected.

CPT Codes:

80143

LOINC Codes:

3298-7

Acetylcholine Receptor Binding Antibody

ACRA

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Radiobinding assay

Reported:
Test performed Monday-Friday. Turnaround time: 2-5 days.

Synonyms:

- Myasthenia gravis

COLLECTION

Sample Type:
Serum

Collect:
Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Stability (from collection to initiation):
Room temperature 2 weeks, refrigerated 2 weeks, frozen at -20C 1 year.

Unacceptable Conditions:
Hemolysis, lipemia

Rejection Criteria:
Hemolysis, lipemia

PROCESSING

Test Code:
ACRA

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate Serum. Order Quest #110346P

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Unacceptable Conditions:
Hemolysis, lipemia

Rejection Criteria:
Hemolysis, lipemia

Stability (from collection to initiation):
Room temperature 2 weeks, refrigerated 2 weeks, frozen at -20C 1 year.

RESULT INTERPRETATION

Units:
nmol/L

Reference Interval:
Negative: <= 0.30 nmol/L
Equivocal: 0.31-0.49 nmol/L
Positive: >= 0.50 nmol/L

ADMINISTRATIVE

CPT Codes:
86041

LOINC Codes:
11034-6

COMPLETE VIEW

Available Stat:
No

Test Code:
ACRA

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Radiobinding assay

Collect:
Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Rejection Criteria:
Hemolysis, lipemia

Unacceptable Conditions:
Hemolysis, lipemia

Specimen Preparation:
Refrigerate Serum. Order Quest #110346P

Units:
nmol/L

Reference Interval:
Negative: <= 0.30 nmol/L
Equivocal: 0.31-0.49 nmol/L
Positive: >= 0.50 nmol/L

Synonyms:

- Myasthenia gravis

Stability (from collection to initiation):
Room temperature 2 weeks, refrigerated 2 weeks, frozen at -20C 1 year.

Reported:
Test performed Monday-Friday. Turnaround time: 2-5 days.

CPT Codes:
86041

LOINC Codes:
11034-6

Acetylcholine Receptor Blocking Antibody

ACRB

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Radioimmunoassay

Reported:
4-7 days

Additional Information:
Myasthenia Gravis (MG) is an autoimmune neuromuscular disorder characterized by muscle weakness, most commonly due to autoantibody-mediated loss of functional acetylcholine receptors (AChR) in the neuromuscular junction. AChR binding autoantibodies are diagnostic of MG, and are found in 85-90% of MG patients. AChR blocking autoantibodies prevent inter-action of binding antibodies with the AChR. Fewer than 1% of patients have blocking antibodies without binding antibodies. Blocking antibodies are present in about 50% of patients with MG, but rare in other conditions. Therefore, blocking antibodies have utility in ruling out a possible false positive binding assay and detecting the rare patient without AChR binding antibodies.

Synonyms:

- Myasthenia Gravis

COLLECTION

Sample Type:
Serum

Collect:
Gold or red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature: 14 days
Refrigerated: 14 days
Frozen: 30 days

Rejection Criteria:
Gross Hemolysis, Grossly lipemic, Microbially contaminated

PROCESSING

Test Code:
ACRB

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot and freeze sample. Transport to CB frozen. Order Quest test code 34459.

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Rejection Criteria:
Gross Hemolysis, Grossly lipemic, Microbially contaminated

Stability (from collection to initiation):
Room temperature: 14 days
Refrigerated: 14 days
Frozen: 30 days

RESULT INTERPRETATION

Units:
% of inhibition

Reference Interval:
< 15%

Additional Information:
Myasthenia Gravis (MG) is an autoimmune neuromuscular disorder characterized by muscle weakness, most commonly due to autoantibody-mediated loss of functional acetylcholine receptors (AChR) in the neuromuscular junction. AChR binding autoantibodies are diagnostic of MG, and are found in 85-90% of MG patients. AChR blocking autoantibodies prevent inter-action of binding antibodies with the AChR. Fewer than 1% of patients have blocking antibodies without binding antibodies. Blocking antibodies are present in about 50% of patients with MG, but rare in other conditions. Therefore, blocking antibodies have utility in ruling out a possible false positive binding assay and detecting the rare patient without AChR binding antibodies.

ADMINISTRATIVE

CPT Codes:
86042

LOINC Codes:
11561-8

COMPLETE VIEW

Available Stat:
No

Test Code:
ACRB

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Radioimmunoassay

Collect:
Gold or red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Rejection Criteria:
Gross Hemolysis, Grossly lipemic, Microbially contaminated

Specimen Preparation:
Aliquot and freeze sample. Transport to CB frozen. Order Quest test code 34459.

Units:
% of inhibition

Reference Interval:
< 15%

Synonyms:

- Myasthenia Gravis

Stability (from collection to initiation):
Room temperature: 14 days
Refrigerated: 14 days
Frozen: 30 days

Reported:
4-7 days

Additional Information:

Myasthenia Gravis (MG) is an autoimmune neuromuscular disorder characterized by muscle weakness, most commonly due to autoantibody-mediated loss of functional acetylcholine receptors (AChR) in the neuromuscular junction. AChR binding autoantibodies are diagnostic of MG, and are found in 85-90% of MG patients. AChR blocking autoantibodies prevent inter-action of binding antibodies with the AChR. Fewer than 1% of patients have blocking antibodies without binding antibodies. Blocking antibodies are present in about 50% of patients with MG, but rare in other conditions. Therefore, blocking antibodies have utility in ruling out a possible false positive binding assay and detecting the rare patient without AChR binding antibodies.

CPT Codes:

86042

LOINC Codes:

11561-8

Acetylcholine Receptor Modulating Antibody

ACRM

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Radiobinding Assay

Reported:
4-7 days

Additional Information:
Myasthenia Gravis (MG) is an autoimmune neuromuscular disorder characterized by muscle weakness, most commonly due to autoantibody-mediated loss of functional acetylcholine receptors (AChR) in the neuromuscular junction. AChR binding autoantibodies are diagnostic of MG, and are found in 85-90% of MG patients. AChR modulating antibodies cross-link AChR molecules on cell surface, promoting internalization, and decreasing AChR surface density. The AChR binding and modulating antibody assays have similar sensitivities, but performing them together increases sensitivity of antibody detection by approximately 5%.

COLLECTION

Sample Type:
Serum

Collect:
Gold or red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature: 14 days
Refrigerated: 14 days
Frozen: 30 days

Rejection Criteria:
Gross hemolysis, Grossly lipemic, Microbially contaminated

PROCESSING

Test Code:
ACRM

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot and freeze sample. Transport to CB frozen. Order Quest test code 26474.

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Rejection Criteria:
Gross hemolysis, Grossly lipemic, Microbially contaminated

Stability (from collection to initiation):
Room temperature: 14 days
Refrigerated: 14 days
Frozen: 30 days

RESULT INTERPRETATION

Units:
% binding inhibition

Reference Interval:
< 32%

Additional Information:
Myasthenia Gravis (MG) is an autoimmune neuromuscular disorder characterized by muscle weakness, most commonly due to autoantibody-mediated loss of functional acetylcholine receptors (AChR) in the neuromuscular junction. AChR binding autoantibodies are diagnostic of MG, and are found in 85-90% of MG patients. AChR modulating antibodies cross-link AChR molecules on cell surface, promoting internalization, and decreasing AChR surface density. The AChR binding and modulating antibody assays have similar sensitivities, but performing them together increases sensitivity of antibody detection by approximately 5%.

ADMINISTRATIVE

CPT Codes:
86043

LOINC Codes:
11562-6

COMPLETE VIEW

Available Stat:
No

Test Code:
ACRM

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Radiobinding Assay

Collect:
Gold or red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Rejection Criteria:
Gross hemolysis, Grossly lipemic, Microbially contaminated

Specimen Preparation:
Aliquot and freeze sample. Transport to CB frozen. Order Quest test code 26474.

Units:
% binding inhibition

Reference Interval:
< 32%

Stability (from collection to initiation):
Room temperature: 14 days
Refrigerated: 14 days
Frozen: 30 days

Reported:
4-7 days

Additional Information:
Myasthenia Gravis (MG) is an autoimmune neuromuscular disorder characterized by muscle weakness, most commonly due to autoantibody-mediated loss of functional acetylcholine receptors (AChR) in the neuromuscular junction. AChR binding autoantibodies are diagnostic of MG, and are found in 85-90% of MG patients. AChR modulating antibodies cross-link AChR molecules on cell surface, promoting internalization, and decreasing AChR surface density. The AChR binding and modulating antibody assays have similar sensitivities, but performing them together increases sensitivity of antibody detection by approximately 5%.

CPT Codes:
86043

LOINC Codes:
11562-6

Acid Phosphatase, Total, Serum

ACPT

ORDERING

Ordering Recommendations:
Total acid phosphatase (AP) activity may be useful when evaluating for prostate cancer, Paget's disease, hyperparathyroidism with skeletal involvement, and Gaucher's disease since elevations in AP activity occur in these conditions.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative Enzymatic Assay

Reported:
1-2 days

COLLECTION

Collect:
Plain red.

Stability (from collection to initiation):
After separation from cells: Ambient: Unacceptable; Refrigerated: Unacceptable; Frozen: 1 month

Storage/Transport Temperature:
CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

Unacceptable Conditions:
Plasma. Non-frozen specimens. Hemolyzed specimens.

PROCESSING

Test Code:
ACPT

ARUP Test Code:
0020544

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Allow specimen to clot completely at room temperature. Transfer 1.5 mL serum to an ARUP Standard Transport Tube. (Min: 0.5 mL)

Unacceptable Conditions:
Plasma. Non-frozen specimens. Hemolyzed specimens.

Stability (from collection to initiation):
After separation from cells: Ambient: Unacceptable; Refrigerated: Unacceptable; Frozen: 1 month

Storage/Transport Temperature:
CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

RESULT INTERPRETATION

Reference Interval:
0.0-4.3 U/L

ADMINISTRATIVE

CPT Codes:
84060

LOINC:

- 12173-1

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Total acid phosphatase (AP) activity may be useful when evaluating for prostate cancer, Paget's disease, hyperparathyroidism with skeletal involvement, and Gaucher's disease since elevations in AP activity occur in these conditions.

Test Code:
ACPT

ARUP Test Code:
0020544

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative Enzymatic Assay

Collect:
Plain red.

Unacceptable Conditions:
Plasma. Non-frozen specimens. Hemolyzed specimens.

Specimen Preparation:
Allow specimen to clot completely at room temperature. Transfer 1.5 mL serum to an ARUP Standard Transport Tube. (Min: 0.5 mL)

Reference Interval:
0.0-4.3 U/L

Storage/Transport Temperature:
CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

Stability (from collection to initiation):
After separation from cells: Ambient: Unacceptable; Refrigerated: Unacceptable; Frozen: 1 month

Reported:
1-2 days

CPT Codes:
84060

LOINC:

- 12173-1

Activated Partial Thromboplastin Time

PTT

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Hematology: 24-hours per day, 7-days per week
Berkeley Outpatient Center: Test available Mon-Fri (0800-1630)

Methodology:
Mechanical clot detection

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
Current reagents permit the reporting of results up to 100 seconds; if no clot is detected by that time the result will be reported as > 100 seconds.

Per in-house study done 1/2023, the sensitivity of the PTT for detecting factor deficiencies is as follows:
Factor VIII level may prolong the PTT when < 39%
Factor IX level may prolong the PTT when < 21%
Factor XI level may prolong the PTT when < 31%

Therapeutic anticoagulation with unfractionated heparin is generally monitored with the PTT. Direct oral anticoagulant medications (non-vitamin K) should not be monitored with PT/INR or aPTT because the effect of these tests is not predictable. Recommendations for monitoring anticoagulant medications are available through the UCSF Hematology consultation services: for adults, pager 443-4276, for pediatrics pager 443-6966.

Patients with lupus anticoagulants being treated with unfractionated heparin are usually monitored with anti-Xa (heparin level), rather than with the PTT. Therapeutic anticoagulation with intravenous direct thrombin inhibitors (i.e. argatroban, bivalirudin) is generally monitored with the PTT. Recommendations for therapy and monitoring are available through the Hematology Consultation services.

For patients not being treated with heparin for whom a sample may be contaminated with heparin, a heparin-neutralizing enzyme can be employed to overcome the effect of up to 2U/mL of unfractionated heparin/mL. Heparin neutralization is not available at Parnassus or Mt. Zion. At Mission Bay, performance of an aPTT after heparin neutralization may rarely be necessary for care of pediatric patients, and is subject to approval by laboratory medicine resident or faculty. In these rare circumstances, heparin neutralization may detect a substantial unexpected coagulopathy when a sample is drawn through a heparinized line. Of note, heparin neutralization reduces coagulation factor levels (typically by approximately 10%, but up to a 30% decrease can occur; internal UCSF study, Jan & Apr 2013). Therefore, heparin neutralization should not be used to detect slight abnormalities of coagulation, small changes in clotting times, or when monitoring anticoagulation.

Synonyms:

- PTT
- aPTT
- Monitoring Anticoagulation
- Monitoring heparin

COLLECTION

Sample Type:
Citrated plasma

Collect:
Blue (2.7 mL) or Lt. Blue (1.8 mL) top filled to full extent of vacuum

Amount to Collect:
Blue top: 2.7 mL blood
Lt. Blue top: 1.8 mL blood

Note: If Hepzyme is required draw a full Blue top (2.7 mL) (available at Mission Bay only)

Preferred Volume:
1.5 mL plasma

Minimum Volume:
1 mL plasma

Remarks:

1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

For patients with Hct's >= 55% please contact Hematology (For Parnassus patients call 3-1747, for Mission Bay patients call 6-0194) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Stability (from collection to initiation):

If the patient is not on heparin, unopened, uncentrifuged specimens are stable for up to 4 hours at room or refrigerator temperature. If the patient is on un-fractionated heparin, the plasma should be separated within one hour and tested within four hours of collection. Plasma may be frozen at -20C if PTT testing must be delayed, but results may be slightly affected.

Unacceptable Conditions:

Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

PROCESSING

Test Code:

PTT

Performing Lab:

Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center

Preferred Volume:

1.5 mL plasma

Minimum Volume:

1 mL plasma

Unacceptable Conditions:

Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Stability (from collection to initiation):

If the patient is not on heparin, unopened, uncentrifuged specimens are stable for up to 4 hours at room or refrigerator temperature. If the patient is on un-fractionated heparin, the plasma should be separated within one hour and tested within four hours of collection. Plasma may be frozen at -20C if PTT testing must be delayed, but results may be slightly affected.

RESULT INTERPRETATION

Units:

seconds

Reference Interval:

Age	Normal range
Full term infant, 0-5 day old	25.0-60.0 seconds
Full term infant, 6 days-3 months	24.0-50.0 seconds
>3 months	21.6 - 30.8 seconds

An infant reference range has not been experimentally determined using our current PTT reagent. The PTTs of normal infants are longer than those of adults due to lower factor levels in the first months of life; the infant reference ranges provided (5 days, 3 months) are based on published literature (Ref: Andrew M et al. Blood 1987; 70-165). This publication further indicates that although trending longer, PTT values at 3 months may not differ statistically from adult values. If there is concern for clotting factor deficiency or inhibitor in an infant, factor activity assays should be requested if clinically indicated.

Critical Values:

>= 60 seconds if new finding within previous 24 hours. >= 80 seconds are always phoned

Additional Information:

Current reagents permit the reporting of results up to 100 seconds; if no clot is detected by that time the result will be reported as > 100 seconds.

Per in-house study done 1/2023, the sensitivity of the PTT for detecting factor deficiencies is as follows:
Factor VIII level may prolong the PTT when < 39%
Factor IX level may prolong the PTT when < 21%
Factor XI level may prolong the PTT when < 31%

Therapeutic anticoagulation with unfractionated heparin is generally monitored with the PTT. Direct oral anticoagulant medications (non-vitamin K) should not be monitored with PT/INR or aPTT because the effect of these tests is not predictable. Recommendations for monitoring anticoagulant medications are available through the UCSF Hematology consultation services: for adults, pager 443-4276, for pediatrics pager 443-6966.

Patients with lupus anticoagulants being treated with unfractionated heparin are usually monitored with anti-Xa (heparin level), rather than with the PTT. Therapeutic anticoagulation with intravenous direct thrombin inhibitors (i.e. argatroban, bivalirudin) is generally monitored with the PTT. Recommendations for therapy and monitoring are available through the Hematology Consultation services.

For patients not being treated with heparin for whom a sample may be contaminated with heparin, a heparin-neutralizing enzyme can be employed to overcome the effect of up to 2U/mL of unfractionated heparin/mL. Heparin neutralization is not available at Parnassus or Mt. Zion. At Mission Bay, performance of an aPTT after heparin neutralization may rarely be necessary for care of pediatric patients, and is subject to approval by laboratory medicine resident or faculty. In these rare circumstances, heparin neutralization may detect a substantial unexpected coagulopathy when a sample is drawn through a heparinized line. Of note, heparin neutralization reduces coagulation factor levels (typically by approximately 10%, but up to a 30% decrease can occur; internal UCSF study, Jan & Apr 2013). Therefore, heparin neutralization should not be used to detect slight abnormalities of coagulation, small changes in clotting times, or when monitoring anticoagulation.

ADMINISTRATIVE

CPT Codes:
85730

LDT or Modified FDA:
Yes

LOINC Codes:
3173-2

COMPLETE VIEW

Available Stat:
Yes

Test Code:
PTT

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Hematology: 24-hours per day, 7-days per week
Berkeley Outpatient Center: Test available Mon-Fri (0800-1630)

Methodology:
Mechanical clot detection

Remarks:

1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

For patients with Hct's >= 55% please contact Hematology (For Parnassus patients call 3-1747, for Mission Bay patients call 6-0194) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Collect:
Blue (2.7 mL) or Lt. Blue (1.8 mL) top filled to full extent of vacuum

Amount to Collect:
Blue top: 2.7 mL blood
Lt. Blue top: 1.8 mL blood

Note: If Hepzyme is required draw a full Blue top (2.7 mL) (available at Mission Bay only)

Sample Type:
Citrated plasma

Preferred Volume:
1.5 mL plasma

Minimum Volume:
1 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Units:
seconds

Reference Interval:

Age	Normal range
Full term infant, 0-5 day old	25.0-60.0 seconds
Full term infant, 6 days-3 months	24.0-50.0 seconds
>3 months	21.6 - 30.8 seconds

An infant reference range has not been experimentally determined using our current PTT reagent. The PTTs of normal infants are longer than those of adults due to lower factor levels in the first months of life; the infant reference ranges provided (5 days, 3 months) are based on published literature (Ref: Andrew M et al. Blood 1987; 70-165). This publication further indicates that although trending longer, PTT values at 3 months may not differ statistically from adult values. If there is concern for clotting factor deficiency or inhibitor in an infant, factor activity assays should be requested if clinically indicated.

Critical Values:
>= 60 seconds if new finding within previous 24 hours. >= 80 seconds are always phoned

Synonyms:

- PTT
- aPTT
- Monitoring Anticoagulation
- Monitoring heparin

Stability (from collection to initiation):
If the patient is not on heparin, unopened, uncentrifuged specimens are stable for up to 4 hours at room or refrigerator temperature. If the patient is on un-fractionated heparin, the plasma should be separated within one hour and tested within four hours of collection. Plasma may be frozen at -20C if PTT testing must be delayed, but results may be slightly affected.

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
Current reagents permit the reporting of results up to 100 seconds; if no clot is detected by that time the result will be reported as > 100 seconds.

Per in-house study done 1/2023, the sensitivity of the PTT for detecting factor deficiencies is as follows:
Factor VIII level may prolong the PTT when < 39%
Factor IX level may prolong the PTT when < 21%
Factor XI level may prolong the PTT when < 31%

Therapeutic anticoagulation with unfractionated heparin is generally monitored with the PTT. Direct oral anticoagulant medications (non-vitamin K) should not be monitored with PT/INR or aPTT because the effect of these tests is not predictable. Recommendations for monitoring anticoagulant medications are available through the UCSF Hematology consultation services: for adults, pager 443-4276, for pediatrics pager 443-6966.

Patients with lupus anticoagulants being treated with unfractionated heparin are usually monitored with anti-Xa (heparin level), rather than with the PTT. Therapeutic anticoagulation with intravenous direct thrombin inhibitors (i.e. argatroban, bivalirudin) is generally monitored with the PTT. Recommendations for therapy and monitoring are available through the Hematology Consultation services.

For patients not being treated with heparin for whom a sample may be contaminated with heparin, a heparin-neutralizing enzyme can be employed to overcome the effect of up to 2U/mL of unfractionated heparin/mL. Heparin neutralization is not available at Parnassus or Mt. Zion. At Mission Bay, performance of an aPTT after heparin neutralization may rarely be necessary for care of pediatric patients, and is subject to approval by laboratory medicine resident or faculty. In these rare circumstances, heparin neutralization may detect a substantial unexpected coagulopathy when a sample is drawn through a heparinized line. Of note, heparin neutralization reduces coagulation factor levels (typically by approximately 10%, but up to a 30% decrease can occur; internal UCSF study, Jan & Apr 2013). Therefore, heparin neutralization should not be used to detect slight abnormalities of coagulation, small changes in clotting times, or when monitoring anticoagulation.

CPT Codes:
85730

LDT or Modified FDA:
Yes

LOINC Codes:
3173-2

Acute Lymphoblastic Leukemia FISH Panel

CYALL, BCYALL

ORDERING

Performing Lab:
Cytogenetics

Performed:
Monday-Friday 9:00am-5:00pm

Methodology:
FISH

Reported:
7-14 days

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Synonyms:

- CYALL
- BCYALL

COLLECTION

Sample Type:
Blood, bone marrow aspirate, bone marrow core

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Stability (from collection to initiation):
2 days at room temperature

Storage/Transport Temperature:
Room temperature

Unacceptable Conditions:
Clotted samples. Samples greater than 2 days at room temperatureles or received refrigerated or frozen.

PROCESSING

Performing Lab:
Cytogenetics

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Clotted samples. Samples greater than 2 days at room temperatureles or received refrigerated or frozen.

Stability (from collection to initiation):
2 days at room temperature

Storage/Transport Temperature:
Room temperature

ADMINISTRATIVE

CPT Codes:
88271x14, 88275x9

COMPLETE VIEW

Performing Lab:
Cytogenetics

Performed:
Monday-Friday 9:00am-5:00pm

Methodology:
FISH

Sample Type:
Blood, bone marrow aspirate, bone marrow core

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Clotted samples. Samples greater than 2 days at room temperatureles or received refrigerated or frozen.

Synonyms:

- CYALL
- BCYALL

Storage/Transport Temperature:
Room temperature

Stability (from collection to initiation):
2 days at room temperature

Reported:
7-14 days

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

CPT Codes:
88271x14, 88275x9

Acute Lymphoblastic leukemia FISH panel #1

CYALL1

ORDERING

Available Stat:
No

Performing Lab:
Molecular Genetics - Cytogenetics

Performed:
Monday - Friday 0900-1700

Methodology:
FISH

Reported:
1-2 weeks

Synonyms:

- B ALL FISH Panel 1

COLLECTION

Sample Type:
Heparinized whole blood or bone marrow aspirate, Bone marrow core biopsy

Collect:
Blood or Bone marrow aspirate: Dark green top
Bone marrow core: Screw top polypropylene tube with transport media

Amount to Collect:
Blood: 2 mL
Bone marrow: 2 mL
Bone marrow biopsy: 2 cm core

Preferred Volume:
Blood: 2 mL
Bone marrow: 2 mL
Bone marrow biopsy: 2 cm core

Minimum Volume:
Blood: 1 mL
Bone marrow: 1 mL
Bone marrow biopsy: 1 cm core

Remarks:
Mix blood and marrow aspirate well with anticoagulant. Keep all samples at room temperature.

Stability (from collection to initiation):
Room temperature 2 days

Unacceptable Conditions:
Clotted samples. Samples received unlabeled, refrigerated or frozen.

PROCESSING

Test Code:
CYALL1

Performing Lab:
Molecular Genetics - Cytogenetics

Specimen Preparation:
Do not centrifuge, refrigerate or freeze samples.

Transport to China Basin Cytogenetics asap.

Preferred Volume:
Blood: 2 mL
Bone marrow: 2 mL
Bone marrow biopsy: 2 cm core

Minimum Volume:
Blood: 1 mL
Bone marrow: 1 mL
Bone marrow biopsy: 1 cm core

Unacceptable Conditions:
Clotted samples. Samples received unlabeled, refrigerated or frozen.

Stability (from collection to initiation):
Room temperature 2 days

ADMINISTRATIVE

CPT Codes:
88271 x2, 88275 x6

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
CYALL1

Performing Lab:
Molecular Genetics - Cytogenetics

Performed:
Monday - Friday 0900-1700

Methodology:
FISH

Remarks:
Mix blood and marrow aspirate well with anticoagulant. Keep all samples at room temperature.

Collect:
Blood or Bone marrow aspirate: Dark green top
Bone marrow core: Screw top polypropylene tube with transport media

Amount to Collect:
Blood: 2 mL
Bone marrow: 2 mL
Bone marrow biopsy: 2 cm core

Sample Type:
Heparinized whole blood or bone marrow aspirate, Bone marrow core biopsy

Preferred Volume:
Blood: 2 mL
Bone marrow: 2 mL
Bone marrow biopsy: 2 cm core

Minimum Volume:
Blood: 1 mL
Bone marrow: 1 mL
Bone marrow biopsy: 1 cm core

Unacceptable Conditions:
Clotted samples. Samples received unlabeled, refrigerated or frozen.

Specimen Preparation:
Do not centrifuge, refrigerate or freeze samples.

Transport to China Basin Cytogenetics asap.

Synonyms:

- B ALL FISH Panel 1

Stability (from collection to initiation):
Room temperature 2 days

Reported:
1-2 weeks

CPT Codes:
88271 x2, 88275 x6

LDT or Modified FDA:
Yes

Acute Lymphoblastic leukemia FISH panel #2

CYALL2

ORDERING

Available Stat:
No

Performing Lab:
Molecular Genetics - Cytogenetics

Performed:
Monday - Friday 0900-1700

Methodology:
FISH

Reported:
1-2 weeks

Synonyms:

- B ALL FISH Panel 2

COLLECTION

Sample Type:
Heparinized whole blood or bone marrow aspirate, Bone marrow core biopsy

Collect:
Blood or Bone marrow aspirate: Dark green top
Bone marrow core: Screw top polypropylene tube with transport media

Amount to Collect:
Blood: 2 mL
Bone marrow: 2 mL
Bone marrow biopsy: 2 cm core

Preferred Volume:
Blood: 2 mL
Bone marrow: 2 mL
Bone marrow biopsy: 2 cm core

Minimum Volume:
Blood: 1 mL
Bone marrow: 1 mL
Bone marrow biopsy: 1 cm core

Remarks:
Mix blood and marrow aspirate well with anticoagulant.

Keep all samples at room temperature.

Stability (from collection to initiation):
Room temperature 2 days

Unacceptable Conditions:
Clotted samples. Samples received unlabeled, refrigerated or frozen.

PROCESSING

Test Code:
CYALL2

Performing Lab:
Molecular Genetics - Cytogenetics

Specimen Preparation:
Do not centrifuge, refrigerate or freeze samples.

Transport to China Basin Cytogenetics asap.

Preferred Volume:
Blood: 2 mL
Bone marrow: 2 mL
Bone marrow biopsy: 2 cm core

Minimum Volume:
Blood: 1 mL
Bone marrow: 1 mL
Bone marrow biopsy: 1 cm core

Unacceptable Conditions:
Clotted samples. Samples received unlabeled, refrigerated or frozen.

Stability (from collection to initiation):
Room temperature 2 days

ADMINISTRATIVE

CPT Codes:
88271 x8, 88275

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
CYALL2

Performing Lab:
Molecular Genetics - Cytogenetics

Performed:
Monday - Friday 0900-1700

Methodology:
FISH

Remarks:
Mix blood and marrow aspirate well with anticoagulant.

Keep all samples at room temperature.

Collect:
Blood or Bone marrow aspirate: Dark green top
Bone marrow core: Screw top polypropylene tube with transport media

Amount to Collect:
Blood: 2 mL
Bone marrow: 2 mL
Bone marrow biopsy: 2 cm core

Sample Type:
Heparinized whole blood or bone marrow aspirate, Bone marrow core biopsy

Preferred Volume:
Blood: 2 mL
Bone marrow: 2 mL
Bone marrow biopsy: 2 cm core

Minimum Volume:
Blood: 1 mL
Bone marrow: 1 mL
Bone marrow biopsy: 1 cm core

Unacceptable Conditions:
Clotted samples. Samples received unlabeled, refrigerated or frozen.

Specimen Preparation:
Do not centrifuge, refrigerate or freeze samples.

Transport to China Basin Cytogenetics asap.

Synonyms:

- B ALL FISH Panel 2

Stability (from collection to initiation):
Room temperature 2 days

Reported:
1-2 weeks

CPT Codes:
88271 x8, 88275

LDT or Modified FDA:
Yes

Acute Myeloid Leukemia FISH Panel

CYAML, BCYAML

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Monday - Friday day shift

Methodology:
Fluorescence in situ Hybridization (FISH)

Reported:
1-2 weeks

Additional Information:
Includes FISH probes for the following markers: Monsomy 5, Deletion 5q, Monosomy 7, Deletion 7q, Trisomy 8, Deletion 20q, Translocation 15:17, Inversion 16q, Translocation 8:21, Deletion 17p, MLL rearrangement

The individual FISH markers are orderable separately

Synonyms:

- AML
- M5D5Q
- M7D7Q
- TRIS8
- DEL20Q
- TR1517
- INV16Q
- TR821
- MLLQ23
- Monsomy 5
- Deletion 5q
- Monosomy 7
- Deletion 7q
- Trisomy 8
- Deletion 20q
- Translocation 15:17
- Inversion 16q
- Translocation 8:21
- CYAML
- BCYAML
- Deletion 17p
- DEL17P
- BD17P

COLLECTION

Sample Type:
Heparinized whole blood, bone marrow aspirate or bone marrow biopsy core

Collect:
Dark green top

Amount to Collect:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Remarks:
Transport samples at room temperature

Stability (from collection to initiation):
Room temperature 2 days

Unacceptable Conditions:
Frozen, cracked or mislabeled containers

PROCESSING

Test Code:
BCYAML: Blood
CYAML: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Specimen Preparation:
Do not centrifuge, store a room temperature. Transport samples to Cytogenetics as soon as possible.

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Frozen, cracked or mislabeled containers

Stability (from collection to initiation):
Room temperature 2 days

RESULT INTERPRETATION

Additional Information:
Includes FISH probes for the following markers: Monsomy 5, Deletion 5q, Monosomy 7, Deletion 7q, Trisomy 8, Deletion 20q, Translocation 15:17, Inversion 16q, Translocation 8:21, Deletion 17p, MLL rearrangement

The individual FISH markers are orderable separately

ADMINISTRATIVE

CPT Codes:
88271 x16, 88275 x9

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BCYAML: Blood
CYAML: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Monday - Friday day shift

Methodology:
Fluorescence in situ Hybridization (FISH)

Remarks:
Transport samples at room temperature

Collect:
Dark green top

Amount to Collect:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Sample Type:
Heparinized whole blood, bone marrow aspirate or bone marrow biopsy core

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Frozen, cracked or mislabeled containers

Specimen Preparation:
Do not centrifuge, store a room temperature. Transport samples to Cytogenetics as soon as possible.

Synonyms:

- AML
- M5D5Q
- M7D7Q
- TRIS8
- DEL20Q
- TR1517
- INV16Q
- TR821
- MLLQ23
- Monsomy 5
- Deletion 5q
- Monosomy 7
- Deletion 7q
- Trisomy 8
- Deletion 20q
- Translocation 15:17
- Inversion 16q
- Translocation 8:21
- CYAML
- BCYAML
- Deletion 17p
- DEL17P
- BD17P

Stability (from collection to initiation):
Room temperature 2 days

Reported:
1-2 weeks

Additional Information:
Includes FISH probes for the following markers: Monsomy 5, Deletion 5q, Monosomy 7, Deletion 7q, Trisomy 8, Deletion 20q, Translocation 15:17, Inversion 16q, Translocation 8:21, Deletion 17p, MLL rearrangement

The individual FISH markers are orderable separately

CPT Codes:
88271 x16, 88275 x9

LDT or Modified FDA:
Yes

Acylcarnitine Profile

ACYLP

ORDERING

Available Stat:
No

Performing Lab:
Lucille-Packard Children's Hospital

Methodology:
Stable Isotope Dilution LC-MS/MS

Reported:
Testing is batched, twice weekly. Turnaround time 1 week.

Additional Information:
For possible fatty acid oxidation abnormalities undetected by urinary organic acid analysis. Note that reference ranges differ for plasma vs. serum. Note that no analytic standards are yet available for hydroxylic and dicarboxylic acylcarnitines; for these analytes (marked with a *), response ratios to internal standards are given instead. Urine acylcarnitine profiles are of no predictive values and will not be run unless approved by the reference laboratory director. Elevation of C14:1- and to a lesser extent of C16:1- and C18:1-carnitine esters is characteristic of deficient activity of long-chain acyl-coenzyme A dehydrogenase.

Synonyms:

- Acyl-carnitine
- C14:1 Carnitine
- Long chain fatty acid oxidation defect

COLLECTION

Sample Type:
Heparinized Plasma

Collect:
Dark Green (Na-Heparin)

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL plasma

Minimum Volume:
0.3 mL plasma

PROCESSING

Test Code:
ACYLP

Sendout:
Yes

Performing Lab:
Lucille-Packard Children's Hospital

Specimen Preparation:
Freeze plasma at -20C. Order Acylcarnitine profile. Ship on dry ice Monday-Friday only by Stanford Courier to: Stanford University Medical Center Biochemical Genetics Laboratory

Preferred Volume:
0.5 mL plasma

Minimum Volume:
0.3 mL plasma

RESULT INTERPRETATION

Reference Interval:
Click here for table.

Additional Information:
For possible fatty acid oxidation abnormalities undetected by urinary organic acid analysis. Note that reference ranges differ for plasma vs. serum. Note that no analytic standards are yet available for hydroxylic and dicarboxylic acylcarnitines; for these analytes (marked with a *), response ratios to internal standards are given instead. Urine acylcarnitine profiles are of no predictive values and will not be run unless approved by the reference laboratory director. Elevation of C14:1- and to a lesser extent of C16:1- and C18:1-carnitine esters is characteristic of deficient activity of long-chain acyl-coenzyme A dehydrogenase.

ADMINISTRATIVE

CPT Codes:
82017-90

LOINC Codes:
43433-2

COMPLETE VIEW

Available Stat:
No

Test Code:
ACYLP

Performing Lab:
Lucille-Packard Children's Hospital

Sendout:
Yes

Methodology:
Stable Isotope Dilution LC-MS/MS

Collect:
Dark Green (Na-Heparin)

Amount to Collect:
1 mL blood

Sample Type:
Heparinized Plasma

Preferred Volume:
0.5 mL plasma

Minimum Volume:
0.3 mL plasma

Specimen Preparation:
Freeze plasma at -20C. Order Acylcarnitine profile. Ship on dry ice Monday-Friday only by Stanford Courier to: Stanford University Medical Center Biochemical Genetics Laboratory

Reference Interval:
Click here for table.

Synonyms:

- Acyl-carnitine
- C14:1 Carnitine
- Long chain fatty acid oxidation defect

Reported:
Testing is batched, twice weekly. Turnaround time 1 week.

Additional Information:
For possible fatty acid oxidation abnormalities undetected by urinary organic acid analysis. Note that reference ranges differ for plasma vs. serum. Note that no analytic standards are yet available for hydroxylic and dicarboxylic acylcarnitines; for these analytes (marked with a *), response ratios to internal standards are given instead. Urine acylcarnitine profiles are of no predictive values and will not be run unless approved by the reference laboratory director. Elevation of C14:1- and to a lesser extent of C16:1- and C18:1-carnitine esters is characteristic of deficient activity of long-chain acyl-coenzyme A dehydrogenase.

CPT Codes:
82017-90

LOINC Codes:
43433-2

Acylglycine Profile

AGLY

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
Stable Isotope Dilution/GCMS

Reported:
Test performed weekly. Turnaround time: 2-9 days.

Additional Information:
For possible fatty acid oxidation abnormalities due to a mutation of acylcoenzyme A dehydrogenase but undetected by urinary organic acid analysis. Elevation of hexanoyl- and phenylpropionylglycine is characteristic of deficient activity of medium-chain acylcoenzyme A dehydrogenase.

Synonyms:

- Acyl-glycine
- MCAD
- Medium chain acyl-coenzyme a dehydrogenase deficiency
- Medium chain fatty acid oxidation defect
- Hexanoylglycine
- Phenylpropionylglycine
- Suberylglycine

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
20 mL urine

Preferred Volume:
5 mL urine

Minimum Volume:
3 mL urine

PROCESSING

Test Code:
AGLY

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Freeze at -20C. Order MAYO# 81249 PT54490. Forward specimen frozen to China Basin Sendout for Mayo courier pickup Monday-Friday at 1600 hours.

Preferred Volume:
5 mL urine

Minimum Volume:
3 mL urine

RESULT INTERPRETATION

Units:
µg/mg creatinine

Reference Interval:

2-Ethylmalonic Acid	0.5-20.2 µg/mg creatinine
2-Methylsuccinic Acid	0.4-13.8 µg/mg creatinine
Glutaric Acid	0.6-15.2 µg/mg creatinine
Isobutyrylglycine	< 0.01-11.0 µg/mg creatinine
n-Butyrylglycine	0.1-2.1 µg/mg creatinine
2-Methylbutyrylglycine	0.3-7.5 µg/mg creatinine
Isovalerylglycine	0.3-14.3 µg/mg creatinine
n-Hexanoylglycine	0.2-1.9 µg/mg creatinine
n-Octanoylglycine	0.1-2.1 µg/mg creatinine
3-Phenylpropionylglycine	< 0.01-1.1 µg/mg creatinine
Suberylglycine	< 0.01-11.0 µg/mg creatinine
trans-Cinnamoylglycine	0.2-14.7 µg/mg creatinine
Dodecanedioic Acid (12 DCA)	0.1-1.1 µg/mg creatinine
Tetradodecanedioic Acid (14 DCA)	< 0.01-1.0 µg/mg creatinine
Hexadodecanedioic Acid (16 DCA)	< 0.01-1.0 µg/mg creatinine

Additional Information:

For possible fatty acid oxidation abnormalities due to a mutation of acylcoenzyme A dehydrogenase but undetected by urinary organic acid analysis. Elevation of hexanoyl- and phenylpropionylglycine is characteristic of deficient activity of medium-chain acylcoenzyme A dehydrogenase.

ADMINISTRATIVE

CPT Codes:

82542

LOINC Codes:

13753-9

COMPLETE VIEW

Available Stat:

No

Test Code:

AGLY

Performing Lab:

Mayo

Sendout:

Yes

Methodology:

Stable Isotope Dilution/GCMS

Collect:

Urine cup

Amount to Collect:

20 mL urine

Sample Type:

Random urine

Preferred Volume:

5 mL urine

Minimum Volume:

3 mL urine

Specimen Preparation:

Freeze at -20C. Order MAYO# 81249 PT54490. Forward specimen frozen to China Basin Sendout for Mayo courier pickup Monday-Friday at 1600 hours.

Units:

µg/mg creatinine

Reference Interval:

2-Ethylmalonic Acid	0.5-20.2 µg/mg creatinine
2-Methylsuccinic Acid	0.4-13.8 µg/mg creatinine
Glutaric Acid	0.6-15.2 µg/mg creatinine
Isobutyrylglycine	< 0.01-11.0 µg/mg creatinine
n-Butyrylglycine	0.1-2.1 µg/mg creatinine
2-Methylbutyrylglycine	0.3-7.5 µg/mg creatinine
Isovalerylglycine	0.3-14.3 µg/mg creatinine
n-Hexanoylglycine	0.2-1.9 µg/mg creatinine
n-Octanoylglycine	0.1-2.1 µg/mg creatinine
3-Phenylpropionylglycine	< 0.01-1.1 µg/mg creatinine
Suberylglycine	< 0.01-11.0 µg/mg creatinine
trans-Cinnamoylglycine	0.2-14.7 µg/mg creatinine
Dodecanedioic Acid (12 DCA)	0.1-1.1 µg/mg creatinine
Tetradodecanedioic Acid (14 DCA)	< 0.01-1.0 µg/mg creatinine
Hexadodecanedioic Acid (16 DCA)	< 0.01-1.0 µg/mg creatinine

Synonyms:

- Acyl-glycine
- MCAD
- Medium chain acyl-coenzyme a dehydrogenase deficiency
- Medium chain fatty acid oxidation defect
- Hexanoylglycine
- Phenylpropionylglycine
- Suberylglycine

Reported:

Test performed weekly. Turnaround time: 2-9 days.

Additional Information:

For possible fatty acid oxidation abnormalities due to a mutation of acylcoenzyme A dehydrogenase but undetected by urinary organic acid analysis. Elevation of hexanoyl- and phenylpropionylglycine is characteristic of deficient activity of medium-chain acylcoenzyme A dehydrogenase.

CPT Codes:

82542

LOINC Codes:

13753-9

Adalimumab and Antibodies to Adalimumab Quantitation

ADAN

ORDERING

Ordering Recommendations:
Use to monitor adalimumab or adalimumab biosimilar therapy.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative Electrochemiluminescent Immunoassay (ECLIA) with Acid Dissociation

Reported:
3-7 days

Synonyms:

- Humira
- Abrilada
- Amjevita
- Cyltezo
- Hadlima
- Hulio
- Hymiroz
- Idacio
- Yusimry

COLLECTION

Patient Preparation:
Collect specimens before next scheduled dose of adalimumab or adalimumab biosimilar (trough specimen). Avoid exposure to biotin (vitamin B7) for 12 hours prior to specimen collection.

Sample Type:
Serum

Collect:
Serum separator tube.

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.1 mL serum

Stability (from collection to initiation):
After separation from cells: Ambient: 2 days; Refrigerated: 2 weeks; Frozen: 1 month (avoid repeated freeze/thaw cycles).
New York State Clients: Ambient: 1 week; Refrigerated: 1 week; Frozen: 308 days

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Grossly hemolyzed, icteric, or lipemic specimens.

PROCESSING

Test Code:
ADAN

ARUP Test Code:
3017043

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate serum from cells ASAP. Transfer 1 mL serum to an ARUP standard transport tube. (Min 0.1 mL)
New York State Clients: 2 mL (Min: 1 mL)

Preferred Volume:
1 mL serum

Minimum Volume:
0.1 mL serum

Unacceptable Conditions:
Grossly hemolyzed, icteric, or lipemic specimens.

Stability (from collection to initiation):
After separation from cells: Ambient: 2 days; Refrigerated: 2 weeks; Frozen: 1 month (avoid repeated freeze/thaw cycles).
New York State Clients: Ambient: 1 week; Refrigerated: 1 week; Frozen: 308 days

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Interpretive Data:
Adalimumab Quantitation:

Limit of Quantitation = 0.4 ug/mL.

Results of 0.4 ug/mL or higher indicate the detection of adalimumab or an adalimumab biosimilar. Therapeutic level may vary depending on the disease being treated.

Antibodies to Adalimumab Quantitation:

Limit of Quantitation = 20 ng/mL

Results of 20 ng/mL or higher indicate the detection of antibodies against adalimumab or an adalimumab biosimilar. Interpret in the context of adalimumab or adalimumab biosimilar trough concentration to determine clinical significance and impact on treatment efficacy.

ADMINISTRATIVE

CPT Codes:
80145; 82397

LOINC:

- 86894-3
- 86895-0

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Use to monitor adalimumab or adalimumab biosimilar therapy.

Test Code:
ADAN

ARUP Test Code:
3017043

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative Electrochemiluminescent Immunoassay (ECLIA) with Acid Dissociation

Patient Preparation:
Collect specimens before next scheduled dose of adalimumab or adalimumab biosimilar (trough specimen). Avoid exposure to biotin (vitamin B7) for 12 hours prior to specimen collection.

Collect:
Serum separator tube.

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.1 mL serum

Unacceptable Conditions:
Grossly hemolyzed, icteric, or lipemic specimens.

Specimen Preparation:
Separate serum from cells ASAP. Transfer 1 mL serum to an ARUP standard transport tube. (Min 0.1 mL)
New York State Clients: 2 mL (Min: 1 mL)

Interpretive Data:
Adalimumab Quantitation:

Limit of Quantitation = 0.4 ug/mL.

Results of 0.4 ug/mL or higher indicate the detection of adalimumab or an adalimumab biosimilar. Therapeutic level may vary depending on the disease being treated.

Antibodies to Adalimumab Quantitation:

Limit of Quantitation = 20 ng/mL

Results of 20 ng/mL or higher indicate the detection of antibodies against adalimumab or an adalimumab biosimilar. Interpret in the context of adalimumab or adalimumab biosimilar trough concentration to determine clinical significance and impact on treatment efficacy.

Synonyms:

- Humira
- Abrilada
- Amjevita
- Cyltezo
- Hadlima
- Hulio
- Hymiroz
- Idacio
- Yusimry

Storage/Transport Temperature:
Refrigerated.

Stability (from collection to initiation):
After separation from cells: Ambient: 2 days; Refrigerated: 2 weeks; Frozen: 1 month (avoid repeated freeze/thaw cycles).
New York State Clients: Ambient: 1 week; Refrigerated: 1 week; Frozen: 308 days

Reported:
3-7 days

CPT Codes:
80145; 82397

LOINC:

- 86894-3
- 86895-0

ADAMTS13 ACTIVITY

AD13AT

ORDERING

Available Stat:
No

Performing Lab:
Machaon Diagnostics

Methodology:
ELISA

Reported:
1 - 2 days

Additional Information:
A severe decrease in ADAMTS-13 activity to less than 10% has been shown to be diagnostic for Thrombotic Thrombocytopenic Purpura (TTP), an illness characterized by thrombocytopenia, microangiopathic hemolytic anemia (MAHA), fever, renal dysfunction and central nervous system ischemia. TTP is often difficult to diagnose as well as differentiate from other thrombotic microangiopathies (TMA) such as hemolytic uremic syndrome (HUS) and atypical hemolytic uremic syndrome (aHUS).

TTP is characterized by the acquired or congenital deficiency of ADAMTS-13 activity. An antibody inhibitor will be present in roughly half of the cases diagnosed with idiopathic TTP.

Early diagnosis is paramount. Left untreated, TTP has a mortality rate above 90%; however, rapid diagnosis and treatment with plasma exchange improve the mortality rate to below 20%.

To maximize the clinical utility of this test, Machaon Diagnostics is offering ADAMTS-13 activity and inhibitor testing on a daily basis with clinical consultation.

Inhibitor assay is performed as a reflex if levels are low.

Absent or low levels of ADAMTS13 activity may allow the accumulation of ultra-large von Willebrand factor multimers (ULVWF) in plasma. It is hypothesized that these ULVWF cause the intravascular platelet aggregation characteristic of TTP.

Activity levels below 10% are seen in acute and relapsing idiopathic (autoimmune) thrombotic thrombocytopenic purpura (TTP) but also in a rare hereditary gene mutation of VWF protein at the cleavage site. Activity levels between 10 and 30% may be seen in some instances, including when immunosuppressive therapy or recent plasmapheresis exchange has been started. Mild decreases in ADAMTS-13 activity are seen in a wide variety of conditions including metastatic cancer, neonates, serious infections and cirrhosis of the liver.

Reflex Testing:
Yes, If the test for Protease Inhibitor is required, it will be ordered and billed at an additional charge.

Synonyms:

- von Willebrand Factor Cleaving Protease
- Thrombotic thrombocytopenic purpura
- TTP
- AD13AT

COLLECTION

Sample Type:
Citrated platelet poor plasma

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Preferred Volume:
1 mL plasma

Minimum Volume:
1 mL plasma

Remarks:

1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

Stability (from collection to initiation):
Room temperature 7 days

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected Marked hemolysis or hyperbilirubinemia

Rejection Criteria:
Marked hemolysis or hyperbilirubinemia

PROCESSING

Test Code:
AD13AT

Test Group:
von Willebrand

Sendout:
Yes

Performing Lab:
Machaon Diagnostics

Specimen Preparation:
Aliquot plasma and maintain at ambient. Call Machaon courier at (510) 839-5600. After hours and weekend samples will be handled by Hematology.

Preferred Volume:
1 mL plasma

Minimum Volume:
1 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected Marked hemolysis or hyperbilirubinemia

Rejection Criteria:
Marked hemolysis or hyperbilirubinemia

Stability (from collection to initiation):
Room temperature 7 days

RESULT INTERPRETATION

Units:
Activity %

Reference Interval:
40-130%

Critical Values:
Machaon: < 10%

Additional Information:

A severe decrease in ADAMTS-13 activity to less than 10% has been shown to be diagnostic for Thrombotic Thrombocytopenic Purpura (TTP), an illness characterized by thrombocytopenia, microangiopathic hemolytic anemia (MAHA), fever, renal dysfunction and central nervous system ischemia. TTP is often difficult to diagnose as well as differentiate from other thrombotic microangiopathies (TMA) such as hemolytic uremic syndrome (HUS) and atypical hemolytic uremic syndrome (aHUS).

TTP is characterized by the acquired or congenital deficiency of ADAMTS-13 activity. An antibody inhibitor will be present in roughly half of the cases diagnosed with idiopathic TTP.

Early diagnosis is paramount. Left untreated, TTP has a mortality rate above 90%; however, rapid diagnosis and treatment with plasma exchange improve the mortality rate to below 20%.

To maximize the clinical utility of this test, Machaon Diagnostics is offering ADAMTS-13 activity and inhibitor testing on a daily basis with clinical consultation.

Inhibitor assay is performed as a reflex if levels are low.

Absent or low levels of ADAMTS13 activity may allow the accumulation of ultra-large von Willebrand factor multimers (ULVWF) in plasma. It is hypothesized that these ULVWF cause the intravascular platelet aggregation characteristic of TTP.

Activity levels below 10% are seen in acute and relapsing idiopathic (autoimmune) thrombotic thrombocytopenic purpura (TTP) but also in a rare hereditary gene mutation of VWF protein at the cleavage site. Activity levels between 10 and 30% may be seen in some instances, including when immunosuppressive therapy or recent plasmapheresis exchange has been started. Mild decreases in ADAMTS-13 activity are seen in a wide variety of conditions including metastatic cancer, neonates, serious infections and cirrhosis of the liver.

ADMINISTRATIVE

CPT Codes:
85247 (activity), 85335 (inhibitor)

LOINC Codes:
34589-2

COMPLETE VIEW

Available Stat:
No

Test Code:
AD13AT

Test Group:
von Willebrand

Performing Lab:
Machaon Diagnostics

Sendout:
Yes

Methodology:
ELISA

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Sample Type:
Citrated platelet poor plasma

Preferred Volume:
1 mL plasma

Minimum Volume:
1 mL plasma

Rejection Criteria:
Marked hemolysis or hyperbilirubinemia

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected Marked hemolysis or hyperbilirubinemia

Specimen Preparation:
Aliquot plasma and maintain at ambient. Call Machaon courier at (510) 839-5600. After hours and weekend samples will be handled by Hematology.

Units:
Activity %

Reference Interval:
40-130%

Critical Values:
Machaon: < 10%

Synonyms:

- von Willebrand Factor Cleaving Protease
- Thrombotic thrombocytopenic purpura
- TTP
- AD13AT

Stability (from collection to initiation):
Room temperature 7 days

Reported:
1 - 2 days

Reflex Testing:
Yes, If the test for Protease Inhibitor is required, it will be ordered and billed at an additional charge.

Additional Information:
A severe decrease in ADAMTS-13 activity to less than 10% has been shown to be diagnostic for Thrombotic Thrombocytopenic Purpura (TTP), an illness characterized by thrombocytopenia, microangiopathic hemolytic anemia (MAHA), fever, renal dysfunction and central nervous system ischemia. TTP is often difficult to diagnose as well as differentiate from other thrombotic microangiopathies (TMA) such as hemolytic uremic syndrome (HUS) and atypical hemolytic uremic syndrome (aHUS).

TTP is characterized by the acquired or congenital deficiency of ADAMTS-13 activity. An antibody inhibitor will be present in roughly half of the cases diagnosed with idiopathic TTP.

Early diagnosis is paramount. Left untreated, TTP has a mortality rate above 90%; however, rapid diagnosis and treatment with plasma exchange improve the mortality rate to below 20%.

To maximize the clinical utility of this test, Machaon Diagnostics is offering ADAMTS-13 activity and inhibitor testing on a daily basis with clinical consultation.

Inhibitor assay is performed as a reflex if levels are low.

Absent or low levels of ADAMTS13 activity may allow the accumulation of ultra-large von Willebrand factor multimers (ULVWF) in plasma. It is hypothesized that these ULVWF cause the intravascular platelet aggregation characteristic of TTP.

Activity levels below 10% are seen in acute and relapsing idiopathic (autoimmune) thrombotic thrombocytopenic purpura (TTP) but also in a rare hereditary gene mutation of VWF protein at the cleavage site. Activity levels between 10 and 30% may be seen in some instances, including when immunosuppressive therapy or recent plasmapheresis exchange has been started. Mild decreases in ADAMTS-13 activity are seen in a wide variety of conditions including metastatic cancer, neonates, serious infections and cirrhosis of the liver.

CPT Codes:
85247 (activity), 85335 (inhibitor)

LOINC Codes:
34589-2

Additional Specimen for Crossmatch

XM72

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus Mt. Zion & Mission Bay Blood Banks

Additional Information:
Use to complete antibody identification and perform manual crossmatch for patient with history of allo antibodies or other special requirements.

Synonyms:

- PEG Crossmatch
- LISS Crossmatch
- Antigen Negative Crossmatch

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top (6 mL)

Preferred Volume:

Patient Age	Amount to Collect
< 4 mo	2x Full Microtainer (1.6 mL)
4 mo - 1 year	3 mL
1-18 years	3 - 6 mL (3 mL OK for small children
>18 years	6 mL x 2

Minimum Volume:

Patient Age	Amount to Collect
< 4 mo	Full Microtainer (0.8 mL)
4 mo - 1 year	1 mL
1-18 years	3 mL (3 mL OK for small children
>18 years	5 mL

Unacceptable Conditions:
Unsigned, missing date/time of draw, mislabeled, unlabeled or hemolyzed sample

PROCESSING

Test Code:
XM72

Performing Lab:
Parnassus Mt. Zion & Mission Bay Blood Banks

Preferred Volume:

Patient Age	Amount to Collect
< 4 mo	2x Full Microtainer (1.6 mL)
4 mo - 1 year	3 mL
1-18 years	3 - 6 mL (3 mL OK for small children
>18 years	6 mL x 2

Minimum Volume:

Patient Age	Amount to Collect
< 4 mo	Full Microtainer (0.8 mL)
4 mo - 1 year	1 mL
1-18 years	3 mL (3 mL OK for small children
>18 years	5 mL

Unacceptable Conditions:
Unsigned, missing date/time of draw, mislabeled, unlabeled or hemolyzed sample

RESULT INTERPRETATION

Additional Information:
Use to complete antibody identification and perform manual crossmatch for patient with history of allo antibodies or other special requirements.

ADMINISTRATIVE

CPT Codes:
86900, 86901

COMPLETE VIEW

Available Stat:
Yes

Test Code:
XM72

Performing Lab:
Parnassus Mt. Zion & Mission Bay Blood Banks

Collect:
Lavender top (6 mL)

Sample Type:
EDTA whole blood

Preferred Volume:

Patient Age	Amount to Collect
< 4 mo	2x Full Microtainer (1.6 mL)
4 mo - 1 year	3 mL
1-18 years	3 - 6 mL (3 mL OK for small children
>18 years	6 mL x 2

Minimum Volume:

Patient Age	Amount to Collect
< 4 mo	Full Microtainer (0.8 mL)
4 mo - 1 year	1 mL
1-18 years	3 mL (3 mL OK for small children
>18 years	5 mL

Unacceptable Conditions:
Unsigned, missing date/time of draw, mislabeled, unlabeled or hemolyzed sample

Synonyms:

- PEG Crossmatch
- LISS Crossmatch
- Antigen Negative Crossmatch

Additional Information:
Use to complete antibody identification and perform manual crossmatch for patient with history of allo antibodies or other special requirements.

CPT Codes:
86900, 86901

Adenosine Deaminase, CSF

ADAC

ORDERING

Ordering Recommendations:

Given the relatively low prevalence of tuberculosis ADA should be ordered only in patients with a moderate to high index of suspicion for tuberculosis (Positive personal, family or TB exposure history, positive PPD, etc.) with an exudative effusion containing high numbers of lymphocytes that is negative for mycobacteria by direct examination and culture.

Available Stat:

No

Performing Lab:

Quest

Methodology:

Kinetic Spectrophotometric

Reported:

3 - 5 days

Additional Information:

Although Adenosione deaminase (ADA) is suggested as a surrogate marker for Tuberculosis, it is not specific for that disease. Elevated levels of ADA may also be seem in other forms of granulomatous inflammation as well as liver cirrhosis, liver fibrosis, certain malignancies (e.g. lymphoma), viral hepatitis, and autoimmune diseases (e.g. SLE, rheumatoid arthritis).

The sensitivity and specificity of ADA for tuberculosis are generally listed as 78-100% and 85-97% respectively. Using 95% for both sensitivity and specificity and a prevalence of tuberculosis in San Francisco of 15/100,000 (0.015%) the test has a negative predictive value of 100% but a positive predictive value of only 0.28%. Therefor the ADA is a poor test to diagnose tuberculosis although it may be useful in ruling it out.

Synonyms:

- Tuberculosis

COLLECTION

Sample Type:

CSF

Collect:

Sterile screw top container

Amount to Collect:

3 mL

Preferred Volume:

3 mL

Minimum Volume:

1 mL

Stability (from collection to initiation):

Room temperature 1 day, refrigerated 3 days, frozen 6 months

PROCESSING

Test Code:

ADAC

Test Group:

Adenosine deaminase

Sendout:

Yes

Performing Lab:

Quest

Specimen Preparation:

Freeze specimen and transport to CB frozen. Order Quest code 17697.

Preferred Volume:

3 mL

Minimum Volume:

1 mL

Stability (from collection to initiation):

Room temperature 1 day, refrigerated 3 days, frozen 6 months

RESULT INTERPRETATION

Units:
ng/mL

Additional Information:
Although Adenosione deaminase (ADA) is suggested as a surrogate marker for Tuberculosis, it is not specific for that disease. Elevated levels of ADA may also be seem in other forms of granulomatous inflammation as well as liver cirrhosis, liver fibrosis, certain malignancies (e.g. lymphoma), viral hepatitis, and autoimmune diseases (e.g. SLE, rheumatoid arthritis).

The sensitivity and specificity of ADA for tuberculosis are generally listed as 78-100% and 85-97% respectively. Using 95% for both sensitivity and specificity and a prevalence of tuberculosis in San Francisco of 15/100,000 (0.015%) the test has a negative predictive value of 100% but a positive predictive value of only 0.28%. Therefor the ADA is a poor test to diagnose tuberculosis although it may be useful in ruling it out.

ADMINISTRATIVE

CPT Codes:
84311-90

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Given the relatively low prevalence of tuberculosis ADA should be ordered only in patients with a moderate to high index of suspicion for tuberculosis (Positive personal, family or TB exposure history, positive PPD, etc.) with an exudative effusion containing high numbers of lymphocytes that is negative for mycobacteria by direct examination and culture.

Test Code:
ADAC

Test Group:
Adenosine deaminase

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Kinetic Spectrophotometric

Collect:
Sterile screw top container

Amount to Collect:
3 mL

Sample Type:
CSF

Preferred Volume:
3 mL

Minimum Volume:
1 mL

Specimen Preparation:
Freeze specimen and transport to CB frozen. Order Quest code 17697.

Units:
ng/mL

Synonyms:

- Tuberculosis

Stability (from collection to initiation):
Room temperature 1 day, refrigerated 3 days, frozen 6 months

Reported:
3 - 5 days

Additional Information:

Although Adenosione deaminase (ADA) is suggested as a surrogate marker for Tuberculosis, it is not specific for that disease. Elevated levels of ADA may also be seem in other forms of granulomatous inflammation as well as liver cirrhosis, liver fibrosis, certain malignancies (e.g. lymphoma), viral hepatitis, and autoimmune diseases (e.g. SLE, rheumatoid arthritis).

The sensitivity and specificity of ADA for tuberculosis are generally listed as 78-100% and 85-97% respectively. Using 95% for both sensitivity and specificity and a prevalence of tuberculosis in San Francisco of 15/100,000 (0.015%) the test has a negative predictive value of 100% but a positive predictive value of only 0.28%. Therefor the ADA is a poor test to diagnose tuberculosis although it may be useful in ruling it out.

CPT Codes:

84311-90

Adenosine Deaminase, Peritoneal fluid

ADAPT

ORDERING

Ordering Recommendations:

Given the relatively low prevalence of tuberculosis ADA should be ordered only in patients with a moderate to high index of suspicion for tuberculosis (Positive personal, family or TB exposure history, positive PPD, etc.) with an exudative effusion containing high numbers of lymphocytes that is negative for mycobacteria by direct examination and culture.

Available Stat:

No

Performing Lab:

Quest

Methodology:

Kinetic Spectrophotometric

Reported:

3 - 5 days

Additional Information:

Although Adenosione deaminase (ADA) is suggested as a surrogate marker for Tuberculosis, it is not specific for that disease. Elevated levels of ADA may also be seem in other forms of granulomatous inflammation as well as liver cirrhosis, liver fibrosis, certain malignancies (e.g. lymphoma), viral hepatitis, and autoimmune diseases (e.g. SLE, rheumatoid arthritis).

The sensitivity and specificity of ADA for tuberculosis are generally listed as 78-100% and 85-97% respectively. Using 95% for both sensitivity and specificity and a prevalence of tuberculosis in San Francisco of 15/100,000 (0.015%) the test has a negative predictive value of 100% but a positive predictive value of only 0.28%. Therefor the ADA is a poor test to diagnose tuberculosis although it may be useful in ruling it out.

Synonyms:

- Tuberculosis

COLLECTION

Sample Type:

Peritoneal fluid

Collect:

Sterile screw top container

Amount to Collect:

10 mL

Preferred Volume:

10 mL

Minimum Volume:

5 mL

Stability (from collection to initiation):

Room temperature 1 day, refrigerated 3 days, frozen 6 months

PROCESSING

Test Code:

ADAPT

Test Group:

Adenosine deaminase

Sendout:

Yes

Performing Lab:

Quest

Specimen Preparation:

Freeze specimen and transport to CB frozen. Order Quest code 17697.

Preferred Volume:

10 mL

Minimum Volume:

5 mL

Stability (from collection to initiation):

Room temperature 1 day, refrigerated 3 days, frozen 6 months

RESULT INTERPRETATION

Units:
ng/mL

Additional Information:
Although Adenosione deaminase (ADA) is suggested as a surrogate marker for Tuberculosis, it is not specific for that disease. Elevated levels of ADA may also be seem in other forms of granulomatous inflammation as well as liver cirrhosis, liver fibrosis, certain malignancies (e.g. lymphoma), viral hepatitis, and autoimmune diseases (e.g. SLE, rheumatoid arthritis).

The sensitivity and specificity of ADA for tuberculosis are generally listed as 78-100% and 85-97% respectively. Using 95% for both sensitivity and specificity and a prevalence of tuberculosis in San Francisco of 15/100,000 (0.015%) the test has a negative predictive value of 100% but a positive predictive value of only 0.28%. Therefor the ADA is a poor test to diagnose tuberculosis although it may be useful in ruling it out.

ADMINISTRATIVE

CPT Codes:
84311-90

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Given the relatively low prevalence of tuberculosis ADA should be ordered only in patients with a moderate to high index of suspicion for tuberculosis (Positive personal, family or TB exposure history, positive PPD, etc.) with an exudative effusion containing high numbers of lymphocytes that is negative for mycobacteria by direct examination and culture.

Test Code:
ADAPT

Test Group:
Adenosine deaminase

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Kinetic Spectrophotometric

Collect:
Sterile screw top container

Amount to Collect:
10 mL

Sample Type:
Peritoneal fluid

Preferred Volume:
10 mL

Minimum Volume:
5 mL

Specimen Preparation:
Freeze specimen and transport to CB frozen. Order Quest code 17697.

Units:
ng/mL

Synonyms:

- Tuberculosis

Stability (from collection to initiation):
Room temperature 1 day, refrigerated 3 days, frozen 6 months

Reported:
3 - 5 days

Additional Information:

Although Adenosione deaminase (ADA) is suggested as a surrogate marker for Tuberculosis, it is not specific for that disease. Elevated levels of ADA may also be seem in other forms of granulomatous inflammation as well as liver cirrhosis, liver fibrosis, certain malignancies (e.g. lymphoma), viral hepatitis, and autoimmune diseases (e.g. SLE, rheumatoid arthritis).

The sensitivity and specificity of ADA for tuberculosis are generally listed as 78-100% and 85-97% respectively. Using 95% for both sensitivity and specificity and a prevalence of tuberculosis in San Francisco of 15/100,000 (0.015%) the test has a negative predictive value of 100% but a positive predictive value of only 0.28%. Therefor the ADA is a poor test to diagnose tuberculosis although it may be useful in ruling it out.

CPT Codes:

84311-90

Adenosine Deaminase, Pleural fluid

ADAPL

ORDERING

Ordering Recommendations:

Given the relatively low prevalence of tuberculosis ADA should be ordered only in patients with a moderate to high index of suspicion for tuberculosis (Positive personal, family or TB exposure history, positive PPD, etc.) with an exudative effusion containing high numbers of lymphocytes that is negative for mycobacteria by direct examination and culture.

Available Stat:

No

Performing Lab:

Quest

Methodology:

Kinetic Spectrophotometric

Reported:

3 - 5 days

Additional Information:

Although Adenosione deaminase (ADA) is suggested as a surrogate marker for Tuberculosis, it is not specific for that disease. Elevated levels of ADA may also be seem in other forms of granulomatous inflammation as well as liver cirrhosis, liver fibrosis, certain malignancies (e.g. lymphoma), viral hepatitis, and autoimmune diseases (e.g. SLE, rheumatoid arthritis).

The sensitivity and specificity of ADA for tuberculosis are generally listed as 78-100% and 85-97% respectively. Using 95% for both sensitivity and specificity and a prevalence of tuberculosis in San Francisco of 15/100,000 (0.015%) the test has a negative predictive value of 100% but a positive predictive value of only 0.28%. Therefor the ADA is a poor test to diagnose tuberculosis although it may be useful in ruling it out.

Synonyms:

- Tuberculosis

COLLECTION

Sample Type:

Pleural fluid

Collect:

Sterile screw top container

Amount to Collect:

10 mL

Preferred Volume:

10 mL

Minimum Volume:

5 mL

Stability (from collection to initiation):

Room temperature 1 day, refrigerated 3 days, frozen 6 months

PROCESSING

Test Code:

ADAPL

Test Group:

Adenosine deaminase

Sendout:

Yes

Performing Lab:

Quest

Specimen Preparation:

Freeze specimen and transport to CB frozen. Order Quest code 17697.

Preferred Volume:

10 mL

Minimum Volume:

5 mL

Stability (from collection to initiation):

Room temperature 1 day, refrigerated 3 days, frozen 6 months

RESULT INTERPRETATION

Units:
ng/mL

Additional Information:
Although Adenosione deaminase (ADA) is suggested as a surrogate marker for Tuberculosis, it is not specific for that disease. Elevated levels of ADA may also be seem in other forms of granulomatous inflammation as well as liver cirrhosis, liver fibrosis, certain malignancies (e.g. lymphoma), viral hepatitis, and autoimmune diseases (e.g. SLE, rheumatoid arthritis).

The sensitivity and specificity of ADA for tuberculosis are generally listed as 78-100% and 85-97% respectively. Using 95% for both sensitivity and specificity and a prevalence of tuberculosis in San Francisco of 15/100,000 (0.015%) the test has a negative predictive value of 100% but a positive predictive value of only 0.28%. Therefor the ADA is a poor test to diagnose tuberculosis although it may be useful in ruling it out.

ADMINISTRATIVE

CPT Codes:
84311-90

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Given the relatively low prevalence of tuberculosis ADA should be ordered only in patients with a moderate to high index of suspicion for tuberculosis (Positive personal, family or TB exposure history, positive PPD, etc.) with an exudative effusion containing high numbers of lymphocytes that is negative for mycobacteria by direct examination and culture.

Test Code:
ADAPL

Test Group:
Adenosine deaminase

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Kinetic Spectrophotometric

Collect:
Sterile screw top container

Amount to Collect:
10 mL

Sample Type:
Pleural fluid

Preferred Volume:
10 mL

Minimum Volume:
5 mL

Specimen Preparation:
Freeze specimen and transport to CB frozen. Order Quest code 17697.

Units:
ng/mL

Synonyms:

- Tuberculosis

Stability (from collection to initiation):
Room temperature 1 day, refrigerated 3 days, frozen 6 months

Reported:
3 - 5 days

Additional Information:

Although Adenosione deaminase (ADA) is suggested as a surrogate marker for Tuberculosis, it is not specific for that disease. Elevated levels of ADA may also be seem in other forms of granulomatous inflammation as well as liver cirrhosis, liver fibrosis, certain malignancies (e.g. lymphoma), viral hepatitis, and autoimmune diseases (e.g. SLE, rheumatoid arthritis).

The sensitivity and specificity of ADA for tuberculosis are generally listed as 78-100% and 85-97% respectively. Using 95% for both sensitivity and specificity and a prevalence of tuberculosis in San Francisco of 15/100,000 (0.015%) the test has a negative predictive value of 100% but a positive predictive value of only 0.28%. Therefor the ADA is a poor test to diagnose tuberculosis although it may be useful in ruling it out.

CPT Codes:

84311-90

Adenovirus Antibody

ADEN

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Complement fixation

Reported:
Performed 5x per week. Turnaround 3-5 days

COLLECTION

Sample Type:
Serum

Collect:
Red top or Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Remarks:
Interpretation requires comparison between acute and convelescent antibody titers.

Label samples as 'Acute' or 'Convalescent'. Convalescent samples should be collected 2-3 weeks after the acute sample.

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 1 week, frozen at -20C 1 month.

PROCESSING

Test Code:
ADEN

Test Group:
Adenovirus

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze serum at -20C. Ship frozen to China basin sendouts. Order Quest test # 50419P

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 1 week, frozen at -20C 1 month.

ADMINISTRATIVE

CPT Codes:
86603-90

LOINC Codes:
5041-9

COMPLETE VIEW

Available Stat:
No

Test Code:
ADEN

Test Group:
Adenovirus

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Complement fixation

Remarks:
Interpretation requires comparison between acute and convelescent antibody titers.

Label samples as 'Acute' or 'Convalescent'. Convalescent samples should be collected 2-3 weeks after the acute sample.

Collect:
Red top or Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Specimen Preparation:
Freeze serum at -20C. Ship frozen to China basin sendouts. Order Quest test # 50419P

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 1 week, frozen at -20C 1 month.

Reported:
Performed 5x per week. Turnaround 3-5 days

CPT Codes:
86603-90

LOINC Codes:
5041-9

Adenovirus DNA, Non-plasma samples

ADVP

ORDERING

Ordering Recommendations:
Testing on urine samples would only be indicated in a pediatric or transplant patient with hemorrhagic cystitis.

Available Stat:
No

Performing Lab:
Viracor

Methodology:
Real-time PCR

Synonyms:

- Adenovirus PCR

COLLECTION

Sample Type:
Bone marrow, Unfixed tissue, CSF, BAL, urine (requires approval)

Collect:
Bone marrow: Lavender top
Other samples: Urine cup, CSF tube or sterile collection tube

Preferred Volume:
Tissue: 5 mg (1/2 pencil eraser size)
Fluids: 2 mL

Minimum Volume:
Tissue: 5 mg (1/2 pencil eraser size)
Marrow: 0.2 mL
Fluids: 0.5 mL

Remarks:
Do not add water, saline, or other fluid media to container with tissue.

Unacceptable Conditions:
Improperly submitted samples, formalin fixed, paraffin embedded tissue

Rejection Criteria:
Improperly submitted samples, formalin fixed, paraffin embedded tissue

PROCESSING

Test Code:
ADVP

Test Group:
Adenovirus

Sendout:
Yes

Performing Lab:
Viracor

Specimen Preparation:
CSF and tissue must be transported frozen to China Basin and then shipped on dry ice to ViraCor.

Keep samples other than CSF and tissue at room temperature and ship at room temperature. Samples should be received at Viracor within 96 hours of collection.

Note: If a blood sample is received, please order ADED for plasma samples, instead of this test.

Preferred Volume:
Tissue: 5 mg (1/2 pencil eraser size)
Fluids: 2 mL

Minimum Volume:
Tissue: 5 mg (1/2 pencil eraser size)
Marrow: 0.2 mL
Fluids: 0.5 mL

Unacceptable Conditions:
Improperly submitted samples, formalin fixed, paraffin embedded tissue

Rejection Criteria:
Improperly submitted samples, formalin fixed, paraffin embedded tissue

RESULT INTERPRETATION

Units:
copies/mL

ADMINISTRATIVE

CPT Codes:
87799-90

LOINC Codes:
49340-3

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Testing on urine samples would only be indicated in a pediatric or transplant patient with hemorrhagic cystitis.

Test Code:
ADVP

Test Group:
Adenovirus

Performing Lab:
Viracor

Sendout:
Yes

Methodology:
Real-time PCR

Remarks:
Do not add water, saline, or other fluid media to container with tissue.

Collect:
Bone marrow: Lavender top
Other samples: Urine cup, CSF tube or sterile collection tube

Sample Type:
Bone marrow, Unfixed tissue, CSF, BAL, urine (requires approval)

Preferred Volume:
Tissue: 5 mg (1/2 pencil eraser size)
Fluids: 2 mL

Minimum Volume:
Tissue: 5 mg (1/2 pencil eraser size)
Marrow: 0.2 mL
Fluids: 0.5 mL

Rejection Criteria:
Improperly submitted samples, formalin fixed, paraffin embedded tissue

Unacceptable Conditions:
Improperly submitted samples, formalin fixed, paraffin embedded tissue

Specimen Preparation:
CSF and tissue must be transported frozen to China Basin and then shipped on dry ice to ViraCor.

Keep samples other than CSF and tissue at room temperature and ship at room temperature. Samples should be received at Viracor within 96 hours of collection.

Note: If a blood sample is received, please order ADED for plasma samples, instead of this test.

Units:
copies/mL

Synonyms:

- Adenovirus PCR

CPT Codes:
87799-90

LOINC Codes:
49340-3

Adenovirus DNA, Plasma

ADED

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
2x per week on day shift

Methodology:
Real Time PCR

Reported:
1-5 days

Additional Information:
Monitoring of plasma Adenovirus DNA titers is useful for evaultion of disseminated infection in highly immunocompromised patients.

COLLECTION

Sample Type:
EDTA Plasma

Collect:
Lavendar top 6 mL

Amount to Collect:
6 mL blood

Preferred Volume:
3 mL EDTA Plasma

Minimum Volume:
< 3 years old: 0.5 mL plasma
>= 3 years old: 1.5 mL plasma

Stability (from collection to initiation):
Room temperature 6 hours. frozen at -70C 1 month.

Unacceptable Conditions:
Heparinized or grossly hemolyzed sample.

Repeat sample from patient within 5 days unless patient has prior positive in which case 2 samples may be sent in one week.

PROCESSING

Test Code:
ADED

Performing Lab:
Microbiology

Specimen Preparation:
Separate plasma from cells within 6 hour of collection and freeze at -70C. Transport to China Basin frozen.

Preferred Volume:
3 mL EDTA Plasma

Minimum Volume:
< 3 years old: 0.5 mL plasma
>= 3 years old: 1.5 mL plasma

Unacceptable Conditions:
Heparinized or grossly hemolyzed sample.

Repeat sample from patient within 5 days unless patient has prior positive in which case 2 samples may be sent in one week.

Stability (from collection to initiation):
Room temperature 6 hours. frozen at -70C 1 month.

RESULT INTERPRETATION

Additional Information:
Monitoring of plasma Adenovirus DNA titers is useful for evaultion of disseminated infection in highly immunocompromised patients.

ADMINISTRATIVE

CPT Codes:
87799

LDT or Modified FDA:
Yes

LOINC Codes:
49334-6

COMPLETE VIEW

Available Stat:
No

Test Code:
ADED

Performing Lab:
Microbiology

Performed:
2x per week on day shift

Methodology:
Real Time PCR

Collect:
Lavendar top 6 mL

Amount to Collect:
6 mL blood

Sample Type:
EDTA Plasma

Preferred Volume:
3 mL EDTA Plasma

Minimum Volume:
< 3 years old: 0.5 mL plasma
>= 3 years old: 1.5 mL plasma

Unacceptable Conditions:
Heparinized or grossly hemolyzed sample.

Repeat sample from patient within 5 days unless patient has prior positive in which case 2 samples may be sent in one week.

Specimen Preparation:
Separate plasma from cells within 6 hour of collection and freeze at -70C. Transport to China Basin frozen.

Stability (from collection to initiation):
Room temperature 6 hours. frozen at -70C 1 month.

Reported:
1-5 days

Additional Information:
Monitoring of plasma Adenovirus DNA titers is useful for evaultion of disseminated infection in highly immunocompromised patients.

CPT Codes:
87799

LDT or Modified FDA:
Yes

LOINC Codes:
49334-6

Adrenocorticotropic hormone

ACTH

ORDERING

Available Stat:
No

Performing Lab:
Mount Zion Chemistry

Performed:
Thursday

Methodology:
Electrochemiluminescence immunoassay (Roche Cobas E411)

Reported:
1-8 days

Additional Information:
The ACTH precursor POMC has ~2% cross reactivity in this Roche electrochemiluminescence assay . This level of cross reactivity can be clinically significant because patients with non-carcinoid ectopic ACTH syndromes can have very high circulating concentrations of POMC-like ACTH precursors (139 - 18,000 pmol/L) - high enough to elevate ACTH in this assay by anywhere between 3 - 360 pmol/L (~13 - 1636 ng/L).

Patients with macroadenomas have been reported to have circulating concentrations of ACTH precursors that would be high enough to elevate ACTH in our assay by anywhere between 2 - 75 pmol/L (12 - 340 ng/L)

Ref: Oliver, Davis, and White, Pituitary 6:119-126, 2009 and Gibson et al, JCEM 81:497-502, 1996

Biotin concentrations of > 70 ng/mL may cause falsely decreased results with this Roche ACTH assay.
In patients taking 5-10 mg/day of biotin, samples should not be taken for this ACTH assay until at least 8 hours following the last biotin administration.
In patients taking higher doses of biotin (including patients taking doses of > 100 mg/day and more), samples should not be taken for this ACTH assay until at least 72 hours after the last biotin administration.

Ref: Li et al, JALM, 05:03 p575-587, 2020.

The quantification of ACTH using this Roche Elecsys immunoassay was not impacted by the use of non-chilled tubes and non-chilled centrifuge and up to a 4 hour delay in separation of plasma from red cells. ACTH samples held at ambient temperature for up to 8 hours after separation of plasma had <10% decrease in ACTH concentrations.

Ref: Nandakumar et al, Clinical Biochemistry, 2020; 81:59-62.

Results for this test determined by assay methods from other manufacturers may not be comparable.

Synonyms:

- ACTH
- Corticotropin

COLLECTION

Sample Type:
EDTA plasma

Collect:
Lavender top (on ice)

Amount to Collect:
3 mL blood

Preferred Volume:
1.5 mL plasma

Minimum Volume:
0.5 mL plasma

Remarks:
Draw specimen between 0700 and 1000 hours if possible. If drawn at other times reference ranges do not apply.

Sample must be collected in pre-chilled vacutainer and delivered immediately to laboratory on ice.

Stability (from collection to initiation):
Frozen (-20C): 10 weeks

PROCESSING

Test Code:
ACTH

Performing Lab:
Mount Zion Chemistry

Specimen Preparation:
Process immediately using refrigerated centrifuge. Avoid all contact with glass during processing and separation. Separate and freeze plasma in plastic tube at -20C.

Preferred Volume:
1.5 mL plasma

Minimum Volume:
0.5 mL plasma

Stability (from collection to initiation):
Frozen (-20C): 10 weeks

RESULT INTERPRETATION

Units:
ng/L

Reference Interval:
7 - 63 ng/L

Reference range was adopted from Roche Diagnostics studies with Cobas ACTH assay using plasma samples drawn between 0700 - 1000 on 354 healthy adults (5th - 95th percentile). The Roche reference range was verified by in-house testing of 15 male and 15 female lab volunteers.

Owing to circadian variation in ACTH levels, the reference ranges are only applicable to samples collected between 0700 and 1000 hours.

Additional Information:
The ACTH precursor POMC has ~2% cross reactivity in this Roche electrochemiluminescence assay . This level of cross reactivity can be clinically significant because patients with non-carcinoid ectopic ACTH syndromes can have very high circulating concentrations of POMC-like ACTH precursors (139 - 18,000 pmol/L) - high enough to elevate ACTH in this assay by anywhere between 3 - 360 pmol/L (~13 - 1636 ng/L).

Patients with macroadenomas have been reported to have circulating concentrations of ACTH precursors that would be high enough to elevate ACTH in our assay by anywhere between 2 - 75 pmol/L (12 - 340 ng/L)

Ref: Oliver, Davis, and White, Pituitary 6:119-126, 2009 and Gibson et al, JCEM 81:497-502, 1996

Biotin concentrations of > 70 ng/mL may cause falsely decreased results with this Roche ACTH assay.
In patients taking 5-10 mg/day of biotin, samples should not be taken for this ACTH assay until at least 8 hours following the last biotin administration.
In patients taking higher doses of biotin (including patients taking doses of > 100 mg/day and more), samples should not be taken for this ACTH assay until at least 72 hours after the last biotin administration.

Ref: Li et al, JALM, 05:03 p575-587, 2020.

The quantification of ACTH using this Roche Elecsys immunoassay was not impacted by the use of non-chilled tubes and non-chilled centrifuge and up to a 4 hour delay in separation of plasma from red cells. ACTH samples held at ambient temperature for up to 8 hours after separation of plasma had <10% decrease in ACTH concentrations.

Ref: Nandakumar et al, Clinical Biochemistry, 2020; 81:59-62.

Results for this test determined by assay methods from other manufacturers may not be comparable.

ADMINISTRATIVE

CPT Codes:
82024

LOINC Codes:
2141-0

COMPLETE VIEW

Available Stat:
No

Test Code:
ACTH

Performing Lab:
Mount Zion Chemistry

Performed:
Thursday

Methodology:
Electrochemiluminescence immunoassay (Roche Cobas E411)

Remarks:
Draw specimen between 0700 and 1000 hours if possible. If drawn at other times reference ranges do not apply.

Sample must be collected in pre-chilled vacutainer and delivered immediately to laboratory on ice.

Collect:
Lavender top (on ice)

Amount to Collect:
3 mL blood

Sample Type:
EDTA plasma

Preferred Volume:
1.5 mL plasma

Minimum Volume:
0.5 mL plasma

Specimen Preparation:
Process immediately using refrigerated centrifuge. Avoid all contact with glass during processing and separation. Separate and freeze plasma in plastic tube at -20C.

Units:
ng/L

Reference Interval:
7 - 63 ng/L

Reference range was adopted from Roche Diagnostics studies with Cobas ACTH assay using plasma samples drawn between 0700 - 1000 on 354 healthy adults (5th - 95th percentile). The Roche reference range was verified by in-house testing of 15 male and 15 female lab volunteers.

Owing to circadian variation in ACTH levels, the reference ranges are only applicable to samples collected between 0700 and 1000 hours.

Synonyms:

- ACTH
- Corticotropin

Stability (from collection to initiation):
Frozen (-20C): 10 weeks

Reported:
1-8 days

Additional Information:

The ACTH precursor POMC has ~2% cross reactivity in this Roche electrochemiluminescence assay . This level of cross reactivity can be clinically significant because patients with non-carcinoid ectopic ACTH syndromes can have very high circulating concentrations of POMC-like ACTH precursors (139 - 18,000 pmol/L) - high enough to elevate ACTH in this assay by anywhere between 3 - 360 pmol/L (~13 - 1636 ng/L).

Patients with macroadenomas have been reported to have circulating concentrations of ACTH precursors that would be high enough to elevate ACTH in our assay by anywhere between 2 - 75 pmol/L (12 - 340 ng/L)

Ref: Oliver, Davis, and White, Pituitary 6:119-126, 2009 and Gibson et al, JCEM 81:497-502, 1996

Biotin concentrations of > 70 ng/mL may cause falsely decreased results with this Roche ACTH assay.
In patients taking 5-10 mg/day of biotin, samples should not be taken for this ACTH assay until at least 8 hours following the last biotin administration.
In patients taking higher doses of biotin (including patients taking doses of > 100 mg/day and more), samples should not be taken for this ACTH assay until at least 72 hours after the last biotin administration.

Ref: Li et al, JALM, 05:03 p575-587, 2020.

The quantification of ACTH using this Roche Elecsys immunoassay was not impacted by the use of non-chilled tubes and non-chilled centrifuge and up to a 4 hour delay in separation of plasma from red cells. ACTH samples held at ambient temperature for up to 8 hours after separation of plasma had <10% decrease in ACTH concentrations.

Ref: Nandakumar et al, Clinical Biochemistry, 2020; 81:59-62.

Results for this test determined by assay methods from other manufacturers may not be comparable.

CPT Codes:

82024

LOINC Codes:

2141-0

Aerobic and Anaerobic Culture, Miscellaneous

P113

ORDERING

Ordering Recommendations:
Test is lab-orderable only and is intended for culturing transfused blood products as indicated by Blood Bank transfusion reaction workup. P113 battery includes STAT gram stain.

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Daily

Methodology:
Gram stain and culture

Reported:
5 days

Additional Information:
If there is no Microbiology HLT onsite, Hematology staff can fax requisition to 415-353-1829 for Micro staff at China Basin to accession. Call 415-353-1268 to alert Micro staff. When accessioning, change Order Account # to 55000476ZZ57048106. Enter code TRB in SDES field followed by the type of product and donor identification number (DIN). Enter TPC in SREQ. For blood products that have not been transfused (co-components), accession using MOP-7 as the medical record number.

Synonyms:

- Transfusion reaction

COLLECTION

Sample Type:
Blood products inoculated in Bactec Plus Aerobic and Lytic Anaerobic bottles by Blood Bank staff. Approximately 1 ml should also be submitted in syringe or sterile tube for STAT gram stain.

Remarks:
Products should be collected from an unused port. Do not use the same port used for transfusion. Avoid using tubing segments if possible.

Storage/Transport Temperature:
Room temp

PROCESSING

Test Code:
P113

Performing Lab:
Microbiology

Storage/Transport Temperature:
Room temp

RESULT INTERPRETATION

Critical Values:
Positive gram stains or cultures should be phoned immediately to the Blood Bank

Additional Information:
If there is no Microbiology HLT onsite, Hematology staff can fax requisition to 415-353-1829 for Micro staff at China Basin to accession. Call 415-353-1268 to alert Micro staff. When accessioning, change Order Account # to 55000476ZZ57048106. Enter code TRB in SDES field followed by the type of product and donor identification number (DIN). Enter TPC in SREQ. For blood products that have not been transfused (co-components), accession using MOP-7 as the medical record number.

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Test is lab-orderable only and is intended for culturing transfused blood products as indicated by Blood Bank transfusion reaction workup. P113 battery includes STAT gram stain.

Test Code:
P113

Performing Lab:
Microbiology

Performed:
Daily

Methodology:
Gram stain and culture

Remarks:
Products should be collected from an unused port. Do not use the same port used for transfusion. Avoid using tubing segments if possible.

Sample Type:
Blood products inoculated in Bactec Plus Aerobic and Lytic Anaerobic bottles by Blood Bank staff. Approximately 1 ml should also be submitted in syringe or sterile tube for STAT gram stain.

Critical Values:
Positive gram stains or cultures should be phoned immediately to the Blood Bank

Synonyms:

- Transfusion reaction

Storage/Transport Temperature:
Room temp

Reported:
5 days

Additional Information:
If there is no Microbiology HLT onsite, Hematology staff can fax requisition to 415-353-1829 for Micro staff at China Basin to accession. Call 415-353-1268 to alert Micro staff. When accessioning, change Order Account # to 55000476ZZ57048106. Enter code TRB in SDES field followed by the type of product and donor identification number (DIN). Enter TPC in SREQ. For blood products that have not been transfused (co-components), accession using MOP-7 as the medical record number.

AFB Blood Culture

P288

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Daily

Methodology:
Culture

Reported:
Up to 60 days

Additional Information:
Blood cultures are performed only for patients with a diagnosis of AIDS and are suitable only for detecting MAIC.

Reflex Testing:
If positive additional test(s) will be performed for identification of the mycobacteria and billed separately.

Synonyms:

- TB culture
- AFB culture
- tuberculosis
- atypical mycobacteria
- MAC
- mycobacteriaum avium intercellulare complex
- MAI

COLLECTION

Sample Type:
Heparinized whole blood

Collect:
Dark green top (**DO NOT** use Lithium heparin i.e. Light Green top tubes)

Amount to Collect:
5 mL blood

Preferred Volume:
5 mL blood

Minimum Volume:
1 mL blood

Remarks:
Use only dark green top, sodium heparin tubes for blood samples.

Stability (from collection to initiation):
Room temperature or refrigerated 3 days

Unacceptable Conditions:
Improper container type

PROCESSING

Test Code:
P288

Test Group:
Mycobacteria

Performing Lab:
Microbiology

Specimen Preparation:
Send sodium heparin tubes to China Basin. At China Basin, process upon receipt. Inoculate 3-5 mL into AFB culture bottle. Refer to BD BACTEC FX40 procedure.

Preferred Volume:
5 mL blood

Minimum Volume:
1 mL blood

Unacceptable Conditions:
Improper container type

Stability (from collection to initiation):
Room temperature or refrigerated 3 days

RESULT INTERPRETATION

Reference Interval:
No AFB isolated

Critical Values:
Inpatient results only. After hours outpatient results will be phoned the following morning.First positive AFB culture; Repeat call only for positive sample from different site or > 2 months since initial call.

Additional Information:
Blood cultures are performed only for patients with a diagnosis of AIDS and are suitable only for detecting MAIC.

ADMINISTRATIVE

CPT Codes:
87116

LOINC Codes:
50941-4

COMPLETE VIEW

Available Stat:
No

Test Code:
P288

Test Group:
Mycobacteria

Performing Lab:
Microbiology

Performed:
Daily

Methodology:
Culture

Remarks:
Use only dark green top, sodium heparin tubes for blood samples.

Collect:
Dark green top (**DO NOT** use Lithium heparin i.e. Light Green top tubes)

Amount to Collect:
5 mL blood

Sample Type:
Heparinized whole blood

Preferred Volume:
5 mL blood

Minimum Volume:
1 mL blood

Unacceptable Conditions:
Improper container type

Specimen Preparation:
Send sodium heparin tubes to China Basin. At China Basin, process upon receipt. Inoculate 3-5 mL into AFB culture bottle. Refer to BD BACTEC FX40 procedure.

Reference Interval:
No AFB isolated

Critical Values:
Inpatient results only. After hours outpatient results will be phoned the following morning.First positive AFB culture; Repeat call only for positive sample from different site or > 2 months since initial call.

Synonyms:

- TB culture
- AFB culture
- tuberculosis
- atypical mycobacteria
- MAC
- mycobacteriaum avium intercellulare complex
- MAI

Stability (from collection to initiation):
Room temperature or refrigerated 3 days

Reported:
Up to 60 days

Reflex Testing:
If positive additional test(s) will be performed for identification of the mycobacteria and billed separately.

Additional Information:
Blood cultures are performed only for patients with a diagnosis of AIDS and are suitable only for detecting MAIC.

CPT Codes:
87116

LOINC Codes:
50941-4

AFB Culture, Cystic Fibrosis Respiratory

P287CF

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Daily, day shift

Methodology:
Culture

Reported:
Up to 7 weeks

Reflex Testing:
Smears will be performed on respiratory samples. Separate charges will be billed for AFB smear and AFB culture. Additional charges will be billed for decontamination of samples from non-sterile sites.

Mycobacterium tuberculosis complex DNA is automatically performed on respiratory specimens with positive smears, and billed separately.

Synonyms:

- TB culture
- AFB culture
- tuberculosis
- atypical mycobacteria
- MAC
- mycobacteriaum avium intercellulare complex
- MAI

COLLECTION

Sample Type:
Sputum, BAL or bronchial wash

Collect:
Urine cup or sterile container

Amount to Collect:
Sputum: 5 mL
BAL or Bronchial wash: 10 mL

Minimum Volume:
Sputum: 5 mL
BAL or Bronchial wash: 10 mL

Remarks:
Sputum: Collect 3 separate sputum samples in 8-12 hour intervals, including at least one early morning sample.

Sputum samples collected < 8 hours apart are pooled & tested as a single specimen.

Stability (from collection to initiation):
Refrigerated 3 days

PROCESSING

Test Code:
P287CF

Test Group:
Mycobacteria

Performing Lab:
Microbiology

Specimen Preparation:

Sputum: Before accessioning, check if a sample was submitted earlier. If earlier sample was collected < 8 hours apart from the sample just received, call China Basin to check if earlier sample has been processed.

1. If earlier sample has not been processed, TND as duplicate and enter code AFPOOL. Inform submitting location that the sample is being pooled with the prior sample, and to collect an additional sputum. Affix a note to the sample stating Pool sample for AFB with (accession # of earlier sample)".

2. If earlier sample has been processed, TND as duplicate and freetext Collect sputa for AFB culture 8 hours apart".

Bronchial lavage/wash: Aliquot the maximum amount of specimen available (>10 mL) into a blue top centrifuge tube.

Bronchial brush:

1. Use sterile forceps to transfer brush to a 50 ml blue-topped centrifuge tube.

2. Add NPC 67 Neutralizing buffer to make a total volume of 2 ml.

3. Vortex thoroughly to expel specimen from the brush and then remove brush from tube.

Minimum Volume:

Sputum: 5 mL
BAL or Bronchial wash: 10 mL

Stability (from collection to initiation):

Refrigerated 3 days

RESULT INTERPRETATION

Reference Interval:

No AFB isolated

Critical Values:

Inpatient results only. After hours outpatient results will be phoned the following morning.First positive AFB smear, first positive AFB culture if smear negative or no smear, or first isolate of M. tuberculosis; Repeat call only for positive sample from different site or > 2 months since initial call.

ADMINISTRATIVE

CPT Codes:

87116, 87206, 87015

COMPLETE VIEW

Available Stat:

No

Test Code:

P287CF

Test Group:

Mycobacteria

Performing Lab:

Microbiology

Performed:

Daily, day shift

Methodology:

Culture

Remarks:

Sputum: Collect 3 separate sputum samples in 8-12 hour intervals, including at least one early morning sample.

Sputum samples collected < 8 hours apart are pooled & tested as a single specimen.

Collect:

Urine cup or sterile container

Amount to Collect:

Sputum: 5 mL
BAL or Bronchial wash: 10 mL

Sample Type:

Sputum, BAL or bronchial wash

Minimum Volume:

Sputum: 5 mL
BAL or Bronchial wash: 10 mL

Specimen Preparation:

Sputum: Before accessioning, check if a sample was submitted earlier. If earlier sample was collected < 8 hours apart from the sample just received, call China Basin to check if earlier sample has been processed.

1. If earlier sample has not been processed, TND as duplicate and enter code AFPOOL. Inform submitting location that the sample is being pooled with the prior sample, and to collect an additional sputum. Affix a note to the sample stating Pool sample for AFB with (accession # of earlier sample)".

2. If earlier sample has been processed, TND as duplicate and freetext Collect sputa for AFB culture 8 hours apart".

Bronchial lavage/wash: Aliquot the maximum amount of specimen available (>10 mL) into a blue top centrifuge tube.

Bronchial brush:

1. Use sterile forceps to transfer brush to a 50 ml blue-topped centrifuge tube.

2. Add NPC 67 Neutralizing buffer to make a total volume of 2 ml.

3. Vortex thoroughly to expel specimen from the brush and then remove brush from tube.

Reference Interval:

No AFB isolated

Critical Values:

Inpatient results only. After hours outpatient results will be phoned the following morning.First positive AFB smear, first positive AFB culture if smear negative or no smear, or first isolate of M. tuberculosis; Repeat call only for positive sample from different site or > 2 months since initial call.

Synonyms:

- TB culture
- AFB culture
- tuberculosis
- atypical mycobacteria
- MAC
- mycobacteriaum avium intercellulare complex
- MAI

Stability (from collection to initiation):

Refrigerated 3 days

Reported:

Up to 7 weeks

Reflex Testing:

Smears will be performed on respiratory samples. Separate charges will be billed for AFB smear and AFB culture. Additional charges will be billed for decontamination of samples from non-sterile sites.

Mycobacterium tuberculosis complex DNA is automatically performed on respiratory specimens with positive smears, and billed separately.

CPT Codes:

87116, 87206, 87015

AFB Culture, Non-Respiratory

P284

ORDERING

Approval Required:

Yes for:
- CSF unless submitted by neurology or neurosurgery services
- Joint fluid
- Abdominal drainage
- < 2 ml fluid submitted

Contact Microbiology at 353-1268

Available Stat:

No

Performing Lab:

Microbiology

Performed:

Daily, day shift

Methodology:

Culture

Reported:

Up to 7 weeks

Additional Information:

Samples are run w/o smear when a positive result would not be interpretable because of relatively frequent contamination with nonpathogenic mycobacteria which cannot be reliably differentiated on smear (e.g., in urine), or for blood, bone marrow, CSF or pleural fluid where the yield of routine testing is low.

Tuberculous arthritis, meningitis, and urinary infection are extremely uncommon diagnoses at this hospital, and cultures should only be requested if the cellular response is highly suggestive of tuberculosis, if there is a history of tuberculosis or close contact with a case, if there is a positive tuberculin test, or if granulomas are found in a biopsy specimen.

Bone marrow is the preferred specimen in non-AIDS patients with disseminated disease, in whom the yield from blood is extremely low.

Reflex Testing:

Separate charges will be billed for AFB smear and AFB culture. Additional charges will be billed for decontamination of samples from non-sterile sites. Smears will be performed on appropriate samples.

Synonyms:

- TB culture
- AFB culture
- tuberculosis
- atypical mycobacteria
- MAC
- mycobacteriaum avium intercellulare complex
- MAI

COLLECTION

Sample Type:

Bone marrow, CSF, body fluids, urine, unfixed tissue, FNA

Collect:

Bone marrow: SPS tube (available from Hematology laboratory)
CSF tube
Sterile collection tube
TSB broth tube (Available from Microbiology processing area)

Amount to Collect:

Bone Marrow: 1 mL
CSF and other fluids: 15-20 mL (6 mL for peds)
Urine: Entire first AM void (Up to 3 samples may be collected on consecutive days)
Tissue: 5 cu mm

Preferred Volume:

Bone Marrow: 1 mL
CSF and other fluids: 15-20 mL (6 mL for peds)
Urine: Entire first AM void
Tissue: 5 cu mm

Minimum Volume:
Bone Marrow: 0.5 mL
CSF and other fluids: 2 mL
Urine: 10 mL
Tissue: 3 cu mm

Remarks:
Bone marrow: Isolator tubes for bone marrow samples are available from the Hematology laboratory.

Urine: Collect entire first AM void

Gastric lavage: Collect in the early morning. Patient should be fasting prior to collection.

FNA: TSB broth tubes for FNA samples are available from the Microbiology processing laboratory.

Note: the diagnostic yield for joint and body fluid samples is low. If mycobacterial infection is suspected from these sites, tissue is the preferred specimen.

Stability (from collection to initiation):
Blood and bone marrow Room temperature: 1 day
Other specimens Refrigerated: 3 days

Unacceptable Conditions:
Samples submitted on swabs or in formalin

PROCESSING

Test Code:
P284

Test Group:
Mycobacteria

Performing Lab:
Microbiology

Specimen Preparation:
Bone marrow: Store at room temperature until processed. Process specimen immediately upon receipt in microbiology

Gastric lavage: If processing will be delayed by more than 5 hours, give specimen to CLS to neutralize.

Tissue: Grind a piece of tissue using NPC 67 Neutralizing buffer and transfer to blue top centrifuge tube.

CSF: If approved, enter volume used for culture in SDES and AFBVOL in SREQ. (The yield of CSF AFB culture increases with greater specimen volume. Recommended volumes are > 6 ml for pediatrics and 15-20 ml for adults.)

Note: If CSF AFB smear is approved, alert AFB processor and do NOT credit AFB smear.

Preferred Volume:
Bone Marrow: 1 mL
CSF and other fluids: 15-20 mL (6 mL for peds)
Urine: Entire first AM void
Tissue: 5 cu mm

Minimum Volume:
Bone Marrow: 0.5 mL
CSF and other fluids: 2 mL
Urine: 10 mL
Tissue: 3 cu mm

Unacceptable Conditions:
Samples submitted on swabs or in formalin

Stability (from collection to initiation):
Blood and bone marrow Room temperature: 1 day
Other specimens Refrigerated: 3 days

RESULT INTERPRETATION

Reference Interval:
No AFB isolated

Critical Values:
Inpatient results only. After hours outpatient results will be phoned the following morning.First positive AFB smear, first positive AFB culture if smear negative or no smear, or first isolate of M. tuberculosis; Repeat call only for positive sample from different site or > 2 months since initial call.

Additional Information:

Samples are run w/o smear when a positive result would not be interpretable because of relatively frequent contamination with nonpathogenic mycobacteria which cannot be reliably differentiated on smear (e.g., in urine), or for blood, bone marrow, CSF or pleural fluid where the yield of routine testing is low.

Tuberculous arthritis, meningitis, and urinary infection are extremely uncommon diagnoses at this hospital, and cultures should only be requested if the cellular response is highly suggestive of tuberculosis, if there is a history of tuberculosis or close contact with a case, if there is a positive tuberculin test, or if granulomas are found in a biopsy specimen.

Bone marrow is the preferred specimen in non-AIDS patients with disseminated disease, in whom the yield from blood is extremely low.

ADMINISTRATIVE

CPT Codes:

87116, 87206

COMPLETE VIEW

Approval Required:

Yes for:
- CSF unless submitted by neurology or neurosurgery services
- Joint fluid
- Abdominal drainage
- < 2 ml fluid submitted

Contact Microbiology at 353-1268

Available Stat:

No

Test Code:

P284

Test Group:

Mycobacteria

Performing Lab:

Microbiology

Performed:

Daily, day shift

Methodology:

Culture

Remarks:

Bone marrow: Isolator tubes for bone marrow samples are available from the Hematology laboratory.

Urine: Collect entire first AM void

Gastric lavage: Collect in the early morning. Patient should be fasting prior to collection.

FNA: TSB broth tubes for FNA samples are available from the Microbiology processing laboratory.

Note: the diagnostic yield for joint and body fluid samples is low. If mycobacterial infection is suspected from these sites, tissue is the preferred specimen.

Collect:

Bone marrow: SPS tube (available from Hematology laboratory)
CSF tube
Sterile collection tube
TSB broth tube (Available from Microbiology processing area)

Amount to Collect:

Bone Marrow: 1 mL
CSF and other fluids: 15-20 mL (6 mL for peds)
Urine: Entire first AM void (Up to 3 samples may be collected on consecutive days)
Tissue: 5 cu mm

Sample Type:

Bone marrow, CSF, body fluids, urine, unfixed tissue, FNA

Preferred Volume:

Bone Marrow: 1 mL
CSF and other fluids: 15-20 mL (6 mL for peds)
Urine: Entire first AM void
Tissue: 5 cu mm

Minimum Volume:
Bone Marrow: 0.5 mL
CSF and other fluids: 2 mL
Urine: 10 mL
Tissue: 3 cu mm

Unacceptable Conditions:
Samples submitted on swabs or in formalin

Specimen Preparation:
Bone marrow: Store at room temperature until processed. Process specimen immediately upon receipt in microbiology

Gastric lavage: If processing will be delayed by more than 5 hours, give specimen to CLS to neutralize.

Tissue: Grind a piece of tissue using NPC 67 Neutralizing buffer and transfer to blue top centrifuge tube.

CSF: If approved, enter volume used for culture in SDES and AFBVOL in SREQ. (The yield of CSF AFB culture increases with greater specimen volume. Recommended volumes are > 6 ml for pediatrics and 15-20 ml for adults.)

Note: If CSF AFB smear is approved, alert AFB processor and do NOT credit AFB smear.

Reference Interval:
No AFB isolated

Critical Values:
Inpatient results only. After hours outpatient results will be phoned the following morning.First positive AFB smear, first positive AFB culture if smear negative or no smear, or first isolate of M. tuberculosis; Repeat call only for positive sample from different site or > 2 months since initial call.

Synonyms:

- TB culture
- AFB culture
- tuberculosis
- atypical mycobacteria
- MAC
- mycobacteriaum avium intercellulare complex
- MAI

Stability (from collection to initiation):
Blood and bone marrow Room temperature: 1 day
Other specimens Refrigerated: 3 days

Reported:
Up to 7 weeks

Reflex Testing:
Separate charges will be billed for AFB smear and AFB culture. Additional charges will be billed for decontamination of samples from non-sterile sites. Smears will be performed on appropriate samples.

Additional Information:
Samples are run w/o smear when a positive result would not be interpretable because of relatively frequent contamination with nonpathogenic mycobacteria which cannot be reliably differentiated on smear (e.g., in urine), or for blood, bone marrow, CSF or pleural fluid where the yield of routine testing is low.

Tuberculous arthritis, meningitis, and urinary infection are extremely uncommon diagnoses at this hospital, and cultures should only be requested if the cellular response is highly suggestive of tuberculosis, if there is a history of tuberculosis or close contact with a case, if there is a positive tuberculin test, or if granulomas are found in a biopsy specimen.

Bone marrow is the preferred specimen in non-AIDS patients with disseminated disease, in whom the yield from blood is extremely low.

CPT Codes:
87116, 87206

AFB Respiratory Culture

P285R

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Daily, day shift

Methodology:
Culture

Reported:
Up to 7 weeks

Reflex Testing:
Smears will be performed on respiratory samples. Separate charges will be billed for AFB smear and AFB culture. Additional charges will be billed for decontamination of samples from nonsterile sites.

Mycobacterium tuberculosis complex DNA is automatically performed on respiratory specimens with positive smears, and billed separately.

Synonyms:

- TB culture
- AFB culture
- tuberculosis
- atypical mycobacteria
- MAC
- mycobacteriaum avium intercellulare complex
- MAI

COLLECTION

Sample Type:
Sputum, BAL, bronchial wash

Collect:
Urine cup or sterilecontainer

Amount to Collect:
Sputum: 5 mL
BAL or Bronchial wash: 10 mL

Preferred Volume:
Sputum: 5 mL
?BAL or Bronchial wash: 10 mL

Minimum Volume:
Sputum: 1 mL
?BAL or Bronchial wash: 2 mL

Remarks:
Sputum: Collect 3 separate sputum samples in 8-12 hour intervals, including at least one early morning sample.

Sputum samples collected < 8 hours apart are pooled & tested as a single specimen.

Stability (from collection to initiation):
Refrigerated 3 days.

PROCESSING

Test Code:
P285R

Test Group:
Mycobacteria

Performing Lab:
Microbiology

Specimen Preparation:

Sputum: Before accessioning, check if a sample was submitted earlier. If earlier sample was collected < 8 hours apart from the sample just received, call China Basin to check if earlier sample has been processed.

1. If earlier sample has not been processed, TND as duplicate and enter code AFPOOL. Inform submitting location that the sample is being pooled with the prior sample, and to collect an additional sputum. Affix a note to the sample stating Pool sample for AFB with (accession # of earlier sample)".

2. If earlier sample has been processed, TND as duplicate and freetext Collect sputa for AFB culture 8 hours apart".

Bronchial lavage/wash: Aliquot the maximum amount of specimen available (>10 mL) into a blue top centrifuge tube.

Bronchial brush:

1. Use sterile forceps to transfer brush to a 50 ml blue-topped centrifuge tube.

2. Add NPC 67 Neutralizing buffer to make a total volume of 2 ml. 3. Vortex thoroughly to expel specimen from the brush and then remove brush from tube.

Preferred Volume:

Sputum: 5 mL
?BAL or Bronchial wash: 10 mL

Minimum Volume:

Sputum: 1 mL
?BAL or Bronchial wash: 2 mL

Stability (from collection to initiation):

Refrigerated 3 days.

RESULT INTERPRETATION

Reference Interval:

No AFB isolated

Critical Values:

Inpatient results only. After hours outpatient results will be phoned the following morning.

First positive AFB smear, first positive AFB culture if smear negative or no smear, or first isolate of M. tuberculosis; Repeat call only for positive sample from different site or > 2 months since initial call.

ADMINISTRATIVE

CPT Codes:

87116, 87206

COMPLETE VIEW

Available Stat:

No

Test Code:

P285R

Test Group:

Mycobacteria

Performing Lab:

Microbiology

Performed:

Daily, day shift

Methodology:

Culture

Remarks:

Sputum: Collect 3 separate sputum samples in 8-12 hour intervals, including at least one early morning sample.

Sputum samples collected < 8 hours apart are pooled & tested as a single specimen.

Collect:

Urine cup or sterilecontainer

Amount to Collect:

Sputum: 5 mL
BAL or Bronchial wash: 10 mL

Sample Type:

Sputum, BAL, bronchial wash

Preferred Volume:
Sputum: 5 mL
?BAL or Bronchial wash: 10 mL

Minimum Volume:
Sputum: 1 mL
?BAL or Bronchial wash: 2 mL

Specimen Preparation:
Sputum: Before accessioning, check if a sample was submitted earlier. If earlier sample was collected < 8 hours apart from the sample just received, call China Basin to check if earlier sample has been processed.

1. If earlier sample has not been processed, TND as duplicate and enter code AFPOOL. Inform submitting location that the sample is being pooled with the prior sample, and to collect an additional sputum. Affix a note to the sample stating Pool sample for AFB with (accession # of earlier sample)".

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Bronchial lavage/wash: Aliquot the maximum amount of specimen available (>10 mL) into a blue top centrifuge tube.

Bronchial brush:

1. Use sterile forceps to transfer brush to a 50 ml blue-topped centrifuge tube.

2. Add NPC 67 Neutralizing buffer to make a total volume of 2 ml. 3. Vortex thoroughly to expel specimen from the brush and then remove brush from tube.

Reference Interval:
No AFB isolated

Critical Values:
Inpatient results only. After hours outpatient results will be phoned the following morning.

First positive AFB smear, first positive AFB culture if smear negative or no smear, or first isolate of M. tuberculosis; Repeat call only for positive sample from different site or > 2 months since initial call.

Synonyms:

- TB culture
- AFB culture
- tuberculosis
- atypical mycobacteria
- MAC
- mycobacteriaum avium intercellulare complex
- MAI

Stability (from collection to initiation):
Refrigerated 3 days.

Reported:
Up to 7 weeks

Reflex Testing:
Smears will be performed on respiratory samples. Separate charges will be billed for AFB smear and AFB culture. Additional charges will be billed for decontamination of samples from nonsterile sites.

Mycobacterium tuberculosis complex DNA is automatically performed on respiratory specimens with positive smears, and billed separately.

CPT Codes:
87116, 87206

Alanine transaminase, Plasma / Serum

ALT

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Chemistry: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center (Mon-Fri 0800-1630)

Methodology:
Parnassus, Mission Bay & Mt. Zion Chemistry: NADH (without P-5'-P) - Abbott Architect
Berkeley Outpatient Center: NADH with P-5'-P - Roche cobas c311

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
Excessive hemolysis causes mild elevation.

Synonyms:

- SGPT
- ALT
- glutamic-pyruvic transaminase
- glutamic-alanine transaminase
- GPT
- beta-alanine aminotransferase
- alanine aminotransferase
- alanine-alpha-ketoglutarate aminotransferase
- alanine-pyruvate aminotransferase
- glutamic acid-pyruvic acid transaminase
- glutamic-pyruvic aminotransferase
- L-alanine aminotransferase
- L-alanine transaminase
- L-alanine-alpha-ketoglutarate aminotransferase
- pyruvate transaminase
- pyruvate-alanine aminotransferase
- pyruvate-glutamate transaminase

COLLECTION

Sample Type:
Plasma or serum

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Parnassus, Mission Bay and Mt. Zion Chemistry
Room temperature 3 days, refrigerated 7 days, frozen at -40C or colder 60 days.

When samples were stored at -20°C for 8 days, an 11% reduction in ALT activity was observed; a 20% reduction in ALT activity was observed when specimens were stored at -20°C for 1 month.

Information obtained from Abbott Architect Alanine Aminotransferace reagent insert revision February 2017.

Berkeley Outpatient Center
Room temperature 3 days, refrigerated 7 days, frozen at -60C or colder >7 days.

PROCESSING

Test Code:
ALT

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Parnassus, Mission Bay and Mt. Zion Chemistry
Room temperature 3 days, refrigerated 7 days, frozen at -40C or colder 60 days.

When samples were stored at -20°C for 8 days, an 11% reduction in ALT activity was observed; a 20% reduction in ALT activity was observed when specimens were stored at -20°C for 1 month.

Information obtained from Abbott Architect Alanine Aminotransferace reagent insert revision February 2017.

Berkeley Outpatient Center
Room temperature 3 days, refrigerated 7 days, frozen at -60C or colder >7 days.

RESULT INTERPRETATION

Units:
U/L

Reference Interval:
Parnassus, Mission Bay and Mt. Zion Chemistry
Male

Age	U/L
0 to <1 year	5-33
1 to 13 years	9-25
13 to <19 years	9-24
>=19 years	10-61

Female

Age	U/L
0 to <1 year	5-33
1 to 13 years	9-25
13 to <19 years	8-22
>=19 years	10-61

Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, https://caliper.research.sickkids.ca/#/search

Adult reference range at Parnassus, Mission Bay and Mount Zion adopted after verifying previous UCSF reference interval from the Backman analyzer using 20 male and 20 female lab volunteers.

Berkeley Outpatient Center

Age	Male (U/L)	Female (U/L)
>= 19 years	9-59	8-41

Adult reference intervals for Berkeley Outpatient Center adopted from an IFCC multicenter study published in Ceriotti et al, Clin Chem Lab Med, 2010; 48(11): 1593-1601 and verified by running 20 male and 20 female normal volunteers from UCSF Clinical Laboratories. This IFCC reference interval study excluded patients with diabetes mellitus, use of therapeutic drugs with an effect on serum enzyme activities, pregnancy, body mass index (BMI) of > 30 kg/m2, alcohol consumption of > 30g/day and heavy exercise in the previous days.

Additional Information:
Excessive hemolysis causes mild elevation.

ADMINISTRATIVE

CPT Codes:
84460

LOINC Codes:
1742-6

COMPLETE VIEW

Available Stat:
Yes

Test Code:
ALT

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Chemistry: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center (Mon-Fri 0800-1630)

Methodology:
Parnassus, Mission Bay & Mt. Zion Chemistry: NADH (without P-5'-P) - Abbott Architect
Berkeley Outpatient Center: NADH with P-5'-P - Roche cobas c311

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
1 mL blood

Sample Type:
Plasma or serum

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Units:
U/L

Reference Interval:
Parnassus, Mission Bay and Mt. Zion Chemistry
Male

Age	U/L
0 to <1 year	5-33
1 to 13 years	9-25
13 to <19 years	9-24
>=19 years	10-61

Female

Age	U/L
0 to <1 year	5-33
1 to 13 years	9-25
13 to <19 years	8-22
>=19 years	10-61

Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, https://caliper.research.sickkids.ca/#/search

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Age	Male (U/L)	Female (U/L)
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Synonyms:

- SGPT
- ALT
- glutamic-pyruvic transaminase
- glutamic-alanine transaminase
- GPT
- beta-alanine aminotransferase
- alanine aminotransferase
- alanine-alpha-ketoglutarate aminotransferase
- alanine-pyruvate aminotransferase
- glutamic acid-pyruvic acid transaminase
- glutamic-pyruvic aminotransferase
- L-alanine aminotransferase
- L-alanine transaminase
- L-alanine-alpha-ketoglutarate aminotransferase
- pyruvate transaminase
- pyruvate-alanine aminotransferase
- pyruvate-glutamate transaminase

Stability (from collection to initiation):

Parnassus, Mission Bay and Mt. Zion Chemistry
Room temperature 3 days, refrigerated 7 days, frozen at -40C or colder 60 days.

When samples were stored at -20°C for 8 days, an 11% reduction in ALT activity was observed; a 20% reduction in ALT activity was observed when specimens were stored at -20°C for 1 month.

Information obtained from Abbott Architect Alanine Aminotransferace reagent insert revision February 2017.

Berkeley Outpatient Center
Room temperature 3 days, refrigerated 7 days, frozen at -60C or colder >7 days.

Reported:

STAT 1 hour, Routine 4 hours

Additional Information:

Excessive hemolysis causes mild elevation.

CPT Codes:

84460

LOINC Codes:

1742-6

Albumin (Microalbumin), 24 hour (or timed) urine

AU24

ORDERING

Available Stat:
No

Performing Lab:
Parnassus, Mission Bay and Mount Zion Chemistry

Performed:
24-hours per day, 7-days per week

Methodology:
Immunoturbidimetric on the Abbott Architect c8000

Reported:
1-2 days

Note: TAT for STAT or Routine samples drawn at Mission Bay can take up to 24 hours.

Additional Information:
Diabetes mellitus is one of the commonest causes of end-stage renal disease. The National Kidney Foundation recommends that diabetics > 12 years old be tested yearly for microalbuminuria if the rate of excretion is within normal limits (Amer J Kid Dis. 1995;25:107). The Diabetes Coalition of California recommends annual testing for microalbuminuria beginning 5 years after the diagnosis of type I diabetes mellitus and beginning at diagnosis of type II disease. The cost benefit of these strategies are not established.

Transient increases in urinary albumin excretion are seen with heavy exercise, urinary infection, acute febrile illness, heart failure and following the administration of NSIADs or ACE inhibitors, all of which should be avoided during screening. Because of the difficulty in collecting and accurately timing 24 hour samples, a spot collection is recommended and the albumin excretion is normalized for creatinine excretion, correcting to some extent for the diurnal fluctuation in urinary output. Abnormalities should be verified by a repeatedly positive assay within 6-12 weeks before a diagnosis of diabetic microalbuminuria or diabetic nephropathy is made.

Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

Synonyms:

- Microalbuminuria

COLLECTION

Sample Type:
24 hour urine

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container, 10g Boric Acid

Amount to Collect:
Entire 24 hour urine output

Preferred Volume:
2 mL urine

Minimum Volume:
0.5 mL urine

Remarks:
Refrigerate container during collection

Note that the minimum acceptable time period for a 'timed' collection is 6 hours.

Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

Stability (from collection to initiation):
Room temperature: 2 days
Refrigerated: 30 days
Frozen: 6 months

Unacceptable Conditions:
Container not refrigerated during collection.

PROCESSING

Test Code:
AU24

Performing Lab:
Parnassus, Mission Bay and Mount Zion Chemistry

Specimen Preparation:
Aliquot 2 mL. Note volume and hours collected. Order AU24.

Preferred Volume:
2 mL urine

Minimum Volume:
0.5 mL urine

Unacceptable Conditions:
Container not refrigerated during collection.

Stability (from collection to initiation):
Room temperature: 2 days
Refrigerated: 30 days
Frozen: 6 months

RESULT INTERPRETATION

Units:
mg/D

Reference Interval:
24 hour collection:

Normal	< 30 mg/D
Microalbuminuria	30-299 mg/D
Nephropathy	> 300 mg/D

Additional Information:
Diabetes mellitus is one of the commonest causes of end-stage renal disease. The National Kidney Foundation recommends that diabetics > 12 years old be tested yearly for microalbuminuria if the rate of excretion is within normal limits (Amer J Kid Dis. 1995;25:107). The Diabetes Coalition of California recommends annual testing for microalbuminuria beginning 5 years after the diagnosis of type I diabetes mellitus and beginning at diagnosis of type II disease. The cost benefit of these strategies are not established.

Transient increases in urinary albumin excretion are seen with heavy exercise, urinary infection, acute febrile illness, heart failure and following the administration of NSIADs or ACE inhibitors, all of which should be avoided during screening. Because of the difficulty in collecting and accurately timing 24 hour samples, a spot collection is recommended and the albumin excretion is normalized for creatinine excretion, correcting to some extent for the diurnal fluctuation in urinary output. Abnormalities should be verified by a repeatedly positive assay within 6-12 weeks before a diagnosis of diabetic microalbuminuria or diabetic nephropathy is made.

Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

ADMINISTRATIVE

CPT Codes:
82043

LOINC Codes:
14956-7

COMPLETE VIEW

Available Stat:
No

Test Code:
AU24

Performing Lab:
Parnassus, Mission Bay and Mount Zion Chemistry

Performed:
24-hours per day, 7-days per week

Methodology:
Immunoturbidimetric on the Abbott Architect c8000

Remarks:

Refrigerate container during collection

Note that the minimum acceptable time period for a 'timed' collection is 6 hours.

Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

Collect:

Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container, 10g Boric Acid

Amount to Collect:

Entire 24 hour urine output

Sample Type:

24 hour urine

Preferred Volume:

2 mL urine

Minimum Volume:

0.5 mL urine

Unacceptable Conditions:

Container not refrigerated during collection.

Specimen Preparation:

Aliquot 2 mL. Note volume and hours collected. Order AU24.

Units:

mg/D

Reference Interval:

24 hour collection:

Normal	< 30 mg/D
Microalbuminuria	30-299 mg/D
Nephropathy	> 300 mg/D

Synonyms:

- Microalbuminuria

Stability (from collection to initiation):

Room temperature: 2 days
Refrigerated: 30 days
Frozen: 6 months

Reported:

1-2 days

Note: TAT for STAT or Routine samples drawn at Mission Bay can take up to 24 hours.

Additional Information:

Diabetes mellitus is one of the commonest causes of end-stage renal disease. The National Kidney Foundation recommends that diabetics > 12 years old be tested yearly for microalbuminuria if the rate of excretion is within normal limits (Amer J Kid Dis. 1995;25:107). The Diabetes Coalition of California recommends annual testing for microalbuminuria beginning 5 years after the diagnosis of type I diabetes mellitus and beginning at diagnosis of type II disease. The cost benefit of these strategies are not established.

Transient increases in urinary albumin excretion are seen with heavy exercise, urinary infection, acute febrile illness, heart failure and following the administration of NSIADs or ACE inhibitors, all of which should be avoided during screening. Because of the difficulty in collecting and accurately timing 24 hour samples, a spot collection is recommended and the albumin excretion is normalized for creatinine excretion, correcting to some extent for the diurnal fluctuation in urinary output. Abnormalities should be verified by a repeatedly positive assay within 6-12 weeks before a diagnosis of diabetic microalbuminuria or diabetic nephropathy is made.

Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

CPT Codes:

82043

LOINC Codes:

14956-7

Albumin (Microalbumin), random urine

AUR

ORDERING

Available Stat:
No

Performing Lab:
Parnassus, Mission Bay and Mt Zion Chemistry

Performed:
24-hours per day, 7-days per week

Methodology:
Immunoturbidimetric on the Abbott Architect c8000

Reported:
1-2 days

Note: TAT for samples collected at Mission Bay can take up to 24 hours.

Additional Information:
Diabetes mellitus is one of the commonest causes of end-stage renal disease. The National Kidney Foundation recommends that diabetics > 12 years old be tested yearly for microalbuminuria if the rate of excretion is within normal limits (Amer J Kid Dis. 1995;25:107). The Diabetes Coalition of California recommends annual testing for microalbuminuria beginning 5 years after the diagnosis of type I diabetes mellitus and beginning at diagnosis of type II disease. The cost benefit of these strategies are not established.

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Reflex Testing:
A creatinine is performed on the same sample to calculate the result and will be reported and billed separately.

Synonyms:

- Microalbuminuria

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
10-20 mL

Preferred Volume:
2 mL urine

Minimum Volume:
0.5 mL urine

Remarks:
First A.M. sample preferred for random urine.

Stability (from collection to initiation):
Room temperature: 2 days
Refrigerated: 30 days
Frozen: 6 months

PROCESSING

Test Code:
AUR

Performing Lab:
Parnassus, Mission Bay and Mt Zion Chemistry

Specimen Preparation:
Aliquot 2 mL, note that sample is a "spot" or random urine sample. Order AUR.

Preferred Volume:
2 mL urine

Minimum Volume:
0.5 mL urine

Stability (from collection to initiation):
Room temperature: 2 days
Refrigerated: 30 days
Frozen: 6 months

RESULT INTERPRETATION

Units:
mg/g creatinine

Reference Interval:
Random urine:

Normal	< 30 mg/g creatinine
Microalbuminuria	30-299 mg/g creatinine
Nephropathy	> 300 mg/g creatinine

Additional Information:
Diabetes mellitus is one of the commonest causes of end-stage renal disease. The National Kidney Foundation recommends that diabetics > 12 years old be tested yearly for microalbuminuria if the rate of excretion is within normal limits (Amer J Kid Dis. 1995;25:107). The Diabetes Coalition of California recommends annual testing for microalbuminuria beginning 5 years after the diagnosis of type I diabetes mellitus and beginning at diagnosis of type II disease. The cost benefit of these strategies are not established.

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ADMINISTRATIVE

CPT Codes:
82043

LOINC Codes:
14959-1

COMPLETE VIEW

Available Stat:
No

Test Code:
AUR

Performing Lab:
Parnassus, Mission Bay and Mt Zion Chemistry

Performed:
24-hours per day, 7-days per week

Methodology:
Immunoturbidimetric on the Abbott Architect c8000

Remarks:
First A.M. sample preferred for random urine.

Collect:
Urine cup

Amount to Collect:
10-20 mL

Sample Type:
Random urine

Preferred Volume:
2 mL urine

Minimum Volume:
0.5 mL urine

Specimen Preparation:
Aliquot 2 mL, note that sample is a "spot" or random urine sample. Order AUR.

Units:
mg/g creatinine

Reference Interval:
Random urine:

Normal	< 30 mg/g creatinine
Microalbuminuria	30-299 mg/g creatinine
Nephropathy	> 300 mg/g creatinine

Synonyms:

- Microalbuminuria

Stability (from collection to initiation):
Room temperature: 2 days
Refrigerated: 30 days
Frozen: 6 months

Reported:
1-2 days

Note: TAT for samples collected at Mission Bay can take up to 24 hours.

Reflex Testing:
A creatinine is performed on the same sample to calculate the result and will be reported and billed separately.

Additional Information:
Diabetes mellitus is one of the commonest causes of end-stage renal disease. The National Kidney Foundation recommends that diabetics > 12 years old be tested yearly for microalbuminuria if the rate of excretion is within normal limits (Amer J Kid Dis. 1995;25:107). The Diabetes Coalition of California recommends annual testing for microalbuminuria beginning 5 years after the diagnosis of type I diabetes mellitus and beginning at diagnosis of type II disease. The cost benefit of these strategies are not established.

Transient increases in urinary albumin excretion are seen with heavy exercise, urinary infection, acute febrile illness, heart failure and following the administration of NSIADs or ACE inhibitors, all of which should be avoided during screening. Because of the difficulty in collecting and accurately timing 24 hour samples, a spot collection is recommended and the albumin excretion is normalized for creatinine excretion, correcting to some extent for the diurnal fluctuation in urinary output. Abnormalities should be verified by a repeatedly positive assay within 6-12 weeks before a diagnosis of diabetic microalbuminuria or diabetic nephropathy is made.

CPT Codes:
82043

LOINC Codes:
14959-1

Albumin, Body Fluid

ALBB

ORDERING

Available Stat:
No

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Spectrophotometric (bromcresol purple)

Reported:
4 hours

Additional Information:
Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context.

Interpretive information on this testing can be found at https://aruplab.com/bodyfluids

COLLECTION

Sample Type:
Body fluid

Collect:
Clean, empty container OR red top (no additives)
Note: Do NOT collect in red top with clot activator (silicone coated).

Amount to Collect:
5 mL fluid

Preferred Volume:
0.3 mL fluid

Minimum Volume:
0.2 mL fluid

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 8 days, frozen at -20C 1 month

PROCESSING

Test Code:
ALBB

Test Group:
Albumin

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
0.3 mL fluid

Minimum Volume:
0.2 mL fluid

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 8 days, frozen at -20C 1 month

RESULT INTERPRETATION

Units:
g/dL

Additional Information:
Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context.

Interpretive information on this testing can be found at https://aruplab.com/bodyfluids

ADMINISTRATIVE

CPT Codes:
82042

LOINC Codes:
1747-5

COMPLETE VIEW

Available Stat:
No

Test Code:
ALBB

Test Group:
Albumin

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Spectrophotometric (bromcresol purple)

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Collect:
Clean, empty container OR red top (no additives)
Note: Do NOT collect in red top with clot activator (silicone coated).

Amount to Collect:
5 mL fluid

Sample Type:
Body fluid

Preferred Volume:
0.3 mL fluid

Minimum Volume:
0.2 mL fluid

Units:
g/dL

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 8 days, frozen at -20C 1 month

Reported:
4 hours

Additional Information:
Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context.

Interpretive information on this testing can be found at https://aruplab.com/bodyfluids

CPT Codes:
82042

LOINC Codes:
1747-5

Albumin, Plasma / Serum

ALB

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Chemistry: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center: (Mon-Fri 0800-1630)

Methodology:
Bromcresol purple

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
Also part of Protein Electrophoresis.

COLLECTION

Sample Type:
Plasma or serum

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Parnassus, Mission Bay & Mt. Zion Chemistry:
Room temperature 2.5 months, refrigerated 5 months, frozen at -20C 3 months

Berkeley Outpatient Center:
Room temperature 2.5 months, refrigerated 5 months, frozen at -20C 4 months

PROCESSING

Test Code:
ALB

Test Group:
Albumin

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Parnassus, Mission Bay & Mt. Zion Chemistry:
Room temperature 2.5 months, refrigerated 5 months, frozen at -20C 3 months

Berkeley Outpatient Center:
Room temperature 2.5 months, refrigerated 5 months, frozen at -20C 4 months

RESULT INTERPRETATION

Units:
g/dL

Reference Interval:

Parnassus, Mission Bay & Mt. Zion Chemistry

Age	g/dL
0 to 14 days	2.8-4.1
15 days to <1 year	2.5-4.6
1 to <8 years	3.5-4.5
8 to <15 years	3.7-4.7
15 to <18 years	3.5-5.0
18 to 60 years	3.5-5.0
>60 years	3.4-4.8

Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database Caliper study: https://caliper.research.sickkids.ca/#/

Parnassus, Mission Bay and Mt. Zion Chemistry verified the adult reference range (18 to 60 years) stated in the Abbott Abumin BCP package insert by running 20 male and 20 female lab volunteers. The >60 years reference range was adopted from the Abbott Albumin BCP package insert Oct. 2015

Berkeley Outpatient Center

Age	g/dL
>= 19 years	3.5-5.2

UCSF Clinical Labs at Berkeley Outpatient Center verified the adult reference range (>= 19 years) stated in the Roche Albumin BCP package insert by running 20 male and 20 female lab volunteers.

Additional Information:

Also part of Protein Electrophoresis.

ADMINISTRATIVE

CPT Codes:

82040

LOINC Codes:

1751-7

COMPLETE VIEW

Available Stat:

Yes

Test Code:

ALB

Test Group:

Albumin

Performing Lab:

Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:

Parnassus, Mission Bay & Mt. Zion Chemistry: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center: (Mon-Fri 0800-1630)

Methodology:

Bromcresol purple

Collect:

Light green top preferred, Gold top acceptable

Amount to Collect:

1 mL blood

Sample Type:

Plasma or serum

Preferred Volume:

0.5 mL plasma or serum

Minimum Volume:

0.2 mL plasma or serum

Units:

g/dL

Reference Interval:

Parnassus, Mission Bay & Mt. Zion Chemistry

Age	g/dL
0 to 14 days	2.8-4.1
15 days to <1 year	2.5-4.6
1 to <8 years	3.5-4.5
8 to <15 years	3.7-4.7
15 to <18 years	3.5-5.0
18 to 60 years	3.5-5.0
>60 years	3.4-4.8

Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database Caliper study: https://caliper.research.sickkids.ca/#/

Parnassus, Mission Bay and Mt. Zion Chemistry verified the adult reference range (18 to 60 years) stated in the Abbott Abumin BCP package insert by running 20 male and 20 female lab volunteers. The >60 years reference range was adopted from the Abbott Albumin BCP package insert Oct. 2015

Berkeley Outpatient Center

Age	g/dL
>= 19 years	3.5-5.2

UCSF Clinical Labs at Berkeley Outpatient Center verified the adult reference range (>= 19 years) stated in the Roche Albumin BCP package insert by running 20 male and 20 female lab volunteers.

Stability (from collection to initiation):

Parnassus, Mission Bay & Mt. Zion Chemistry:
Room temperature 2.5 months, refrigerated 5 months, frozen at -20C 3 months

Berkeley Outpatient Center:
Room temperature 2.5 months, refrigerated 5 months, frozen at -20C 4 months

Reported:

STAT 1 hour, Routine 4 hours

Additional Information:

Also part of Protein Electrophoresis.

CPT Codes:

82040

LOINC Codes:

1751-7

Alcohols

VOLAS

ORDERING

Ordering Recommendations:
Use to identify ethanol, methanol, isopropanol, or acetone ingestion. For medical purposes only.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative Gas Chromatography

Reported:
1-3 days

Synonyms:

- Acetone
- Alcohol, Blood
- Blood Alcohol Level
- Blood Ethanol Level
- Ethanol
- Ethyl Alcohol, Blood
- EtOH
- Isopropanol
- Methanol
- Volatiles Screen

COLLECTION

Patient Preparation:
For medical purposes only. Timing of specimen collection: Dependent on time of exposure, test upon presentation to hospital.

Sample Type:
Serum or plasma

Collect:
Plain Red. Also acceptable: Lavender (EDTA), Pink (K_2EDTA), or Gray (Potassium Oxalate/Sodium Fluoride).

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

Stability (from collection to initiation):
After separation from cells: Ambient: 1 week; Refrigerated: 2 weeks; Frozen: 1 month.

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Whole blood, Plasma Separator Tubes (PST), Serum Separator Tubes (SST).

PROCESSING

Test Code:
VOLAS

ARUP Test Code:
0090131

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate from cells ASAP or within 2 hours of collection. Transfer 2 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.3 mL) Cap tube tightly to minimize alcohol loss. When drawing a blood specimen for alcohol testing, use a nonalcohol-based cleanser at the venipuncture site.

Preferred Volume:
2 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

Unacceptable Conditions:
Whole blood, Plasma Separator Tubes (PST), Serum Separator Tubes (SST).

Stability (from collection to initiation):
After separation from cells: Ambient: 1 week; Refrigerated: 2 weeks; Frozen: 1 month.

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Interpretive Data:
This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Component	Interpretive Data
Acetone, Quantitative	Limit of detection: 5 mg/dL No therapeutic range Toxic Level: Greater than 100 mg/dL
Ethanol	Limit of detection: 5 mg/dL Therapy for Methanol: 100-200 mg/dL Toxic Level: Greater than 250 mg/dL
Isopropanol	Limit of detection: 5 mg/dL No therapeutic range Toxic Level: Greater than 50 mg/dL
Methanol	Limit of detection: 5 mg/dL No therapeutic range Toxic Level: Greater than 20 mg/dL

ADMINISTRATIVE

CPT Codes:
80320 (Alt code: G0480)

LOINC:

- 5669-7
- 5693-7
- 14336-2
- 5568-1

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Use to identify ethanol, methanol, isopropanol, or acetone ingestion. For medical purposes only.

Test Code:
VOLAS

ARUP Test Code:
0090131

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative Gas Chromatography

Patient Preparation:
For medical purposes only. Timing of specimen collection: Dependent on time of exposure, test upon presentation to hospital.

Collect:
Plain Red. Also acceptable: Lavender (EDTA), Pink (K_2EDTA), or Gray (Potassium Oxalate/Sodium Fluoride).

Amount to Collect:
4 mL blood

Sample Type:
Serum or plasma

Preferred Volume:
2 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

Unacceptable Conditions:
Whole blood, Plasma Separator Tubes (PST), Serum Separator Tubes (SST).

Specimen Preparation:
Separate from cells ASAP or within 2 hours of collection. Transfer 2 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.3 mL) Cap tube tightly to minimize alcohol loss. When drawing a blood specimen for alcohol testing, use a nonalcohol-based cleanser at the venipuncture site.

Interpretive Data:
This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Component	Interpretive Data
Acetone, Quantitative	Limit of detection: 5 mg/dL No therapeutic range Toxic Level: Greater than 100 mg/dL
Ethanol	Limit of detection: 5 mg/dL Therapy for Methanol: 100-200 mg/dL Toxic Level: Greater than 250 mg/dL
Isopropanol	Limit of detection: 5 mg/dL No therapeutic range Toxic Level: Greater than 50 mg/dL
Methanol	Limit of detection: 5 mg/dL No therapeutic range Toxic Level: Greater than 20 mg/dL

Synonyms:

- Acetone
- Alcohol, Blood
- Blood Alcohol Level
- Blood Ethanol Level
- Ethanol
- Ethyl Alcohol, Blood
- EtOH
- Isopropanol
- Methanol
- Volatiles Screen

Storage/Transport Temperature:
Refrigerated.

Stability (from collection to initiation):
After separation from cells: Ambient: 1 week; Refrigerated: 2 weeks; Frozen: 1 month.

Reported:
1-3 days

CPT Codes:
80320 (Alt code: G0480)

LOINC:

- 5669-7
- 5693-7
- 14336-2
- 5568-1

Aldolase, Serum

ADSE

ORDERING

Ordering Recommendations:
Do not use as a stand-alone test. This non-specific test has been replaced by more specific markers for muscle or liver damage. It has largely been replaced by other enzyme tests such as CK, alanine aminotransferase (ALT), and aspartate aminotransferase (AST) as markers of muscle or liver damage.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative Enzymatic Assay

Reported:
Within 24 hours

Synonyms:

- aldolase
- Aldolase, S
- Fructose-Biphosphate Aldolase
- Total Aldolase

COLLECTION

Sample Type:
Serum

Collect:
Serum separator tube.

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
After separation from cells: Ambient: 8 hours; Refrigerated: 5 days; Frozen: 6 months

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Specimen types other than serum. Hemolyzed specimens.

PROCESSING

Test Code:
ADSE

ARUP Test Code:
0020012

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Allow specimen to clot completely at room temperature. Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min: 0.5 mL)

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Specimen types other than serum. Hemolyzed specimens.

Stability (from collection to initiation):
After separation from cells: Ambient: 8 hours; Refrigerated: 5 days; Frozen: 6 months

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Units:
U/L

Reference Interval:

0-30 days	6.0-32.0 U/L
1-5 months	3.0-12.0 U/L
6-35 months	3.5-10.0 U/L
3-6 years	2.7-8.8 U/L
7-17 years	3.3-9.7 U/L
18 years and older	1.2-7.6 U/L

ADMINISTRATIVE

CPT Codes:
82085

LOINC:

- 1761-6

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Do not use as a stand-alone test. This non-specific test has been replaced by more specific markers for muscle or liver damage. It has largely been replaced by other enzyme tests such as CK, alanine aminotransferase (ALT), and aspartate aminotransferase (AST) as markers of muscle or liver damage.

Test Code:
ADSE

ARUP Test Code:
0020012

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative Enzymatic Assay

Collect:
Serum separator tube.

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Specimen types other than serum. Hemolyzed specimens.

Specimen Preparation:

Allow specimen to clot completely at room temperature. Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min: 0.5 mL)

Units:

U/L

Reference Interval:

0-30 days	6.0-32.0 U/L
1-5 months	3.0-12.0 U/L
6-35 months	3.5-10.0 U/L
3-6 years	2.7-8.8 U/L
7-17 years	3.3-9.7 U/L
18 years and older	1.2-7.6 U/L

Synonyms:

- aldolase
- Aldolase, S
- Fructose-Biphosphate Aldolase
- Total Aldolase

Storage/Transport Temperature:

Refrigerated.

Stability (from collection to initiation):

After separation from cells: Ambient: 8 hours; Refrigerated: 5 days; Frozen: 6 months

Reported:

Within 24 hours

CPT Codes:

82085

LOINC:

- 1761-6

Aldosterone

ALDO

ORDERING

Available Stat:
No

Performing Lab:
Quest

Performed:
Mon-Sat

Methodology:
Chromatography/Mass Spectrometry

Reported:
3-5 days

COLLECTION

Sample Type:
Serum

Collect:
Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.25 mL serum

Stability (from collection to initiation):
Room temperature: 4 days
Refrigerated: 7 days
Frozen: 28 days

Storage/Transport Temperature:
Frozen

Unacceptable Conditions:
Samples collected in Serum Separator Tube (SST®) • Moderate to gross hemolysis

PROCESSING

Test Code:
ALDO

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot and freeze. Send to CB frozen. Order Quest test code 171811

Preferred Volume:
1 mL serum

Minimum Volume:
0.25 mL serum

Unacceptable Conditions:
Samples collected in Serum Separator Tube (SST®) • Moderate to gross hemolysis

Stability (from collection to initiation):
Room temperature: 4 days
Refrigerated: 7 days
Frozen: 28 days

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Units:
ng/dL

Reference Interval:
Adult

Upright 8:00-10:00 A.M.	<=28 ng/dL
Upright 4:00-6:00 P.M.	<=21 ng/dL
Supine 8:00-10:00 A.M.	3-16 ng/dL

Pediatric

1-12 Months	2-70 ng/dL
1-4 Years	2-37 ng/dL
5-9 Years	<=9 ng/dL
10-13 Years	<=21 ng/dL
14-17 Years	<=35 ng/dL

Infants

Premature (31-35 Weeks)	<=144 ng/dL
Term	<=217 ng/dL

Tanner Stages

II-III Males	1-13 ng/dL
II-III Females	2-20 ng/dL
IV-V Males	3-14 ng/dL
IV-V Females	4-32 ng/dL

Interpretive Data:
Approximately 1-2% of individuals with primary hypertension have primary hyperaldosteronism characterized by hypokalemia (low potassium) and low direct renin. Because serum aldosterone concentrations vary due to dietary sodium intake and body positions, some physicians prefer measurement of 24-hour urine concentrations for aldosterone.

ADMINISTRATIVE

CPT Codes:
82088

LOINC Codes:
1763-2

COMPLETE VIEW

Available Stat:
No

Test Code:
ALDO

Performing Lab:
Quest

Sendout:
Yes

Performed:
Mon-Sat

Methodology:
Chromatography/Mass Spectrometry

Collect:
Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.25 mL serum

Unacceptable Conditions:
Samples collected in Serum Separator Tube (SST®) • Moderate to gross hemolysis

Specimen Preparation:
Aliquot and freeze. Send to CB frozen. Order Quest test code 171811

Units:
ng/dL

Reference Interval:
Adult

Upright 8:00-10:00 A.M.	<=28 ng/dL
Upright 4:00-6:00 P.M.	<=21 ng/dL
Supine 8:00-10:00 A.M.	3-16 ng/dL

Pediatric

1-12 Months	2-70 ng/dL
1-4 Years	2-37 ng/dL
5-9 Years	<=9 ng/dL
10-13 Years	<=21 ng/dL
14-17 Years	<=35 ng/dL

Infants

Premature (31-35 Weeks)	<=144 ng/dL
Term	<=217 ng/dL

Tanner Stages

II-III Males	1-13 ng/dL
II-III Females	2-20 ng/dL
IV-V Males	3-14 ng/dL
IV-V Females	4-32 ng/dL

Interpretive Data:
Approximately 1-2% of individuals with primary hypertension have primary hyperaldosteronism characterized by hypokalemia (low potassium) and low direct renin. Because serum aldosterone concentrations vary due to dietary sodium intake and body positions, some physicians prefer measurement of 24-hour urine concentrations for aldosterone.

Storage/Transport Temperature:
Frozen

Stability (from collection to initiation):
Room temperature: 4 days
Refrigerated: 7 days
Frozen: 28 days

Reported:
3-5 days

CPT Codes:
82088

LOINC Codes:
1763-2

Aldosterone, 24-Hour Urine

ALDU

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Hydrolysis • Extraction • Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS

Reported:
Test run Monday and Thursday. Turnaround: 3-7 days.

Additional Information:
To convert µg/d to nmol/d (SI units) multiply by 2.77

COLLECTION

Sample Type:
24 hour urine collection

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container, 10g Boric Acid

Amount to Collect:
Entire 24 hour urine output

Preferred Volume:
5 mL urine

Minimum Volume:
1 mL urine

Remarks:
Refrigerate during collection.

Unacceptable Conditions:
Container not refrigerated during collection

PROCESSING

Test Code:
ALDU

Test Group:
Aldosterone

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate aliquot of the well-mixed collection. Record total volume on both transport vial and request slip. Order Quest # 7062N

Preferred Volume:
5 mL urine

Minimum Volume:
1 mL urine

Unacceptable Conditions:
Container not refrigerated during collection

RESULT INTERPRETATION

Units:
µg/24 hours (mcg/24 hours)

Reference Interval:

On a typical diet containing 100-300 mmol Sodium per day:

2-7 years	<= 5.7 µg/d
8-11 years	<= 10.2 µg/d
12-16 years	<= 15.6 µg/d
>= 18 year olds	<= 2.3-21.0 µg/d

Post-fludrocortisone or IV saline suppression: < 5.0 µg/d

Additional Information:

To convert µg/d to nmol/d (SI units) multiply by 2.77

ADMINISTRATIVE

CPT Codes:

82088-90

LOINC Codes:

1765-7

COMPLETE VIEW

Available Stat:

No

Test Code:

ALDU

Test Group:

Aldosterone

Performing Lab:

Quest

Sendout:

Yes

Methodology:

Hydrolysis • Extraction • Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS

Remarks:

Refrigerate during collection.

Collect:

Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container, 10g Boric Acid

Amount to Collect:

Entire 24 hour urine output

Sample Type:

24 hour urine collection

Preferred Volume:

5 mL urine

Minimum Volume:

1 mL urine

Unacceptable Conditions:

Container not refrigerated during collection

Specimen Preparation:

Refrigerate aliquot of the well-mixed collection. Record total volume on both transport vial and request slip. Order Quest # 7062N

Units:

µg/24 hours (mcg/24 hours)

Reference Interval:

On a typical diet containing 100-300 mmol Sodium per day:

2-7 years	<= 5.7 µg/d
8-11 years	<= 10.2 µg/d
12-16 years	<= 15.6 µg/d
>= 18 year olds	<= 2.3-21.0 µg/d

Post-fludrocortisone or IV saline suppression: < 5.0 µg/d

Reported:

Test run Monday and Thursday. Turnaround: 3-7 days.

Additional Information:

To convert µg/d to nmol/d (SI units) multiply by 2.77

CPT Codes:

82088-90

LOINC Codes:

1765-7

ALK 2p Break Apart Metaphase FISH

ALK2P, BALK2P

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Fluorescent in-Situ Hybridization

Reported:
1-2 weeks

Synonyms:

- ALK2P
- BALK2P

COLLECTION

Sample Type:
Heparinized blood or bone marrow aspirate
Bone biopsy

Collect:
Blood or marrow aspirate: Dark Green top

Amount to Collect:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Remarks:
Mix blood and marrow aspirates well

Stability (from collection to initiation):
2 days at room temperature

Unacceptable Conditions:
Insufficient sample or not collected in heparin

PROCESSING

Test Code:
BALK2P: Blood
ALK2P: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Specimen Preparation:
Maintain sample at room temperature; Do Not Refrigerate or freeze. Do Not centrifuge.

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Insufficient sample or not collected in heparin

Stability (from collection to initiation):
2 days at room temperature

ADMINISTRATIVE

CPT Codes:
88271 x2, 88275

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BALK2P: Blood
ALK2P: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Fluorescent in-Situ Hybridization

Remarks:
Mix blood and marrow aspirates well

Collect:
Blood or marrow aspirate: Dark Green top

Amount to Collect:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Sample Type:
Heparinized blood or bone marrow aspirate
Bone biopsy

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Insufficient sample or not collected in heparin

Specimen Preparation:
Maintain sample at room temperature; Do Not Refrigerate or freeze. Do Not centrifuge.

Synonyms:

- ALK2P
- BALK2P

Stability (from collection to initiation):
2 days at room temperature

Reported:
1-2 weeks

CPT Codes:
88271 x2, 88275

LDT or Modified FDA:
Yes

Alkaline Phosphatase, Bone-specific

BSAP

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Immunoenzymatic

Reported:
Test performed Tuesday and Thursday. Turnaround time: 3-8 days.

Additional Information:
Pediatric data are taken from Intl J Biol Markers, 1956:11:159 and J Clin Endocrinol Metab, 1999

COLLECTION

Sample Type:
Serum

Collect:
Red top or Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 3 weeks, frozen at -20C 3 months

Unacceptable Conditions:
Hemolyzed, lipemic or grossly icteric samples. Plasma samples.

Rejection Criteria:
Received at room temperature

PROCESSING

Test Code:
BSAP

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze serum at -20C. Order Quest # 29498

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Hemolyzed, lipemic or grossly icteric samples. Plasma samples.

Rejection Criteria:
Received at room temperature

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 3 weeks, frozen at -20C 3 months

RESULT INTERPRETATION

Units:
µg/L (mcg/L)

Reference Interval:

>= 18 year old males:

18-29 Years	8.4-29.3 µg/L
30-39 Years	7.7-21.3 µg/L
40-49 Years	7.0-18.3 µg/L
50-68 Years	7.6-14.9 µg/L

>= 18 year old females:

18-29 Years	4.7-17.8 µg/L
30-39 Years	5.3-19.5 µg/L
40-49 Years	5.0-18.8 µg/L
50-76 Years	5.6-29.0 µg/L
Premenopausal (35-45 Years)	5.0-18.2 µg/L

Pediatrics:
Males

2-24 Months	25.4-124.0 µg/L
6-9 Years	41.0-134.6 µg/L
10-13 Years	43.8-177.4 µg/L
14-17 Years	13.7-128.0 µg/L

Females:

2-24 Months	25.4-124.0 µg/L
6-9 Years	41.0-134.6 µg/L
10-13 Years	24.2-154.2 µg/L
14-17 Years	10.5-75.2 µg/L

Additional Information:

Pediatric data are taken from Intl J Biol Markers, 1956:11:159 and J Clin Endocrinol Metab, 1999

ADMINISTRATIVE

CPT Codes:
84075-90

LOINC Codes:
17838-4

COMPLETE VIEW

Available Stat:
No

Test Code:
BSAP

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Immunoenzymatic

Collect:
Red top or Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Rejection Criteria:
Received at room temperature

Unacceptable Conditions:
Hemolyzed, lipemic or grossly icteric samples. Plasma samples.

Specimen Preparation:
Freeze serum at -20C. Order Quest # 29498

Units:
µg/L (mcg/L)

Reference Interval:
>= 18 year old males:

18-29 Years	8.4-29.3 µg/L
30-39 Years	7.7-21.3 µg/L
40-49 Years	7.0-18.3 µg/L
50-68 Years	7.6-14.9 µg/L

>= 18 year old females:

18-29 Years	4.7-17.8 µg/L
30-39 Years	5.3-19.5 µg/L
40-49 Years	5.0-18.8 µg/L
50-76 Years	5.6-29.0 µg/L
Premenopausal (35-45 Years)	5.0-18.2 µg/L

Pediatrics:
Males

2-24 Months	25.4-124.0 µg/L
6-9 Years	41.0-134.6 µg/L
10-13 Years	43.8-177.4 µg/L
14-17 Years	13.7-128.0 µg/L

Females:

2-24 Months	25.4-124.0 µg/L
6-9 Years	41.0-134.6 µg/L
10-13 Years	24.2-154.2 µg/L
14-17 Years	10.5-75.2 µg/L

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 3 weeks, frozen at -20C 3 months

Reported:
Test performed Tuesday and Thursday. Turnaround time: 3-8 days.

Additional Information:
Pediatric data are taken from Intl J Biol Markers, 1956:11:159 and J Clin Endocrinol Metab, 1999

CPT Codes:
84075-90

LOINC Codes:
17838-4

Alkaline Phosphatase, Plasma / Serum

ALKP

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Chemistry:Test available 24 hours per day 7 days per week
Berkeley Outpatient Center (Mon-Fri 0800-1630)

Methodology:
Parnassus, Mission Bay & Mt. Zion Chemistry: Para-nitrophenyl phosphate on Abbott Architect
Berkeley Outpatient Center: Para-nitrophenyl phosphate on Roche c311

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
Alkaline phosphatase isoenzymes are unreliable; use GGT to distinguish bone from liver enzyme if the source of elevation is unclear.

Synonyms:

- Alk phos
- AlkP
- Alk Ptase

COLLECTION

Sample Type:
Serum or plasma

Collect:
Gold top or Light Green top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Stability (from collection to initiation):
Room temperature: 7 days
Refrigerated (2-8C): 7 days
Frozen (-20C): 2 months

PROCESSING

Test Code:
ALKP

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Stability (from collection to initiation):
Room temperature: 7 days
Refrigerated (2-8C): 7 days
Frozen (-20C): 2 months

RESULT INTERPRETATION

Units:
U/L

Reference Interval:

Parnassus, Mission Bay & Mt. Zion Chemistry

Age	Male (U/L)	Female (U/L)
0-14 days	90-273	90-273
15 days - <1 year	134-518	134-518
1-9 years	156-369	156-369
10-12 years	141-460	141-460
13-14 years	127-517	62-280
15-16 years	89-365	54-128
17-18 years	59-164	48-95
>=19 years	38-108	38-108

Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, https://caliper.research.sickkids.ca/#/

Parnassus, Mission Bay and Mt. Zion Chemistry adult reference range adopted from Lee GR et al, Practical Laboratory Medicine, 2017 and verified by running 20 male and 20 female lab volunteers.

Berkeley Outpatient Center:

Age	Male (U/L)	Female (U/L)
>= 19 years	40-129	35-104

UCSF Clinical Labs at Berkeley Outpatient Center verified the adult reference range (>= 19 years) stated in the Roche ALP2 package insert by running 20 male and 20 female lab volunteers.

Additional Information:

Alkaline phosphatase isoenzymes are unreliable; use GGT to distinguish bone from liver enzyme if the source of elevation is unclear.

ADMINISTRATIVE

CPT Codes:

84075

LOINC Codes:

6768-6

COMPLETE VIEW

Available Stat:

Yes

Test Code:

ALKP

Performing Lab:

Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:

Parnassus, Mission Bay & Mt. Zion Chemistry:Test available 24 hours per day 7 days per week
Berkeley Outpatient Center (Mon-Fri 0800-1630)

Methodology:

Parnassus, Mission Bay & Mt. Zion Chemistry: Para-nitrophenyl phosphate on Abbott Architect
Berkeley Outpatient Center: Para-nitrophenyl phosphate on Roche c311

Collect:

Gold top or Light Green top

Amount to Collect:

1 mL blood

Sample Type:

Serum or plasma

Preferred Volume:

0.5 mL serum or plasma

Minimum Volume:

0.2 mL serum or plasma

Units:

U/L

Reference Interval:

Parnassus, Mission Bay & Mt. Zion Chemistry

Age	Male (U/L)	Female (U/L)
0-14 days	90-273	90-273
15 days - <1 year	134-518	134-518
1-9 years	156-369	156-369
10-12 years	141-460	141-460
13-14 years	127-517	62-280
15-16 years	89-365	54-128
17-18 years	59-164	48-95
>=19 years	38-108	38-108

Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, https://caliper.research.sickkids.ca/#/

Parnassus, Mission Bay and Mt. Zion Chemistry adult reference range adopted from Lee GR et al, Practical Laboratory Medicine, 2017 and verified by running 20 male and 20 female lab volunteers.

Berkeley Outpatient Center:

Age	Male (U/L)	Female (U/L)
>= 19 years	40-129	35-104

UCSF Clinical Labs at Berkeley Outpatient Center verified the adult reference range (>= 19 years) stated in the Roche ALP2 package insert by running 20 male and 20 female lab volunteers.

Synonyms:

- Alk phos
- AlkP
- Alk Ptase

Stability (from collection to initiation):

Room temperature: 7 days
Refrigerated (2-8C): 7 days
Frozen (-20C): 2 months

Reported:

STAT 1 hour, Routine 4 hours

Additional Information:

Alkaline phosphatase isoenzymes are unreliable; use GGT to distinguish bone from liver enzyme if the source of elevation is unclear.

CPT Codes:

84075

LOINC Codes:

6768-6

Allergen, Food, Peanut Components IgE

PCOMP

ORDERING

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative ImmunoCAP Fluorescent Enzyme Immunoassay

Reported:
1-3 days

Synonyms:

- Peanut Component Package
- Peanut molecular allergy
- Peanut Test
- uKnow Peanut

COLLECTION

Patient Preparation:
Multiple patient encounters should be avoided

Sample Type:
Serum

Collect:
Serum separator tube (SST). Multiple specimen tubes should be avoided. Include all available specimen.

Amount to Collect:
1.5 mL (blood)

Preferred Volume:
0.6 mL (serum)

Minimum Volume:
0.4 mL (serum)

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year

Storage/Transport Temperature:
Refrigerated

Unacceptable Conditions:
Hemolyzed, icteric, or lipemic specimens

PROCESSING

Test Code:
PCOMP

ARUP Test Code:
2007211

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate serum from cells ASAP or within 2 hours of collection. Transfer 0.6 mL serum plus 0.1 mL for each additional allergen ordered to an ARUP Standard Transport Tube. (Min: 0.4 mL plus 0.04 mL for each allergen ordered)

Additional Processing Instructions:
This test should not be ordered in conjuction with an IGES for Peanut. This test code will take priority over an IGES order for Peanut.

Preferred Volume:
0.6 mL (serum)

Minimum Volume:
0.4 mL (serum)

Unacceptable Conditions:
Hemolyzed, icteric, or lipemic specimens

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year

Storage/Transport Temperature:
Refrigerated

RESULT INTERPRETATION

Reference Interval:

Components	Reference Interval
Allergen, Food, Peanut IgE	Less than or equal to 0.34 kU/L
Allergen, Food, Severe Peanut Ara h 1	Less than or equal to 0.09 kU/L
Allergen, Food, Severe Peanut Ara h 2	Less than or equal to 0.09 kU/L
Allergen, Food, Severe Peanut Ara h 3	Less than or equal to 0.09 kU/L
Allergen, Food, Severe Peanut Ara h 9	Less than or equal to 0.09 kU/L
Allergen, Food, Mild Peanut Ara h 8	Less than or equal to 0.09 kU/L
Allergen, Food, Severe Peanut Ara h 6	Less than or equal to 0.09 kU/L

Interpretive Data:
Allergen results of 0.10-0.34 kU/L for whole peanut are intended for specialist use as the clinical relevance is undetermined. Even though increasing ranges are reflective of increasing concentrations of allergen-specific IgE, these concentrations may not correlate with the degree of clinical response or skin testing results when challenged with a specific allergen. The correlation of allergy laboratory results with clinical history and in vivo reactivity to specific allergens is essential. A negative test may not rule out clinical allergy or even anaphylaxis.

Reporting Range (reported in kU/L)	Probability of IgE Mediated Clinical Reaction	Class Scoring
Less than 0.10	No significant level detected	0
0.10 - 0.34	Clinical relevance undetermined	0/1
0.35 - 0.70	Low	1
0.71 - 3.50	Moderate	2
3.51 - 17.50	High	3
17.51 - 50.00	Very high	4
50.01 - 100.00	Very high	5
Greater than 100.00	Very high	6

ADMINISTRATIVE

CPT Codes:
86003; 86008 x6

LOINC:

- 64965-7
- 58778-2
- 90880-6
- 48767-8
- 6206-7
- 58779-0
- 11526-1
- 63477-4
- 58777-4

COMPLETE VIEW

Available Stat:
No

Test Code:
PCOMP

ARUP Test Code:
2007211

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative ImmunoCAP Fluorescent Enzyme Immunoassay

Patient Preparation:
Multiple patient encounters should be avoided

Collect:
Serum separator tube (SST). Multiple specimen tubes should be avoided. Include all available specimen.

Amount to Collect:
1.5 mL (blood)

Sample Type:
Serum

Preferred Volume:
0.6 mL (serum)

Minimum Volume:
0.4 mL (serum)

Unacceptable Conditions:
Hemolyzed, icteric, or lipemic specimens

Specimen Preparation:
Separate serum from cells ASAP or within 2 hours of collection. Transfer 0.6 mL serum plus 0.1 mL for each additional allergen ordered to an ARUP Standard Transport Tube. (Min: 0.4 mL plus 0.04 mL for each allergen ordered)

Additional Processing Instructions:
This test should not be ordered in conjuction with an IGES for Peanut. This test code will take priority over an IGES order for Peanut.

Reference Interval:

Components	Reference Interval
Allergen, Food, Peanut IgE	Less than or equal to 0.34 kU/L
Allergen, Food, Severe Peanut Ara h 1	Less than or equal to 0.09 kU/L
Allergen, Food, Severe Peanut Ara h 2	Less than or equal to 0.09 kU/L
Allergen, Food, Severe Peanut Ara h 3	Less than or equal to 0.09 kU/L
Allergen, Food, Severe Peanut Ara h 9	Less than or equal to 0.09 kU/L
Allergen, Food, Mild Peanut Ara h 8	Less than or equal to 0.09 kU/L
Allergen, Food, Severe Peanut Ara h 6	Less than or equal to 0.09 kU/L

Interpretive Data:
Allergen results of 0.10-0.34 kU/L for whole peanut are intended for specialist use as the clinical relevance is undetermined. Even though increasing ranges are reflective of increasing concentrations of allergen-specific IgE, these concentrations may not correlate with the degree of clinical response or skin testing results when challenged with a specific allergen. The correlation of allergy laboratory results with clinical history and in vivo reactivity to specific allergens is essential. A negative test may not rule out clinical allergy or even anaphylaxis.

Reporting Range (reported in kU/L)	Probability of IgE Mediated Clinical Reaction	Class Scoring
Less than 0.10	No significant level detected	0
0.10 - 0.34	Clinical relevance undetermined	0/1
0.35 - 0.70	Low	1
0.71 - 3.50	Moderate	2
3.51 - 17.50	High	3
17.51 - 50.00	Very high	4
50.01 - 100.00	Very high	5
Greater than 100.00	Very high	6

Synonyms:

- Peanut Component Package
- Peanut molecular allergy
- Peanut Test
- uKnow Peanut

Storage/Transport Temperature:
Refrigerated

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year

Reported:
1-3 days

CPT Codes:
86003; 86008 x6

LOINC:

- 64965-7
- 58778-2
- 90880-6
- 48767-8
- 6206-7
- 58779-0
- 11526-1
- 63477-4
- 58777-4

Notes:
Test methodology uses solid-phase immunoassays against the whole peanut allergen (f13) and 6 antigenic epitopes (Ara h1, Ara h2, Ara h3, Ara h6, Ara h8, and Ara h9) and measures IgE antibody concentrations in patient serum or plasma. The binding of a specific IgE to an immobilized allergen component is detected by the addition of a secondary fluorescence-labeled anti-human IgE antibody.

Allergen, Food, Peanut with Reflex to Components, IgE

PCOMPR

ORDERING

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative ImmunoCAP Fluorescent Enzyme Immunoassay

Reported:
1-3 days

Reflex Testing:
This assay will reflex to 6 unique peanut protein components if the result is 0.1 or highter. Additional charges apply.

Synonyms:

- Arachis hypogaea

COLLECTION

Patient Preparation:
Multiple patient encounters should be avoided.

Sample Type:
Serum, gold top or red top

Collect:
Serum Separator Tube.

Amount to Collect:
1.6 mL blood

Preferred Volume:
0.6 mL serum

Minimum Volume:
0.6 mL serum

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Hemolyzed, icteric, or lipemic specimens.

PROCESSING

Test Code:
PCOMPR

ARUP Test Code:
3002253

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate serum from cells ASAP or within 2 hours of collection. Transfer 0.5 mL serum to an ARUP Standard Transport Tube. (Min: 0.25 mL). For multiple allergen orders refer to "Allergen Specimen Collection Instructions" at www.aruplab.com/testing/resources/specimen.

Preferred Volume:
0.6 mL serum

Minimum Volume:
0.6 mL serum

Unacceptable Conditions:
Hemolyzed, icteric, or lipemic specimens.

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:

Components	Reference Interval
Allergen, Food, Peanut IgE	Less than or equal to 0.34 kU/L

Interpretive Data:
Allergen results of 0.10-0.34 kU/L are intended for specialist use as the clinical relevance is undetermined. Even though increasing ranges are reflective of increasing concentrations of allergen-specific IgE, these concentrations may not correlate with the degree of clinical response or skin testing results when challenged with a specific allergen. The correlation of allergy laboratory results with clinical history and in vivo reactivity to specific allergens is essential. A negative test may not rule out clinical allergy or even anaphylaxis.

Reporting Range (reported in kU/L)	Probability of IgE Mediated Clinical Reaction	Class Scoring
Less than 0.10	No significant level detected	0
0.10 - 0.34	Clinical relevance undetermined	0/1
0.35 - 0.70	Low	1
0.71 - 3.50	Moderate	2
3.51 - 17.50	High	3
17.51 - 50.00	Very high	4
50.01 - 100.00	Very high	5
Greater than 100.00	Very high	6

ADMINISTRATIVE

CPT Codes:
86003; if reflexed add 86008 x6

LOINC:

- 6206-7

COMPLETE VIEW

Available Stat:
No

Test Code:
PCOMPR

ARUP Test Code:
3002253

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative ImmunoCAP Fluorescent Enzyme Immunoassay

Patient Preparation:
Multiple patient encounters should be avoided.

Collect:
Serum Separator Tube.

Amount to Collect:
1.6 mL blood

Sample Type:
Serum, gold top or red top

Preferred Volume:
0.6 mL serum

Minimum Volume:
0.6 mL serum

Unacceptable Conditions:
Hemolyzed, icteric, or lipemic specimens.

Specimen Preparation:
Separate serum from cells ASAP or within 2 hours of collection. Transfer 0.5 mL serum to an ARUP Standard Transport Tube. (Min: 0.25 mL). For multiple allergen orders refer to "Allergen Specimen Collection Instructions" at www.aruplab.com/testing/resources/specimen.

Reference Interval:

Components	Reference Interval
Allergen, Food, Peanut IgE	Less than or equal to 0.34 kU/L

Interpretive Data:
Allergen results of 0.10-0.34 kU/L are intended for specialist use as the clinical relevance is undetermined. Even though increasing ranges are reflective of increasing concentrations of allergen-specific IgE, these concentrations may not correlate with the degree of clinical response or skin testing results when challenged with a specific allergen. The correlation of allergy laboratory results with clinical history and in vivo reactivity to specific allergens is essential. A negative test may not rule out clinical allergy or even anaphylaxis.

Reporting Range (reported in kU/L)	Probability of IgE Mediated Clinical Reaction	Class Scoring
Less than 0.10	No significant level detected	0
0.10 - 0.34	Clinical relevance undetermined	0/1
0.35 - 0.70	Low	1
0.71 - 3.50	Moderate	2
3.51 - 17.50	High	3
17.51 - 50.00	Very high	4
50.01 - 100.00	Very high	5
Greater than 100.00	Very high	6

Synonyms:

- Arachis hypogaea

Storage/Transport Temperature:
Refrigerated.

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year

Reported:
1-3 days

Reflex Testing:
This assay will reflex to 6 unique peanut protein components if the result is 0.1 or highter. Additional charges apply.

CPT Codes:
86003; if reflexed add 86008 x6

LOINC:

- 6206-7

Notes:
This assay will reflex to 6 unique peanut protein components if the result is 0.1 or higher. Additional charges apply.

AlloMap Gene Expression Profiling

ALLOMP

ORDERING

Available Stat:
No

Performing Lab:
CareDx

Methodology:
Targeted Next Generation Sequencing

Reported:
3-5 days

COLLECTION

Sample Type:
Whole blood

Collect:
Streck Cell-Free DNA BCT® (Streck Tube): AlloMap (Blue Tubes)

Amount to Collect:
10 ml for AlloMap

Minimum Volume:
8ml for AlloMap

Remarks:
Collection kit is required for this testing. Kits stocks are limited at draw sites, if possible, patient should bring kit from ordering clinic.

This test is only collected Monday through Friday (Excluding Holidays), from 8 am to 2 pm at Parnassus Outpatient Blood Draw and Parnassus Inpatient units.

Some areas may collect this sample from 2-3pm must call a STAT AmTran Courier for pickup.

Mix the tubes after drawing by gently inverting them back and forth10 times.

Label with patient's name, the date and time of collection, and RN or Phlebotomist initials.

Stability (from collection to initiation):
AlloMap - 3 Hours

Unacceptable Conditions:
Frozen samples, hemolysis

PROCESSING

Test Code:
ALLOMP

Sendout:
Yes

Performing Lab:
CareDx

Specimen Preparation:
Collection kit is required for processing. After collection kit is to be shipped from drawing location.

Minimum Volume:
8ml for AlloMap

Unacceptable Conditions:
Frozen samples, hemolysis

Stability (from collection to initiation):
AlloMap - 3 Hours

COMPLETE VIEW

Available Stat:
No

Test Code:
ALLOMP

Performing Lab:
CareDx

Sendout:
Yes

Methodology:
Targeted Next Generation Sequencing

Remarks:
Collection kit is required for this testing. Kits stocks are limited at draw sites, if possible, patient should bring kit from ordering clinic.

This test is only collected Monday through Friday (Excluding Holidays), from 8 am to 2 pm at Parnassus Outpatient Blood Draw and Parnassus Inpatient units.

Some areas may collect this sample from 2-3pm must call a STAT AmTran Courier for pickup.

Mix the tubes after drawing by gently inverting them back and forth10 times.

Label with patient's name, the date and time of collection, and RN or Phlebotomist initials.

Collect:
Streck Cell-Free DNA BCT® (Streck Tube): AlloMap (Blue Tubes)

Amount to Collect:
10 ml for AlloMap

Sample Type:
Whole blood

Minimum Volume:
8ml for AlloMap

Unacceptable Conditions:
Frozen samples, hemolysis

Specimen Preparation:
Collection kit is required for processing. After collection kit is to be shipped from drawing location.

Stability (from collection to initiation):
AlloMap - 3 Hours

Reported:
3-5 days

AlloSure dd-cfDNA Test

ALLOS

ORDERING

Available Stat:
No

Performing Lab:
CareDx

Methodology:
Targeted Next Generation Sequencing

Reported:
3-5 days

Additional Information:
The AlloSure test is intended to assess the probability of allograft rejection in kidney transplant recipients with clinical suspicion of rejection and to inform clinical decision-making about the necessity of renal biopsy in such patients at least 2 weeks post-transplant in conjunction with standard clinical assessment.

COLLECTION

Sample Type:
Whole blood

Collect:
Streck Cell-Free DNA BCT® (Streck Tube): AlloSure (Brown Tubes)

Amount to Collect:
10 mL fpr AlloSure

Minimum Volume:
10 mL fpr AlloSure

Remarks:
Collection kit is required for this testing. Kits stocks are limited at draw sites, if possible, patients should bring kit from the ordering clinic.

Mix the tubes after drawing by gently inverting them back and forth 10 times.

Label with patient's name, the date and time of collection, and RN or Phlebotomist initials.

Stability (from collection to initiation):
AlloSure - 7 days

Rejection Criteria:
Frozen samples. Hemolysis.

PROCESSING

Test Code:
ALLOS

Sendout:
Yes

Performing Lab:
CareDx

Specimen Preparation:
Collection kit is required for processing. After collection kit is to be shipped from drawing location.

Minimum Volume:
10 mL fpr AlloSure

Rejection Criteria:
Frozen samples. Hemolysis.

Stability (from collection to initiation):
AlloSure - 7 days

RESULT INTERPRETATION

Additional Information:
The AlloSure test is intended to assess the probability of allograft rejection in kidney transplant recipients with clinical suspicion of rejection and to inform clinical decision-making about the necessity of renal biopsy in such patients at least 2 weeks post-transplant in conjunction with standard clinical assessment.

ADMINISTRATIVE

CPT Codes:
81479

COMPLETE VIEW

Available Stat:
No

Test Code:
ALLOS

Performing Lab:
CareDx

Sendout:
Yes

Methodology:
Targeted Next Generation Sequencing

Remarks:
Collection kit is required for this testing. Kits stocks are limited at draw sites, if possible, patients should bring kit from the ordering clinic.

Mix the tubes after drawing by gently inverting them back and forth 10 times.

Label with patient's name, the date and time of collection, and RN or Phlebotomist initials.

Collect:
Streck Cell-Free DNA BCT® (Streck Tube): AlloSure (Brown Tubes)

Amount to Collect:
10 mL fpr AlloSure

Sample Type:
Whole blood

Minimum Volume:
10 mL fpr AlloSure

Rejection Criteria:
Frozen samples. Hemolysis.

Specimen Preparation:
Collection kit is required for processing. After collection kit is to be shipped from drawing location.

Stability (from collection to initiation):
AlloSure - 7 days

Reported:
3-5 days

Additional Information:
The AlloSure test is intended to assess the probability of allograft rejection in kidney transplant recipients with clinical suspicion of rejection and to inform clinical decision-making about the necessity of renal biopsy in such patients at least 2 weeks post-transplant in conjunction with standard clinical assessment.

CPT Codes:
81479

Alpha Fetoprotein (Amniotic Fluid) with Reflex to Acetylcholinesterase and Fetal Hemoglobin

AFPAF

ORDERING

Ordering Recommendations:
Evaluate possibility of a fetal open neural tube defect at 13-36 weeks of gestation.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative Chemiluminescent Immunoassay/Electrophoresis

Reported:
3-4 days

Additional Information:
Evaluate possibility of a fetal open neural tube defect at 13-36 weeks of gestation.

Reflex Testing:
If the AFP (amniotic fluid) is elevated, then Acetylcholinesterase will be added. Additional charges apply. Acetylcholinesterase testing requires an additional 3-11 days to be reported.

Synonyms:

- AFP
- AFP-AF (Alpha-Fetoprotein, Amniotic Fluid)
- Alpha Fetoprotein, Amniotic Fluid
- Alpha-Fetoprotein, Amniotic Fluid
- Fetoprotein, Amniotic Fluid

COLLECTION

Patient Preparation:
Amniocentesis. Specimen must be drawn between 13 weeks, 0 days and 36 weeks, 6 days gestation.

Sample Type:
Amniotic fluid in sterile container

Collect:
Amniotic fluid.

Amount to Collect:
2.5 mL

Preferred Volume:
2.5 mL

Minimum Volume:
1.5 mL

Remarks:
Submit with Order: Gestational age at time of collection or estimated due date.

Stability (from collection to initiation):
Ambient: 1 month; Refrigerated: 3 months; Frozen: 3 months

Storage/Transport Temperature:
From Central processing to China Basin Central processing : Room Temperature
(send ALL amniotic fluid tubes (including tubes with sendout labels) at ROOM TEMPERATURE to China Basin Cytogenetics Lab immediately upon receiving)
From China Basin Central Processing to Cytogenetics: Room Temperature
From China Basin Central Processing to Send Out institution: Frozen

PROCESSING

Test Code:
AFPAF

ARUP Test Code:
3000142

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transport 2.5 mL amniotic fluid. (Min: 1.5 mL)

Additional Processing Instructions:
Central Processing, please send/transport ALL amniotic fluid tubes (including tubes with sendout labels) at ROOM TEMPERATURE to China Basin Cytogenetics Lab immediately upon receiving. China Basin Processing will give Cytogenetics lab all tubes and Cytogenetics lab will bring all send out tests back to Sendout lab. Sendout department will then send the tubes out at frozen temperature.

Preferred Volume:
2.5 mL

Minimum Volume:
1.5 mL

Stability (from collection to initiation):
Ambient: 1 month; Refrigerated: 3 months; Frozen: 3 months

Storage/Transport Temperature:
From Central processing to China Basin Central processing : Room Temperature
(send ALL amniotic fluid tubes (including tubes with sendout labels) at ROOM TEMPERATURE to China Basin Cytogenetics Lab immediately upon receiving)
From China Basin Central Processing to Cytogenetics: Room Temperature
From China Basin Central Processing to Send Out institution: Frozen

RESULT INTERPRETATION

Reference Interval:

Components	Reference Interval
AFP, AF MoM	<=1.99

Additional Information:
Evaluate possibility of a fetal open neural tube defect at 13-36 weeks of gestation.

Interpretive Data:
Refer to report.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:
82106; if reflexed, add 82013 and 83033

LOINC:

- 1832-5
- 18185-9
- 8665-2
- 11778-8
- 41273-4
- 29595-6

LOINC Codes:
1832-5, 41273-4, 29595-6, 18185-9

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Evaluate possibility of a fetal open neural tube defect at 13-36 weeks of gestation.

Test Code:
AFPAF

ARUP Test Code:
3000142

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative Chemiluminescent Immunoassay/Electrophoresis

Patient Preparation:
Amniocentesis. Specimen must be drawn between 13 weeks, 0 days and 36 weeks, 6 days gestation.

Remarks:
Submit with Order: Gestational age at time of collection or estimated due date.

Collect:
Amniotic fluid.

Amount to Collect:
2.5 mL

Sample Type:
Amniotic fluid in sterile container

Preferred Volume:
2.5 mL

Minimum Volume:
1.5 mL

Specimen Preparation:
Transport 2.5 mL amniotic fluid. (Min: 1.5 mL)

Additional Processing Instructions:
Central Processing, please send/transport ALL amniotic fluid tubes (including tubes with sendout labels) at ROOM TEMPERATURE to China Basin Cytogenetics Lab immediately upon receiving. China Basin Processing will give Cytogenetics lab all tubes and Cytogenetics lab will bring all send out tests back to Sendout lab. Sendout department will then send the tubes out at frozen temperature.

Reference Interval:

Components	Reference Interval
AFP, AF MoM	<=1.99

Interpretive Data:
Refer to report.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Synonyms:

- AFP
- AFP-AF (Alpha-Fetoprotein, Amniotic Fluid)
- Alpha Fetoprotein, Amniotic Fluid
- Alpha-Fetoprotein, Amniotic Fluid
- Fetoprotein, Amniotic Fluid

Storage/Transport Temperature:
From Central processing to China Basin Central processing : Room Temperature
(send ALL amniotic fluid tubes (including tubes with sendout labels) at ROOM TEMPERATURE to China Basin Cytogenetics Lab immediately upon receiving)
From China Basin Central Processing to Cytogenetics: Room Temperature
From China Basin Central Processing to Send Out institution: Frozen

Stability (from collection to initiation):
Ambient: 1 month; Refrigerated: 3 months; Frozen: 3 months

Reported:
3-4 days

Reflex Testing:
If the AFP (amniotic fluid) is elevated, then Acetylcholinesterase will be added. Additional charges apply. Acetylcholinesterase testing requires an additional 3-11 days to be reported.

Additional Information:
Evaluate possibility of a fetal open neural tube defect at 13-36 weeks of gestation.

CPT Codes:
82106; if reflexed, add 82013 and 83033

LOINC:

- 1832-5
- 18185-9
- 8665-2
- 11778-8
- 41273-4
- 29595-6

LOINC Codes:

1832-5, 41273-4, 29595-6, 18185-9

Notes:

Information must include weeks of gestation. If the AFP (amniotic fluid) is elevated, then Acetylcholinesterase will be added. Additional charges apply. Acetylcholinesterase testing requires an additional 3-11 days to be reported.

Alpha Fetoprotein, Total and L3 Percent

AFPL3

ORDERING

Ordering Recommendations:
Surveillance and monitoring of hepatocellular carcinoma.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Mon, Thu

Methodology:
Quantitative Liquid Chromatography/Immunoassay

Reported:
1-5 days

Synonyms:

- AFP, AFP-L3%, Hepatocellular carcinoma marker, HCC marker
- AFP
- AFP-L3%
- Alpha Fetoprotein
- Alpha Fetoprotein, Total and L3 Percent
- Alpha-Fetoprotein (AFP) L3% and Total, Hepatocellular Carcinoma Tumor Marker, Serum
- Alpha-fetoprotein, Total
- Hepatocellular Carcinoma AFP
- Total AFP

COLLECTION

Sample Type:
Serum

Collect:
Serum separator tube.

Amount to Collect:
2 mL (blood)

Preferred Volume:
1 mL (serum)

Minimum Volume:
0.5 mL (serum)

Stability (from collection to initiation):
After separation from cells: Ambient: 8 hours; Refrigerated: 5 days; Frozen: 3 months (avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
Frozen.

Unacceptable Conditions:
Plasma.

Rejection Criteria:
Plasma

PROCESSING

Test Code:
AFPL3

ARUP Test Code:
0081208

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Allow specimen to clot completely at room temperature. Separate serum from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min: 0.5 mL)

Preferred Volume:
1 mL (serum)

Minimum Volume:
0.5 mL (serum)

Unacceptable Conditions:
Plasma.

Rejection Criteria:
Plasma

Stability (from collection to initiation):
After separation from cells: Ambient: 8 hours; Refrigerated: 5 days; Frozen: 3 months (avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
Frozen.

RESULT INTERPRETATION

Units:
ng/mL, percent

Reference Interval:
By report

Components	Reference Interval
Alpha Fetoprotein Total	0-15 ng/mL
Alpha Fetoprotein L3 Pct	0.0-9.9 percent

Interpretive Data:
The µTASWako method is used. Results obtained with different assay methods or kits cannot be used interchangeably. The AFP L3 Percent assay is intended as a risk assessment for the development of hepatocellular carcinoma in patients with chronic liver diseases. Patients with elevated serum AFP-L3 percent should be more intensely evaluated for evidence of hepatocellular carcinoma since elevated values have been shown to be associated with a seven-fold increase in the risk for developing hepatocellular carcinoma within 21 months. Results cannot be interpreted as absolute evidence of the presence or absence of malignant disease. For pregnant females, the result is not interpretable as a tumor marker.

ADMINISTRATIVE

CPT Codes:
82107

LOINC:

- 1834-1
- 42332-7

LOINC Codes:
1834-1, 42332-7

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Surveillance and monitoring of hepatocellular carcinoma.

Test Code:
AFPL3

ARUP Test Code:
0081208

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Mon, Thu

Methodology:
Quantitative Liquid Chromatography/Immunoassay

Collect:
Serum separator tube.

Amount to Collect:
2 mL (blood)

Sample Type:
Serum

Preferred Volume:
1 mL (serum)

Minimum Volume:
0.5 mL (serum)

Rejection Criteria:
Plasma

Unacceptable Conditions:
Plasma.

Specimen Preparation:
Allow specimen to clot completely at room temperature. Separate serum from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min: 0.5 mL)

Units:
ng/mL, percent

Reference Interval:
By report

Components	Reference Interval
Alpha Fetoprotein Total	0-15 ng/mL
Alpha Fetoprotein L3 Pct	0.0-9.9 percent

Interpretive Data:
The µTASWako method is used. Results obtained with different assay methods or kits cannot be used interchangeably. The AFP L3 Percent assay is intended as a risk assessment for the development of hepatocellular carcinoma in patients with chronic liver diseases. Patients with elevated serum AFP-L3 percent should be more intensely evaluated for evidence of hepatocellular carcinoma since elevated values have been shown to be associated with a seven-fold increase in the risk for developing hepatocellular carcinoma within 21 months. Results cannot be interpreted as absolute evidence of the presence or absence of malignant disease. For pregnant females, the result is not interpretable as a tumor marker.

Synonyms:

- AFP, AFP-L3%, Hepatocellular carcinoma marker, HCC marker
- AFP
- AFP-L3%
- Alpha Fetoprotein
- Alpha Fetoprotein, Total and L3 Percent
- Alpha-Fetoprotein (AFP) L3% and Total, Hepatocellular Carcinoma Tumor Marker, Serum
- Alpha-fetoprotein, Total
- Hepatocellular Carcinoma AFP
- Total AFP

Storage/Transport Temperature:
Frozen.

Stability (from collection to initiation):
After separation from cells: Ambient: 8 hours; Refrigerated: 5 days; Frozen: 3 months (avoid repeated freeze/thaw cycles)

Reported:
1-5 days

CPT Codes:
82107

LOINC:

- 1834-1
- 42332-7

LOINC Codes:
1834-1, 42332-7

Alpha Subunit of Glycoprotein Hormones

ASUB

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
RIA

Reported:
Test run Tuesday, and Thursday. Turnaround time: 3-8 days.

Synonyms:

- FSH
- HCG
- LH
- TSH
- Alpha-PGH
- Alpha-TSH
- Alpha chains

COLLECTION

Sample Type:
Serum

Collect:
Red top preferred, Gold top acceptable

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 1 week, frozen at -20C 4 weeks

Unacceptable Conditions:
Hemolyiss, lipemia

Rejection Criteria:
Hemolyiss, lipemia

PROCESSING

Test Code:
ASUB

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze serum, Order Quest #8658X.

For Brown & Toland patients: order BTMOLT and FREEZE serum, Order LabCorp #140269.

Preferred Volume:
2 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Hemolyiss, lipemia

Rejection Criteria:
Hemolyiss, lipemia

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 1 week, frozen at -20C 4 weeks

RESULT INTERPRETATION

Units:
ng/mL

Reference Interval:

Males	<= 0.6 ng/mL
Premenopausal females	<= 1.5 ng/mL
Postmenopausal females	0.9-3.3 ng/mL
Pregnancy (1st & 2nd Trimest)	1.8-360 ng/mL
Hypothyroid patients	<= 3.7 ng/mL

ADMINISTRATIVE

CPT Codes:
83159-90

LOINC Codes:
30199-4

COMPLETE VIEW

Available Stat:
No

Test Code:
ASUB

Performing Lab:
Quest

Sendout:
Yes

Methodology:
RIA

Collect:
Red top preferred, Gold top acceptable

Amount to Collect:
4 mL blood

Sample Type:
Serum

Preferred Volume:
2 mL serum

Minimum Volume:
0.3 mL serum

Rejection Criteria:
Hemolyiss, lipemia

Unacceptable Conditions:
Hemolyiss, lipemia

Specimen Preparation:
Freeze serum, Order Quest #8658X.

For Brown & Toland patients: order BTMOLT and FREEZE serum, Order LabCorp #140269.

Units:
ng/mL

Reference Interval:

Males	<= 0.6 ng/mL
Premenopausal females	<= 1.5 ng/mL
Postmenopausal females	0.9-3.3 ng/mL
Pregnancy (1st & 2nd Trimest)	1.8-360 ng/mL
Hypothyroid patients	<= 3.7 ng/mL

Synonyms:

- FSH
- HCG
- LH
- TSH
- Alpha-PGH
- Alpha-TSH
- Alpha chains

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 1 week, frozen at -20C 4 weeks

Reported:
Test run Tuesday, and Thursday. Turnaround time: 3-8 days.

CPT Codes:
83159-90

LOINC Codes:
30199-4

Alpha Thalassemia mutations

ATHL

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Molecular Diagnostics

Performed:
Run 1x per week as needed

Methodology:
PCR and gel electrophoresis

Reported:
7-14 days

Additional Information:
If this assay fails to detect a deletion and suspicion for alpha thalassemia remains elevated (e.g. low MCV, confounding presence of iron deficiency, low percentage of Hb S in sickle-cell trait, heterozygous beta thalassemia, Hb H disease with a two-alpha globin gene deletion), then it is possible that a non-deletion type of alpha thalassemia could be present. Such variants can be detected using our Alpha-globin Gene Sequencing assay (test code AGSQ), which determines the DNA sequence of both alpha1 and alpha2 globin genes and detects the presence of point mutations that result in alpha thalassemia.

There are four alpha globin genes per diploid genome, with two genes located on each chromosome. The most common molecular abnormalities that cause alpha thalassemia are alpha globin gene deletions, which can result in either one or two alpha globin gene deletions per chromosome. Although point mutations that cause alpha thalassemia occur in the alpha globin genes, these are not common and may be found in individuals from inbred populations.

This test detects seven deletions that cause alpha thalassemia in various worldwide populations. These are:

1) Rightward (- alpha 3.7): one alpha globin gene deletion. (alpha thal-2). It is the most common type of alpha thal-2 deletion found in numerous populations worldwide such as in African, Mediterranean and Far Eastern populations. This test will detect the common and Hawaiian variants of this deletion.

2) Leftward (- alpha 4.2): one alpha globin gene deletion. (alpha thal-2). This deletion is much less prevalent than the rightward deletion and occurs in multiple populations.

3) Southeast Asian (- - SEA): Two alpha globin gene deletion. (alpha thal-1). Found in Southeast Asian populations, mostly China.

4) Filipino (FIL): Two alpha globin gene deletion. (alpha thal-2). Found predominantly in Filipinos and Hawaiians. Fetuses homozygous for this deletion are usually aborted due to the deletion of genes that encode embryonic zeta chains.

5) Thai (THAI): Two alpha globin gene deletion. (alpha thal-2). Found predominantly in Southeast Asian individuals (Thailand). Fetuses homozygous for this deletion are usually aborted due to the deletion of genes that encode embryonic zeta chains

6) Mediterranean (MED): Two alpha globin gene deletion. (alpha thal-2). Occurs in individuals with Mediterranean backgrounds.

7) 20.5 Kb: Two alpha globin gene deletion. (alpha thal-2). Found in various Mediterranean and Central Asian populations.

The most clinically significant situation arises when each parent is a carrier of a 2 alpha-globin gene deletion in cis (--/aa). Fetuses of such couples are at 25% risk for hydrops fetalis. Fetuses of couples where one partner is a carrier of a 2 alpha-globin gene deletion and the other is a carrier of a single alpha-globin gene deletion are at 25% risk for Hb H disease (--/-a).

This test is often used to assess whether a low MCV is caused by the inheritance of alpha-thalassemia either alone or in combination with iron deficiency and/or beta-thalassemia.

Note: This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Synonyms:

- Alpha thalassemia-1
- Alpha thalassemia-2

COLLECTION

Sample Type:
EDTA whole blood
Amniotic fluid
Cultured amniocytes
Chorionic villi
Cultured chorionic villi

Collect:
Lavender top

Amount to Collect:
Blood: 5 ml
Amniotic fluid: 20 ml
Cultures amniocytes: 2 T25 flasks
Chorionic villi: 20 mg
Cultured chorionic villi: 2 T25 flasks

Preferred Volume:
Blood: 5 ml
Amniotic fluid: 20 ml
Cultures amniocytes: 2 T25 flasks
Chorionic villi: 20 mg
Cultured chorionic villi: 2 T25 flasks

Minimum Volume:
Blood: 2 ml
Amniotic fluid: 10 ml
Cultures amniocytes: 1 T25 flasks
Chorionic villi: 10 mg
Cultured chorionic villi: 1 T25 flasks

Remarks:
Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Unacceptable Conditions:
Heparinized samples. Tissue flasks with poorly confluence cultures. Insufficient amount of amniotic fluid or chorionic villi

PROCESSING

Test Code:
ATHL

Test Group:
Thalassemia

Performing Lab:
Medical Genomics - Molecular Diagnostics

Specimen Preparation:
Do not centrifuge, do not freeze, Refrigerate samples and ship at room temperature.

Preferred Volume:
Blood: 5 ml
Amniotic fluid: 20 ml
Cultures amniocytes: 2 T25 flasks
Chorionic villi: 20 mg
Cultured chorionic villi: 2 T25 flasks

Minimum Volume:
Blood: 2 ml
Amniotic fluid: 10 ml
Cultures amniocytes: 1 T25 flasks
Chorionic villi: 10 mg
Cultured chorionic villi: 1 T25 flasks

Unacceptable Conditions:
Heparinized samples. Tissue flasks with poorly confluence cultures. Insufficient amount of amniotic fluid or chorionic villi

RESULT INTERPRETATION

Reference Interval:
Negative. No alpha globin gene deletions detected.

Additional Information:

If this assay fails to detect a deletion and suspicion for alpha thalassemia remains elevated (e.g. low MCV, confounding presence of iron deficiency, low percentage of Hb S in sickle-cell trait, heterozygous beta thalassemia, Hb H disease with a two-alpha globin gene deletion), then it is possible that a non-deletion type of alpha thalassemia could be present. Such variants can be detected using our Alpha-globin Gene Sequencing assay (test code AGSQ), which determines the DNA sequence of both alpha1 and alpha2 globin genes and detects the presence of point mutations that result in alpha thalassemia.

There are four alpha globin genes per diploid genome, with two genes located on each chromosome. The most common molecular abnormalities that cause alpha thalassemia are alpha globin gene deletions, which can result in either one or two alpha globin gene deletions per chromosome. Although point mutations that cause alpha thalassemia occur in the alpha globin genes, these are not common and may be found in individuals from inbred populations.

This test detects seven deletions that cause alpha thalassemia in various worldwide populations. These are:

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2) Leftward (- alpha 4.2): one alpha globin gene deletion. (alpha thal-2). This deletion is much less prevalent than the rightward deletion and occurs in multiple populations.

3) Southeast Asian (- - SEA): Two alpha globin gene deletion. (alpha thal-1). Found in Southeast Asian populations, mostly China.

4) Filipino (FIL): Two alpha globin gene deletion. (alpha thal-2). Found predominantly in Filipinos and Hawaiians. Fetuses homozygous for this deletion are usually aborted due to the deletion of genes that encode embryonic zeta chains.

5) Thai (THAI): Two alpha globin gene deletion. (alpha thal-2). Found predominantly in Southeast Asian individuals (Thailand). Fetuses homozygous for this deletion are usually aborted due to the deletion of genes that encode embryonic zeta chains

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7) 20.5 Kb: Two alpha globin gene deletion. (alpha thal-2). Found in various Mediterranean and Central Asian populations.

The most clinically significant situation arises when each parent is a carrier of a 2 alpha-globin gene deletion in cis (--/aa). Fetuses of such couples are at 25% risk for hydrops fetalis. Fetuses of couples where one partner is a carrier of a 2 alpha-globin gene deletion and the other is a carrier of a single alpha-globin gene deletion are at 25% risk for Hb H disease (--/-a).

This test is often used to assess whether a low MCV is caused by the inheritance of alpha-thalassemia either alone or in combination with iron deficiency and/or beta-thalassemia.

Note: This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

ADMINISTRATIVE

CPT Codes:
81257

LDT or Modified FDA:
Yes

LOINC Codes:
21687-9

COMPLETE VIEW

Available Stat:
No

Test Code:
ATHL

Test Group:
Thalassemia

Performing Lab:
Medical Genomics - Molecular Diagnostics

Performed:
Run 1x per week as needed

Methodology:
PCR and gel electrophoresis

Remarks:
Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Collect:
Lavender top

Amount to Collect:
Blood: 5 ml
Amniotic fluid: 20 ml
Cultures amniocytes: 2 T25 flasks
Chorionic villi: 20 mg
Cultured chorionic villi: 2 T25 flasks

Sample Type:
EDTA whole blood
Amniotic fluid
Cultured amniocytes
Chorionic villi
Cultured chorionic villi

Preferred Volume:
Blood: 5 ml
Amniotic fluid: 20 ml
Cultures amniocytes: 2 T25 flasks
Chorionic villi: 20 mg
Cultured chorionic villi: 2 T25 flasks

Minimum Volume:
Blood: 2 ml
Amniotic fluid: 10 ml
Cultures amniocytes: 1 T25 flasks
Chorionic villi: 10 mg
Cultured chorionic villi: 1 T25 flasks

Unacceptable Conditions:
Heparinized samples. Tissue flasks with poorly confluence cultures. Insufficient amount of amniotic fluid or chorionic villi

Specimen Preparation:
Do not centrifuge, do not freeze, Refrigerate samples and ship at room temperature.

Reference Interval:
Negative. No alpha globin gene deletions detected.

Synonyms:

- Alpha thalassemia-1
- Alpha thalassemia-2

Reported:
7-14 days

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Additional Information:

If this assay fails to detect a deletion and suspicion for alpha thalassemia remains elevated (e.g. low MCV, confounding presence of iron deficiency, low percentage of Hb S in sickle-cell trait, heterozygous beta thalassemia, Hb H disease with a two-alpha globin gene deletion), then it is possible that a non-deletion type of alpha thalassemia could be present. Such variants can be detected using our Alpha-globin Gene Sequencing assay (test code AGSQ), which determines the DNA sequence of both alpha1 and alpha2 globin genes and detects the presence of point mutations that result in alpha thalassemia.

There are four alpha globin genes per diploid genome, with two genes located on each chromosome. The most common molecular abnormalities that cause alpha thalassemia are alpha globin gene deletions, which can result in either one or two alpha globin gene deletions per chromosome. Although point mutations that cause alpha thalassemia occur in the alpha globin genes, these are not common and may be found in individuals from inbred populations.

This test detects seven deletions that cause alpha thalassemia in various worldwide populations. These are:

1) Rightward (- alpha 3.7): one alpha globin gene deletion. (alpha thal-2). It is the most common type of alpha thal-2 deletion found in numerous populations worldwide such as in African, Mediterranean and Far Eastern populations. This test will detect the common and Hawaiian variants of this deletion.

2) Leftward (- alpha 4.2): one alpha globin gene deletion. (alpha thal-2). This deletion is much less prevalent than the rightward deletion and occurs in multiple populations.

3) Southeast Asian (- - SEA): Two alpha globin gene deletion. (alpha thal-1). Found in Southeast Asian populations, mostly China.

4) Filipino (FIL): Two alpha globin gene deletion. (alpha thal-2). Found predominantly in Filipinos and Hawaiians. Fetuses homozygous for this deletion are usually aborted due to the deletion of genes that encode embryonic zeta chains.

5) Thai (THAI): Two alpha globin gene deletion. (alpha thal-2). Found predominantly in Southeast Asian individuals (Thailand). Fetuses homozygous for this deletion are usually aborted due to the deletion of genes that encode embryonic zeta chains

6) Mediterranean (MED): Two alpha globin gene deletion. (alpha thal-2). Occurs in individuals with Mediterranean backgrounds.

7) 20.5 Kb: Two alpha globin gene deletion. (alpha thal-2). Found in various Mediterranean and Central Asian populations.

The most clinically significant situation arises when each parent is a carrier of a 2 alpha-globin gene deletion in cis (--/aa). Fetuses of such couples are at 25% risk for hydrops fetalis. Fetuses of couples where one partner is a carrier of a 2 alpha-globin gene deletion and the other is a carrier of a single alpha-globin gene deletion are at 25% risk for Hb H disease (--/-a).

This test is often used to assess whether a low MCV is caused by the inheritance of alpha-thalassemia either alone or in combination with iron deficiency and/or beta-thalassemia.

Note: This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

CPT Codes:

81257

LDT or Modified FDA:

Yes

LOINC Codes:

21687-9

Alpha-1-Antitrypsin, clearance

A1AC

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
Rate nephelometry

Reported:
Test performed Monday-F. Turnaround time: 3-4 days.

Synonyms:

- A1AT
- A1-AT
- Alpha-1-PI
- Alpha-1-Protease inhibiitor
- A1-Antitrypsin
- A1-PI
- A1-Protease inhibitor

COLLECTION

Sample Type:
24 hour Stool collection & serum

Collect:
Collect stool only in special 24 hour collection container white with Red cap available in clinical labs. Submit with Gold top

NOTE: Collect blood during the stool collection time interval

Amount to Collect:
Entire 24 hour stool output
2 mL blood (Gold top)

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

PROCESSING

Test Code:
A1AC

Test Group:
Alpha-1-Antitrypsin

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Freeze stool and serum at -20C and ship both on dry ice to Mayo Medical Laboratories. IMPORTANT: If only an aliquot of the homogenized stool is sent to the reference laboratory, record and send the weight of the entire 24 hour collection and the volume of any distilled water added to homogenize the sample with the specimens. Order MAYO# 8835. Call MCS for pickup.

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

RESULT INTERPRETATION

Units:
mL/24 h

Reference Interval:
Clearance: <= 27 mL/d

ADMINISTRATIVE

CPT Codes:
82103-90 x2.

LOINC Codes:
18271-7

COMPLETE VIEW

Available Stat:
No

Test Code:
A1AC

Test Group:
Alpha-1-Antitrypsin

Performing Lab:
Mayo

Sendout:
Yes

Methodology:
Rate nephelometry

Collect:
Collect stool only in special 24 hour collection container white with Red cap available in clinical labs. Submit with Gold top

NOTE: Collect blood during the stool collection time interval

Amount to Collect:
Entire 24 hour stool output
2 mL blood (Gold top)

Sample Type:
24 hour Stool collection & serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Specimen Preparation:
Freeze stool and serum at -20C and ship both on dry ice to Mayo Medical Laboratories. IMPORTANT: If only an aliquot of the homogenized stool is sent to the reference laboratory, record and send the weight of the entire 24 hour collection and the volume of any distilled water added to homogenize the sample with the specimens. Order MAYO# 8835. Call MCS for pickup.

Units:
mL/24 h

Reference Interval:
Clearance: <= 27 mL/d

Synonyms:

- A1AT
- A1-AT
- Alpha-1-PI
- Alpha-1-Protease inhibiitor
- A1-Antitrypsin
- A1-PI
- A1-Protease inhibitor

Reported:
Test performed Monday-F. Turnaround time: 3-4 days.

CPT Codes:
82103-90 x2.

LOINC Codes:
18271-7

Alpha-1-Antitrypsin, Phenotyping

ATPN

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Isoelectric focusing

Reported:
Test set up 5x per week, turnaround 5-7 days

Additional Information:
Most normal individuals have the M phenotype (M,M1, or M2). Over 99% of M phenotypes are genotypically MM. In the absence of family studies, the phenotype (M) and quantitative level can be used to infer the genotype MM.

The most common alleles associated with a quantitatave deficiency ate Z and S. The reports for the rare alleles will indicate whether or not they have been associated with reduced quantitative levels.

Synonyms:

- A1AT
- A1-AT
- Alpha-1-PI
- Alpha-1-Protease inhibiitor
- A1-Antitrypsin
- A1-PI
- A1-Protease inhibitor

COLLECTION

Sample Type:
Serum

Collect:
Red top or Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.1 mL serum

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 1 week, frozen at -20C 1 month.

PROCESSING

Test Code:
ATPN

Test Group:
Alpha-1-Antitrypsin

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate. Order Quest Test # 853X Alpha-1-Antitrypsin Phenotyping

Preferred Volume:
1 mL serum

Minimum Volume:
0.1 mL serum

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 1 week, frozen at -20C 1 month.

RESULT INTERPRETATION

Reference Interval:
90% of Normals are MM

Additional Information:
Most normal individuals have the M phenotype (M,M1, or M2). Over 99% of M phenotypes are genotypically MM. In the absence of family studies, the phenotype (M) and quantitative level can be used to infer the genotype MM.

The most common alleles associated with a quantitatave deficiency ate Z and S. The reports for the rare alleles will indicate whether or not they have been associated with reduced quantitative levels.

ADMINISTRATIVE

CPT Codes:
82104-90

LOINC Codes:
32769-2

COMPLETE VIEW

Available Stat:
No

Test Code:
ATPN

Test Group:
Alpha-1-Antitrypsin

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Isoelectric focusing

Collect:
Red top or Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.1 mL serum

Specimen Preparation:
Refrigerate. Order Quest Test # 853X Alpha-1-Antitrypsin Phenotyping

Reference Interval:
90% of Normals are MM

Synonyms:

- A1AT
- A1-AT
- Alpha-1-PI
- Alpha-1-Protease inhibiitor
- A1-Antitrypsin
- A1-PI
- A1-Protease inhibitor

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 1 week, frozen at -20C 1 month.

Reported:
Test set up 5x per week, turnaround 5-7 days

Additional Information:
Most normal individuals have the M phenotype (M,M1, or M2). Over 99% of M phenotypes are genotypically MM. In the absence of family studies, the phenotype (M) and quantitative level can be used to infer the genotype MM.

The most common alleles associated with a quantitatave deficiency ate Z and S. The reports for the rare alleles will indicate whether or not they have been associated with reduced quantitative levels.

CPT Codes:
82104-90

LOINC Codes:
32769-2

Alpha-1-Antitrypsin, random stool

A1AF

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
Rate nephelometry

Reported:
7-10 days

Additional Information:
The recommended test for protein losing enteropathy is, Alpha-1-antitrypsin, clearance.

Synonyms:

- A1AT
- A1-AT
- Alpha-1-PI
- Alpha-1-Protease inhibiitor
- A1-Antitrypsin
- A1-PI
- A1-Protease inhibitor

COLLECTION

Sample Type:
Stool

Collect:
Urine cup

Amount to Collect:
10 g random stool

Preferred Volume:
10 g stool

Minimum Volume:
5 g stool

PROCESSING

Test Code:
A1AF

Test Group:
Alpha-1-Antitrypsin

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Refrigerate stool. Order MAYO# 182. Call MCS for pickup.

Preferred Volume:
10 g stool

Minimum Volume:
5 g stool

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:
<= 54 mg/dL

Additional Information:
The recommended test for protein losing enteropathy is, Alpha-1-antitrypsin, clearance.

ADMINISTRATIVE

CPT Codes:
82103-90

COMPLETE VIEW

Available Stat:
No

Test Code:
A1AF

Test Group:
Alpha-1-Antitrypsin

Performing Lab:
Mayo

Sendout:
Yes

Methodology:
Rate nephelometry

Collect:
Urine cup

Amount to Collect:
10 g random stool

Sample Type:
Stool

Preferred Volume:
10 g stool

Minimum Volume:
5 g stool

Specimen Preparation:
Refrigerate stool. Order MAYO# 182. Call MCS for pickup.

Units:
mg/dL

Reference Interval:
<= 54 mg/dL

Synonyms:

- A1AT
- A1-AT
- Alpha-1-PI
- Alpha-1-Protease inhibiitor
- A1-Antitrypsin
- A1-PI
- A1-Protease inhibitor

Reported:
7-10 days

Additional Information:
The recommended test for protein losing enteropathy is, Alpha-1-antitrypsin, clearance.

CPT Codes:
82103-90

Alpha-1-Antitrypsin, serum

A1AT

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday, Wednesday, Friday (day shift)

Methodology:
Turbidimetry

Reported:
2-5 days

Additional Information:
Lipemia interferes with the assay.

Synonyms:

- A1AT
- A1-AT
- Alpha-1-PI
- Alpha-1-Protease inhibiitor
- A1-Antitrypsin
- A1-PI
- A1-Protease inhibitor

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Refrigerated 48 hours; Frozen for longer stability

Storage/Transport Temperature:
Frozen

Unacceptable Conditions:
Lipemic and grossly hemolyzed samples

PROCESSING

Test Code:
A1AT

Test Group:
Alpha-1-Antitrypsin

Performing Lab:
Immunology

Specimen Preparation:
Frozen

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Lipemic and grossly hemolyzed samples

Stability (from collection to initiation):
Refrigerated 48 hours; Frozen for longer stability

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:
90-200 mg/dL

Additional Information:
Lipemia interferes with the assay.

ADMINISTRATIVE

CPT Codes:
82103

LOINC Codes:
1825-9

COMPLETE VIEW

Available Stat:
No

Test Code:
A1AT

Test Group:
Alpha-1-Antitrypsin

Performing Lab:
Immunology

Performed:
Monday, Wednesday, Friday (day shift)

Methodology:
Turbidimetry

Collect:
Gold top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Lipemic and grossly hemolyzed samples

Specimen Preparation:
Frozen

Units:
mg/dL

Reference Interval:
90-200 mg/dL

Synonyms:

- A1AT
- A1-AT
- Alpha-1-PI
- Alpha-1-Protease inhibiitor
- A1-Antitrypsin
- A1-PI
- A1-Protease inhibitor

Storage/Transport Temperature:
Frozen

Stability (from collection to initiation):
Refrigerated 48 hours; Frozen for longer stability

Reported:
2-5 days

Additional Information:
Lipemia interferes with the assay.

CPT Codes:
82103

LOINC Codes:
1825-9

Alpha-Fetoprotein, CSF

AFPCSF

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
MEIA

Reported:
Test run Monday-Saturday. Turnaround time: 2-3 days.

Synonyms:

- AFP
- Alpha-fetoglobulin

COLLECTION

Sample Type:
CSF

Collect:
CSF tube or sterile collection tube

Amount to Collect:
See preferred volume

Preferred Volume:
1 mL CSF

Minimum Volume:
0.3 mL CSF

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

PROCESSING

Test Code:
AFPCSF

Test Group:
Alpha-Fetoprotein

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Freeze specimen at -20C. Order MAYO# 8876 Ship on dry ice to China basin for MCI courier pick-up.

Preferred Volume:
1 mL CSF

Minimum Volume:
0.3 mL CSF

RESULT INTERPRETATION

Units:
ng/mL

Reference Interval:
< 1.5 ng/mL

Reference range in newborns is not established.

ADMINISTRATIVE

CPT Codes:
86316-90

LOINC Codes:
1833-3

COMPLETE VIEW

Available Stat:
No

Test Code:
AFPCSF

Test Group:
Alpha-Fetoprotein

Performing Lab:
Mayo

Sendout:
Yes

Methodology:
MEIA

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Collect:
CSF tube or sterile collection tube

Amount to Collect:
See preferred volume

Sample Type:
CSF

Preferred Volume:
1 mL CSF

Minimum Volume:
0.3 mL CSF

Specimen Preparation:
Freeze specimen at -20C. Order MAYO# 8876 Ship on dry ice to China basin for MCI courier pick-up.

Units:
ng/mL

Reference Interval:
< 1.5 ng/mL

Reference range in newborns is not established.

Synonyms:

- AFP
- Alpha-fetoglobulin

Reported:
Test run Monday-Saturday. Turnaround time: 2-3 days.

CPT Codes:
86316-90

LOINC Codes:
1833-3

Alpha-Fetoprotein, serum

AFPT

ORDERING

Available Stat:
No

Performing Lab:
China Basin Chemistry

Performed:
Monday, Wednesday, Friday (day shift)

Methodology:
Chemiluminescent Microparticle Immunoassay (Abbott Architect i2000)

Reported:
1-5 days

Additional Information:
Method changed from Siemens Centaur XP platform to Abbott Architect i2000 platform on 2/20/18.

No significant impact on results.

Results for this test are generated by immunoassay using the Abbott Architect i2000 platform. Results for this test determined by assay methods from other manufacturers may not be comparable.

The ARCHITECT AFP calibrators are manufactured gravimetrically and are referenced to the World Health Organization (WHO) First International Standard 72/225 for Alpha-fetoprotein at each concentration level.

Synonyms:

- AFP
- Alpha-fetoglobulin

COLLECTION

Sample Type:
Serum

Collect:
Preferred: Gold top or Red top
Acceptable: Dark Green or Light Green

Amount to Collect:
1 mL blood

Preferred Volume:
0.3 mL serum

Minimum Volume:
0.15 mL serum

Stability (from collection to initiation):
Room Temperature: 3 days
Refrigerated (2-8°C): 7 days

If testing will be delayed more than 7 days, remove serum from clot, red blood cells, or serum separator gel and store at -20°C or colder.

Avoid more than 5 freeze/thaw cycles.

Storage/Transport Temperature:
-20°C or colder

PROCESSING

Test Code:
AFPT

Performing Lab:
China Basin Chemistry

Specimen Preparation:
Aliquot and freeze specimen at -20C

Preferred Volume:
0.3 mL serum

Minimum Volume:
0.15 mL serum

Stability (from collection to initiation):
Room Temperature: 3 days
Refrigerated (2-8°C): 7 days

If testing will be delayed more than 7 days, remove serum from clot, red blood cells, or serum separator gel and store at -20°C or colder.

Avoid more than 5 freeze/thaw cycles.

Storage/Transport Temperature:
-20°C or colder

RESULT INTERPRETATION

Units:
µg/L

Reference Interval:
Adult Reference Range (>= 18 years): <8.9 ug/L

Adult reference range adopted from Abbott (vendor) based on in-house verification studies of 25 normal volunteers (18 years old)) in the UCSF Laboratory.

Pediatric Reference Range:

Age	Results (ug/L)
0 - < 1 month	> 2000
1 month - < 3 months	10 - 1359
3 months - < 6 months	4 - 275
6 months - < 1 year	3 - 148
1 year - < 3 years	3 - 21
3 years - < 18 years	1 - 4

Pediatric reference ranges adopted from CALIPER Pediatric Reference Interval study performed on random samples using the Abbott Architect i2000 assay.

Additional Information:
Method changed from Siemens Centaur XP platform to Abbott Architect i2000 platform on 2/20/18.

No significant impact on results.

Results for this test are generated by immunoassay using the Abbott Architect i2000 platform. Results for this test determined by assay methods from other manufacturers may not be comparable.

The ARCHITECT AFP calibrators are manufactured gravimetrically and are referenced to the World Health Organization (WHO) First International Standard 72/225 for Alpha-fetoprotein at each concentration level.

ADMINISTRATIVE

CPT Codes:
82105

LOINC Codes:
1834-1

COMPLETE VIEW

Available Stat:
No

Test Code:
AFPT

Performing Lab:
China Basin Chemistry

Performed:
Monday, Wednesday, Friday (day shift)

Methodology:
Chemiluminescent Microparticle Immunoassay (Abbott Architect i2000)

Collect:
Preferred: Gold top or Red top
Acceptable: Dark Green or Light Green

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.3 mL serum

Minimum Volume:
0.15 mL serum

Specimen Preparation:
Aliquot and freeze specimen at -20C

Units:
µg/L

Reference Interval:
Adult Reference Range (>= 18 years): <8.9 ug/L

Adult reference range adopted from Abbott (vendor) based on in-house verification studies of 25 normal volunteers (18 years old)) in the UCSF Laboratory.

Pediatric Reference Range:

Age	Results (ug/L)
0 - < 1 month	> 2000
1 month - < 3 months	10 - 1359
3 months - < 6 months	4 - 275
6 months - < 1 year	3 - 148
1 year - < 3 years	3 - 21
3 years - < 18 years	1 - 4

Pediatric reference ranges adopted from CALIPER Pediatric Reference Interval study performed on random samples using the Abbott Architect i2000 assay.

Synonyms:

- AFP
- Alpha-fetoglobulin

Storage/Transport Temperature:
-20°C or colder

Stability (from collection to initiation):
Room Temperature: 3 days
Refrigerated (2-8°C): 7 days

If testing will be delayed more than 7 days, remove serum from clot, red blood cells, or serum separator gel and store at -20°C or colder.

Avoid more than 5 freeze/thaw cycles.

Reported:
1-5 days

Additional Information:
Method changed from Siemens Centaur XP platform to Abbott Architect i2000 platform on 2/20/18.

No significant impact on results.

Results for this test are generated by immunoassay using the Abbott Architect i2000 platform. Results for this test determined by assay methods from other manufacturers may not be comparable.

The ARCHITECT AFP calibrators are manufactured gravimetrically and are referenced to the World Health Organization (WHO) First International Standard 72/225 for Alpha-fetoprotein at each concentration level.

CPT Codes:
82105

LOINC Codes:
1834-1

Alpha-Galactosidase Activity, Leukocytes

AGA

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
Fluorometric

COLLECTION

Sample Type:
Citrated whole blood

Collect:
Yellow top (ACD)

Amount to Collect:
7 mL blood

Preferred Volume:
7 mL blood

Minimum Volume:
5 mL blood

Remarks:
Specimen must arrive at Mayo Labs within 72 hours of draw to be stabilized. **Draw specimen Monday through Thursday (before 12pm) only and NOT the day before a holiday.**

Transport sample immediately to lab for processing.

Stability (from collection to initiation):
Specimen must arrive within 72 hours of collection to Mayo.

Unacceptable Conditions:
Samples collected Friday or the day before a holiday.

Rejection Criteria:
Frozen sample received. Sample > 72 hours old on receipt.

PROCESSING

Test Code:
AGA

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Ship tubes refrigerated to China Basin for Mayo laboratory pickup. Order Mayo test #8785.

Preferred Volume:
7 mL blood

Minimum Volume:
5 mL blood

Unacceptable Conditions:
Samples collected Friday or the day before a holiday.

Rejection Criteria:
Frozen sample received. Sample > 72 hours old on receipt.

Stability (from collection to initiation):
Specimen must arrive within 72 hours of collection to Mayo.

RESULT INTERPRETATION

Units:
nmol/h/mg protein

Reference Interval:
> 23 nmol/h/mg protein

ADMINISTRATIVE

CPT Codes:
82675-90

COMPLETE VIEW

Available Stat:
No

Test Code:
AGA

Performing Lab:
Mayo

Sendout:
Yes

Methodology:
Fluorometric

Remarks:
Specimen must arrive at Mayo Labs within 72 hours of draw to be stabilized. **Draw specimen Monday through Thursday (before 12pm) only and NOT the day before a holiday.**

Transport sample immediately to lab for processing.

Collect:
Yellow top (ACD)

Amount to Collect:
7 mL blood

Sample Type:
Citrated whole blood

Preferred Volume:
7 mL blood

Minimum Volume:
5 mL blood

Rejection Criteria:
Frozen sample received. Sample > 72 hours old on receipt.

Unacceptable Conditions:
Samples collected Friday or the day before a holiday.

Specimen Preparation:
Ship tubes refrigerated to China Basin for Mayo laboratory pickup. Order Mayo test #8785.

Units:
nmol/h/mg protein

Reference Interval:
> 23 nmol/h/mg protein

Stability (from collection to initiation):
Specimen must arrive within 72 hours of collection to Mayo.

CPT Codes:
82675-90

ALPS - Double Negative T-cells by Flow Cytometry

ALPS

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday-Saturday (day shift)

Methodology:
Flow cytometry

Reported:
Preliminary result available from laboratory in 1-2 days. Written interpretive report sent within 7 days.

Additional Information:
This test is used as part of the workup for autoimmune lymphoproliferative syndrome (ALPS) by evaluating double-negative T-cells by flow cytometry.

This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. Only some of the reagents used have been cleared or approved by the U.S. Food and Drug Administration.

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Synonyms:

- T-Cell Receptor
- TCR
- Autoimmune lymphoproliferative syndrome

COLLECTION

Sample Type:
EDTA whole blood only

Collect:
Lavender top

Amount to Collect:
3 mL blood

Remarks:
Blood should be held at room temperature.

Storage/Transport Temperature:
Room temperature

Unacceptable Conditions:
Reject samples that have been frozen, stored in fixative, transported or stored at improper temperatures.

PROCESSING

Test Code:
ALPS

Performing Lab:
Immunology

Specimen Preparation:
Hold blood at room temperature. Do NOT centrifuge. Each specimen should be assigned its own accession number.

If specimens are delivered after 1200 hours on Saturday, anytime Sunday or on a holiday contact the resident on call.

Unacceptable Conditions:
Reject samples that have been frozen, stored in fixative, transported or stored at improper temperatures.

Storage/Transport Temperature:
Room temperature

RESULT INTERPRETATION

Additional Information:

This test is used as part of the workup for autoimmune lymphoproliferative syndrome (ALPS) by evaluating double-negative T-cells by flow cytometry.

This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. Only some of the reagents used have been cleared or approved by the U.S. Food and Drug Administration.

ADMINISTRATIVE

CPT Codes:
88184, 88185

LDT or Modified FDA:
Yes

LOINC Codes:
54226-6

COMPLETE VIEW

Available Stat:
No

Test Code:
ALPS

Performing Lab:
Immunology

Performed:
Monday-Saturday (day shift)

Methodology:
Flow cytometry

Remarks:
Blood should be held at room temperature.

Collect:
Lavender top

Amount to Collect:
3 mL blood

Sample Type:
EDTA whole blood only

Unacceptable Conditions:
Reject samples that have been frozen, stored in fixative, transported or stored at improper temperatures.

Specimen Preparation:
Hold blood at room temperature. Do NOT centrifuge. Each specimen should be assigned its own accession number.

If specimens are delivered after 1200 hours on Saturday, anytime Sunday or on a holiday contact the resident on call.

Synonyms:

- T-Cell Receptor
- TCR
- Autoimmune lymphoproliferative syndrome

Storage/Transport Temperature:
Room temperature

Reported:
Preliminary result available from laboratory in 1-2 days. Written interpretive report sent within 7 days.

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Additional Information:

This test is used as part of the workup for autoimmune lymphoproliferative syndrome (ALPS) by evaluating double-negative T-cells by flow cytometry.

This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. Only some of the reagents used have been cleared or approved by the U.S. Food and Drug Administration.

CPT Codes:
88184, 88185

LDT or Modified FDA:
Yes

LOINC Codes:
54226-6

Alternative Complement Pathway Activity (AH50)

AH50A

ORDERING

Ordering Recommendations:
Initial screening for suspected deficiency in the alternative complement pathway.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun, Wed

Methodology:
Semi-Quantitative Enzyme-Linked Immunosorbent Assay (ELISA)

Reported:
7-14 days

Synonyms:

- AH50
- Alternate Pathway
- Alternative Complement Pathway
- Alternative Complement Pathway Function
- Alternative Pathway - Complement
- Functional Complement
- Hemolytic Complement
- Alternative Pathway Functional Assay
- atypical hemolytic uremic syndrome
- C3 glomerulonephrits
- Dense-deposit disease

COLLECTION

Collect:
Plain Red

Stability (from collection to initiation):
After separation from cells: Ambient: unacceptable; Refrigerated: Unacceptable; Frozen: 30 days if kept at -70 C

Storage/Transport Temperature:
CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

Unacceptable Conditions:
Specimen types other than serum collected from RED TOP tubes. SST or serum gel tubes are not acceptable. Refrigerated or room temperature specimens. Specimens left to clot at refrigerated temperature. Specimens exposed to repeated freeze/thaw cycles. Grossly hemolyzed or grossly lipemic specimens or icteric specimens.

PROCESSING

Test Code:
AH50A

ARUP Test Code:
2005373

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Allow specimen to clot for one hour at room temperature. Separate serum from cells ASAP and centrifuge at 2-8 degrees C and aliquot serum into ARUP standard transport tube. Freeze specimen immediately at -70 degrees C or lower freezer. (Min: 0.3 mL)

Unacceptable Conditions:
Specimen types other than serum collected from RED TOP tubes. SST or serum gel tubes are not acceptable. Refrigerated or room temperature specimens. Specimens left to clot at refrigerated temperature. Specimens exposed to repeated freeze/thaw cycles. Grossly hemolyzed or grossly lipemic specimens or icteric specimens.

Stability (from collection to initiation):
After separation from cells: Ambient: unacceptable; Refrigerated: Unacceptable; Frozen: 30 days if kept at -70 C

Storage/Transport Temperature:
CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

RESULT INTERPRETATION

Reference Interval:

Components	Reference Interval
Alternative Complement Pathway Activity	31 percent normal or greater

Interpretive Data:
See report.

ADMINISTRATIVE

CPT Codes:
86161

LOINC:

- 74520-8

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Initial screening for suspected deficiency in the alternative complement pathway.

Test Code:
AH50A

ARUP Test Code:
2005373

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun, Wed

Methodology:
Semi-Quantitative Enzyme-Linked Immunosorbent Assay (ELISA)

Collect:
Plain Red

Unacceptable Conditions:
Specimen types other than serum collected from RED TOP tubes. SST or serum gel tubes are not acceptable. Refrigerated or room temperature specimens. Specimens left to clot at refrigerated temperature. Specimens exposed to repeated freeze/thaw cycles. Grossly hemolyzed or grossly lipemic specimens or icteric specimens.

Specimen Preparation:
Allow specimen to clot for one hour at room temperature. Separate serum from cells ASAP and centrifuge at 2-8 degrees C and aliquot serum into ARUP standard transport tube. Freeze specimen immediately at -70 degrees C or lower freezer. (Min: 0.3 mL)

Reference Interval:

Components	Reference Interval
Alternative Complement Pathway Activity	31 percent normal or greater

Interpretive Data:
See report.

Synonyms:

- AH50
- Alternate Pathway
- Alternative Complement Pathway
- Alternative Complement Pathway Function
- Alternative Pathway - Complement
- Functional Complement
- Hemolytic Complement
- Alternative Pathway Functional Assay
- atypical hemolytic uremic syndrome
- C3 glomerulonephrits
- Dense-deposit disease

Storage/Transport Temperature:
CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

Stability (from collection to initiation):
After separation from cells: Ambient: unacceptable; Refrigerated: Unacceptable; Frozen: 30 days if kept at -70 C

Reported:
7-14 days

CPT Codes:
86161

LOINC:

- 74520-8

Aluminum, plasma

ALUM

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Atomic Spectroscopy

Reported:
Test run 2x per week. Turnaround: 2-5 days.

Additional Information:
µg/L x 0.0371 = µmol/L (SI units).

COLLECTION

Patient Preparation:
Patient should refrain from taking antacids containing aluminum compounds at least three days prior to sample collection.

Sample Type:
EDTA Plasma

Collect:
Navy blue top (EDTA) tube

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL plasma

Minimum Volume:
0.7 mL plasma

Remarks:
Avoid hemolysis. Collect one vacutainer and discard, collect second vacutainer and submit for testing.

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 2 weeks, frozen at -20C 1 month

Unacceptable Conditions:
Hemolyzed samples

PROCESSING

Test Code:
ALUM

Test Group:
Aluminum

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Follow the detailed processing instructions for Trace Metal Analysis. Centrifuge within 2 hours of collection and pour the serum into the special red-labeled trace metal-free vial supplied by vendor. Store at room temperature Order Quest # 2958.

Preferred Volume:
2 mL plasma

Minimum Volume:
0.7 mL plasma

Unacceptable Conditions:
Hemolyzed samples

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 2 weeks, frozen at -20C 1 month

RESULT INTERPRETATION

Units:
µg/L (mcg/L)

Reference Interval:
Non-dialysis patient: <= 7 µg/L
Dialysis patient: < 40 µg/L

Additional Information:
µg/L x 0.0371 = µmol/L (SI units).

ADMINISTRATIVE

CPT Codes:
82108-90

LOINC Codes:
5574-9

COMPLETE VIEW

Available Stat:
No

Test Code:
ALUM

Test Group:
Aluminum

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Atomic Spectroscopy

Patient Preparation:
Patient should refrain from taking antacids containing aluminum compounds at least three days prior to sample collection.

Remarks:
Avoid hemolysis. Collect one vacutainer and discard, collect second vacutainer and submit for testing.

Collect:
Navy blue top (EDTA) tube

Amount to Collect:
4 mL blood

Sample Type:
EDTA Plasma

Preferred Volume:
2 mL plasma

Minimum Volume:
0.7 mL plasma

Unacceptable Conditions:
Hemolyzed samples

Specimen Preparation:
Follow the detailed processing instructions for Trace Metal Analysis. Centrifuge within 2 hours of collection and pour the serum into the special red-labeled trace metal-free vial supplied by vendor. Store at room temperature Order Quest # 2958.

Units:
µg/L (mcg/L)

Reference Interval:
Non-dialysis patient: <= 7 µg/L
Dialysis patient: < 40 µg/L

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 2 weeks, frozen at -20C 1 month

Reported:
Test run 2x per week. Turnaround: 2-5 days.

Additional Information:
µg/L x 0.0371 = µmol/L (SI units).

CPT Codes:
82108-90

LOINC Codes:
5574-9

Amikacin, Peak (AMIKPK); Amikacin, Trough (AMIKTR); Amikacin, Random (AMIKRD)

Amikacin

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Particle-enhanced turbidimetric inhibition immunoassay (PETINIA)

Reported:
STAT: 1 hour
Routine: 4 hours

Note: Samples from Mission Bay and Mount Zion may take up to 24 hours.

Synonyms:

- AMIKPK
- AMIKTR
- AMIKRD
- AMIK
- AMIKACIN

COLLECTION

Sample Type:
Plasma or serum

Collect:
Light green or gold top tube

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.3 mL plasma or serum

Remarks:
Time to Steady State: 2-3 doses (1 dose for ICN extended interval dosing)

Trough samples should be collected 30 minutes before 3rd or 4th dose. Document exact time of collection in Apex, on requisition AND sample label.

Draw peak sample 30 min. after end of infusion or 60 minutes after IM dose.

Stability (from collection to initiation):
Room temperature: 8 hours
Refrigerated: 7 days
Frozen: 14 days

Storage/Transport Temperature:
Refrigerated

PROCESSING

Test Code:
Amikacin, Peak: AMIKPK
Amikacin, Trough: AMIKTR
Amikacin, Random: AMIKRD

Performing Lab:
Parnassus Chemistry

Specimen Preparation:
Refrigerate plasma or serum sample.
Samples collected in Mission Bay and Mount Zion should be sent to Parnassus refrigerated..

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.3 mL plasma or serum

Stability (from collection to initiation):
Room temperature: 8 hours
Refrigerated: 7 days
Frozen: 14 days

Storage/Transport Temperature:
Refrigerated

RESULT INTERPRETATION

Units:
µg/mL

Reference Interval:
Peak: 35 - 60 µg/mL
Trough: <5 µg/mL
Random: no reference interval has been established for random amikacin levels.

Therapeutic ranges and critical values are based upon recommendations by UCSF Antimicrobial Stewardship Programs.

Daley, C.L et al. Treatment of Nontuberculous Mycobacterial Pulmonary Disease: An Official ATS/ERS/ESCMID/IDSA Clinical Practice Guideline: Executive Summary. Clinical Infectious Diseases, (2020) 71(4): e1-e36. https://doi.org/10.1093/cid/ciaa241.

Critical Values:
Peak and Random: >60 µg/mL

Trough: >10 µg/mL

ADMINISTRATIVE

CPT Codes:
80150

COMPLETE VIEW

Available Stat:
Yes

Test Code:
Amikacin, Peak: AMIKPK
Amikacin, Trough: AMIKTR
Amikacin, Random: AMIKRD

Performing Lab:
Parnassus Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Particle-enhanced turbidimetric inhibition immunoassay (PETINIA)

Remarks:
Time to Steady State: 2-3 doses (1 dose for ICN extended interval dosing)

Trough samples should be collected 30 minutes before 3rd or 4th dose. Document exact time of collection in Apex, on requisition AND sample label.

Draw peak sample 30 min. after end of infusion or 60 minutes after IM dose.

Collect:
Light green or gold top tube

Amount to Collect:
1 mL blood

Sample Type:
Plasma or serum

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.3 mL plasma or serum

Specimen Preparation:

Refrigerate plasma or serum sample.
Samples collected in Mission Bay and Mount Zion should be sent to Parnassus refrigerated..

Units:

µg/mL

Reference Interval:

Peak: 35 - 60 µg/mL
Trough: <5 µg/mL
Random: no reference interval has been established for random amikacin levels.

Therapeutic ranges and critical values are based upon recommendations by UCSF Antimicrobial Stewardship Programs.

Daley, C.L et al. Treatment of Nontuberculous Mycobacterial Pulmonary Disease: An Official ATS/ERS/ESCMID/IDSA Clinical Practice Guideline: Executive Summary. Clinical Infectious Diseases, (2020) 71(4): e1-e36. https://doi.org/10.1093/cid/ciaa241.

Critical Values:

Peak and Random: >60 µg/mL

Trough: >10 µg/mL

Synonyms:

- AMIKPK
- AMIKTR
- AMIKRD
- AMIK
- AMIKACIN

Storage/Transport Temperature:

Refrigerated

Stability (from collection to initiation):

Room temperature: 8 hours
Refrigerated: 7 days
Frozen: 14 days

Reported:

STAT: 1 hour
Routine: 4 hours

Note: Samples from Mission Bay and Mount Zion may take up to 24 hours.

CPT Codes:

80150

Amino Acids, CSF, Quantitative

AACSF

ORDERING

Available Stat:
No

Performing Lab:
Lucille-Packard Children's Hospital

Methodology:
Ion Exchange Chromatography

Reported:
Batched twice weekly. Turnaround time: One week

Synonyms:

- Glycine
- Homocystine
- Tyrosine
- Alpha-keto acids
- Arginine
- Arginosuccinase deficiency
- Arginosuccinate Lyase deficiency
- Aspartate
- Aspartic acid
- Beta-aminoisobutyric acid
- Citrulline
- Cystathionine
- Cystathionuria
- Ethanolamine
- FeCl3 Screen
- Ferric chloride screen
- Glutaimic acid
- Histidine
- Isoleucine
- Leucine
- Lysine
- Methionine
- Ornithine
- Phosphoethanolamine
- Sarcosine
- Serine
- Taurine
- Threnonine
- Valine
- Arginosuccinic acid
- Glutamine

COLLECTION

Sample Type:
CSF

Collect:
CSF tube or sterile collection tube

Amount to Collect:
See preferred volume

Preferred Volume:
1 mL CSF

Minimum Volume:
0.5 mL CSF

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

PROCESSING

Test Code:
AACSF

Sendout:
Yes

Performing Lab:
Lucille-Packard Children's Hospital

Specimen Preparation:
Freeze CSF at -20C

Preferred Volume:
1 mL CSF

Minimum Volume:
0.5 mL CSF

ADMINISTRATIVE

CPT Codes:
82139-90

LOINC Codes:
32610-8

COMPLETE VIEW

Available Stat:
No

Test Code:
AACSF

Performing Lab:
Lucille-Packard Children's Hospital

Sendout:
Yes

Methodology:
Ion Exchange Chromatography

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Collect:
CSF tube or sterile collection tube

Amount to Collect:
See preferred volume

Sample Type:
CSF

Preferred Volume:
1 mL CSF

Minimum Volume:
0.5 mL CSF

Specimen Preparation:
Freeze CSF at -20C

Synonyms:

- Glycine
- Homocystine
- Tyrosine
- Alpha-keto acids
- Arginine
- Arginosuccinase deficiency
- Arginosuccinate Lyase deficiency
- Aspartate
- Aspartic acid
- Beta-aminoisobutyric acid
- Citrulline
- Cystathionine
- Cystathionuria
- Ethanolamine
- FeCl3 Screen
- Ferric chloride screen
- Glutaimic acid
- Histidine
- Isoleucine
- Leucine
- Lysine
- Methionine
- Ornithine
- Phosphoethanolamine
- Sarcosine
- Serine
- Taurine
- Threnonine
- Valine
- Arginosuccinic acid
- Glutamine

Reported:
Batched twice weekly. Turnaround time: One week

CPT Codes:
82139-90

LOINC Codes:
32610-8

Amino Acids, Urine, Quantitative

AAQU

ORDERING

Available Stat:
No

Performing Lab:
Lucille-Packard Children's Hospital

Methodology:
Ion Exchange Chromatography

Reported:
Set up as needed, at least 2x a week. Turnaround time: One week.

Additional Information:
Urinary quantitation is rarely useful. Urine creatinine is also assayed.

Synonyms:

- Glycine
- Homocystine
- Tyrosine
- Alpha-keto acids
- Arginine
- Arginosuccinase deficiency
- Arginosuccinate Lyase deficiency
- Aspartate
- Aspartic acid
- Beta-aminoisobutyric acid
- Citrulline
- Cystathionine
- Cystathionuria
- Ethanolamine
- FeCl3 Screen
- Ferric chloride screen
- Glutaimic acid
- Histidine
- Isoleucine
- Leucine
- Lysine
- Methionine
- Ornithine
- Phosphoethanolamine
- Sarcosine
- Serine
- Taurine
- Threnonine
- Valine
- Arginosuccinic acid
- Glutamine

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
20 mL urine

Preferred Volume:
5 mL urine

Minimum Volume:
1 mL urine

Remarks:
First morning urine preferred but not required.

PROCESSING

Test Code:
AAQU

Test Group:
Amino Acids

Sendout:
Yes

Performing Lab:
Lucille-Packard Children's Hospital

Specimen Preparation:
Freeze at -20C.

Preferred Volume:
5 mL urine

Minimum Volume:
1 mL urine

RESULT INTERPRETATION

Reference Interval:
See report

Additional Information:
Urinary quantitation is rarely useful. Urine creatinine is also assayed.

ADMINISTRATIVE

CPT Codes:
82139-90

LOINC Codes:
35087-6

COMPLETE VIEW

Available Stat:
No

Test Code:
AAQU

Test Group:
Amino Acids

Performing Lab:
Lucille-Packard Children's Hospital

Sendout:
Yes

Methodology:
Ion Exchange Chromatography

Remarks:
First morning urine preferred but not required.

Collect:
Urine cup

Amount to Collect:
20 mL urine

Sample Type:
Random urine

Preferred Volume:
5 mL urine

Minimum Volume:
1 mL urine

Specimen Preparation:
Freeze at -20C.

Reference Interval:
See report

Synonyms:

- Glycine
- Homocystine
- Tyrosine
- Alpha-keto acids
- Arginine
- Arginosuccinase deficiency
- Arginosuccinate Lyase deficiency
- Aspartate
- Aspartic acid
- Beta-aminoisobutyric acid
- Citrulline
- Cystathionine
- Cystathionuria
- Ethanolamine
- FeCl3 Screen
- Ferric chloride screen
- Glutaimic acid
- Histidine
- Isoleucine
- Leucine
- Lysine
- Methionine
- Ornithine
- Phosphoethanolamine
- Sarcosine
- Serine
- Taurine
- Threnonine
- Valine
- Arginosuccinic acid
- Glutamine

Reported:

Set up as needed, at least 2x a week. Turnaround time: One week.

Additional Information:

Urinary quantitation is rarely useful. Urine creatinine is also assayed.

CPT Codes:

82139-90

LOINC Codes:

35087-6

Aminolevulinic acid dehydratase, RBC

ALAD

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
Enzymatic endpoint/Spectroflurometric

Reported:
5-7 days

Synonyms:

- ALA dehydrase
- ALA-D

COLLECTION

Patient Preparation:
Have patient fast for 12-14 hours. Water may be taken as needed. No other liquids are allowed. Patient should abstain from alcohol for 24 hours prior to collection.

Note: The patient should be off medications for 1 week. If clinically inappropriate to discontinue medications, forward a list of medications with the specimen.

Sample Type:
Heparinized whole blood

Collect:
Dark Green top on ice

Amount to Collect:
5 mL blood

Preferred Volume:
5 mL blood

Minimum Volume:
5 mL blood

Remarks:
Draw a full, Dark green-top (Sodium Heparin) tube, and send specimen on wet ice to lab immediately.

Draw specimen Monday-Thursday by noon only.

Stability (from collection to initiation):
Refrigerated whole blood 2 days.

Rejection Criteria:
Sample not received by Mayo within 48 hours of collection. Frozen sample.

PROCESSING

Test Code:
ALAD

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Whole Blood to be washed at Mayo Medical Laboratories. Specimen must arrive within 48 hours of draw.

Place green top on wet ice and forward whole blood to China Basin for MCI courier pickup at 1600 hours. **DO NOT** freeze sample.

Notify sendout at 3-1349 that specimen is en-route. Mark sample REFRIGERATED to Mayo Labs.

Order Mayo test #88924.

Preferred Volume:
5 mL blood

Minimum Volume:
5 mL blood

Rejection Criteria:
Sample not received by Mayo within 48 hours of collection. Frozen sample.

Stability (from collection to initiation):
Refrigerated whole blood 2 days.

RESULT INTERPRETATION

Units:
nmol/L/sec

Reference Interval:
Normal: > 3.9 nmol/L/sec
Indeterminate: 3.5-3.9 nmol/L/sec
Decreased: < 3.5 nmol/L/sec

ADMINISTRATIVE

CPT Codes:
82657-90

COMPLETE VIEW

Available Stat:
No

Test Code:
ALAD

Performing Lab:
Mayo

Sendout:
Yes

Methodology:
Enzymatic endpoint/Spectroflurometric

Patient Preparation:
Have patient fast for 12-14 hours. Water may be taken as needed. No other liquids are allowed. Patient should abstain from alcohol for 24 hours prior to collection.

Note: The patient should be off medications for 1 week. If clinically inappropriate to discontinue medications, forward a list of medications with the specimen.

Remarks:
Draw a full, Dark green-top (Sodium Heparin) tube, and send specimen on wet ice to lab immediately.

Draw specimen Monday-Thursday by noon only.

Collect:
Dark Green top on ice

Amount to Collect:
5 mL blood

Sample Type:
Heparinized whole blood

Preferred Volume:
5 mL blood

Minimum Volume:
5 mL blood

Rejection Criteria:
Sample not received by Mayo within 48 hours of collection. Frozen sample.

Specimen Preparation:
Whole Blood to be washed at Mayo Medical Laboratories. Specimen must arrive within 48 hours of draw.

Place green top on wet ice and forward whole blood to China Basin for MCI courier pickup at 1600 hours. **DO NOT** freeze sample.

Notify sendout at 3-1349 that specimen is en-route. Mark sample REFRIGERATED to Mayo Labs.

Order Mayo test #88924.

Units:
nmol/L/sec

Reference Interval:
Normal: > 3.9 nmol/L/sec
Indeterminate: 3.5-3.9 nmol/L/sec
Decreased: < 3.5 nmol/L/sec

Synonyms:

- ALA dehydrase
- ALA-D

Stability (from collection to initiation):
Refrigerated whole blood 2 days.

Reported:
5-7 days

CPT Codes:
82657-90

Amiodarone

AMIO

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
HPLC

Reported:
Test performed Monday-Saturday. Turnaround time: 2-4 days.

Additional Information:
Includes assay for the metabolite N-desethylamiodarone.

COLLECTION

Sample Type:
Serum

Collect:
Red top

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Remarks:
Do NOT use serum separator tube.

Unacceptable Conditions:
Collected in Gold top

PROCESSING

Test Code:
AMIO

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze serum at -20C. Order Quest # 43125N.

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Unacceptable Conditions:
Collected in Gold top

RESULT INTERPRETATION

Units:
mg/L

Reference Interval:
Therapeutic for each: 1.5-2.5 mg/L
Toxic Amiodarone: > 2.5 mg/L
Desethyl-amiodarone: > 2.0 mg/L

Additional Information:
Includes assay for the metabolite N-desethylamiodarone.

ADMINISTRATIVE

CPT Codes:
82492-90

LOINC Codes:
3330-8

COMPLETE VIEW

Available Stat:
No

Test Code:
AMIO

Performing Lab:
Quest

Sendout:
Yes

Methodology:
HPLC

Remarks:
Do NOT use serum separator tube.

Collect:
Red top

Amount to Collect:
4 mL blood

Sample Type:
Serum

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Unacceptable Conditions:
Collected in Gold top

Specimen Preparation:
Freeze serum at -20C. Order Quest # 43125N.

Units:
mg/L

Reference Interval:
Therapeutic for each: 1.5-2.5 mg/L
Toxic Amiodarone: > 2.5 mg/L
Desethyl-amiodarone: > 2.0 mg/L

Reported:
Test performed Monday-Saturday. Turnaround time: 2-4 days.

Additional Information:
Includes assay for the metabolite N-desethylamiodarone.

CPT Codes:
82492-90

LOINC Codes:
3330-8

Amitriptyline

AMTR

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Liquid Chromatography
Tandem Mass Spectrometry

Reported:
Test performed Monday-Saturday. Turnaround time: 2-5 days

Additional Information:
Includes testing for the metabolite nortriptyline (Aventyl)

Synonyms:

- Elavil
- Aventyl

COLLECTION

Sample Type:
Serum

Collect:
Red top

Amount to Collect:
6 mL blood

Preferred Volume:
3mL serum

Minimum Volume:
1.5 mL serum

Remarks:
Do NOT use serum separator tube.

Unacceptable Conditions:
Collected in Gold top

PROCESSING

Test Code:
AMTR

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Separate serum promptly. Refrigerate.

Preferred Volume:
3mL serum

Minimum Volume:
1.5 mL serum

Unacceptable Conditions:
Collected in Gold top

RESULT INTERPRETATION

Units:
µg/L (mcg/L)

Reference Interval:
100-250 µg/L for sum of drug and metabolite

Critical Values:
Quest Priority-1: Amitriptyline + Nortriptyline >= 1000 µg/L
Quest Priority-2: 600-999 µg/L

Additional Information:
Includes testing for the metabolite nortriptyline (Aventyl)

ADMINISTRATIVE

CPT Codes:
80335-90

LOINC Codes:
3333-2

COMPLETE VIEW

Available Stat:
No

Test Code:
AMTR

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Liquid Chromatography
Tandem Mass Spectrometry

Remarks:
Do NOT use serum separator tube.

Collect:
Red top

Amount to Collect:
6 mL blood

Sample Type:
Serum

Preferred Volume:
3mL serum

Minimum Volume:
1.5 mL serum

Unacceptable Conditions:
Collected in Gold top

Specimen Preparation:
Separate serum promptly. Refrigerate.

Units:
µg/L (mcg/L)

Reference Interval:
100-250 µg/L for sum of drug and metabolite

Critical Values:
Quest Priority-1: Amitriptyline + Nortriptyline >= 1000 µg/L
Quest Priority-2: 600-999 µg/L

Synonyms:

- Elavil
- Aventyl

Reported:
Test performed Monday-Saturday. Turnaround time: 2-5 days

Additional Information:
Includes testing for the metabolite nortriptyline (Aventyl)

CPT Codes:
80335-90

LOINC Codes:
3333-2

Ammonia

NH3

ORDERING

Available Stat:
Yes (always run STAT)

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Glutamate dehydrogenase

Reported:
1 hour

Additional Information:
Fasting sample recommended.

NOTE: Ammonia cannot be 'added-on' to a previously tested sample

Specimens should be sampled from free flowing blood without the use of tourniquets or heel/finger sticks. False positive elevations of ammonia can be caused by many factors including use of capillary samples or by delay between sampling and centrifugation (Clinical Biochemistry 40:531-535, 2007).

Newborn reference range adopted from Maranda et al., Clinical Biochemistry 40:531-535, 2007.

Synonyms:

- NH3

COLLECTION

Sample Type:
Heparinized plasma

Collect:
Light Green top (on ice)

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL plasma

Minimum Volume:
0.7 mL plasma

Remarks:
Fasting sample recommended. Pre-chill tube. Deliver to lab immediately on ice.

Specimens should be sampled from free flowing blood without the use of tourniquets or heel/finger sticks.

NOTE: Ammonia cannot be 'added-on' to a previously tested sample

Use plasma collected by standard venipuncture techniques. As erythrocytes contain ammonia levels approximately three times that of plasma, hemolyzed samples may result in significant interference.

Acceptable anticoagulants are lithium heparin (with or without gel barrier), sodium heparin, and EDTA. Do not use ammonium heparin.

NOTE: Rapid separation of plasma from blood cells is critical for obtaining reliable results. The standard recommendation is no more than 15 minutes from sample collection to the start of centrifugation. Timing is especially critical for patients with liver disease. Delays exceeding 15 minutes have been shown to increase ammonia concentration even at 0°C. Once the plasma sample is obtained, it should be maintained on ice or refrigerated and analyzed immediately.

Stability (from collection to initiation):
Sample should be transported to the lab on ice immediately after draw and the plasma separation from cells should be completed within less than 15 minutes of the blood draw. Once the plasma sample is obtained, it should be maintained on ice or refrigerated and analyzed immediately.

If the plasma cannot be analyzed immediately, it is stable on ice or in the refrigerator for 2 hours and 3 weeks at -20C.

Unacceptable Conditions:
If sample is NOT delivered on ice or processed rapidly enough then immediately transport sample to the testing section for analysis. Inform them the specimen was NOT received on ice or NOT processed rapidly enough and a note should be attached to the result that gets reported.

PROCESSING

Test Code:
NH3

Performing Lab:
Parnassus & Mission Bay Chemistry

Specimen Preparation:
Centrifuge the cold sample as quickly as possible and separate the plasma from blood cells according to the specimen collection tube manufacturer's instructions. Ensure centrifugation is adequate to remove platelets.

NOTE: Rapid separation of plasma from blood cells is critical for obtaining reliable results. The standard recommendation is no more than 15 minutes from sample collection to the start of centrifugation. Timing is especially critical for patients with liver disease. Delays exceeding 15 minutes have been shown to increase ammonia concentration even at 0°C.

Once the plasma sample is obtained, it should be maintained on ice or refrigerated and analyzed immediately.

If the test is ordered routine or at Mt. Zion, collect the specimen and centrifuge within 15 minutes. Aliquot and freeze the plasma at -20C immediately and send to Moffitt/Long on next scheduled delivery run.

Preferred Volume:
1 mL plasma

Minimum Volume:
0.7 mL plasma

Unacceptable Conditions:
If sample is NOT delivered on ice or processed rapidly enough then immediately transport sample to the testing section for analysis. Inform them the specimen was NOT received on ice or NOT processed rapidly enough and a note should be attached to the result that gets reported.

Stability (from collection to initiation):
Sample should be transported to the lab on ice immediately after draw and the plasma separation from cells should be completed within less than 15 minutes of the blood draw. Once the plasma sample is obtained, it should be maintained on ice or refrigerated and analyzed immediately.

If the plasma cannot be analyzed immediately, it is stable on ice or in the refrigerator for 2 hours and 3 weeks at -20C.

RESULT INTERPRETATION

Units:
µmol/L

Reference Interval:

Age	µmol/L
0-14 days	21-95
15 days - 6 years	16-68
>6 years	18-72

UCSF Clinical Lab verified the adult reference range stated in the Abbott Ammonia package insert (July 2017) by running 20 male and 20 femal lab volunteers.

Pediatric reference ranges adapted from ARUP Laboratories (May 2019).

Critical Values:
>150 µmol/L for patients less than 18 years of age

Additional Information:
Fasting sample recommended.

NOTE: Ammonia cannot be 'added-on' to a previously tested sample

Specimens should be sampled from free flowing blood without the use of tourniquets or heel/finger sticks. False positive elevations of ammonia can be caused by many factors including use of capillary samples or by delay between sampling and centrifugation (Clinical Biochemistry 40:531-535, 2007).

Newborn reference range adopted from Maranda et al., Clinical Biochemistry 40:531-535, 2007.

ADMINISTRATIVE

CPT Codes:
82140

LOINC Codes:
22763-7

COMPLETE VIEW

Available Stat:
Yes (always run STAT)

Test Code:
NH3

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Glutamate dehydrogenase

Remarks:
Fasting sample recommended. Pre-chill tube. Deliver to lab immediately on ice.

Specimens should be sampled from free flowing blood without the use of tourniquets or heel/finger sticks.

NOTE: Ammonia cannot be 'added-on' to a previously tested sample

Use plasma collected by standard venipuncture techniques. As erythrocytes contain ammonia levels approximately three times that of plasma, hemolyzed samples may result in significant interference.

Acceptable anticoagulants are lithium heparin (with or without gel barrier), sodium heparin, and EDTA. Do not use ammonium heparin.

NOTE: Rapid separation of plasma from blood cells is critical for obtaining reliable results. The standard recommendation is no more than 15 minutes from sample collection to the start of centrifugation. Timing is especially critical for patients with liver disease. Delays exceeding 15 minutes have been shown to increase ammonia concentration even at 0°C. Once the plasma sample is obtained, it should be maintained on ice or refrigerated and analyzed immediately.

Collect:
Light Green top (on ice)

Amount to Collect:
2 mL blood

Sample Type:
Heparinized plasma

Preferred Volume:
1 mL plasma

Minimum Volume:
0.7 mL plasma

Unacceptable Conditions:
If sample is NOT delivered on ice or processed rapidly enough then immediately transport sample to the testing section for analysis. Inform them the specimen was NOT received on ice or NOT processed rapidly enough and a note should be attached to the result that gets reported.

Specimen Preparation:
Centrifuge the cold sample as quickly as possible and separate the plasma from blood cells according to the specimen collection tube manufacturer's instructions. Ensure centrifugation is adequate to remove platelets.

NOTE: Rapid separation of plasma from blood cells is critical for obtaining reliable results. The standard recommendation is no more than 15 minutes from sample collection to the start of centrifugation. Timing is especially critical for patients with liver disease. Delays exceeding 15 minutes have been shown to increase ammonia concentration even at 0°C.

Once the plasma sample is obtained, it should be maintained on ice or refrigerated and analyzed immediately.

If the test is ordered routine or at Mt. Zion, collect the specimen and centrifuge within 15 minutes. Aliquot and freeze the plasma at -20C immediately and send to Moffitt/Long on next scheduled delivery run.

Units:
µmol/L

Reference Interval:

Age	µmol/L
0-14 days	21-95
15 days - 6 years	16-68
>6 years	18-72

UCSF Clinical Lab verified the adult reference range stated in the Abbott Ammonia package insert (July 2017) by running 20 male and 20 femal lab volunteers.

Pediatric reference ranges adapted from ARUP Laboratories (May 2019).

Critical Values:

>150 µmol/L for patients less than 18 years of age

Synonyms:

- NH3

Stability (from collection to initiation):

Sample should be transported to the lab on ice immediately after draw and the plasma separation from cells should be completed within less than 15 minutes of the blood draw. Once the plasma sample is obtained, it should be maintained on ice or refrigerated and analyzed immediately.

If the plasma cannot be analyzed immediately, it is stable on ice or in the refrigerator for 2 hours and 3 weeks at -20C.

Reported:

1 hour

Additional Information:

Fasting sample recommended.

NOTE: Ammonia cannot be 'added-on' to a previously tested sample

Specimens should be sampled from free flowing blood without the use of tourniquets or heel/finger sticks. False positive elevations of ammonia can be caused by many factors including use of capillary samples or by delay between sampling and centrifugation (Clinical Biochemistry 40:531-535, 2007).

Newborn reference range adopted from Maranda et al., Clinical Biochemistry 40:531-535, 2007.

CPT Codes:

82140

LOINC Codes:

22763-7

Amphetamine Screen, Urine

AMPU

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Competitive enzyme immunoassay method using G6PDH-labeling

Reported:
STAT 2 hours, Routine 4 hours

Additional Information:
A concentration of < 1000 µg/L is considered negative by this test. A positive result is >= 1000 µg/L and indicates the presence of this class of drugs. This immunoassay is only a screening test and is not definitive. Results cannot be used for medico-legal purposes.

This assay detects amphetamine and methamphetamine and has some cross reactivity with MDA (methylenedioxyamphetamine) and MDMA (methylenedioxymethamphetamine; ecstasy).

Click here for a List of Cross Reactive Substances

False positive results may occur due to other cross reacting substances, however, positive results are NOT routinely confirmed by a second method. If confirmation of the test result is required, it is the responsibility of the physician to separately order a specific confirmatory test for the drug identified. Contact laboratory at x 31667 to request confirmatory testing. Confirmation test code AMPQNT. Samples are held for 7 days. False negative results are also possible, for example, with use of newer designer amine compounds.

Amphetamine can be detected in urine from 24 hours up to 9 days after use. Methamphetamine can typically be detected 1.5-6 days after use. (From: Verstraete AG. Detection Times of Drugs of Abuse in Blood, Urine and Oral Fluid. Ther Drug Monit, 26(2) April 2004, 200-205).

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
See preferred volume

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Stability (from collection to initiation):
Refrigerated 1 week, frozen at -20C 2 weeks

PROCESSING

Test Code:
AMPU

Test Group:
Amphetamine

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Stability (from collection to initiation):
Refrigerated 1 week, frozen at -20C 2 weeks

RESULT INTERPRETATION

Reference Interval:
Negative

Note: a negative result indicates that this class of drugs is not present, or they are present at a concentration below the cut-off concentration of 1000 µg/L.

Additional Information:
A concentration of < 1000 µg/L is considered negative by this test. A positive result is >= 1000 µg/L and indicates the presence of this class of drugs. This immunoassay is only a screening test and is not definitive. Results cannot be used for medico-legal purposes.

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ADMINISTRATIVE

CPT Codes:
80307

LOINC Codes:
19343-3

COMPLETE VIEW

Available Stat:
Yes

Test Code:
AMPU

Test Group:
Amphetamine

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Competitive enzyme immunoassay method using G6PDH-labeling

Collect:
Urine cup

Amount to Collect:
See preferred volume

Sample Type:
Random urine

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Reference Interval:
Negative

Note: a negative result indicates that this class of drugs is not present, or they are present at a concentration below the cut-off concentration of 1000 µg/L.

Stability (from collection to initiation):
Refrigerated 1 week, frozen at -20C 2 weeks

Reported:

STAT 2 hours, Routine 4 hours

Additional Information:

A concentration of < 1000 µg/L is considered negative by this test. A positive result is >= 1000 µg/L and indicates the presence of this class of drugs. This immunoassay is only a screening test and is not definitive. Results cannot be used for medico-legal purposes.

This assay detects amphetamine and methamphetamine and has some cross reactivity with MDA (methylenedioxyamphetamine) and MDMA (methylenedioxymethamphetamine; ecstasy).

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CPT Codes:

80307

LOINC Codes:

19343-3

Amphetamines, Urine, Quantitative

AMPQNT

ORDERING

Ordering Recommendations:
Use to obtain quantitative results or to follow up a presumptive result. For general screening, the preferred test is Amphetamines Urine Screen with Reflex to Quantitation (2012209).

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Reported:
1-4 days

Synonyms:

- Adderall
- Amphetamine
- Benzedrine
- Carbex
- Deprenyl
- Desoxyephedrine
- Desoxyn
- Dexedrine
- Dextroamphetamine
- Ecstasy
- Eldepryl
- Emsam
- Eve
- Lisdexamfetamine
- MDA
- MDEA
- MDMA
- MDMA Confirmation, Urine
- Methamphetamine
- Methedrine
- Pain Management
- Pain Management, Amphetamines, Quantitative, with medMATCH, Urine
- Pain Management, Amphetamines, with Confirmation with medMATCH, Urine
- Pain Management, MDMA/MDA Quantitative, Urine
- Pain Management, MDMA/MDA, Quantitative, with medMATCH, Urine
- Paremyd
- Selegiline
- Vicks Inhaler
- Vyvanse
- XTC
- Zelapor

COLLECTION

Collect:
Random urine.

Stability (from collection to initiation):
Ambient: 1 week; Refrigerated: 1 month; Frozen: 3 years

Storage/Transport Temperature:
Room temperature

Unacceptable Conditions:
Specimens exposed to repeated freeze/thaw cycles.

PROCESSING

Test Code:
AMPQNT

ARUP Test Code:
2010075

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transfer 0.5 mL urine with no additives or preservatives to an ARUP standard transport tube. (Min: 0.3 mL)

Unacceptable Conditions:
Specimens exposed to repeated freeze/thaw cycles.

Stability (from collection to initiation):
Ambient: 1 week; Refrigerated: 1 month; Frozen: 3 years

Storage/Transport Temperature:
Room temperature

RESULT INTERPRETATION

Reference Interval:
Effective November 11, 2018

Drugs Covered	Cutoff Concentrations
Amphetamine	50 ng/mL
Methamphetamine	200 ng/mL
Methylenedioxyamphetamine (MDA)	200 ng/mL
Methylenedioxymethamphetamine (Ecstasy, MDMA)	200 ng/mL
Methylenedioxyethylamphetamine (Eve, MDEA)	200 ng/mL
Phentermine	200 ng/mL

Interpretive Data:
Methodology: Quantitative Liquid Chromatography-Tandem Mass Spectrometry.

Positive cutoff: 200 ng/mL unless specified below:
Amphetamine: 50 ng/mL

For medical purposes only; not valid for forensic use.

The absence of expected drug(s) and/or drug metabolite(s) may indicate noncompliance, inappropriate timing of specimen collection relative to drug administration, poor drug absorption, diluted/adulterated urine, or limitations of testing. The concentration value must be greater than or equal to the cutoff to be reported as positive. Interpretive questions should be directed to the laboratory.

ADMINISTRATIVE

CPT Codes:
80325; 80359 (Alt code: G0480)

LOINC:

- 19570-1
- 27085-0
- 3780-4
- 18355-8
- 20557-5
- 19346-6

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Use to obtain quantitative results or to follow up a presumptive result. For general screening, the preferred test is Amphetamines Urine Screen with Reflex to Quantitation (2012209).

Test Code:
AMPQNT

ARUP Test Code:
2010075

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Collect:
Random urine.

Unacceptable Conditions:
Specimens exposed to repeated freeze/thaw cycles.

Specimen Preparation:
Transfer 0.5 mL urine with no additives or preservatives to an ARUP standard transport tube. (Min: 0.3 mL)

Reference Interval:
Effective November 11, 2018

Drugs Covered	Cutoff Concentrations
Amphetamine	50 ng/mL
Methamphetamine	200 ng/mL
Methylenedioxyamphetamine (MDA)	200 ng/mL
Methylenedioxymethamphetamine (Ecstasy, MDMA)	200 ng/mL
Methylenedioxyethylamphetamine (Eve, MDEA)	200 ng/mL
Phentermine	200 ng/mL

Interpretive Data:
Methodology: Quantitative Liquid Chromatography-Tandem Mass Spectrometry.

Positive cutoff: 200 ng/mL unless specified below:
Amphetamine: 50 ng/mL

For medical purposes only; not valid for forensic use.

The absence of expected drug(s) and/or drug metabolite(s) may indicate noncompliance, inappropriate timing of specimen collection relative to drug administration, poor drug absorption, diluted/adulterated urine, or limitations of testing. The concentration value must be greater than or equal to the cutoff to be reported as positive. Interpretive questions should be directed to the laboratory.

Synonyms:

- Adderall
- Amphetamine
- Benzedrine
- Carbex
- Deprenyl
- Desoxyephedrine
- Desoxyn
- Dexedrine
- Dextroamphetamine
- Ecstasy
- Eldepryl
- Emsam
- Eve
- Lisdexamfetamine
- MDA
- MDEA
- MDMA
- MDMA Confirmation, Urine
- Methamphetamine
- Methedrine
- Pain Management
- Pain Management, Amphetamines, Quantitative, with medMATCH, Urine
- Pain Management, Amphetamines, with Confirmation with medMATCH, Urine
- Pain Management, MDMA/MDA Quantitative, Urine
- Pain Management, MDMA/MDA, Quantitative, with medMATCH, Urine
- Paremyd
- Selegiline
- Vicks Inhaler
- Vyvanse
- XTC
- Zelapor

Storage/Transport Temperature:
Room temperature

Stability (from collection to initiation):
Ambient: 1 week; Refrigerated: 1 month; Frozen: 3 years

Reported:
1-4 days

CPT Codes:
80325; 80359 (Alt code: G0480)

LOINC:

- 19570-1
- 27085-0
- 3780-4
- 18355-8
- 20557-5
- 19346-6

Notes:
Compare to Pain Management, MDMA/MDA, Quantitative, with medMATCH, Urine; Pain Management, Amphetamines, with Confirmation with medMATCH, Urine; Pain Management, Amphetamines, Quantitative, with medMATCH, Urine.

Amylase, Body Fluid

AMYB

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
CNPG3 Substrate and measurement of rate of formation of 2-chloro-4-nitrophenol - Abbott Architect c8000

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context.

Interpretive information on this testing can be found at https://aruplab.com/bodyfluids

Synonyms:

- Diastase

COLLECTION

Sample Type:
Body Fluid

Collect:
Clean, empty container OR red top (no additives)
Note: Do NOT collect in red top with clot activator (silicone coated).

Amount to Collect:
5 mL fluid

Preferred Volume:
0.5 mL fluid

Minimum Volume:
0.2 mL fluid

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Stability (from collection to initiation):

Storage Temperature	Maximum Storage Time (Body Fluid)
20-25°C	1 week
2-8°C	1 month
<=-20° C	1 month

ARUP laboratories. http://ltd.aruplab.com/Tests/Pub/0020506

PROCESSING

Test Code:
AMYB

Test Group:
Amylase

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
0.5 mL fluid

Minimum Volume:
0.2 mL fluid

Stability (from collection to initiation):

Storage Temperature	Maximum Storage Time (Body Fluid)
20-25°C	1 week
2-8°C	1 month
<=-20° C	1 month

ARUP laboratories. http://ltd.aruplab.com/Tests/Pub/0020506

RESULT INTERPRETATION

Units:
U/L

Additional Information:
Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context.

Interpretive information on this testing can be found at https://aruplab.com/bodyfluids

ADMINISTRATIVE

CPT Codes:
82150

LOINC Codes:
1795-4

COMPLETE VIEW

Available Stat:
Yes

Test Code:
AMYB

Test Group:
Amylase

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
CNPG3 Substrate and measurement of rate of formation of 2-chloro-4-nitrophenol - Abbott Architect c8000

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Collect:
Clean, empty container OR red top (no additives)
Note: Do NOT collect in red top with clot activator (silicone coated).

Amount to Collect:
5 mL fluid

Sample Type:
Body Fluid

Preferred Volume:
0.5 mL fluid

Minimum Volume:
0.2 mL fluid

Units:
U/L

Synonyms:

- Diastase

Stability (from collection to initiation):

Storage Temperature	Maximum Storage Time (Body Fluid)
20-25°C	1 week
2-8°C	1 month
<=-20° C	1 month

ARUP laboratories. http://ltd.aruplab.com/Tests/Pub/0020506

Reported:

STAT 1 hour, Routine 4 hours

Additional Information:

Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context.

Interpretive information on this testing can be found at https://aruplab.com/bodyfluids

CPT Codes:

82150

LOINC Codes:

1795-4

Amylase, Plasma / Serum

AMY

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
CNPG3 Substrate and measurement of rate of formation of 2-chloro-4-nitrophenol - Abbott Architect c8000

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
Note that this assay reacts with both pancreatic and salivary amylase.

Synonyms:

- Diastase

COLLECTION

Sample Type:
Plasma or serum

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Room temperature or refrigerated 7 days, frozen at -20C 1 year.

PROCESSING

Test Code:
AMY

Test Group:
Amylase

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Room temperature or refrigerated 7 days, frozen at -20C 1 year.

RESULT INTERPRETATION

Units:
U/L

Reference Interval:

Age	U/L
0-14 days	3-10
15 days - 12 weeks	2-22
13 weeks - <1 year	3-50
1-17 years	25-101
18-70 years	25-125
>70 years	20-160

Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, https://caliper.research.sickkids.ca/#/

UCSF Clinical Labs verified the adult reference range stated in the Abbott Amylase package insert (August 2015) by running 20 male and 20 female lab volunteers.

Additional Information:

Note that this assay reacts with both pancreatic and salivary amylase.

ADMINISTRATIVE

CPT Codes:

82150

LOINC Codes:

1798-8

COMPLETE VIEW

Available Stat:

Yes

Test Code:

AMY

Test Group:

Amylase

Performing Lab:

Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:

Test available 24 hours per day 7 days per week

Methodology:

CNPG3 Substrate and measurement of rate of formation of 2-chloro-4-nitrophenol - Abbott Architect c8000

Collect:

Light green top preferred, Gold top acceptable

Amount to Collect:

1 mL blood

Sample Type:

Plasma or serum

Preferred Volume:

0.5 mL plasma or serum

Minimum Volume:

0.2 mL plasma or serum

Units:

U/L

Reference Interval:

Age	U/L
0-14 days	3-10
15 days - 12 weeks	2-22
13 weeks - <1 year	3-50
1-17 years	25-101
18-70 years	25-125
>70 years	20-160

Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, https://caliper.research.sickkids.ca/#/

UCSF Clinical Labs verified the adult reference range stated in the Abbott Amylase package insert (August 2015) by running 20 male and 20 female lab volunteers.

Synonyms:

- Diastase

Stability (from collection to initiation):
Room temperature or refrigerated 7 days, frozen at -20C 1 year.

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
Note that this assay reacts with both pancreatic and salivary amylase.

CPT Codes:
82150

LOINC Codes:
1798-8

Amylase, random urine

AMYUR

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
CNPG3 Substrate and measurement of rate of formation of 2-chloro-4-nitrophenol

Reported:
STAT 1 hour, Routine same or next day

Synonyms:

- Diastase

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
10 mL urine

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 10 days, frozen at -20C 3 weeks

PROCESSING

Test Code:
AMYUR

Test Group:
Amylase

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 10 days, frozen at -20C 3 weeks

RESULT INTERPRETATION

Units:
U/L

ADMINISTRATIVE

CPT Codes:
82150

LOINC Codes:
1799-6

COMPLETE VIEW

Available Stat:
Yes

Test Code:
AMYUR

Test Group:
Amylase

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
CNPG3 Substrate and measurement of rate of formation of 2-chloro-4-nitrophenol

Collect:
Urine cup

Amount to Collect:
10 mL urine

Sample Type:
Random urine

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Units:
U/L

Synonyms:

- Diastase

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 10 days, frozen at -20C 3 weeks

Reported:
STAT 1 hour, Routine same or next day

CPT Codes:
82150

LOINC Codes:
1799-6

Amylase, timed (2 hour) urine

AMYU

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 7 days per week from 8:00 AM to midnight only.

Methodology:
CNPG3 Substrate and measurement of rate of formation of 2-chloro-4-nitrophenol - Abbott Architect c8000

Reported:
STAT 1 hour, Routine same or next day

Synonyms:

- Diastase

COLLECTION

Sample Type:
Timed urine collection (2 hour) with no preservative

Collect:
2 hour urine collection container

Amount to Collect:
Complete collection

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Remarks:
Two hour collection recommended

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 10 days, frozen at -20C 3 weeks

PROCESSING

Test Code:
AMYU

Test Group:
Amylase

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 10 days, frozen at -20C 3 weeks

RESULT INTERPRETATION

Units:
U/hour

Reference Interval:
1-17 U/hour

ADMINISTRATIVE

CPT Codes:
82150

COMPLETE VIEW

Available Stat:
Yes

Test Code:
AMYU

Test Group:
Amylase

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 7 days per week from 8:00 AM to midnight only.

Methodology:
CNPG3 Substrate and measurement of rate of formation of 2-chloro-4-nitrophenol - Abbott Architect c8000

Remarks:
Two hour collection recommended

Collect:
2 hour urine collection container

Amount to Collect:
Complete collection

Sample Type:
Timed urine collection (2 hour) with no preservative

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Units:
U/hour

Reference Interval:
1-17 U/hour

Synonyms:

- Diastase

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 10 days, frozen at -20C 3 weeks

Reported:
STAT 1 hour, Routine same or next day

CPT Codes:
82150

Anaplasma phagocytophilium, Antibodies (IgG & IgM)

ANAPL

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Immunoflourescent assay

Reported:
Set up 6x per week, turnaround 4-5 days.

Synonyms:

- Ehrlichia phagocytophilia
- Ehrlichia equi
- Human granulocytic ehrlichiosis
- human granulocytic anaplasmosis
- HGE
- HGA

COLLECTION

Sample Type:
Serum

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
3 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Remarks:
If B/T patient, requires prior authorization for outside testing at Quest, no longer offered at LabCorp.

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 1 week, frozen at -20C 1 month.

Unacceptable Conditions:
Collected in Gold top

PROCESSING

Test Code:
ANAPL

Test Group:
Ehrlichia

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze serum. Order Quest test # 83386N.

If B/T patient, requires prior authorization for outside testing at Quest, no longer offered at LabCorp.

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Unacceptable Conditions:
Collected in Gold top

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 1 week, frozen at -20C 1 month.

RESULT INTERPRETATION

Units:
titer

Reference Interval:
IgG: < 1:64 titer
IgM: < 1:20 titer

ADMINISTRATIVE

CPT Codes:
86666-90 x2

LOINC Codes:
30338-8

COMPLETE VIEW

Available Stat:
No

Test Code:
ANAPL

Test Group:
Ehrlichia

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Immunoflourescent assay

Remarks:
If B/T patient, requires prior authorization for outside testing at Quest, no longer offered at LabCorp.

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
3 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Unacceptable Conditions:
Collected in Gold top

Specimen Preparation:
Freeze serum. Order Quest test # 83386N.

If B/T patient, requires prior authorization for outside testing at Quest, no longer offered at LabCorp.

Units:
titer

Reference Interval:
IgG: < 1:64 titer
IgM: < 1:20 titer

Synonyms:

- Ehrlichia phagocytophilia
- Ehrlichia equi
- Human granulocytic ehrlichiosis
- human granulocytic anaplasmosis
- HGE
- HGA

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 1 week, frozen at -20C 1 month.

Reported:
Set up 6x per week, turnaround 4-5 days.

CPT Codes:
86666-90 x2

LOINC Codes:
30338-8

Androstanediol Glucuronide, 3 alpha-

AGLU

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Enzyme digestion, chromatography, RIA

Reported:
Test run Monday and Thursday. Turnaround time: 4-7 days.

Additional Information:
3a-Androstanediol Glucuronide is useful in evaluating idiopathic hirsutism in women, especially when the total testosterone concentrations are not elevated.

COLLECTION

Sample Type:
Serum

Collect:
Gold top, Red top

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL serum

Minimum Volume:
0.3 mL serum

PROCESSING

Test Code:
AGLU

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate. Order Quest test # 5276X .

Preferred Volume:
2 mL serum

Minimum Volume:
0.3 mL serum

RESULT INTERPRETATION

Units:
ng/dL

Reference Interval:

Prepubertal	10-60 ng/dL

Tanner Stages II-III:

Males	19-164 ng/mL
Females	33-244 ng/dL

>= 18 year olds:

Males	260-1500 ng/dL
Females	60-300 ng/dL

Additional Information:
3a-Androstanediol Glucuronide is useful in evaluating idiopathic hirsutism in women, especially when the total testosterone concentrations are not elevated.

ADMINISTRATIVE

CPT Codes:
82154-90

LOINC Codes:
1680-8

COMPLETE VIEW

Available Stat:
No

Test Code:
AGLU

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Enzyme digestion, chromatography, RIA

Collect:
Gold top, Red top

Amount to Collect:
4 mL blood

Sample Type:
Serum

Preferred Volume:
2 mL serum

Minimum Volume:
0.3 mL serum

Specimen Preparation:
Refrigerate. Order Quest test # 5276X .

Units:
ng/dL

Reference Interval:

Prepubertal	10-60 ng/dL

Tanner Stages II-III:

Males	19-164 ng/mL
Females	33-244 ng/dL

>= 18 year olds:

Males	260-1500 ng/dL
Females	60-300 ng/dL

Reported:
Test run Monday and Thursday. Turnaround time: 4-7 days.

Additional Information:
3a-Androstanediol Glucuronide is useful in evaluating idiopathic hirsutism in women, especially when the total testosterone concentrations are not elevated.

CPT Codes:
82154-90

LOINC Codes:
1680-8

Androstenedione

ASDN

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
LC/MS/MS

Reported:
Test performed Tuesday-Saturday. Turnaround time: 2-4 days.

Additional Information:
To convert ng/dL to nmol/L (SI units) multiply by 0.0349. Newborn reference ranges are taken from Tietz, NW, Clinical Guide to Laboratory Tests, 2nd ed., 1990, Saunders, Philadelphia.

COLLECTION

Patient Preparation:
Early AM sample preferred

Sample Type:
Serum or plasma

Collect:
Red top preferred (Gold top **NOT** acceptable), EDTA, Light Green and Dark Green acceptable

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum plasma

Minimum Volume:
0.25 mL serum or plasma

Remarks:
Early AM sample preferred

Stability (from collection to initiation):
Room temperature 2 weeks, refrigerated 4 weeks, frozen at -20C 2 years

Unacceptable Conditions:
Sample collected in Gold top

PROCESSING

Test Code:
ASDN

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate. Order Quest # 17182.

Preferred Volume:
1 mL serum plasma

Minimum Volume:
0.25 mL serum or plasma

Unacceptable Conditions:
Sample collected in Gold top

Stability (from collection to initiation):
Room temperature 2 weeks, refrigerated 4 weeks, frozen at -20C 2 years

RESULT INTERPRETATION

Units:
ng/dL

Reference Interval:

Pediatric:

1-12 months	6-78 ng/dL
1-4 years	5-51 ng/dL
5-9 years	6-115 ng/dL
10-13 years	12-221 ng/dL
14-17 years	22-225 ng/dL

Premature infants (31-35 weeks)	<= 480 ng/dL
Term infants	<= 290 ng/dL

Tanner Stages:

II-III Males	17-82 ng/dL
II-III Females	43-180 ng/dL
IV-V Males	57-150 ng/dL
IV-V Females	7-68 ng/dL

>= 18 year old male:

18-30 years	50-220 ng/dL
31-50 years	40-190 ng/dL
51-60 years	50-220 ng/dL

>= 18 year old female:

Follicular	35-250 ng/dL
Mid-cycle	60-285 ng/dL
Luteal	30-235 ng/dL
Postmenopausal	20-75 ng/dL

Additional Information:

To convert ng/dL to nmol/L (SI units) multiply by 0.0349. Newborn reference ranges are taken from Tietz, NW, Clinical Guide to Laboratory Tests, 2nd ed., 1990, Saunders, Philadelphia.

ADMINISTRATIVE

CPT Codes:

82157-90

LOINC Codes:

1854-9

COMPLETE VIEW

Available Stat:

No

Test Code:

ASDN

Performing Lab:

Quest

Sendout:

Yes

Methodology:

LC/MS/MS

Patient Preparation:

Early AM sample preferred

Remarks:

Early AM sample preferred

Collect:

Red top preferred (Gold top **NOT** acceptable), EDTA, Light Green and Dark Green acceptable

Amount to Collect:
2 mL blood

Sample Type:
Serum or plasma

Preferred Volume:
1 mL serum plasma

Minimum Volume:
0.25 mL serum or plasma

Unacceptable Conditions:
Sample collected in Gold top

Specimen Preparation:
Refrigerate. Order Quest # 17182.

Units:
ng/dL

Reference Interval:
Pediatric:

1-12 months	6-78 ng/dL
1-4 years	5-51 ng/dL
5-9 years	6-115 ng/dL
10-13 years	12-221 ng/dL
14-17 years	22-225 ng/dL

Premature infants (31-35 weeks)	<= 480 ng/dL
Term infants	<= 290 ng/dL

Tanner Stages:

II-III Males	17-82 ng/dL
II-III Females	43-180 ng/dL
IV-V Males	57-150 ng/dL
IV-V Females	7-68 ng/dL

>= 18 year old male:

18-30 years	50-220 ng/dL
31-50 years	40-190 ng/dL
51-60 years	50-220 ng/dL

>= 18 year old female:

Follicular	35-250 ng/dL
Mid-cycle	60-285 ng/dL
Luteal	30-235 ng/dL
Postmenopausal	20-75 ng/dL

Stability (from collection to initiation):
Room temperature 2 weeks, refrigerated 4 weeks, frozen at -20C 2 years

Reported:
Test performed Tuesday-Saturday. Turnaround time: 2-4 days.

Additional Information:
To convert ng/dL to nmol/L (SI units) multiply by 0.0349. Newborn reference ranges are taken from Tietz, NW, Clinical Guide to Laboratory Tests, 2nd ed., 1990, Saunders, Philadelphia.

CPT Codes:
82157-90

LOINC Codes:
1854-9

Aneuvysion FISH

CYFD, BCYFD

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Set up daily, Monday-Friday

Methodology:
Fluorescent in-situ hybridization

Reported:
3-7 days

Additional Information:
Direct FISH is limited to the detection of aneuploidy (increase or decrease in copy number) of chromosomes 13, 18, 21, X and Y by analyzing INTERPHASE nuclei. A normal result indicates that no numeric abnormality of chromosomes 13, 18, 21, X and Y were identified. It does not rule out the possibility of structural defects or numeric defects in other chromosomes.

DIRECT FISH results are preliminary: G-banded chromosome analysis of 15 colonies or 20 cells remains the standard of care for prenatal diagnosis and all cytogenetic studies. It is also standard of care that no irreversible therapeutic action be initiated on the basis of DIRECT FISH results alone. About one third of all chromosome abnormalities cannot be detected by DIRECT FISH, including structural abnormalities, mosaicism, and numerical abnormalities of other chromosomes.

"Direct FISH" is the UCSF Cytogenetics name for interphase fluorescence in situ hybridization (FISH) analysis for chromosomes 13, 18, 21, X, and Y.

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Reflex Testing:
If an abnormality is detected the Director will determine the appropriate additional studies to be performed to characterize the abnormality.

Additional testing may be omitted if specifically requested when the sample is submitted for cytogenetic analysis.

Synonyms:

- Cytogenetic analysis
- CYFD
- BCYFD

COLLECTION

Sample Type:
Heparinized whole blood, CVS, Amniotic fluid, POC

Collect:
Blood: Dark green top
Amniotic fluid: Sterile screw top container
CVS or POC: 15 mL centrifuge tube with transport media (RPMI, FBS, L-Glutamine, Sodium Heparin and PenStrep). Available from Cytogenetics, 415-353-4844.

Preferred Volume:
Whole blood, child or adult: 5 mL
Whole blood, infant: 2 mL
Amniotic fluid: 10 mL
CVS: 10 mg
POC: 10 mg

Minimum Volume:
Whole blood, child or adult: 2 mL
Whole blood, infant: 1 mL
Amniotic fluid: 10 mL
CVS: 10 mg
POC: 10 mg

Remarks:
Keep samples at Room temperature. DO NOT CENTRIFUGE for any reason.

Stability (from collection to initiation):
48 hours

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

PROCESSING

Test Code:
BCYFD: Blood
CYFD: Amniotic fluid, CVS

Test Group:
Chromosome Analysis

Performing Lab:
Medical Genomics - Cytogenetics

Specimen Preparation:
Keep samples at Room temperature. DO NOT CENTRIFUGE for any reason. Send all tubes and completed paperwork asap to the Cytogenetics laboratory at China Basin.

Preferred Volume:
Whole blood, child or adult: 5 mL
Whole blood, infant: 2 mL
Amniotic fluid: 10 mL
CVS: 10 mg
POC: 10 mg

Minimum Volume:
Whole blood, child or adult: 2 mL
Whole blood, infant: 1 mL
Amniotic fluid: 10 mL
CVS: 10 mg
POC: 10 mg

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

Stability (from collection to initiation):
48 hours

RESULT INTERPRETATION

Reference Interval:
Normal. See Additional Information

Additional Information:
Direct FISH is limited to the detection of aneuploidy (increase or decrease in copy number) of chromosomes 13, 18, 21, X and Y by analyzing INTERPHASE nuclei. A normal result indicates that no numeric abnormality of chromosomes 13, 18, 21, X and Y were identified. It does not rule out the possibility of structural defects or numeric defects in other chromosomes.

DIRECT FISH results are preliminary: G-banded chromosome analysis of 15 colonies or 20 cells remains the standard of care for prenatal diagnosis and all cytogenetic studies. It is also standard of care that no irreversible therapeutic action be initiated on the basis of DIRECT FISH results alone. About one third of all chromosome abnormalities cannot be detected by DIRECT FISH, including structural abnormalities, mosaicism, and numerical abnormalities of other chromosomes.

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ADMINISTRATIVE

CPT Codes:
88275, 88271x3

LDT or Modified FDA:
Yes

LOINC Codes:
50684-0

COMPLETE VIEW

Available Stat:
No

Test Code:
BCYFD: Blood
CYFD: Amniotic fluid, CVS

Test Group:
Chromosome Analysis

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Set up daily, Monday-Friday

Methodology:
Fluorescent in-situ hybridization

Remarks:
Keep samples at Room temperature. DO NOT CENTRIFUGE for any reason.

Collect:
Blood: Dark green top
Amniotic fluid: Sterile screw top container
CVS or POC: 15 mL centrifuge tube with transport media (RPMI, FBS, L-Glutamine, Sodium Heparin and PenStrep). Available from Cytogenetics, 415-353-4844.

Sample Type:
Heparinized whole blood, CVS, Amniotic fluid, POC

Preferred Volume:
Whole blood, child or adult: 5 mL
Whole blood, infant: 2 mL
Amniotic fluid: 10 mL
CVS: 10 mg
POC: 10 mg

Minimum Volume:
Whole blood, child or adult: 2 mL
Whole blood, infant: 1 mL
Amniotic fluid: 10 mL
CVS: 10 mg
POC: 10 mg

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

Specimen Preparation:
Keep samples at Room temperature. DO NOT CENTRIFUGE for any reason. Send all tubes and completed paperwork asap to the Cytogenetics laboratory at China Basin.

Reference Interval:
Normal. See Additional Information

Synonyms:

- Cytogenetic analysis
- CYFD
- BCYFD

Stability (from collection to initiation):
48 hours

Reported:
3-7 days

Reflex Testing:
If an abnormality is detected the Director will determine the appropriate additional studies to be performed to characterize the abnormality.

Additional testing may be omitted if specifically requested when the sample is submitted for cytogenetic analysis.

Additional Information:

Direct FISH is limited to the detection of aneuploidy (increase or decrease in copy number) of chromosomes 13, 18, 21, X and Y by analyzing INTERPHASE nuclei. A normal result indicates that no numeric abnormality of chromosomes 13, 18, 21, X and Y were identified. It does not rule out the possibility of structural defects or numeric defects in other chromosomes.

DIRECT FISH results are preliminary: G-banded chromosome analysis of 15 colonies or 20 cells remains the standard of care for prenatal diagnosis and all cytogenetic studies. It is also standard of care that no irreversible therapeutic action be initiated on the basis of DIRECT FISH results alone. About one third of all chromosome abnormalities cannot be detected by DIRECT FISH, including structural abnormalities, mosaicism, and numerical abnormalities of other chromosomes.

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CPT Codes:

88275, 88271x3

LDT or Modified FDA:

Yes

LOINC Codes:

50684-0

Aneuvysion FISH 13/21

A1321, BA1321

ORDERING

Available Stat:
No

Performing Lab:
Medical genomics - Cytogenetics

Performed:
Set up daily, Monday - Friday

Methodology:
Fluorescent in-situ hybridization (FISH)

Reported:
2-3 days

Additional Information:
Direct FISH is limited to the detection of aneuploidy (increase or decrease in copy number) of chromosomes 13, 18, 21, X and Y by analyzing INTERPHASE nuclei. A normal result indicates that no numeric abnormality of chromosomes 13, 18, 21, X and Y were identified. It does not rule out the possibility of structural defects or numeric defects in other chromosomes.

DIRECT FISH results are preliminary: G-banded chromosome analysis of 15 colonies or 20 cells remains the standard of care for prenatal diagnosis and all cytogenetic studies. It is also standard of care that no irreversible therapeutic action be initiated on the basis of DIRECT FISH results alone. About one third of all chromosome abnormalities cannot be detected by DIRECT FISH, including structural abnormalities, mosaicism, and numerical abnormalities of other chromosomes.

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Reflex Testing:
If an abnormality is detected the Director will determine the appropriate additional studies to be performed to characterize the abnormality.

Additional testing may be omitted if specifically requested when the sample is submitted for cytogenetic analysis.

Synonyms:

- AV 18/XY
- Direct aneuploidy FISH 18/XY
- A1321
- BA1321

COLLECTION

Sample Type:
Heparinized whole blood, Amniotic fluid, CVS, POC

Collect:
Blood: Dark green top
Amniotic fluid: Sterile screw top container
CVS or POC: 15 mL centrifuge tube with transport media (Avaialable from Cytogenetics: 353-4844)

Preferred Volume:
Whole blood, child or adult: 5 mL
Whole blood, infant: 2 mL
Amniotic fluid: 10 mL
CVS: 10 mg
POC: 10 mg

Minimum Volume:
Whole blood, child or adult: 2 mL
Whole blood, infant: 1 mL
Amniotic fluid: 5 mL
CVS: 5 mg
POC: 5 mg

Stability (from collection to initiation):
1-2 days

PROCESSING

Test Code:
BA1321: Blood
A1321: Amniotic fluid, CVS

Test Group:
FISH

Performing Lab:
Medical genomics - Cytogenetics

Specimen Preparation:
Keep samples at Room temperature. DO NOT CENTRIFUGE for any reason. Send all tubes and completed paperwork asap to the Cytogenetics laboratory at China Basin.

Preferred Volume:
Whole blood, child or adult: 5 mL
Whole blood, infant: 2 mL
Amniotic fluid: 10 mL
CVS: 10 mg
POC: 10 mg

Minimum Volume:
Whole blood, child or adult: 2 mL
Whole blood, infant: 1 mL
Amniotic fluid: 5 mL
CVS: 5 mg
POC: 5 mg

Stability (from collection to initiation):
1-2 days

RESULT INTERPRETATION

Additional Information:
Direct FISH is limited to the detection of aneuploidy (increase or decrease in copy number) of chromosomes 13, 18, 21, X and Y by analyzing INTERPHASE nuclei. A normal result indicates that no numeric abnormality of chromosomes 13, 18, 21, X and Y were identified. It does not rule out the possibility of structural defects or numeric defects in other chromosomes.

DIRECT FISH results are preliminary: G-banded chromosome analysis of 15 colonies or 20 cells remains the standard of care for prenatal diagnosis and all cytogenetic studies. It is also standard of care that no irreversible therapeutic action be initiated on the basis of DIRECT FISH results alone. About one third of all chromosome abnormalities cannot be detected by DIRECT FISH, including structural abnormalities, mosaicism, and numerical abnormalities of other chromosomes.

"Direct FISH" is the UCSF Cytogenetics name for interphase fluorescence in situ hybridization (FISH) analysis for chromosomes 13, 18, 21, X, and Y.

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ADMINISTRATIVE

CPT Codes:
88271 x2, 88275, 88291

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BA1321: Blood
A1321: Amniotic fluid, CVS

Test Group:
FISH

Performing Lab:
Medical genomics - Cytogenetics

Performed:
Set up daily, Monday - Friday

Methodology:
Fluorescent in-situ hybridization (FISH)

Collect:
Blood: Dark green top
Amniotic fluid: Sterile screw top container
CVS or POC: 15 mL centrifuge tube with transport media (Avaialable from Cytogenetics: 353-4844)

Sample Type:
Heparinized whole blood, Amniotic fluid, CVS, POC

Preferred Volume:
Whole blood, child or adult: 5 mL
Whole blood, infant: 2 mL
Amniotic fluid: 10 mL
CVS: 10 mg
POC: 10 mg

Minimum Volume:
Whole blood, child or adult: 2 mL
Whole blood, infant: 1 mL
Amniotic fluid: 5 mL
CVS: 5 mg
POC: 5 mg

Specimen Preparation:
Keep samples at Room temperature. DO NOT CENTRIFUGE for any reason. Send all tubes and completed paperwork asap to the Cytogenetics laboratory at China Basin.

Synonyms:

- AV 18/XY
- Direct aneuploidy FISH 18/XY
- A1321
- BA1321

Stability (from collection to initiation):
1-2 days

Reported:
2-3 days

Reflex Testing:
If an abnormality is detected the Director will determine the appropriate additional studies to be performed to characterize the abnormality.

Additional testing may be omitted if specifically requested when the sample is submitted for cytogenetic analysis.

Additional Information:
Direct FISH is limited to the detection of aneuploidy (increase or decrease in copy number) of chromosomes 13, 18, 21, X and Y by analyzing INTERPHASE nuclei. A normal result indicates that no numeric abnormality of chromosomes 13, 18, 21, X and Y were identified. It does not rule out the possibility of structural defects or numeric defects in other chromosomes.

DIRECT FISH results are preliminary: G-banded chromosome analysis of 15 colonies or 20 cells remains the standard of care for prenatal diagnosis and all cytogenetic studies. It is also standard of care that no irreversible therapeutic action be initiated on the basis of DIRECT FISH results alone. About one third of all chromosome abnormalities cannot be detected by DIRECT FISH, including structural abnormalities, mosaicism, and numerical abnormalities of other chromosomes.

"Direct FISH" is the UCSF Cytogenetics name for interphase fluorescence in situ hybridization (FISH) analysis for chromosomes 13, 18, 21, X, and Y.

Each FISH test is developed and its performance characteristics determined by the UCSF Cytogenetics Laboratory as required by CLIA '88 regulations. It has not been cleared or approved for specific uses by the U.S. Food and Drug Administration. All FISH probes undergo internal validation and quality control testing at UCSF Cytogenetics Lab prior to use.

CPT Codes:
88271 x2, 88275, 88291

LDT or Modified FDA:
Yes

Aneuvysion FISH 18/XY

A18XY, BA18XY

ORDERING

Available Stat:
No

Performing Lab:
Medical genomics - Cytogenetics

Performed:
Set up daily, Monday - Friday

Methodology:
Fluorescent in-situ hybridization (FISH)

Reported:
2-3 days

Additional Information:
Direct FISH is limited to the detection of aneuploidy (increase or decrease in copy number) of chromosomes 13, 18, 21, X and Y by analyzing INTERPHASE nuclei. A normal result indicates that no numeric abnormality of chromosomes 13, 18, 21, X and Y were identified. It does not rule out the possibility of structural defects or numeric defects in other chromosomes.

DIRECT FISH results are preliminary: G-banded chromosome analysis of 15 colonies or 20 cells remains the standard of care for prenatal diagnosis and all cytogenetic studies. It is also standard of care that no irreversible therapeutic action be initiated on the basis of DIRECT FISH results alone. About one third of all chromosome abnormalities cannot be detected by DIRECT FISH, including structural abnormalities, mosaicism, and numerical abnormalities of other chromosomes.

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Reflex Testing:
If an abnormality is detected the Director will determine the appropriate additional studies to be performed to characterize the abnormality.

Additional testing may be omitted if specifically requested when the sample is submitted for cytogenetic analysis.

Synonyms:

- AV 18/XY
- Direct aneuploidy FISH 18/XY
- A18XY
- BA18XY

COLLECTION

Sample Type:
Heparinized whole blood, Amniotic fluid, CVS, POC

Collect:
Blood: Dark green top
Amniotic fluid: Sterile screw top container
CVS or POC: 15 mL centrifuge tube with transport media (Avaialable from Cytogenetics: 353-4844)

Preferred Volume:
Whole blood, child or adult: 5 mL
Whole blood, infant: 2 mL
Amniotic fluid: 10 mL
CVS: 10 mg
POC: 10 mg

Minimum Volume:
Whole blood, child or adult: 2 mL
Whole blood, infant: 2 mL
Amniotic fluid: 5 mL
CVS: 5 mg
POC: 5 mg

Stability (from collection to initiation):
1-2 days

PROCESSING

Test Code:
BA18XY: Blood
A18XY: Amniotic fluid, CVS

Test Group:
FISH

Performing Lab:
Medical genomics - Cytogenetics

Specimen Preparation:
Keep samples at Room temperature. DO NOT CENTRIFUGE for any reason. Send all tubes and completed paperwork asap to the Cytogenetics laboratory at China Basin.

Preferred Volume:
Whole blood, child or adult: 5 mL
Whole blood, infant: 2 mL
Amniotic fluid: 10 mL
CVS: 10 mg
POC: 10 mg

Minimum Volume:
Whole blood, child or adult: 2 mL
Whole blood, infant: 2 mL
Amniotic fluid: 5 mL
CVS: 5 mg
POC: 5 mg

Stability (from collection to initiation):
1-2 days

RESULT INTERPRETATION

Additional Information:
Direct FISH is limited to the detection of aneuploidy (increase or decrease in copy number) of chromosomes 13, 18, 21, X and Y by analyzing INTERPHASE nuclei. A normal result indicates that no numeric abnormality of chromosomes 13, 18, 21, X and Y were identified. It does not rule out the possibility of structural defects or numeric defects in other chromosomes.

DIRECT FISH results are preliminary: G-banded chromosome analysis of 15 colonies or 20 cells remains the standard of care for prenatal diagnosis and all cytogenetic studies. It is also standard of care that no irreversible therapeutic action be initiated on the basis of DIRECT FISH results alone. About one third of all chromosome abnormalities cannot be detected by DIRECT FISH, including structural abnormalities, mosaicism, and numerical abnormalities of other chromosomes.

"Direct FISH" is the UCSF Cytogenetics name for interphase fluorescence in situ hybridization (FISH) analysis for chromosomes 13, 18, 21, X, and Y.

Each FISH test is developed and its performance characteristics determined by the UCSF Cytogenetics Laboratory as required by CLIA '88 regulations. It has not been cleared or approved for specific uses by the U.S. Food and Drug Administration. All FISH probes undergo internal validation and quality control testing at UCSF Cytogenetics Lab prior to use.

ADMINISTRATIVE

CPT Codes:
88271 x3, 88275, 88291

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BA18XY: Blood
A18XY: Amniotic fluid, CVS

Test Group:
FISH

Performing Lab:
Medical genomics - Cytogenetics

Performed:
Set up daily, Monday - Friday

Methodology:
Fluorescent in-situ hybridization (FISH)

Collect:
Blood: Dark green top
Amniotic fluid: Sterile screw top container
CVS or POC: 15 mL centrifuge tube with transport media (Avaialable from Cytogenetics: 353-4844)

Sample Type:
Heparinized whole blood, Amniotic fluid, CVS, POC

Preferred Volume:
Whole blood, child or adult: 5 mL
Whole blood, infant: 2 mL
Amniotic fluid: 10 mL
CVS: 10 mg
POC: 10 mg

Minimum Volume:
Whole blood, child or adult: 2 mL
Whole blood, infant: 2 mL
Amniotic fluid: 5 mL
CVS: 5 mg
POC: 5 mg

Specimen Preparation:
Keep samples at Room temperature. DO NOT CENTRIFUGE for any reason. Send all tubes and completed paperwork asap to the Cytogenetics laboratory at China Basin.

Synonyms:

- AV 18/XY
- Direct aneuploidy FISH 18/XY
- A18XY
- BA18XY

Stability (from collection to initiation):
1-2 days

Reported:
2-3 days

Reflex Testing:
If an abnormality is detected the Director will determine the appropriate additional studies to be performed to characterize the abnormality.

Additional testing may be omitted if specifically requested when the sample is submitted for cytogenetic analysis.

Additional Information:
Direct FISH is limited to the detection of aneuploidy (increase or decrease in copy number) of chromosomes 13, 18, 21, X and Y by analyzing INTERPHASE nuclei. A normal result indicates that no numeric abnormality of chromosomes 13, 18, 21, X and Y were identified. It does not rule out the possibility of structural defects or numeric defects in other chromosomes.

DIRECT FISH results are preliminary: G-banded chromosome analysis of 15 colonies or 20 cells remains the standard of care for prenatal diagnosis and all cytogenetic studies. It is also standard of care that no irreversible therapeutic action be initiated on the basis of DIRECT FISH results alone. About one third of all chromosome abnormalities cannot be detected by DIRECT FISH, including structural abnormalities, mosaicism, and numerical abnormalities of other chromosomes.

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CPT Codes:
88271 x3, 88275, 88291

LDT or Modified FDA:
Yes

Angiotensin Converting Enzyme, CSF

ACEC

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Spectrophotometric kinetic

Reported:
3-5 days

Additional Information:
This test is useful in diagnosing patients with sarcoidosis involving the central nervous system and meninges.

COLLECTION

Sample Type:
CSF

Collect:
CSF tube or sterile collection tube

Amount to Collect:
See preferred volume

Preferred Volume:
1 mL CSF

Minimum Volume:
0.2 mL CSF

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 1 week, frozen 2 months

PROCESSING

Test Code:
ACEC

Test Group:
ACE

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze sample at -20C Order Quest # 34692N

Preferred Volume:
1 mL CSF

Minimum Volume:
0.2 mL CSF

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 1 week, frozen 2 months

RESULT INTERPRETATION

Units:
U/L

Reference Interval:
<= 15 U/L

Additional Information:
This test is useful in diagnosing patients with sarcoidosis involving the central nervous system and meninges.

ADMINISTRATIVE

CPT Codes:
82164-90

COMPLETE VIEW

Available Stat:
No

Test Code:
ACEC

Test Group:
ACE

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Spectrophotometric kinetic

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Collect:
CSF tube or sterile collection tube

Amount to Collect:
See preferred volume

Sample Type:
CSF

Preferred Volume:
1 mL CSF

Minimum Volume:
0.2 mL CSF

Specimen Preparation:
Freeze sample at -20C Order Quest # 34692N

Units:
U/L

Reference Interval:
<= 15 U/L

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 1 week, frozen 2 months

Reported:
3-5 days

Additional Information:
This test is useful in diagnosing patients with sarcoidosis involving the central nervous system and meninges.

CPT Codes:
82164-90

Angiotensin Converting Enzyme, serum

ACE

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Spectrophotometric kinetic

Reported:
Test performed Monday-Saturday. Turnaround time: 2-4 days.

Synonyms:

- ACE

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

PROCESSING

Test Code:
ACE

Test Group:
ACE

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Centrifuge under refrigeration and separate serum within 1 hour of collection. Store refrigerated. Order Quest # 18572P

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

RESULT INTERPRETATION

Units:
U/L

Reference Interval:
Pediatric (6 mo-17 years): 13-100 U/L
Adults (19-61 years): 9-67 U/L

ADMINISTRATIVE

CPT Codes:
82164-90

LOINC Codes:
2742-5

COMPLETE VIEW

Available Stat:
No

Test Code:
ACE

Test Group:
ACE

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Spectrophotometric kinetic

Collect:
Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Specimen Preparation:
Centrifuge under refrigeration and separate serum within 1 hour of collection. Store refrigerated. Order Quest # 18572P

Units:
U/L

Reference Interval:
Pediatric (6 mo-17 years): 13-100 U/L
Adults (19-61 years): 9-67 U/L

Synonyms:

- ACE

Reported:
Test performed Monday-Saturday. Turnaround time: 2-4 days.

CPT Codes:
82164-90

LOINC Codes:
2742-5

Anion Gap (Information only)

ORDERING

Available Stat:
No

Additional Information:
Hypertriglyceridemia will tend to decrease the CO2 results in both the Abbott and Roche assays. For every 1000 mg/dL increase in triglycerides, there is an approximate 10% decrease in CO2.

Abbott ref: Wiencek et al, Journal of Applied Laboratory Medicine, 2017, 02(01): 123-127.

Roche ref: Brock et al, Clinical Pathology and Research Journal, 2019, 3(1) (DOI: 10.23880/cprj-16000115).

The anion gap is calculated from the serum Sodium, Chloride and Total CO2 values using the equation: Na-(CL+CO2). The calculation is automatic whenever all three of the electrolytes are ordered together. It is not a separately orderable test.

RESULT INTERPRETATION

Reference Interval:
4-14

Additional Information:
Hypertriglyceridemia will tend to decrease the CO2 results in both the Abbott and Roche assays. For every 1000 mg/dL increase in triglycerides, there is an approximate 10% decrease in CO2.

Abbott ref: Wiencek et al, Journal of Applied Laboratory Medicine, 2017, 02(01): 123-127.

Roche ref: Brock et al, Clinical Pathology and Research Journal, 2019, 3(1) (DOI: 10.23880/cprj-16000115).

The anion gap is calculated from the serum Sodium, Chloride and Total CO2 values using the equation: Na-(CL+CO2). The calculation is automatic whenever all three of the electrolytes are ordered together. It is not a separately orderable test.

COMPLETE VIEW

Available Stat:
No

Reference Interval:
4-14

Additional Information:
Hypertriglyceridemia will tend to decrease the CO2 results in both the Abbott and Roche assays. For every 1000 mg/dL increase in triglycerides, there is an approximate 10% decrease in CO2.

Abbott ref: Wiencek et al, Journal of Applied Laboratory Medicine, 2017, 02(01): 123-127.

Roche ref: Brock et al, Clinical Pathology and Research Journal, 2019, 3(1) (DOI: 10.23880/cprj-16000115).

The anion gap is calculated from the serum Sodium, Chloride and Total CO2 values using the equation: Na-(CL+CO2). The calculation is automatic whenever all three of the electrolytes are ordered together. It is not a separately orderable test.

Anti-Adrenal Antibody Screen

ADRAB

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
IFA

Reported:
4-6 days

Additional Information:
Adrenal Antibody is detected in patients with autoimmune adrenal disease, e.g., Addison's disease.

Reflex Testing:
If screen is positive, titer will be performed automatically and reported separately.

COLLECTION

Sample Type:
Serum

Collect:
Gold top or Red top vacutainer

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 2 weeks, frozen 1 month

PROCESSING

Test Code:
ADRAB

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot an freeze serum. Transport to CB frozen. Order Quest test code 42465N

Preferred Volume:
2 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 2 weeks, frozen 1 month

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
Adrenal Antibody is detected in patients with autoimmune adrenal disease, e.g., Addison's disease.

ADMINISTRATIVE

CPT Codes:
86255-90

COMPLETE VIEW

Available Stat:
No

Test Code:
ADRAB

Performing Lab:
Quest

Sendout:
Yes

Methodology:
IFA

Collect:
Gold top or Red top vacutainer

Amount to Collect:
4 mL blood

Sample Type:
Serum

Preferred Volume:
2 mL serum

Minimum Volume:
0.5 mL serum

Specimen Preparation:
Aliquot an freeze serum. Transport to CB frozen. Order Quest test code 42465N

Reference Interval:
Negative

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 2 weeks, frozen 1 month

Reported:
4-6 days

Reflex Testing:
If screen is positive, titer will be performed automatically and reported separately.

Additional Information:
Adrenal Antibody is detected in patients with autoimmune adrenal disease, e.g., Addison's disease.

CPT Codes:
86255-90

Anti-Angiotensin Type I Receptors

ILAT1R

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Luminex-based

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Additional Information:
This test assigns cPRA (calculated PRA) and determines specific HLA Class I antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring.

In addition to solid organ testing protocols, this test can be requested for evaluation of refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

Reflex Testing:
Yes

COLLECTION

Sample Type:
Serum

Collect:
Red top x 2

Amount to Collect:
12 mL blood

Preferred Volume:
6 mL serum

Remarks:
Please see ITL Sample Collection Guide here.

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

Rejection Criteria:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

PROCESSING

Test Code:
HTAT1R (Sunquest: ILAT1R)

Test Group:
HLA Antibody Testing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Preferred Volume:
6 mL serum

Rejection Criteria:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

RESULT INTERPRETATION

Additional Information:

This test assigns cPRA (calculated PRA) and determines specific HLA Class I antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring.

In addition to solid organ testing protocols, this test can be requested for evaluation of refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

ADMINISTRATIVE

CPT Codes:

86832

COMPLETE VIEW

Available Stat:

Yes

Test Code:

HTAT1R (Sunquest: ILAT1R)

Test Group:

HLA Antibody Testing

Performing Lab:

Immunogenetics & Transplantation Laboratory (ITL)

Sendout:

Yes

Methodology:

Luminex-based

Remarks:

Please see ITL Sample Collection Guide here.

Collect:

Red top x 2

Amount to Collect:

12 mL blood

Sample Type:

Serum

Preferred Volume:

6 mL serum

Rejection Criteria:

Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

Specimen Preparation:

Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Stability (from collection to initiation):

If kept at ambient temperature, can be good for up to 72 hours

Reported:

Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Reflex Testing:

Yes

Additional Information:

This test assigns cPRA (calculated PRA) and determines specific HLA Class I antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring.

In addition to solid organ testing protocols, this test can be requested for evaluation of refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

CPT Codes:

86832

Antibodies to Extractable Nuclear Antigens

AENA

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Friday (day shift)

Methodology:
Chemiluminescent

Reported:
2-8 days

Additional Information:
Systemic lupus erythematosus (SLE) is characterized by the presence of autoantibodies. One class of autoantibodies is directed against extractable nuclear antigens, often producing a speckled pattern on ANA screening.

Antibodies to Sm are present in approximately 40% of patients with SLE and are considered to be highly specific markers for this disease.

The RNP antigen is closely associated with the Sm antigen and is designated the Sm/RNP complex. Anti-RNP antibodies are found in a variety of rheumatic diseases including scleroderma, rheumatoid arthritis, discoid lupus, polymyositis, and Sjogren's syndrome.

Synonyms:

- ENA
- anti-SM
- anti-RNP
- anti-ENA
- anti-smith
- RNP antibody
- Sm antibody
- Smith antibody
- Sm/RNP

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Remarks:
Avoid hemolysis

Unacceptable Conditions:
Grossly hemolyzed, lipemic or icteric samples.

PROCESSING

Test Code:
AENA

Performing Lab:
Immunology

Specimen Preparation:
Freeze serum at -20C

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Grossly hemolyzed, lipemic or icteric samples.

RESULT INTERPRETATION

Units:
Chemiluminescent Units (CU)

Reference Interval:
For both anti-SM and anti-RNP:
Negative: < 20 CU
Positive: >= 20 CU

Additional Information:
Systemic lupus erythematosus (SLE) is characterized by the presence of autoantibodies. One class of autoantibodies is directed against extractable nuclear antigens, often producing a speckled pattern on ANA screening.

Antibodies to Sm are present in approximately 40% of patients with SLE and are considered to be highly specific markers for this disease.

The RNP antigen is closely associated with the Sm antigen and is designated the Sm/RNP complex. Anti-RNP antibodies are found in a variety of rheumatic diseases including scleroderma, rheumatoid arthritis, discoid lupus, polymyositis, and Sjogren's syndrome.

ADMINISTRATIVE

CPT Codes:
86235 x 2

LOINC Codes:
43182-5

COMPLETE VIEW

Available Stat:
No

Test Code:
AENA

Performing Lab:
Immunology

Performed:
Friday (day shift)

Methodology:
Chemiluminescent

Remarks:
Avoid hemolysis

Collect:
Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Grossly hemolyzed, lipemic or icteric samples.

Specimen Preparation:
Freeze serum at -20C

Units:
Chemiluminescent Units (CU)

Reference Interval:
For both anti-SM and anti-RNP:
Negative: < 20 CU
Positive: >= 20 CU

Synonyms:

- ENA
- anti-SM
- anti-RNP
- anti-ENA
- anti-smith
- RNP antibody
- Sm antibody
- Smith antibody
- Sm/RNP

Reported:
2-8 days

Additional Information:
Systemic lupus erythematosus (SLE) is characterized by the presence of autoantibodies. One class of autoantibodies is directed against extractable nuclear antigens, often producing a speckled pattern on ANA screening.

Antibodies to Sm are present in approximately 40% of patients with SLE and are considered to be highly specific markers for this disease.

The RNP antigen is closely associated with the Sm antigen and is designated the Sm/RNP complex. Anti-RNP antibodies are found in a variety of rheumatic diseases including scleroderma, rheumatoid arthritis, discoid lupus, polymyositis, and Sjogren's syndrome.

CPT Codes:
86235 x 2

LOINC Codes:
43182-5

Anti-Cardiolipin Antibody, IgA

ACLA

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
ELISA

Reported:
Test is set up Monday-Saturday PM. Turnaround 2-3 days

Synonyms:

- anti-phospholipid antibody

COLLECTION

Sample Type:
Serum, Citrated plasma

Collect:
Gold top or Blue top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.5 mL serum or plasma

Remarks:
If collecting in citrate, check the expiration date on the label of the blue top vacutainer before drawing the patient.

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer.

PROCESSING

Test Code:
ACLA

Test Group:
Anti-Cardiolipin

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze serum or plasma at -20C. Order Quest # 4661X. **Note**: For Brown and Toland patients: Test procedure code is BTMOLT, and 1.0 frozen serum is shipped to LabCorp, test code 161836

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.5 mL serum or plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer.

RESULT INTERPRETATION

Units:
APL U/mL

Reference Interval:
Normal: < 10 APL U/mL
Equivocal: 10-15 APL U/mL
Positive: > 15 APL U/mL

ADMINISTRATIVE

CPT Codes:
86147-90

LOINC Codes:
5076-5

COMPLETE VIEW

Available Stat:
No

Test Code:
ACLA

Test Group:
Anti-Cardiolipin

Performing Lab:
Quest

Sendout:
Yes

Methodology:
ELISA

Remarks:
If collecting in citrate, check the expiration date on the label of the blue top vacutainer before drawing the patient.

Collect:
Gold top or Blue top

Amount to Collect:
2 mL blood

Sample Type:
Serum, Citrated plasma

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.5 mL serum or plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer.

Specimen Preparation:
Freeze serum or plasma at -20C. Order Quest # 4661X. **Note**: For Brown and Toland patients: Test procedure code is BTMOLT, and 1.0 frozen serum is shipped to LabCorp, test code 161836

Units:
APL U/mL

Reference Interval:
Normal: < 10 APL U/mL
Equivocal: 10-15 APL U/mL
Positive: > 15 APL U/mL

Synonyms:

- anti-phospholipid antibody

Reported:
Test is set up Monday-Saturday PM. Turnaround 2-3 days

CPT Codes:
86147-90

LOINC Codes:
5076-5

Anti-Cardiolipin Antibody, IgG

ACLG

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Thursday (day shift)

Methodology:
Chemiluminescent Immunoassay

Reported:
Test run weekly, turn around time 2-8 days

Additional Information:
Assays for antibodies to phospholipids are not well standardized and significant inter-laboratory variability exists. As such it is recommended that repeat testing be performed by the same method by the same laboratory. The units used do not correlate to a titer.

Synonyms:

- Anti-phospholipid antibody
- anticardiolipin antibody

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

PROCESSING

Test Code:
ACLG

Test Group:
Anti-Cardiolipin

Performing Lab:
Immunology

Specimen Preparation:
Freeza serum at -20C

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

RESULT INTERPRETATION

Units:
C.U.

Reference Interval:
<20.1 CU

Additional Information:
Assays for antibodies to phospholipids are not well standardized and significant inter-laboratory variability exists. As such it is recommended that repeat testing be performed by the same method by the same laboratory. The units used do not correlate to a titer.

ADMINISTRATIVE

CPT Codes:
86147

LOINC Codes:
24385-7

COMPLETE VIEW

Available Stat:
No

Test Code:
ACLG

Test Group:
Anti-Cardiolipin

Performing Lab:
Immunology

Performed:
Thursday (day shift)

Methodology:
Chemiluminescent Immunoassay

Collect:
Gold top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Specimen Preparation:
Freeza serum at -20C

Units:
C.U.

Reference Interval:
<20.1 CU

Synonyms:

- Anti-phospholipid antibody
- anticardiolipin antibody

Reported:
Test run weekly, turn around time 2-8 days

Additional Information:
Assays for antibodies to phospholipids are not well standardized and significant inter-laboratory variability exists. As such it is recommended that repeat testing be performed by the same method by the same laboratory. The units used do not correlate to a titer.

CPT Codes:
86147

LOINC Codes:
24385-7

Anti-Cardiolipin Antibody, IgM

ACLM

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Thursday (day shift)

Methodology:
Chemiluminescent Immunoassay

Reported:
1-8 days

Additional Information:
Assays for antibodies to phospholipids are not well standardized and significant inter-laboratory variability exists. As such it is recommended that repeat testing be performed by the same method by the same laboratory. The units used do not correlate to a titer.

Synonyms:

- anti-phospholipid antibody

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

PROCESSING

Test Code:
ACLM

Test Group:
Anti-Cardiolipin

Performing Lab:
Immunology

Specimen Preparation:
Freeze serum at -20C

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

RESULT INTERPRETATION

Units:
C.U.

Reference Interval:
<20.1 CU

Additional Information:
Assays for antibodies to phospholipids are not well standardized and significant inter-laboratory variability exists. As such it is recommended that repeat testing be performed by the same method by the same laboratory. The units used do not correlate to a titer.

ADMINISTRATIVE

CPT Codes:
86147

LOINC Codes:
24386-5

COMPLETE VIEW

Available Stat:
No

Test Code:
ACLM

Test Group:
Anti-Cardiolipin

Performing Lab:
Immunology

Performed:
Thursday (day shift)

Methodology:
Chemiluminescent Immunoassay

Collect:
Gold top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Specimen Preparation:
Freeze serum at -20C

Units:
C.U.

Reference Interval:
<20.1 CU

Synonyms:

- anti-phospholipid antibody

Reported:
1-8 days

Additional Information:
Assays for antibodies to phospholipids are not well standardized and significant inter-laboratory variability exists. As such it is recommended that repeat testing be performed by the same method by the same laboratory. The units used do not correlate to a titer.

CPT Codes:
86147

LOINC Codes:
24386-5

Anti-CFH Autoantibody

CFHA

ORDERING

Available Stat:
No

Performing Lab:
Machaon

Performed:
Monday-Friday

Methodology:
ELISA

COLLECTION

Sample Type:
Serum

Collect:
Gold or Red-top

Amount to Collect:
2 mL blood

Preferred Volume:
1.0 mL serum

Minimum Volume:
0.5 mL

Stability (from collection to initiation):
7 days

Storage/Transport Temperature:
Frozen

PROCESSING

Test Code:
CFHA

Sendout:
Yes

Performing Lab:
Machaon

Preferred Volume:
1.0 mL serum

Minimum Volume:
0.5 mL

Stability (from collection to initiation):
7 days

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Units:
Units/mL

Reference Interval:
< 20

Interpretive Data:
Factor H is a negative regulator of the alternative complement activation pathway. Factor H acquired deficiency due to autoantibodies production can lead to complement activation. Continuous complement activation is associated with development of aHUS and DDD. Factor H is a soluble protein, and its levels can be accurately measured by ELISA.

ADMINISTRATIVE

CPT Codes:
83516

LOINC Codes:
4519-5

COMPLETE VIEW

Available Stat:
No

Test Code:
CFHA

Performing Lab:
Machaon

Sendout:
Yes

Performed:
Monday-Friday

Methodology:
ELISA

Collect:
Gold or Red-top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1.0 mL serum

Minimum Volume:
0.5 mL

Units:
Units/mL

Reference Interval:
< 20

Interpretive Data:
Factor H is a negative regulator of the alternative complement activation pathway. Factor H acquired deficiency due to autoantibodies production can lead to complement activation. Continuous complement activation is associated with development of aHUS and DDD. Factor H is a soluble protein, and its levels can be accurately measured by ELISA.

Storage/Transport Temperature:
Frozen

Stability (from collection to initiation):
7 days

CPT Codes:
83516

LOINC Codes:
4519-5

Anti-Cyclic Citrullinated Peptide Antibody (IgG)

CYCP

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday (day shift)

Methodology:
Chemiluminescent immunoassay

Reported:
2-9 days

Additional Information:
The main clinically useful biologic markers in diagnosis of patients with rheumatoid arthritis (RA) are rheumatoid factor and antibodies to citrullinated peptides. These antibodies may also be useful for prediction of functional and radiographic outcomes. Anti-perinuclear antibodies (also called anti-keratin antibodies) often found in patients with RA recognize an epitope that contains the deimidated form of arginine called citrulline.

This test uses a third generation cyclic citrullinated peptide (CCP) antigen for detection of these antibodies. Presence of these antibodies is thought to be very specific for RA but not as sensitive as rheumatoid factor. Recent studies suggest that use of RF and CCP antibodies together may provide better sensitivity for diagnosis of RA than either alone. Note that at the present time, CCP antibodies are not considered part of the diagnostic criteria for RA. Test results that fall in the weak positive range may be repeated, if clinically indicated for diagnostic purposes, or may reflect treatment of a patient with an existing clinical diagnosis.

Synonyms:

- CCP
- anti-CCP

COLLECTION

Sample Type:
Serum

Collect:
Gold top or Red top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

PROCESSING

Test Code:
CYCP

Performing Lab:
Immunology

Specimen Preparation:
Freeze serum at -20C

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

RESULT INTERPRETATION

Units:
C.U.

Reference Interval:
<20.0 CU

Additional Information:

The main clinically useful biologic markers in diagnosis of patients with rheumatoid arthritis (RA) are rheumatoid factor and antibodies to citrullinated peptides. These antibodies may also be useful for prediction of functional and radiographic outcomes. Anti-perinuclear antibodies (also called anti-keratin antibodies) often found in patients with RA recognize an epitope that contains the deimidated form of arginine called citrulline.

This test uses a third generation cyclic citrullinated peptide (CCP) antigen for detection of these antibodies. Presence of these antibodies is thought to be very specific for RA but not as sensitive as rheumatoid factor. Recent studies suggest that use of RF and CCP antibodies together may provide better sensitivity for diagnosis of RA than either alone. Note that at the present time, CCP antibodies are not considered part of the diagnostic criteria for RA. Test results that fall in the weak positive range may be repeated, if clinically indicated for diagnostic purposes, or may reflect treatment of a patient with an existing clinical diagnosis.

ADMINISTRATIVE

CPT Codes:
86200

LOINC Codes:
33935-8

COMPLETE VIEW

Available Stat:
No

Test Code:
CYCP

Performing Lab:
Immunology

Performed:
Monday (day shift)

Methodology:
Chemiluminescent immunoassay

Collect:
Gold top or Red top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Specimen Preparation:
Freeze serum at -20C

Units:
C.U.

Reference Interval:
<20.0 CU

Synonyms:

- CCP
- anti-CCP

Reported:
2-9 days

Additional Information:

The main clinically useful biologic markers in diagnosis of patients with rheumatoid arthritis (RA) are rheumatoid factor and antibodies to citrullinated peptides. These antibodies may also be useful for prediction of functional and radiographic outcomes. Anti-perinuclear antibodies (also called anti-keratin antibodies) often found in patients with RA recognize an epitope that contains the deimidated form of arginine called citrulline.

This test uses a third generation cyclic citrullinated peptide (CCP) antigen for detection of these antibodies. Presence of these antibodies is thought to be very specific for RA but not as sensitive as rheumatoid factor. Recent studies suggest that use of RF and CCP antibodies together may provide better sensitivity for diagnosis of RA than either alone. Note that at the present time, CCP antibodies are not considered part of the diagnostic criteria for RA. Test results that fall in the weak positive range may be repeated, if clinically indicated for diagnostic purposes, or may reflect treatment of a patient with an existing clinical diagnosis.

CPT Codes:
86200

LOINC Codes:
33935-8

Anti-IgA Antibody by ELISA

MOLT

ORDERING

Ordering Recommendations:
Use prior to transfusion or in possible transfusion reactions to determine the presence of anti-IgA antibodies in patients with selective IgA deficiency.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Varies

Methodology:
Quantitative Enzyme-Linked Immunosorbent Assay (ELISA)

Reported:
5-11 days

COLLECTION

Sample Type:
Serum

Collect:
Plain red or serum separator tube (SST).

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Ambient: 1 week; Refrigerated: 1 week; Frozen: 2 weeks

Storage/Transport Temperature:
Frozen. Also acceptable: Room temperature or refrigerated.

PROCESSING

Test Code:
MOLT

ARUP Test Code:
2003126

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transfer 1 mL serum to an ARUP standard transport tube. (Min: 0.5 mL)
Test is not performed at ARUP; separate specimens must be submitted when multiple tests are ordered.

Additional Processing Instructions:
Send samples to Central Processing

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Ambient: 1 week; Refrigerated: 1 week; Frozen: 2 weeks

Storage/Transport Temperature:
Frozen. Also acceptable: Room temperature or refrigerated.

RESULT INTERPRETATION

Reference Interval:
By report

ADMINISTRATIVE

CPT Codes:
83520

LOINC:

- 13312-4

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Use prior to transfusion or in possible transfusion reactions to determine the presence of anti-IgA antibodies in patients with selective IgA deficiency.

Test Code:
MOLT

ARUP Test Code:
2003126

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Varies

Methodology:
Quantitative Enzyme-Linked Immunosorbent Assay (ELISA)

Collect:
Plain red or serum separator tube (SST).

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Specimen Preparation:
Transfer 1 mL serum to an ARUP standard transport tube. (Min: 0.5 mL)
Test is not performed at ARUP; separate specimens must be submitted when multiple tests are ordered.

Additional Processing Instructions:
Send samples to Central Processing

Reference Interval:
By report

Storage/Transport Temperature:
Frozen. Also acceptable: Room temperature or refrigerated.

Stability (from collection to initiation):
Ambient: 1 week; Refrigerated: 1 week; Frozen: 2 weeks

Reported:
5-11 days

CPT Codes:
83520

LOINC:

- 13312-4

Antimicrobial Synergy Study

B043

ORDERING

Approval Required:
Yes, contact Microbiology x3-1268

Available Stat:
No

Performing Lab:
Microbiology

Additional Information:
This test is only orderable by the Microbiology staff.

PROCESSING

Test Code:
B043

Performing Lab:
Microbiology

RESULT INTERPRETATION

Additional Information:
This test is only orderable by the Microbiology staff.

ADMINISTRATIVE

CPT Codes:
87188

COMPLETE VIEW

Approval Required:
Yes, contact Microbiology x3-1268

Available Stat:
No

Test Code:
B043

Performing Lab:
Microbiology

Additional Information:
This test is only orderable by the Microbiology staff.

CPT Codes:
87188

Anti-Mullerian Hormone

AMHM

ORDERING

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative Enzyme-Linked Immunosorbent Assay

Reported:
1-3 days

Synonyms:

- MIF
- MIH
- MIS
- Mullerian inhibiting factor
- Mullerian-inhibiting hormone
- Mullerian-inhibiting substance
- AntiMullerian

COLLECTION

Collect:
Serum separator tube. Also acceptable: Plain red or green (lithium heparin).

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 1 week; Frozen: 3 weeks (avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
Frozen.

PROCESSING

Test Code:
AMHM

ARUP Test Code:
2002656

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate from cells ASAP or within 2 hours of collection. Transfer 0.5 mL serum to an ARUP Standard Transport Tube. (Min: 0.2 mL)

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 1 week; Frozen: 3 weeks (avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
Frozen.

RESULT INTERPRETATION

Reference Interval:
Effective April 7, 2014

Female, Age	Reference Interval	Male, Age	Reference Interval
6 months - 14 years	0.256-6.345 ng/mL	6-11 months	56.677-495.299 ng/mL
15-17 years	0.861-10.451 ng/mL	1-6 years	33.442-342.450 ng/ml
18-29 years	0.401-16.015 ng/mL	7-9 years	20.245-189.781 ng/mL
30-39 years	0.176-11.705 ng/mL	10-12 years	2.903-178.243 ng/mL
40-45 years	6.282 ng/mL or less	13 years or greater	2.079-30.656 ng/mL
46-50 years	0.064 ng/mL or less		
Post-menopausal	0.003 ng/mL or less		

Interpretive Data:
This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:
82166

LOINC:

- 38476-8

COMPLETE VIEW

Available Stat:
No

Test Code:
AMHM

ARUP Test Code:
2002656

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative Enzyme-Linked Immunosorbent Assay

Collect:
Serum separator tube. Also acceptable: Plain red or green (lithium heparin).

Specimen Preparation:
Separate from cells ASAP or within 2 hours of collection. Transfer 0.5 mL serum to an ARUP Standard Transport Tube. (Min: 0.2 mL)

Reference Interval:
Effective April 7, 2014

Female, Age	Reference Interval	Male, Age	Reference Interval
6 months - 14 years	0.256-6.345 ng/mL	6-11 months	56.677-495.299 ng/mL
15-17 years	0.861-10.451 ng/mL	1-6 years	33.442-342.450 ng/ml
18-29 years	0.401-16.015 ng/mL	7-9 years	20.245-189.781 ng/mL
30-39 years	0.176-11.705 ng/mL	10-12 years	2.903-178.243 ng/mL
40-45 years	6.282 ng/mL or less	13 years or greater	2.079-30.656 ng/mL
46-50 years	0.064 ng/mL or less		
Post-menopausal	0.003 ng/mL or less		

Interpretive Data:

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Synonyms:

- MIF
- MIH
- MIS
- Mullerian inhibiting factor
- Mullerian-inhibiting hormone
- Mullerian-inhibiting substance
- AntiMullerian

Storage/Transport Temperature:

Frozen.

Stability (from collection to initiation):

Ambient: Unacceptable; Refrigerated: 1 week; Frozen: 3 weeks (avoid repeated freeze/thaw cycles)

Reported:

1-3 days

CPT Codes:

82166

LOINC:

- 38476-8

Anti-Nuclear Antibodies

ANA

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift)

Methodology:
Indirect Immunofluorescence

Reported:
1-3 days

Additional Information:
Anti-Centromere and Anti-Nucleolar antibodies will be reported if present.

LE Prep is not an offered test. Order Anti-Nuclear antibodies

Reflex Testing:
Positive samples will automatically be titered and a separate charge applied.

Synonyms:

- ANA
- LE Preparation
- LE Prep
- Antinuclear antibodies
- ANT
- anti-centromere antibodies
- anti-nucleolar antibodies

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.35 mL serum

Stability (from collection to initiation):
Refrigerated 7 days

PROCESSING

Test Code:
ANA

Performing Lab:
Immunology

Specimen Preparation:
Refrigerate sample

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.35 mL serum

Stability (from collection to initiation):
Refrigerated 7 days

RESULT INTERPRETATION

Units:
titer

Reference Interval:
Negative titer < 80

Additional Information:
Anti-Centromere and Anti-Nucleolar antibodies will be reported if present.

LE Prep is not an offered test. Order Anti-Nuclear antibodies

ADMINISTRATIVE

CPT Codes:
86038

LOINC Codes:
5048-4

COMPLETE VIEW

Available Stat:
No

Test Code:
ANA

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift)

Methodology:
Indirect Immunofluorescence

Collect:
Gold top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.35 mL serum

Specimen Preparation:
Refrigerate sample

Units:
titer

Reference Interval:
Negative titer < 80

Synonyms:

- ANA
- LE Preparation
- LE Prep
- Antinuclear antibodies
- ANT
- anti-centromere antibodies
- anti-nucleolar antibodies

Stability (from collection to initiation):
Refrigerated 7 days

Reported:
1-3 days

Reflex Testing:
Positive samples will automatically be titered and a separate charge applied.

Additional Information:
Anti-Centromere and Anti-Nucleolar antibodies will be reported if present.

LE Prep is not an offered test. Order Anti-Nuclear antibodies

CPT Codes:
86038

LOINC Codes:
5048-4

Anti-Phospholipid Antibody Panel

APLA

ORDERING

Available Stat:
No

Performing Lab:
Parnassus Hematology, Immunology

Additional Information:
Panel includes Russell's Viper Venom Test (RVVTM), Lupus Anticoagulant by HEXA (HEXA), Anticardiolipin Antibodies IgG & IgM (ACLG, ACLM), and Beta 2 Glycoprotein Antibodies IgG & IgM (B2GPG, B2GPM). If "Anti-phospholipid Antibody" is ordered without further specification, the Anti-phospholipid Panel will be performed.

Lupus anticoagulants, along with anti-cardiolipin antibodies and anti-Beta 2 Glycoprotein antibodies, are the major categories of anti-phospholipid antibodies. If a patient is being evaluated for anti-phospholipid antibody syndrome, the hematology laboratory service at Moffitt-Long recommends that the Russell's Viper Venom Test, Lupus Anticoagulant by HEXA, Anticardiolipin Antibodies IgG & IgM , and anti- Beta 2 Glycoprotein Antibodies IgG & IgM, each be performed as clinically indicated.

Synonyms:

- LA
- Lupus anticoagulant
- antiphospholipid syndrome

COLLECTION

Sample Type:
Citrated plasma **AND** serum

Collect:
Blue tops filled to full extent of vacuum x 2 and Gold top x1 (Red top acceptable)

Amount to Collect:
Two full Blue tops **AND** 2 mL blood in Gold top (Red top acceptable)

Preferred Volume:
2 mL citrated plasma **AND** 1 mL serum

Minimum Volume:
1 mL citrated plasma **AND** 0.6 mL serum

Remarks:
Check the expiration date on the label of the blue top vacutainer before drawing the patient.

Fill 2 Blue tops to full extent of vacuum, Gold top (or Red top) must contain at least 2 mL blood.

For patients with Hct's >= 55% please contact Hematology (Parnassus: 3-1747, Mission Bay 6-1094) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer.

PROCESSING

Test Code:
APLA

Test Group:
Anti-phospholipid

Performing Lab:
Parnassus Hematology, Immunology

Specimen Preparation:
If "Anti-phospholipid Antibody" is ordered without further specification, order the Anti-phospholipid Panel (APLA).

Panel contains the following test codes: RVVTM, HEXA, ACLM, ACLG, B2GPG, B2GPM

Preferred Volume:
2 mL citrated plasma **AND** 1 mL serum

Minimum Volume:
1 mL citrated plasma **AND** 0.6 mL serum

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer.

RESULT INTERPRETATION

Additional Information:

Panel includes Russell's Viper Venom Test (RVVTM), Lupus Anticoagulant by HEXA (HEXA), Anticardiolipin Antibodies IgG & IgM (ACLG, ACLM), and Beta 2 Glycoprotein Antibodies IgG & IgM (B2GPG, B2GPM). If "Anti-phospholipid Antibody" is ordered without further specification, the Anti-phospholipid Panel will be performed.

Lupus anticoagulants, along with anti-cardiolipin antibodies and anti-Beta 2 Glycoprotein antibodies, are the major categories of anti-phospholipid antibodies. If a patient is being evaluated for anti-phospholipid antibody syndrome, the hematology laboratory service at Moffitt-Long recommends that the Russell's Viper Venom Test, Lupus Anticoagulant by HEXA, Anticardiolipin Antibodies IgG & IgM , and anti- Beta 2 Glycoprotein Antibodies IgG & IgM, each be performed as clinically indicated.

ADMINISTRATIVE

CPT Codes:
86147

LOINC Codes:
55395-8

COMPLETE VIEW

Available Stat:
No

Test Code:
APLA

Test Group:
Anti-phospholipid

Performing Lab:
Parnassus Hematology, Immunology

Remarks:
Check the expiration date on the label of the blue top vacutainer before drawing the patient.

Fill 2 Blue tops to full extent of vacuum, Gold top (or Red top) must contain at least 2 mL blood.

For patients with Hct's >= 55% please contact Hematology (Parnassus: 3-1747, Mission Bay 6-1094) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Collect:
Blue tops filled to full extent of vacuum x 2 and Gold top x1 (Red top acceptable)

Amount to Collect:
Two full Blue tops **AND** 2 mL blood in Gold top (Red top acceptable)

Sample Type:
Citrated plasma **AND** serum

Preferred Volume:
2 mL citrated plasma **AND** 1 mL serum

Minimum Volume:
1 mL citrated plasma **AND** 0.6 mL serum

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer.

Specimen Preparation:
If "Anti-phospholipid Antibody" is ordered without further specification, order the Anti-phospholipid Panel (APLA).

Panel contains the following test codes: RVVTM, HEXA, ACLM, ACLG, B2GPG, B2GPM

Synonyms:

- LA
- Lupus anticoagulant
- antiphospholipid syndrome

Additional Information:

Panel includes Russell's Viper Venom Test (RVVTM), Lupus Anticoagulant by HEXA (HEXA), Anticardiolipin Antibodies IgG & IgM (ACLG, ACLM), and Beta 2 Glycoprotein Antibodies IgG & IgM (B2GPG, B2GPM). If "Anti-phospholipid Antibody" is ordered without further specification, the Anti-phospholipid Panel will be performed.

Lupus anticoagulants, along with anti-cardiolipin antibodies and anti-Beta 2 Glycoprotein antibodies, are the major categories of anti-phospholipid antibodies. If a patient is being evaluated for anti-phospholipid antibody syndrome, the hematology laboratory service at Moffitt-Long recommends that the Russell's Viper Venom Test, Lupus Anticoagulant by HEXA, Anticardiolipin Antibodies IgG & IgM , and anti- Beta 2 Glycoprotein Antibodies IgG & IgM, each be performed as clinically indicated.

CPT Codes:

86147

LOINC Codes:

55395-8

Antiplasmin Activity

A2PI

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
Colorimetry w/synthetic chromagenic ubstrate

Reported:
7 days.

Additional Information:
Antiplasmin Activity is primarily due to alpha-2-antiplasmin, w/ some interference from alpha-2-macroglobulin.

Synonyms:

- Alpha-2-Antiplasmin
- A2-AP
- Alpha-2-plasmin inhibitor
- A2-antiplasmin
- A2-PI

COLLECTION

Sample Type:
Citrated Plasma

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.

2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.

3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.

4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

For patients with Hct's >= 55% please contact Hematology (Parnassus: 3-1747, Mission Bay 6-1094) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

PROCESSING

Test Code:
A2PI

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Separate plasma by centrifugation, then recentrifuge the separated plasma to avoid spurious results from platelet contamination. Promptly freeze an 0.5 mL aliquot of the respun plasma in a plastic vial at -70C. Call MCS for pick-up and ship on dry ice. The sample must be accompanied by a completed Mayo Medical Laboratories "Coagulation Request Form". Order MAYO# 9084

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

RESULT INTERPRETATION

Units:
% activity

Reference Interval:
Newborn: >= 50%
>= 18 year old: 80-140%

30-36 wk premature infants may not reach adult levels for up to 90 days of age.

Additional Information:
Antiplasmin Activity is primarily due to alpha-2-antiplasmin, w/ some interference from alpha-2-macroglobulin.

ADMINISTRATIVE

CPT Codes:
85410-90

LOINC Codes:
27810-1

COMPLETE VIEW

Available Stat:
No

Test Code:
A2PI

Performing Lab:
Mayo

Sendout:
Yes

Methodology:
Colorimetry w/synthetic chromagenic ubstrate

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.

2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.

3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.

4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

For patients with Hct's >= 55% please contact Hematology (Parnassus: 3-1747, Mission Bay 6-1094) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Sample Type:
Citrated Plasma

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Specimen Preparation:

Separate plasma by centrifugation, then recentrifuge the separated plasma to avoid spurious results from platelet contamination. Promptly freeze an 0.5 mL aliquot of the respun plasma in a plastic vial at -70C. Call MCS for pick-up and ship on dry ice. The sample must be accompanied by a completed Mayo Medical Laboratories "Coagulation Request Form". Order MAYO# 9084

Units:

% activity

Reference Interval:

Newborn: >= 50%
>= 18 year old: 80-140%

30-36 wk premature infants may not reach adult levels for up to 90 days of age.

Synonyms:

- Alpha-2-Antiplasmin
- A2-AP
- Alpha-2-plasmin inhibitor
- A2-antiplasmin
- A2-PI

Reported:

7 days.

Additional Information:

Antiplasmin Activity is primarily due to alpha-2-antiplasmin, w/ some interference from alpha-2-macroglobulin.

CPT Codes:

85410-90

LOINC Codes:

27810-1

Anti-Streptolysin O

ASO

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Rate Nephelometry

Reported:
Test performed Tu, Thur, and Saturday. Turnaround time: 2-4 days.

Synonyms:

- ASO
- Antistreptolysin O
- ASLO
- ASOT
- ASTO
- Streptolysin titer

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

PROCESSING

Test Code:
ASO

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate. Order Quest # 53702P

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

RESULT INTERPRETATION

Units:
IU/mL

Reference Interval:
<= 200 IU/mL

ADMINISTRATIVE

CPT Codes:
86060-90

LOINC Codes:
5370-2

COMPLETE VIEW

Available Stat:
No

Test Code:
ASO

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Rate Nephelometry

Collect:
Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Specimen Preparation:
Refrigerate. Order Quest # 53702P

Units:
IU/mL

Reference Interval:
<= 200 IU/mL

Synonyms:

- ASO
- Antistreptolysin O
- ASLO
- ASOT
- ASTO
- Streptolysin titer

Reported:
Test performed Tu, Thur, and Saturday. Turnaround time: 2-4 days.

CPT Codes:
86060-90

LOINC Codes:
5370-2

Antithrombin Activity

AT

ORDERING

Available Stat:
Yes, Mission Bay only

Performing Lab:
Parnassus & Mission Bay Hematology

Performed:
Mission Bay: 24-hours per day, 7-days per week

Parnassus: Test run every Monday 0800 - 1600.
If urgently needed, contact Parnassus hematology lab at 353 - 1747

Inform appropriate lab by phone when initiating ECLS anticoagulation protocol

Methodology:
Chromogenic substrate

Reported:
Mission Bay: STAT 1 hour, Routine 4 hours

Parnassus: 1-2 weeks

Additional Information:
A low level of antithrombin may be associated with an inherited deficiency or with secondary causes such as acute venous thrombosis, liver disease, disseminated intravascular coagulation, heparin therapy, pregnancy, estrogen therapy, and nephropathy with proteinuria.

Reflex Testing:
If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

Synonyms:

- ATIII
- AT3
- AT III
- AT Activity
- Anithrombin III Activity

COLLECTION

Sample Type:
Citrated plasma

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.

2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.

3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.

4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

For patients with Hct's >= 55% please contact Hematology (Parnassus: 353-1747, Mission Bay 476-0194) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

PROCESSING

Test Code:
AT

Test Group:
Antithrombin

Performing Lab:
Parnassus & Mission Bay Hematology

Specimen Preparation:
Deliver sample to Hematology asap for processing. Test specimens within four hours of collection or freeze plasma in a plastic tubes at -20C.

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

RESULT INTERPRETATION

Units:
% activity

Reference Interval:
Adults: 79-120%

Neonatal normal ranges based on antithrombin activity are not available. We have included normal ranges below for neonates based on antigen levels which should roughly correlate with activity.

Full term Neonates
Day 1: 39-87%
Day 5: 41-93%
Day 30: 48-108%
Day 90: 73-121%

Reference: Andrew M. Et al. Development of the Human Coagulation System in the Full Term Infant. Blood July 1987, 70(1):165-172

Healthy Premature Neonates
Day 1: 14-62%
Day 5: 30-82%
Day 30: 37-81%
Day 90: 45-121%
Day 180: 52-128%

Reference: Andrew M, et al. Development of the Human Coagulation System in the Healthy Premature Infant. Blood November 1988, 72(5): 1651-1657.

Additional Information:
A low level of antithrombin may be associated with an inherited deficiency or with secondary causes such as acute venous thrombosis, liver disease, disseminated intravascular coagulation, heparin therapy, pregnancy, estrogen therapy, and nephropathy with proteinuria.

ADMINISTRATIVE

CPT Codes:
85300

LOINC Codes:
27811-9

COMPLETE VIEW

Available Stat:
Yes, Mission Bay only

Test Code:
AT

Test Group:
Antithrombin

Performing Lab:
Parnassus & Mission Bay Hematology

Performed:

Mission Bay: 24-hours per day, 7-days per week

Parnassus: Test run every Monday 0800 - 1600.
If urgently needed, contact Parnassus hematology lab at 353 - 1747

Inform appropriate lab by phone when initiating ECLS anticoagulation protocol

Methodology:

Chromogenic substrate

Remarks:

1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.

2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.

3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.

4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

For patients with Hct's >= 55% please contact Hematology (Parnassus: 353-1747, Mission Bay 476-0194) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Collect:

Blue top filled to full extent of vacuum

Amount to Collect:

2.7 mL blood

Sample Type:

Citrated plasma

Preferred Volume:

1 mL plasma

Minimum Volume:

0.5 mL plasma

Unacceptable Conditions:

Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Specimen Preparation:

Deliver sample to Hematology asap for processing. Test specimens within four hours of collection or freeze plasma in a plastic tubes at -20C.

Units:

% activity

Reference Interval:

Adults: 79-120%

Neonatal normal ranges based on antithrombin activity are not available. We have included normal ranges below for neonates based on antigen levels which should roughly correlate with activity.

Full term Neonates
Day 1: 39-87%
Day 5: 41-93%
Day 30: 48-108%
Day 90: 73-121%

Reference: Andrew M. Et al. Development of the Human Coagulation System in the Full Term Infant. Blood July 1987, 70(1):165-172

Healthy Premature Neonates
Day 1: 14-62%
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Day 90: 45-121%
Day 180: 52-128%

Reference: Andrew M, et al. Development of the Human Coagulation System in the Healthy Premature Infant. Blood November 1988, 72(5): 1651-1657.

Synonyms:

- ATIII
- AT3
- AT III
- AT Activity
- Anithrombin III Activity

Reported:

Mission Bay: STAT 1 hour, Routine 4 hours

Parnassus: 1-2 weeks

Reflex Testing:

If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

Additional Information:

A low level of antithrombin may be associated with an inherited deficiency or with secondary causes such as acute venous thrombosis, liver disease, disseminated intravascular coagulation, heparin therapy, pregnancy, estrogen therapy, and nephropathy with proteinuria.

CPT Codes:

85300

LOINC Codes:

27811-9

Anti-Xa (Apixaban level)

APIX

ORDERING

Ordering Recommendations:

This test is intended only for patients receiving apixaban. Other direct anti-Xa inhibitors (e.g., rivaroxaban, edoxaban), as well as unfractionated heparin and low molecular weight heparins (e.g., enoxaparin, dalteparin, tinzaparin), may interfere with this test. Please check lab manual for appropriate tests specific to the anti-Xa medication patient is receiving.

Please note that routine therapeutic monitoring of apixaban level is not required because of the drug's relatively wide therapeutic index. Discussion with pharmacy regarding the timing of the last dose and expected drug half-life is typically helpful for evaluating the patient's state of anticoagulation.

Available Stat:

No. However, if the test is needed urgently, please call the Parnassus Hematology laboratory (415-353-1747).

Performing Lab:

Parnassus Hematology

Performed:

Monday - Friday 0800-1600
If the test is needed urgently, please call the Parnassus Hematology laboratory (415-353-1747).

Methodology:

Chromogenic anti-Factor Xa

Reported:

1-3 days

Additional Information:

Although the manufacturer of apixaban (Eliquis®, Bristol-Myers Squibb/Pfizer) does not recommend routine monitoring, typical drug levels in patients taking apixaban have been described (Clinical Pharmacokinetics 2019;58:12651279). Key findings include:

Patient population/clinical setting	Apixaban dose	C_{min} (ng/mL)	C_{max} (ng/mL)
		Samples 20-24 hours after dosing OR Before daily dose	Samples 3-4 hours after dosing
Prevention of stroke and systemic embolism in NVAF	5 mg twice daily	103 (41-230)	171 (91-321)
Prevention of recurrent DVT and PE	5 mg twice daily	63 (22-177)	132 (59-302)

NVAF=Non-Valvular Atrial Fibrillation; Median (5th-95th percentile)DVT=Deep Vein Thrombosis;
PE=Pulmonary Embolism
VTE=Venous Thromboembolism

*At UCSF, the limit of detection for apixaban is 29 ng/mL.

The STA- Liquid anti-Xa method is a one-step reaction where factor Xa is added to the plasma-substrate mixture. Two reactions take place simultaneously,
-Hydrolysis of the substrate by factor Xa
-Inhibition of factor Xa by the anti-Xa medication.
After the necessary period of time for the competitive reaction to reach equilibrium, the quantity of pNA that is released is inversely proportional to the concentration of anti-Xa medication present in the test medium.

Note that a similar methodology used for detecting other anti-Xa medications; however, the calibration curve is distinct for each drug. Therefore, while a positive result from this test (anti-Xa Apixaban level) indicates the presence of anti-Xa activity, the exact level of any drug other than apixaban cannot be assessed.

The appropriate therapeutic range will vary with the disease and the treatment intensity desired. An overview of recommendations is available in the laboratory manual for reference purposes only. Recommendations for apixaban therapy and monitoring are available through the Hematology consultation services: for adults pager 443-4276, for pediatrics pager 443-6966.

Synonyms:

- Eliquis
- Anti Factor Xa
- Anti Factor Xa

COLLECTION

Sample Type:
Citrated plasma

Collect:
Blue top

Amount to Collect:
2.7 mL blood

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Remarks:
Blue (2.7 mL) or Lt. Blue (1.8 mL) top filled to full extent of vacuum

Stability (from collection to initiation):
Room temperature 4 hours

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer.
Over-filled or under-filled tubes may be rejected.
Hemolysis, Lipemia, and Icterus may interfere with this assay.

PROCESSING

Test Code:
APIX

Performing Lab:
Parnassus Hematology

Specimen Preparation:
Deliver immediately to Hematology for processing.

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer.
Over-filled or under-filled tubes may be rejected.
Hemolysis, Lipemia, and Icterus may interfere with this assay.

Stability (from collection to initiation):
Room temperature 4 hours

RESULT INTERPRETATION

Units:
ng/mL

Reference Interval:
See Additional Information

Critical Values:
>500 ng/mL

Additional Information:

Although the manufacturer of apixaban (Eliquis®, Bristol-Myers Squibb/Pfizer) does not recommend routine monitoring, typical drug levels in patients taking apixaban have been described (Clinical Pharmacokinetics 2019;58:12651279). Key findings include:

Patient population/clinical setting	Apixaban dose	C_{min} (ng/mL)	C_{max} (ng/mL)
		Samples 20-24 hours after dosing OR Before daily dose	Samples 3-4 hours after dosing
Prevention of stroke and systemic embolism in NVAF	5 mg twice daily	103 (41-230)	171 (91-321)
Prevention of recurrent DVT and PE	5 mg twice daily	63 (22-177)	132 (59-302)

NVAF=Non-Valvular Atrial Fibrillation; Median (5th-95th percentile)DVT=Deep Vein Thrombosis;
PE=Pulmonary Embolism
VTE=Venous Thromboembolism

*At UCSF, the limit of detection for apixaban is 29 ng/mL.

The STA- Liquid anti-Xa method is a one-step reaction where factor Xa is added to the plasma-substrate mixture. Two reactions take place simultaneously,
-Hydrolysis of the substrate by factor Xa
-Inhibition of factor Xa by the anti-Xa medication.
After the necessary period of time for the competitive reaction to reach equilibrium, the quantity of pNA that is released is inversely proportional to the concentration of anti-Xa medication present in the test medium.

Note that a similar methodology used for detecting other anti-Xa medications; however, the calibration curve is distinct for each drug. Therefore, while a positive result from this test (anti-Xa Apixaban level) indicates the presence of anti-Xa activity, the exact level of any drug other than apixaban cannot be assessed.

The appropriate therapeutic range will vary with the disease and the treatment intensity desired. An overview of recommendations is available in the laboratory manual for reference purposes only. Recommendations for apixaban therapy and monitoring are available through the Hematology consultation services: for adults pager 443-4276, for pediatrics pager 443-6966.

ADMINISTRATIVE

CPT Codes:
80299

LDT or Modified FDA:
Yes

LOINC Codes:
74214-8

COMPLETE VIEW

Available Stat:
No. However, if the test is needed urgently, please call the Parnassus Hematology laboratory (415-353-1747).

Ordering Recommendations:
This test is intended only for patients receiving apixaban. Other direct anti-Xa inhibitors (e.g., rivaroxaban, edoxaban), as well as unfractionated heparin and low molecular weight heparins (e.g., enoxaparin, dalteparin, tinzaparin), may interfere with this test. Please check lab manual for appropriate tests specific to the anti-Xa medication patient is receiving.

Please note that routine therapeutic monitoring of apixaban level is not required because of the drug's relatively wide therapeutic index. Discussion with pharmacy regarding the timing of the last dose and expected drug half-life is typically helpful for evaluating the patient's state of anticoagulation.

Test Code:
APIX

Performing Lab:
Parnassus Hematology

Performed:
Monday - Friday 0800-1600
If the test is needed urgently, please call the Parnassus Hematology laboratory (415-353-1747).

Methodology:
Chromogenic anti-Factor Xa

Remarks:
Blue (2.7 mL) or Lt. Blue (1.8 mL) top filled to full extent of vacuum

Collect:
Blue top

Amount to Collect:
2.7 mL blood

Sample Type:
Citrated plasma

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer.
Over-filled or under-filled tubes may be rejected.
Hemolysis, Lipemia, and Icterus may interfere with this assay.

Specimen Preparation:
Deliver immediately to Hematology for processing.

Units:
ng/mL

Reference Interval:
See Additional Information

Critical Values:
>500 ng/mL

Synonyms:

- Eliquis
- Anti Factor Xa
- Anti Factor Xa

Stability (from collection to initiation):
Room temperature 4 hours

Reported:
1-3 days

Additional Information:

Although the manufacturer of apixaban (Eliquis®, Bristol-Myers Squibb/Pfizer) does not recommend routine monitoring, typical drug levels in patients taking apixaban have been described (Clinical Pharmacokinetics 2019;58:12651279). Key findings include:

Patient population/clinical setting	Apixaban dose	C_{min} (ng/mL)	C_{max} (ng/mL)
		Samples 20-24 hours after dosing OR Before daily dose	Samples 3-4 hours after dosing
Prevention of stroke and systemic embolism in NVAF	5 mg twice daily	103 (41-230)	171 (91-321)
Prevention of recurrent DVT and PE	5 mg twice daily	63 (22-177)	132 (59-302)

NVAF=Non-Valvular Atrial Fibrillation; Median (5th-95th percentile)DVT=Deep Vein Thrombosis;
PE=Pulmonary Embolism
VTE=Venous Thromboembolism

*At UCSF, the limit of detection for apixaban is 29 ng/mL.

The STA- Liquid anti-Xa method is a one-step reaction where factor Xa is added to the plasma-substrate mixture. Two reactions take place simultaneously,
-Hydrolysis of the substrate by factor Xa
-Inhibition of factor Xa by the anti-Xa medication.
After the necessary period of time for the competitive reaction to reach equilibrium, the quantity of pNA that is released is inversely proportional to the concentration of anti-Xa medication present in the test medium.

Note that a similar methodology used for detecting other anti-Xa medications; however, the calibration curve is distinct for each drug. Therefore, while a positive result from this test (anti-Xa Apixaban level) indicates the presence of anti-Xa activity, the exact level of any drug other than apixaban cannot be assessed.

The appropriate therapeutic range will vary with the disease and the treatment intensity desired. An overview of recommendations is available in the laboratory manual for reference purposes only. Recommendations for apixaban therapy and monitoring are available through the Hematology consultation services: for adults pager 443-4276, for pediatrics pager 443-6966.

CPT Codes:

80299

LDT or Modified FDA:

Yes

LOINC Codes:

74214-8

Anti-Xa (Fondaparinux level)

FONDA

ORDERING

Available Stat:
No

Performing Lab:
Parnassus Hematology

Performed:
Monday - Friday 0800-1600

Methodology:
Chromogenic anti-factor Xa

Reported:
1-3 days for routine requests

Additional Information:

Although the manufacturer DOES NOT provide recommendations for a therapeutic range, the manufacturer provides the following information regarding observed drug levels in individuals treated with fondaparinux (Prescribing information from Glaxo Smithkline, 2008). Values in these ranges may be expected when fondaparinux is measured.

Prophylactic dose: 2.5 mg, once daily.
Peak steady-state plasma concentration: 0.39-0.50 micrograms/mL (3 hours post-dose)
Minimum steady-state plasma concentration: 0.14-0.19 micrograms/mL.

Therapeutic dose: 5 mg (body weight <50 kg), 7.5 mg (body weight 50-100 kg) or 10 mg (body weight >100 kg) once daily.
Peak steady-state plasma concentration: 1.20-1.26 micrograms/mL (3 hours post dose)
Minimum steady-state plasma concentration: 0.46-0.62 micrograms/mL.

The manufacturer recommends that if during therapy with fondaparinux, unexpected changes in coagulation parameters or major bleeding occurs, fondaparinux should be discontinued.

Recommendations for fondaparinux therapy and monitoring are available through the UCSF Hematology consultation services: for adults pager 443-4276, for pediatrics pager 443-6966.

Synonyms:

- Arixtra
- Monitoring Anticoagulation
- Anti Factor 10a
- Anti Factor Xa

COLLECTION

Sample Type:
Plasma

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

Stability (from collection to initiation):
Room temperature 4 hours

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected.

PROCESSING

Test Code:
FONDA

Performing Lab:
Parnassus Hematology

Specimen Preparation:
Deliver immediately to Hematology for processing.

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected.

Stability (from collection to initiation):
Room temperature 4 hours

RESULT INTERPRETATION

Units:
µg/mL

Reference Interval:
See additional information

Critical Values:
> 1.26 µg/mL

Additional Information:

Although the manufacturer DOES NOT provide recommendations for a therapeutic range, the manufacturer provides the following information regarding observed drug levels in individuals treated with fondaparinux (Prescribing information from Glaxo Smithkline, 2008). Values in these ranges may be expected when fondaparinux is measured.

Prophylactic dose: 2.5 mg, once daily.
Peak steady-state plasma concentration: 0.39-0.50 micrograms/mL (3 hours post-dose)
Minimum steady-state plasma concentration: 0.14-0.19 micrograms/mL.

Therapeutic dose: 5 mg (body weight <50 kg), 7.5 mg (body weight 50-100 kg) or 10 mg (body weight >100 kg) once daily.
Peak steady-state plasma concentration: 1.20-1.26 micrograms/mL (3 hours post dose)
Minimum steady-state plasma concentration: 0.46-0.62 micrograms/mL.

The manufacturer recommends that if during therapy with fondaparinux, unexpected changes in coagulation parameters or major bleeding occurs, fondaparinux should be discontinued.

Recommendations for fondaparinux therapy and monitoring are available through the UCSF Hematology consultation services: for adults pager 443-4276, for pediatrics pager 443-6966.

ADMINISTRATIVE

CPT Codes:
80299

LDT or Modified FDA:
Yes

LOINC Codes:
49060-7

COMPLETE VIEW

Available Stat:
No

Test Code:
FONDA

Performing Lab:
Parnassus Hematology

Performed:
Monday - Friday 0800-1600

Methodology:
Chromogenic anti-factor Xa

Remarks:

1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL

Sample Type:
Plasma

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected.

Specimen Preparation:
Deliver immediately to Hematology for processing.

Units:
µg/mL

Reference Interval:
See additional information

Critical Values:
> 1.26 µg/mL

Synonyms:

- Arixtra
- Monitoring Anticoagulation
- Anti Factor 10a
- Anti Factor Xa

Stability (from collection to initiation):
Room temperature 4 hours

Reported:
1-3 days for routine requests

Additional Information:

Although the manufacturer DOES NOT provide recommendations for a therapeutic range, the manufacturer provides the following information regarding observed drug levels in individuals treated with fondaparinux (Prescribing information from Glaxo Smithkline, 2008). Values in these ranges may be expected when fondaparinux is measured.

Prophylactic dose: 2.5 mg, once daily.
Peak steady-state plasma concentration: 0.39-0.50 micrograms/mL (3 hours post-dose)
Minimum steady-state plasma concentration: 0.14-0.19 micrograms/mL.

Therapeutic dose: 5 mg (body weight <50 kg), 7.5 mg (body weight 50-100 kg) or 10 mg (body weight >100 kg) once daily.
Peak steady-state plasma concentration: 1.20-1.26 micrograms/mL (3 hours post dose)
Minimum steady-state plasma concentration: 0.46-0.62 micrograms/mL.

The manufacturer recommends that if during therapy with fondaparinux, unexpected changes in coagulation parameters or major bleeding occurs, fondaparinux should be discontinued.

Recommendations for fondaparinux therapy and monitoring are available through the UCSF Hematology consultation services: for adults pager 443-4276, for pediatrics pager 443-6966.

CPT Codes:
80299

LDT or Modified FDA:
Yes

LOINC Codes:
49060-7

Anti-Xa (Heparin level)

UNHEP

ORDERING

Ordering Recommendations:

This test is intended only for patients receiving unfractionated heparin by infusion. Other anti-Xa medications, such as low molecular weight heparins (e.g., enoxaparin, dalteparin, tinzaparin) and direct anti-Xa inhibitors (e.g., apixaban, rivaroxaban, edoxaban) may interfere with this test. Please check lab manual for appropriate tests specific to the anticoagulant the patient is receiving.

Available Stat:

Yes

Performing Lab:

Parnassus Hematology, Mission Bay Hematology

Performed:

24 hours per day, 7 days per week

Methodology:

Chromogenic

Reported:

1 hour from receipt in Hematology

Additional Information:

The utility of measuring heparin levels has been demonstrated in a few clinical settings. Patients receiving unfractionated heparin require heparin levels if there is heparin resistance (adults requiring more than 35,000 units/day) or if a lupus anticoagulant is present; in such conditions the PTT may not be an accurate indicator of anticoagulation.

The STA- Liquid anti-Xa method is a one-step reaction where factor Xa is added to the plasma-substrate mixture. Two reactions take place simultaneously,
-Hydrolysis of the substrate by factor Xa
-Inhibition of factor Xa by the heparin-antithrombin complex*.
After the necessary period of time for the competitive reaction to reach equilibrium, the quantity of pNA that is released is inversely proportional to the concentration of heparin present in the test medium.
*The heparin-antithrombin complex is made up from the heparin medication and the patient's endogenous antithrombin.

Note that a similar methodology used for detecting other anti-Xa medications; however, the calibration curve is distinct for each drug. Therefore, while a positive result from this test (anti-Xa Heparin level) indicates the presence of anti-Xa activity, the exact level of any drug other than unfractionated heparin cannot be assessed.

The appropriate therapeutic range will vary with the disease and the treatment intensity desired. An overview of recommendations is available on the UCSF Carelinks webpage for reference purposes only. Recommendations for therapy and monitoring are also available through the Hematology consultation services: for adults, pager 443-4276, for pediatrics pager 443-6966.

Synonyms:

- Anti-Xa Level

COLLECTION

Sample Type:

Blood

Collect:

Blue top filled to full extent of vacuum (3.2% sodium citrate)

Amount to Collect:

2 mL blood

Preferred Volume:

1 mL plasma

Minimum Volume:

0.5 mL plasma

Remarks:

Deliver specimen to lab immediately for processing

Stability (from collection to initiation):

2 hours

Storage/Transport Temperature:

Deliver whole blood at room temperature
Plasma acceptable on dry ice and stored -20 to -80C

Unacceptable Conditions:
Hemolysis, Icterus, Lipemia
Under-filled or Over-filled tubes
Clotted

PROCESSING

Test Code:
UNHEP

Performing Lab:
Parnassus Hematology, Mission Bay Hematology

Specimen Preparation:
Deliver sample immediately to Hematology Lab

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Hemolysis, Icterus, Lipemia
Under-filled or Over-filled tubes
Clotted

Stability (from collection to initiation):
2 hours

Storage/Transport Temperature:
Deliver whole blood at room temperature
Plasma acceptable on dry ice and stored -20 to -80C

RESULT INTERPRETATION

Units:
U/mL

Reference Interval:
Therapeutic:
UFH by infusion: 0.3 - 0.7 anti-Xa U/mL

Critical Values:
> 0.70 anti-Xa U/mL

Additional Information:
The utility of measuring heparin levels has been demonstrated in a few clinical settings. Patients receiving unfractionated heparin require heparin levels if there is heparin resistance (adults requiring more than 35,000 units/day) or if a lupus anticoagulant is present; in such conditions the PTT may not be an accurate indicator of anticoagulation.

The STA- Liquid anti-Xa method is a one-step reaction where factor Xa is added to the plasma-substrate mixture. Two reactions take place simultaneously,
-Hydrolysis of the substrate by factor Xa
-Inhibition of factor Xa by the heparin-antithrombin complex*.
After the necessary period of time for the competitive reaction to reach equilibrium, the quantity of pNA that is released is inversely proportional to the concentration of heparin present in the test medium.
*The heparin-antithrombin complex is made up from the heparin medication and the patient's endogenous antithrombin.

Note that a similar methodology used for detecting other anti-Xa medications; however, the calibration curve is distinct for each drug. Therefore, while a positive result from this test (anti-Xa Heparin level) indicates the presence of anti-Xa activity, the exact level of any drug other than unfractionated heparin cannot be assessed.

The appropriate therapeutic range will vary with the disease and the treatment intensity desired. An overview of recommendations is available on the UCSF Carelinks webpage for reference purposes only. Recommendations for therapy and monitoring are also available through the Hematology consultation services: for adults, pager 443-4276, for pediatrics pager 443-6966.

ADMINISTRATIVE

CPT Codes:
85520

LOINC Codes:
3274-8

COMPLETE VIEW

Available Stat:
Yes

Ordering Recommendations:
This test is intended only for patients receiving unfractionated heparin by infusion. Other anti-Xa medications, such as low molecular weight heparins (e.g., enoxaparin, dalteparin, tinzaparin) and direct anti-Xa inhibitors (e.g., apixaban, rivaroxaban, edoxaban) may interfere with this test. Please check lab manual for appropriate tests specific to the anticoagulant the patient is receiving.

Test Code:
UNHEP

Performing Lab:
Parnassus Hematology, Mission Bay Hematology

Performed:
24 hours per day, 7 days per week

Methodology:
Chromogenic

Remarks:
Deliver specimen to lab immediately for processing

Collect:
Blue top filled to full extent of vacuum (3.2% sodium citrate)

Amount to Collect:
2 mL blood

Sample Type:
Blood

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Hemolysis, Icterus, Lipemia
Under-filled or Over-filled tubes
Clotted

Specimen Preparation:
Deliver sample immediately to Hematology Lab

Units:
U/mL

Reference Interval:
Therapeutic:
UFH by infusion: 0.3 - 0.7 anti-Xa U/mL

Critical Values:
> 0.70 anti-Xa U/mL

Synonyms:

- Anti-Xa Level

Storage/Transport Temperature:
Deliver whole blood at room temperature
Plasma acceptable on dry ice and stored -20 to -80C

Stability (from collection to initiation):
2 hours

Reported:
1 hour from receipt in Hematology

Additional Information:

The utility of measuring heparin levels has been demonstrated in a few clinical settings. Patients receiving unfractionated heparin require heparin levels if there is heparin resistance (adults requiring more than 35,000 units/day) or if a lupus anticoagulant is present; in such conditions the PTT may not be an accurate indicator of anticoagulation.

The STA- Liquid anti-Xa method is a one-step reaction where factor Xa is added to the plasma-substrate mixture. Two reactions take place simultaneously,
-Hydrolysis of the substrate by factor Xa
-Inhibition of factor Xa by the heparin-antithrombin complex*.
After the necessary period of time for the competitive reaction to reach equilibrium, the quantity of pNA that is released is inversely proportional to the concentration of heparin present in the test medium.
*The heparin-antithrombin complex is made up from the heparin medication and the patient's endogenous antithrombin.

Note that a similar methodology used for detecting other anti-Xa medications; however, the calibration curve is distinct for each drug. Therefore, while a positive result from this test (anti-Xa Heparin level) indicates the presence of anti-Xa activity, the exact level of any drug other than unfractionated heparin cannot be assessed.

The appropriate therapeutic range will vary with the disease and the treatment intensity desired. An overview of recommendations is available on the UCSF Carelinks webpage for reference purposes only. Recommendations for therapy and monitoring are also available through the Hematology consultation services: for adults, pager 443-4276, for pediatrics pager 443-6966.

CPT Codes:

85520

LOINC Codes:

3274-8

Anti-Xa (Rivaroxaban level)

RVX

ORDERING

Ordering Recommendations:

*The heparin-antithrombin complex is made up from the heparin medication and the patient's endogenous antithrombin.

Note that a similar methodology used for detecting other anti-Xa medications; however, the calibration curve is distinct for each drug. Therefore, while a positive result from this test (anti-Xa Heparin level) indicates the presence of anti-Xa activity, the exact level of any drug other than unfractionated heparin cannot be assessed.

Available Stat:

No. However, if the test is needed urgently, please call the Parnassus Hematology laboratory (415-353-1747).

Performing Lab:

Parnassus Hematology

Performed:

Monday - Friday 0800-1600
If the test is needed urgently, please call the Parnassus Hematology laboratory (415-353-1747).

Methodology:

Chromogenic anti-Factor Xa

Reported:

1-3 days

Additional Information:

Although the manufacturer of rivaroxaban (Xarelto®, Bayer Healthcare AG) does not recommend routine monitoring, typical drug levels in patients taking rivaroxaban have been described (Clin Pharmacokinet. 2014;53:1-16. PMID: 23999929). Key findings include:

Patient population/clinical setting	Rivaroxaban dose	C_{trough} (ng/mL)	C_{max} (ng/mL)
		Samples 20-28 hours after dosing	Samples 2-4 hours after dosing
Stroke prevention in patients with AF (CL_{CR} >= mL/min)	20 mg per day	44 (12-137)	249 (184-343)
Stroke prevention in patients with AF (CL_{CR} 30-49 mL/min)	15 mg per day	57 (18-136)	229 (178-313)
DVT treatment (continued treatment)	20 mg per day	26 (6-87)	270 (189-419)

AF=Atrial Fibrillation; Median (5th-95th percentile)
DVT=Deep Vein Thrombosis

*At UCSF, the limit of detection for rivaroxaban is 25 ng/mL.

The STA- Liquid anti-Xa method is a one-step reaction where factor Xa is added to the plasma-substrate mixture. Two reactions take place simultaneously,
-Hydrolysis of the substrate by factor Xa
-Inhibition of factor Xa by the anti-Xa medication.
After the necessary period of time for the competitive reaction to reach equilibrium, the quantity of pNA that is released is inversely proportional to the concentration of anti-Xa medication present in the test medium.

Note that a similar methodology used for detecting other anti-Xa medications; however, the calibration curve is distinct for each drug. Therefore, while a positive result from this test (anti-Xa Rivaroxaban level) indicates the presence of anti-Xa activity, the exact level of any drug other than rivaroxaban cannot be assessed.

The appropriate therapeutic range will vary with the disease and the treatment intensity desired. An overview of recommendations is available in the laboratory manual for reference purposes only. Recommendations for rivaroxaban therapy and monitoring are available through the Hematology consultation services: for adults pager 443-4276, for pediatrics pager 443-6966.

Synonyms:

- Xarelto
- Monitoring Anticoagulation
- Anti Factor 10a
- Anti Factor Xa

COLLECTION

Sample Type:
Citrated plasma

Collect:
Blue (2.7 mL) or Lt. Blue (1.8 mL) top filled to full extent of vacuum

Amount to Collect:
2.7 or 1.8 mL blood

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

Stability (from collection to initiation):
Room temperature 4 hours

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer.

Over-filled or under-filled tubes may be rejected

PROCESSING

Test Code:
RVX

Performing Lab:
Parnassus Hematology

Specimen Preparation:
Deliver immediately to Hematology for processing.

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer.

Over-filled or under-filled tubes may be rejected

Stability (from collection to initiation):
Room temperature 4 hours

RESULT INTERPRETATION

Units:
ng/mL

Reference Interval:
See additional information

Critical Values:
> 500 ng/mL

Additional Information:

Although the manufacturer of rivaroxaban (Xarelto®, Bayer Healthcare AG) does not recommend routine monitoring, typical drug levels in patients taking rivaroxaban have been described (Clin Pharmacokinet. 2014;53:1-16. PMID: 23999929). Key findings include:

Patient population/clinical setting	Rivaroxaban dose	C_{trough} (ng/mL)	C_{max} (ng/mL)
		Samples 20-28 hours after dosing	Samples 2-4 hours after dosing
Stroke prevention in patients with AF (CL_{CR} >= mL/min)	20 mg per day	44 (12-137)	249 (184-343)
Stroke prevention in patients with AF (CL_{CR} 30-49 mL/min)	15 mg per day	57 (18-136)	229 (178-313)
DVT treatment (continued treatment)	20 mg per day	26 (6-87)	270 (189-419)

AF=Atrial Fibrillation; Median (5th-95th percentile)
DVT=Deep Vein Thrombosis

*At UCSF, the limit of detection for rivaroxaban is 25 ng/mL.

The STA- Liquid anti-Xa method is a one-step reaction where factor Xa is added to the plasma-substrate mixture. Two reactions take place simultaneously,
-Hydrolysis of the substrate by factor Xa
-Inhibition of factor Xa by the anti-Xa medication.
After the necessary period of time for the competitive reaction to reach equilibrium, the quantity of pNA that is released is inversely proportional to the concentration of anti-Xa medication present in the test medium.

Note that a similar methodology used for detecting other anti-Xa medications; however, the calibration curve is distinct for each drug. Therefore, while a positive result from this test (anti-Xa Rivaroxaban level) indicates the presence of anti-Xa activity, the exact level of any drug other than rivaroxaban cannot be assessed.

The appropriate therapeutic range will vary with the disease and the treatment intensity desired. An overview of recommendations is available in the laboratory manual for reference purposes only. Recommendations for rivaroxaban therapy and monitoring are available through the Hematology consultation services: for adults pager 443-4276, for pediatrics pager 443-6966.

ADMINISTRATIVE

CPT Codes:
80299

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No. However, if the test is needed urgently, please call the Parnassus Hematology laboratory (415-353-1747).

Ordering Recommendations:
*The heparin-antithrombin complex is made up from the heparin medication and the patient's endogenous antithrombin.

Note that a similar methodology used for detecting other anti-Xa medications; however, the calibration curve is distinct for each drug. Therefore, while a positive result from this test (anti-Xa Heparin level) indicates the presence of anti-Xa activity, the exact level of any drug other than unfractionated heparin cannot be assessed.

Test Code:
RVX

Performing Lab:
Parnassus Hematology

Performed:
Monday - Friday 0800-1600
If the test is needed urgently, please call the Parnassus Hematology laboratory (415-353-1747).

Methodology:
Chromogenic anti-Factor Xa

Remarks:

1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

Collect:

Blue (2.7 mL) or Lt. Blue (1.8 mL) top filled to full extent of vacuum

Amount to Collect:

2.7 or 1.8 mL blood

Sample Type:

Citrated plasma

Preferred Volume:

1 mL plasma

Minimum Volume:

0.5 mL plasma

Unacceptable Conditions:

Samples collected in outdated blue top vacutainer.

Over-filled or under-filled tubes may be rejected

Specimen Preparation:

Deliver immediately to Hematology for processing.

Units:

ng/mL

Reference Interval:

See additional information

Critical Values:

> 500 ng/mL

Synonyms:

- Xarelto
- Monitoring Anticoagulation
- Anti Factor 10a
- Anti Factor Xa

Stability (from collection to initiation):

Room temperature 4 hours

Reported:

1-3 days

Additional Information:

Although the manufacturer of rivaroxaban (Xarelto®, Bayer Healthcare AG) does not recommend routine monitoring, typical drug levels in patients taking rivaroxaban have been described (Clin Pharmacokinet. 2014;53:1-16. PMID: 23999929). Key findings include:

Patient population/clinical setting	Rivaroxaban dose	C_{trough} (ng/mL)	C_{max} (ng/mL)
		Samples 20-28 hours after dosing	Samples 2-4 hours after dosing
Stroke prevention in patients with AF (CL_{CR} >= mL/min)	20 mg per day	44 (12-137)	249 (184-343)
Stroke prevention in patients with AF (CL_{CR} 30-49 mL/min)	15 mg per day	57 (18-136)	229 (178-313)
DVT treatment (continued treatment)	20 mg per day	26 (6-87)	270 (189-419)

AF=Atrial Fibrillation; Median (5th-95th percentile)
DVT=Deep Vein Thrombosis

*At UCSF, the limit of detection for rivaroxaban is 25 ng/mL.

The STA- Liquid anti-Xa method is a one-step reaction where factor Xa is added to the plasma-substrate mixture. Two reactions take place simultaneously,
-Hydrolysis of the substrate by factor Xa
-Inhibition of factor Xa by the anti-Xa medication.
After the necessary period of time for the competitive reaction to reach equilibrium, the quantity of pNA that is released is inversely proportional to the concentration of anti-Xa medication present in the test medium.

Note that a similar methodology used for detecting other anti-Xa medications; however, the calibration curve is distinct for each drug. Therefore, while a positive result from this test (anti-Xa Rivaroxaban level) indicates the presence of anti-Xa activity, the exact level of any drug other than rivaroxaban cannot be assessed.

The appropriate therapeutic range will vary with the disease and the treatment intensity desired. An overview of recommendations is available in the laboratory manual for reference purposes only. Recommendations for rivaroxaban therapy and monitoring are available through the Hematology consultation services: for adults pager 443-4276, for pediatrics pager 443-6966.

CPT Codes:

80299

LDT or Modified FDA:

Yes

Anti-Xa Level (Low Molecular Weight Heparin)

LMHEP

ORDERING

Ordering Recommendations:

This test is intended only for patients receiving low molecular weight heparin (e.g., enoxaparin, dalteparin, tinzaparin). Other anti-Xa medications, such as unfractionated heparin and direct anti-Xa inhibitors (e.g., apixaban, rivaroxaban, edoxaban) may interfere with this test. Please check lab manual for appropriate tests specific to the anticoagulant the patient is receiving.

Available Stat:

Yes

Performing Lab:

Parnassus Hematology
Mission Bay Hematology

Performed:

Daily

Methodology:

Chromogenic

Reported:

STAT: 1 hour
Routine: 24 hours

Additional Information:

The utility of measuring LMW heparin levels is limited to a few clinical settings. Common indications for monitoring patients receiving LMW heparin include renal insufficiency, clinical obesity, weight < 50 kg or pregnancy.

The STA- Liquid anti-Xa method is aone-step reaction where factor Xa is added to the plasma-subsrate mixture. Two reactions take place simultaneously,
-Hydrolysis of the substrate by factor Xa
-Inhibition of factor Xa by the heparin-antithrombin complex*.
After the necessary period of time for the competitive reaction to reach equilibrium, the quantity of pNA that is released is inversely proportional to the concentration of heparin present in the test medium.
*The heparin-antithrombin complex is made up from the heparin medication and the patient's endogenous antithrombin.

Note that a similar methodology used for detecting other anti-Xa medications; however, the calibration curve is distinct for each drug. Therefore, while a positive result from this test (anti-Xa Low Molecular Weight Heparin level) indicates the presence of anti-Xa activity, the exact level of any drug other than low molecular weight heparin cannot be assessed.

The appropriate therapeutic range will vary with the specific medication, the disease, and the treatment intensity desired. An overview of recommendations is available on the UCSF Carelinks webpage for reference purposes only. Recommendations for therapy and monitoring are also available through the Hematology consultation services: for adults, pager 443-4276, for pediatrics pager 443-6966.

Synonyms:

- LMW
- LMWH

COLLECTION

Sample Type:

Plasma

Collect:

Blue top filled to full extent of vacuum (3.2% sodium citrate)

Amount to Collect:

See Preferred Volume

Preferred Volume:

1.0 mL plasma

Minimum Volume:

0.5 mL plasma

Remarks:

Deliver specimen to lab immediately for processing

Stability (from collection to initiation):

2 hours

Storage/Transport Temperature:

Deliver whole blood at room temperature
Plasma acceptable on dry ice and stored -20 to -80C

Unacceptable Conditions:
Hemolysis, Icterus, Lipemia
Under-filled or Over-filled tubes
Clotted

PROCESSING

Test Code:
LMHEP

Performing Lab:
Parnassus Hematology
Mission Bay Hematology

Specimen Preparation:
Deliver sample immediately to Hematology Lab

Preferred Volume:
1.0 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Hemolysis, Icterus, Lipemia
Under-filled or Over-filled tubes
Clotted

Stability (from collection to initiation):
2 hours

Storage/Transport Temperature:
Deliver whole blood at room temperature
Plasma acceptable on dry ice and stored -20 to -80C

RESULT INTERPRETATION

Units:
U/mL

Reference Interval:
Therapeutic (4 hours post dose):

Enoxaparin:
Q12 dosing 0.5-1.0 U/mL
Qday dosing 1.0-2.0 U/mL
Prophylactic dosing 0.2-0.4 U/mL

Dalteparin:
Q12 dosing 0.6 U/mL
Qday dosing 1.05 U/mL

Tinzaparin:
Qday dosing 0.85 U/mL

These are general guidelines only. Detailed recommendations for heparin therapy and monitoring are available through the the Hematology consultation services: for adults, pager 443-4276, for pediatrics, pager 443-6966.

Critical Values:
> 2.0 U/mL

Additional Information:

The utility of measuring LMW heparin levels is limited to a few clinical settings. Common indications for monitoring patients receiving LMW heparin include renal insufficiency, clinical obesity, weight < 50 kg or pregnancy.

The STA- Liquid anti-Xa method is aone-step reaction where factor Xa is added to the plasma-subsrate mixture. Two reactions take place simultaneously,
-Hydrolysis of the substrate by factor Xa
-Inhibition of factor Xa by the heparin-antithrombin complex*.
After the necessary period of time for the competitive reaction to reach equilibrium, the quantity of pNA that is released is inversely proportional to the concentration of heparin present in the test medium.
*The heparin-antithrombin complex is made up from the heparin medication and the patient's endogenous antithrombin.

Note that a similar methodology used for detecting other anti-Xa medications; however, the calibration curve is distinct for each drug. Therefore, while a positive result from this test (anti-Xa Low Molecular Weight Heparin level) indicates the presence of anti-Xa activity, the exact level of any drug other than low molecular weight heparin cannot be assessed.

The appropriate therapeutic range will vary with the specific medication, the disease, and the treatment intensity desired. An overview of recommendations is available on the UCSF Carelinks webpage for reference purposes only. Recommendations for therapy and monitoring are also available through the Hematology consultation services: for adults, pager 443-4276, for pediatrics pager 443-6966.

ADMINISTRATIVE

CPT Codes:
85520

LOINC Codes:
3271-4

COMPLETE VIEW

Available Stat:
Yes

Ordering Recommendations:
This test is intended only for patients receiving low molecular weight heparin (e.g., enoxaparin, dalteparin, tinzaparin). Other anti-Xa medications, such as unfractionated heparin and direct anti-Xa inhibitors (e.g., apixaban, rivaroxaban, edoxaban) may interfere with this test. Please check lab manual for appropriate tests specific to the anticoagulant the patient is receiving.

Test Code:
LMHEP

Performing Lab:
Parnassus Hematology
Mission Bay Hematology

Performed:
Daily

Methodology:
Chromogenic

Remarks:
Deliver specimen to lab immediately for processing

Collect:
Blue top filled to full extent of vacuum (3.2% sodium citrate)

Amount to Collect:
See Preferred Volume

Sample Type:
Plasma

Preferred Volume:
1.0 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Hemolysis, Icterus, Lipemia
Under-filled or Over-filled tubes
Clotted

Specimen Preparation:
Deliver sample immediately to Hematology Lab

Units:
U/mL

Reference Interval:

Therapeutic (4 hours post dose):

Enoxaparin:
Q12 dosing 0.5-1.0 U/mL
Qday dosing 1.0-2.0 U/mL
Prophylactic dosing 0.2-0.4 U/mL

Dalteparin:
Q12 dosing 0.6 U/mL
Qday dosing 1.05 U/mL

Tinzaparin:
Qday dosing 0.85 U/mL

These are general guidelines only. Detailed recommendations for heparin therapy and monitoring are available through the the Hematology consultation services: for adults, pager 443-4276, for pediatrics, pager 443-6966.

Critical Values:

> 2.0 U/mL

Synonyms:

- LMW
- LMWH

Storage/Transport Temperature:

Deliver whole blood at room temperature
Plasma acceptable on dry ice and stored -20 to -80C

Stability (from collection to initiation):

2 hours

Reported:

STAT: 1 hour
Routine: 24 hours

Additional Information:

The utility of measuring LMW heparin levels is limited to a few clinical settings. Common indications for monitoring patients receiving LMW heparin include renal insufficiency, clinical obesity, weight < 50 kg or pregnancy.

The STA- Liquid anti-Xa method is aone-step reaction where factor Xa is added to the plasma-subsrate mixture. Two reactions take place simultaneously,
-Hydrolysis of the substrate by factor Xa
-Inhibition of factor Xa by the heparin-antithrombin complex*.
After the necessary period of time for the competitive reaction to reach equilibrium, the quantity of pNA that is released is inversely proportional to the concentration of heparin present in the test medium.
*The heparin-antithrombin complex is made up from the heparin medication and the patient's endogenous antithrombin.

Note that a similar methodology used for detecting other anti-Xa medications; however, the calibration curve is distinct for each drug. Therefore, while a positive result from this test (anti-Xa Low Molecular Weight Heparin level) indicates the presence of anti-Xa activity, the exact level of any drug other than low molecular weight heparin cannot be assessed.

The appropriate therapeutic range will vary with the specific medication, the disease, and the treatment intensity desired. An overview of recommendations is available on the UCSF Carelinks webpage for reference purposes only. Recommendations for therapy and monitoring are also available through the Hematology consultation services: for adults, pager 443-4276, for pediatrics pager 443-6966.

CPT Codes:

85520

LOINC Codes:

3271-4

Apolipoprotein B

APOB

ORDERING

Available Stat:
No

Performing Lab:
Quest

Performed:
Monday - Saturday

Methodology:
Nephelometry

Reported:
2-4 days

Additional Information:
Apolipoprotein B (APO B) has been reported to be a powerful indicator of CAD. In some patients with CAD, APO B is elevated even in the presence of normal LDL cholesterol.

COLLECTION

Sample Type:
Serum

Collect:
Gold or red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature: 7 days
Refrigerated: 10 days
Frozen: 90 days

Storage/Transport Temperature:
Frozen

Unacceptable Conditions:
Grossly lipemic

PROCESSING

Test Code:
APOB

Sendout:
Yes

Performing Lab:
Quest

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Grossly lipemic

Stability (from collection to initiation):
Room temperature: 7 days
Refrigerated: 10 days
Frozen: 90 days

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:

Reference Range

Male	52-109 mg/dL
Female	49-103 mg/dL

Risk Category

	Male	Female
Optimal	< 80 mg/dL	< 80 mg/dL
Moderate	80 - 119 mg/dL	80 - 119 mg/dL
High	>= 120 mg/dL	>= 120 mg/dL

Additional Information:
Apolipoprotein B (APO B) has been reported to be a powerful indicator of CAD. In some patients with CAD, APO B is elevated even in the presence of normal LDL cholesterol.

ADMINISTRATIVE

CPT Codes:
82172

LOINC Codes:
1884-6

COMPLETE VIEW

Available Stat:
No

Test Code:
APOB

Performing Lab:
Quest

Sendout:
Yes

Performed:
Monday - Saturday

Methodology:
Nephelometry

Collect:
Gold or red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Grossly lipemic

Units:
mg/dL

Reference Interval:

Reference Range

Male	52-109 mg/dL
Female	49-103 mg/dL

Risk Category

	Male	Female
Optimal	< 80 mg/dL	< 80 mg/dL
Moderate	80 - 119 mg/dL	80 - 119 mg/dL
High	>= 120 mg/dL	>= 120 mg/dL

Storage/Transport Temperature:
Frozen

Stability (from collection to initiation):
Room temperature: 7 days
Refrigerated: 10 days
Frozen: 90 days

Reported:
2-4 days

Additional Information:
Apolipoprotein B (APO B) has been reported to be a powerful indicator of CAD. In some patients with CAD, APO B is elevated even in the presence of normal LDL cholesterol.

CPT Codes:
82172

LOINC Codes:
1884-6

Apolipoprotein E (*APOE*) Genotyping, Alzheimer Disease Risk

APOEZ

ORDERING

Ordering Recommendations:
Supports a clinical diagnosis of Alzheimer disease (AD) in symptomatic individuals. Use for AD risk assessment only. Genetic counseling and informed consent are strongly recommended prior to ordering and post test to discuss results.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Varies

Methodology:
Polymerase Chain Reaction (PCR)/Fluorescence Monitoring

Reported:
2-7 days

Synonyms:

- Alzheimer's
- Alzheimer's
- Alzheimers
- APOE
- ApoE 2 mutations
- ApoE Alzheimer Risk
- ApoLipoprotein E Genotype

COLLECTION

Sample Type:
Whole blood

Collect:
Lavender (EDTA), Pink (K_2EDTA), or Yellow (ACD Solution A or B).

Amount to Collect:
3 mL

Preferred Volume:
3 mL

Minimum Volume:
1 mL

Remarks:
Testing of fetal specimens or specimens from patients under the age of 18 years is not offered.

Stability (from collection to initiation):
Ambient: 72 hours; Refrigerated: 1 week; Frozen: 1 month.

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Plasma or serum. Heparinized specimens. Frozen specimens in glass collection tubes.

PROCESSING

Test Code:
APOEZ

ARUP Test Code:
2013341

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transport 3 mL whole blood. (Min: 1 mL)

Additional Processing Instructions:
Do not aliquot. Send sample refrigerated to CB. Order ARUP test code 2013341.

Preferred Volume:
3 mL

Minimum Volume:
1 mL

Unacceptable Conditions:
Plasma or serum. Heparinized specimens. Frozen specimens in glass collection tubes.

Stability (from collection to initiation):
Ambient: 72 hours; Refrigerated: 1 week; Frozen: 1 month.

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:
Homozygous apo e3 (e3/e3): This genotype is the most common (normal) genotype.

Interpretive Data:
Refer to Report

Counseling and informed consent are recommended for genetic testing. Consent forms are available online.

ADMINISTRATIVE

CPT Codes:
81401

LOINC:

- 31208-2
- 42315-2

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Supports a clinical diagnosis of Alzheimer disease (AD) in symptomatic individuals. Use for AD risk assessment only. Genetic counseling and informed consent are strongly recommended prior to ordering and post test to discuss results.

Test Code:
APOEZ

ARUP Test Code:
2013341

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Varies

Methodology:
Polymerase Chain Reaction (PCR)/Fluorescence Monitoring

Remarks:
Testing of fetal specimens or specimens from patients under the age of 18 years is not offered.

Collect:
Lavender (EDTA), Pink (K_2EDTA), or Yellow (ACD Solution A or B).

Amount to Collect:
3 mL

Sample Type:
Whole blood

Preferred Volume:
3 mL

Minimum Volume:
1 mL

Unacceptable Conditions:
Plasma or serum. Heparinized specimens. Frozen specimens in glass collection tubes.

Specimen Preparation:
Transport 3 mL whole blood. (Min: 1 mL)

Additional Processing Instructions:
Do not aliquot. Send sample refrigerated to CB. Order ARUP test code 2013341.

Reference Interval:
Homozygous apo e3 (e3/e3): This genotype is the most common (normal) genotype.

Interpretive Data:
Refer to Report

Counseling and informed consent are recommended for genetic testing. Consent forms are available online.

Synonyms:

- Alzheimer's
- Alzheimer's
- Alzheimers
- APOE
- ApoE 2 mutations
- ApoE Alzheimer Risk
- ApoLipoprotein E Genotype

Storage/Transport Temperature:
Refrigerated.

Stability (from collection to initiation):
Ambient: 72 hours; Refrigerated: 1 week; Frozen: 1 month.

Reported:
2-7 days

CPT Codes:
81401

LOINC:

- 31208-2
- 42315-2

Apolipoprotein E (*APOE*) Genotyping, Cardiovascular Risk

APOEC

ORDERING

Ordering Recommendations:
Use to provide supporting evidence for a diagnosis of type III hyperlipoproteinemia for evaluation of premature coronary heart disease.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Varies

Methodology:
Polymerase Chain Reaction (PCR)/Fluorescence Monitoring

Reported:
2-7 days

Synonyms:

- APOE
- ApoE 2 mutations
- ApoE cardiac risk
- ApoLipoprotein E Genotype

COLLECTION

Sample Type:
Whole blood

Collect:
Lavender (EDTA), Pink (K_2EDTA), or Yellow (ACD Solution A or B).

Amount to Collect:
3 mL

Preferred Volume:
3 mL

Minimum Volume:
1 mL

Remarks:
This test is not recommended for nonsymptomatic patients under 18 years of age.

Stability (from collection to initiation):
Ambient: 72 hours; Refrigerated: 1 week; Frozen: 1 month

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Plasma or serum. Heparinized specimens. Frozen specimens in glass collection tubes.

PROCESSING

Test Code:
APOEC

ARUP Test Code:
2013337

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transport 3 mL whole blood. (Min: 1 mL)

Additional Processing Instructions:
Do not aliquot specimen. Transport to CB refrigerated. Order ARUP test code 2013337.

Preferred Volume:
3 mL

Minimum Volume:
1 mL

Unacceptable Conditions:
Plasma or serum. Heparinized specimens. Frozen specimens in glass collection tubes.

Stability (from collection to initiation):
Ambient: 72 hours; Refrigerated: 1 week; Frozen: 1 month

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:
Homozygous APOE e3 (e3/e3): This genotype is the most common (normal) genotype.

Interpretive Data:
Refer to Report

Counseling and informed consent are recommended for genetic testing. Consent forms are available online.

ADMINISTRATIVE

CPT Codes:
81401

LOINC:

- 34438-2
- 31208-2

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Use to provide supporting evidence for a diagnosis of type III hyperlipoproteinemia for evaluation of premature coronary heart disease.

Test Code:
APOEC

ARUP Test Code:
2013337

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Varies

Methodology:
Polymerase Chain Reaction (PCR)/Fluorescence Monitoring

Remarks:
This test is not recommended for nonsymptomatic patients under 18 years of age.

Collect:
Lavender (EDTA), Pink (K_2EDTA), or Yellow (ACD Solution A or B).

Amount to Collect:
3 mL

Sample Type:
Whole blood

Preferred Volume:
3 mL

Minimum Volume:
1 mL

Unacceptable Conditions:
Plasma or serum. Heparinized specimens. Frozen specimens in glass collection tubes.

Specimen Preparation:
Transport 3 mL whole blood. (Min: 1 mL)

Additional Processing Instructions:
Do not aliquot specimen. Transport to CB refrigerated. Order ARUP test code 2013337.

Reference Interval:
Homozygous APOE e3 (e3/e3): This genotype is the most common (normal) genotype.

Interpretive Data:
Refer to Report

Counseling and informed consent are recommended for genetic testing. Consent forms are available online.

Synonyms:

- APOE
- ApoE 2 mutations
- ApoE cardiac risk
- ApoLipoprotein E Genotype

Storage/Transport Temperature:
Refrigerated.

Stability (from collection to initiation):
Ambient: 72 hours; Refrigerated: 1 week; Frozen: 1 month

Reported:
2-7 days

CPT Codes:
81401

LOINC:

- 34438-2
- 31208-2

Apt Test

APT

ORDERING

Approval Required:
Yes, contact Mission Bay Hematology at x6-0194

Available Stat:
No

Performing Lab:
Mission Bay Hematology

Performed:
Test available 24 hours per day 7 days per week

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
For identification of swallowed maternal blood. Performed on stool, gastric aspirate or vomitus from infants within 3 days of birth.

COLLECTION

Sample Type:
Visibly bloody (not tarry) specimen and if possible, include a heparinized capillary tube of the patient's blood to use as control.

Collect:
Clean container for stool aspirate or vomitus; and if possible, include a heparinized capillary tubes of the patient's blood to use as control.

PROCESSING

Test Code:
APT

Performing Lab:
Mission Bay Hematology

RESULT INTERPRETATION

Reference Interval:
Adult

Additional Information:
For identification of swallowed maternal blood. Performed on stool, gastric aspirate or vomitus from infants within 3 days of birth.

ADMINISTRATIVE

CPT Codes:
83033

LOINC Codes:
40721-3

COMPLETE VIEW

Approval Required:
Yes, contact Mission Bay Hematology at x6-0194

Available Stat:
No

Test Code:
APT

Performing Lab:
Mission Bay Hematology

Performed:
Test available 24 hours per day 7 days per week

Collect:
Clean container for stool aspirate or vomitus; and if possible, include a heparinized capillary tubes of the patient's blood to use as control.

Sample Type:
Visibly bloody (not tarry) specimen and if possible, include a heparinized capillary tube of the patient's blood to use as control.

Reference Interval:
Adult

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
For identification of swallowed maternal blood. Performed on stool, gastric aspirate or vomitus from infants within 3 days of birth.

CPT Codes:
83033

LOINC Codes:
40721-3

Argatroban Assay

ARGA

ORDERING

Approval Required:
No, except for testing outside of stated test availability, contact Hematology at x31747

Available Stat:
No

Performing Lab:
Parnassus Hematology

Performed:
Monday - Friday 0800-1600. Approval required for testing outside of these hours.

Methodology:
Mechanical clot detection asay

Reported:
1-3 days

Additional Information:

The information contained herein is applicable to patients receiving argatroban in the setting of heparin induced thrombocytopenia. If argatroban is being utilized in other settings, including percutaneous coronary interventions, it is suggested that the Hematology Consultation service (pager: 443-4276) and a physician in the coagulation laboratory (353-1747) be contacted.

Argatroban is usually monitored by the activated PTT. Rarely, however, plasma argatroban levels should be measured to give a more accurate estimate of clinical anticoagulation.

Lupus anticoagulants can prolong the PTT at baseline, or impact the PTT after a patient has begun heparin therapy. If a patient being treated with argatroban is known or suspected to have a lupus anticoagulant, an argatroban level and an aPTT should be sent simultaneously. If review of results of simultaneous argatroban and PTT measurements indicates that the patient's lupus anticoagulant is causing an artifactual PTT prolongation, subsequent monitoring with argatroban levels is indicated.

The manufacturer of argatroban, GlaxoSmithKline, provides complete prescribing information on its website: https://www.accessdata.fda.gov/drugsatfda_docs/label/2008/020883s014lbl.pdf, including information on the association of plasma argatroban levels and the activated PTT. A portion of the relevant information from this March 2009 document is summarized in the following information:

"Laboratory Tests: Anticoagulation effects associated with Argatroban infusion at doses up to 40 mcg/kg/min correlate with increases of the activated partial thromboplastin time (aPTT)."

"Dosage Adjustment: After the initial dose of Argatroban, the dose can be adjusted as clinically indicated (not to exceed 10 mcg/kg/min), until the steady-state aPTT is 1.5 to 3 times the initial baseline value (not to exceed 100 seconds)"

Patients for whom a lupus anticoagulant influences the PTT must be monitored with argatroban levels. Therapeutic levels are not recommended by the manufacturer, but the manufacturer does provide a graph that shows a relationship among representative PTT levels, ACT levels, infusion rates, and plasma Argatroban levels:

In Figure 1.Relationship at Steady State Between Argatroban Dose, Plasma Argatroban Concentration and Anticoagulant Effect: A 0.4 microgram/mL argatroban level corresponded to approximately 1.6x the baseline PTT whereas a 2.0 microgram/mL argatroban level corresponded to approximately 2.6x the baseline PTT.

At UCSF we have assessed the sensitivity of our current PTT reagent to argatroban in May 2020. In plasma calibrators containing argatroban, we observed that 0.56 microgram/mL argatroban resulted in a PTT 1.8x baseline, 1.08 microgram/mL resulted in a PTT 2.2x baseline, 1.58 microgram/mL resulted in a PTT 2.5x baseline, and 2.07 microgram/mL resulted in a PTT 2.8x baseline. These results are generally similar to the information provided by the manufacturer and to the results of prior UCSF ex vivo spiking studies (performed in 2006, 2009, 2013, 2019).

On the basis of the information available, argatroban levels of 0.5-2.0 micrograms/mL can be considered therapeutic. These levels corresponded to 1.6x-2.7x baseline PTT in plasma without a lupus anticoagulant, which is within the manufacturer's recommended therapeutic PTT of 1.5x-3.0x patient baseline.

For adult patients without lupus anticoagulants an argatroban order form is available and should be utilized. The therapeutic PTT as of August 2017 was 52-67.9 seconds. For patients in whom the PTT cannot be used for monitoring, a derivative algorithm, based on a therapeutic target of 0.5-2.0 micrograms/mL, should be used for monitoring and dose adjustment, as clinically indicated. It is suggested that the Hematology Consultation service (415-443-4276) be contacted for recommendations regarding an appropriate algorithm for monitoring and dose adjustment in these patients.

The presence of heparin will interfere with the argatroban assay and can produce an erroneously elevated argatroban test result.

Synonyms:

- Direct thrombin inhibitor

COLLECTION

Sample Type:
Citrated plasma

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Preferred Volume:
1.0 mL plasma

Minimum Volume:
0.5 mL plasma

Remarks:
1. Peripheral stick required as heparin will interfere with the test.

2. Collect 1 blue top filled to full extent of vacuum (2.7 mL blood). Check the expiration date on the label of the blue top vacutainer before drawing the patient.

3. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.

4. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.

5. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

6. For patients with Hct's >= 55%, please contact Hematology (415-353-1747) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Stability (from collection to initiation):
4 hours

Unacceptable Conditions:
QNS, hemolyzed or clotted sample.

PROCESSING

Test Code:
ARGA

Performing Lab:
Parnassus Hematology

Specimen Preparation:
Deliver sample immediately to Hematology for processing

Preferred Volume:
1.0 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
QNS, hemolyzed or clotted sample.

Stability (from collection to initiation):
4 hours

RESULT INTERPRETATION

Units:
µg/mL (mcg/mL)

Reference Interval:
Therapeutic anticoagulation: 0.5-2.0 µg/mL (mcg/mL)

Note: these values may not be applicable to intra-operative anticoagulation. See 'Additional information'

Critical Values:
> 2.0 µg/mL

Additional Information:

The information contained herein is applicable to patients receiving argatroban in the setting of heparin induced thrombocytopenia. If argatroban is being utilized in other settings, including percutaneous coronary interventions, it is suggested that the Hematology Consultation service (pager: 443-4276) and a physician in the coagulation laboratory (353-1747) be contacted.

Argatroban is usually monitored by the activated PTT. Rarely, however, plasma argatroban levels should be measured to give a more accurate estimate of clinical anticoagulation.

Lupus anticoagulants can prolong the PTT at baseline, or impact the PTT after a patient has begun heparin therapy. If a patient being treated with argatroban is known or suspected to have a lupus anticoagulant, an argatroban level and an aPTT should be sent simultaneously. If review of results of simultaneous argatroban and PTT measurements indicates that the patient's lupus anticoagulant is causing an artifactual PTT prolongation, subsequent monitoring with argatroban levels is indicated.

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The presence of heparin will interfere with the argatroban assay and can produce an erroneously elevated argatroban test result.

ADMINISTRATIVE

CPT Codes:
85130

LDT or Modified FDA:
Yes

COMPLETE VIEW

Approval Required:
No, except for testing outside of stated test availability, contact Hematology at x31747

Available Stat:
No

Test Code:
ARGA

Performing Lab:
Parnassus Hematology

Performed:
Monday - Friday 0800-1600. Approval required for testing outside of these hours.

Methodology:
Mechanical clot detection asay

Remarks:
1. Peripheral stick required as heparin will interfere with the test.

2. Collect 1 blue top filled to full extent of vacuum (2.7 mL blood). Check the expiration date on the label of the blue top vacutainer before drawing the patient.

3. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.

4. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.

5. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

6. For patients with Hct's >= 55%, please contact Hematology (415-353-1747) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Sample Type:
Citrated plasma

Preferred Volume:
1.0 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
QNS, hemolyzed or clotted sample.

Specimen Preparation:
Deliver sample immediately to Hematology for processing

Units:
µg/mL (mcg/mL)

Reference Interval:
Therapeutic anticoagulation: 0.5-2.0 µg/mL (mcg/mL)

Note: these values may not be applicable to intra-operative anticoagulation. See 'Additional information'

Critical Values:
> 2.0 µg/mL

Synonyms:

- Direct thrombin inhibitor

Stability (from collection to initiation):
4 hours

Reported:
1-3 days

Additional Information:

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The presence of heparin will interfere with the argatroban assay and can produce an erroneously elevated argatroban test result.

CPT Codes:
85130

LDT or Modified FDA:
Yes

Arginine Vasopressin Hormone

AVP

ORDERING

Available Stat:
No

Performing Lab:
ARUP

Performed:
Mon, Wed, Fri

Methodology:
Quantitative Radioimmunoassay

Reported:
3-11 days

Synonyms:

- ADH
- Arginine vasopressin
- AVP
- ADH, Plasma
- Antidiuretic Hormone
- Antidiuretic Hormone, Plasma
- Arginine Vasopressin, Plasma
- AVH, Plasma
- Diabetes Insipidus
- SIADH
- Vasopressin
- Vasopressin/ADH

COLLECTION

Sample Type:
EDTA Plasma

Collect:
Lavender (EDTA) or pink (K_2EDTA).

Amount to Collect:
12 mL blood

Preferred Volume:
6 mL plasma

Minimum Volume:
2.5 mL plasma

Stability (from collection to initiation):
After separation from cells: Ambient: 2 hours; Refrigerated: Unacceptable; Frozen: 1 month

Storage/Transport Temperature:
CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

Unacceptable Conditions:
Non-frozen specimens.

PROCESSING

Test Code:
AVP

ARUP Test Code:
0070027

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate plasma from cells ASAP or within 2 hours of collection. Transfer 6 mL plasma to ARUP Standard Transport Tubes and freeze immediately. (Min: 2.5 mL)

Preferred Volume:
6 mL plasma

Minimum Volume:
2.5 mL plasma

Unacceptable Conditions:
Non-frozen specimens.

Stability (from collection to initiation):
After separation from cells: Ambient: 2 hours; Refrigerated: Unacceptable; Frozen: 1 month

Storage/Transport Temperature:
CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

RESULT INTERPRETATION

Reference Interval:
Effective May 21, 2012
0.0-6.9 pg/mL

Interpretive Data:
This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:
84588

LOINC:

- 3126-0

COMPLETE VIEW

Available Stat:
No

Test Code:
AVP

ARUP Test Code:
0070027

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Mon, Wed, Fri

Methodology:
Quantitative Radioimmunoassay

Collect:
Lavender (EDTA) or pink (K_2EDTA).

Amount to Collect:
12 mL blood

Sample Type:
EDTA Plasma

Preferred Volume:
6 mL plasma

Minimum Volume:
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Unacceptable Conditions:
Non-frozen specimens.

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Synonyms:

- ADH
- Arginine vasopressin
- AVP
- ADH, Plasma
- Antidiuretic Hormone
- Antidiuretic Hormone, Plasma
- Arginine Vasopressin, Plasma
- AVH, Plasma
- Diabetes Insipidus
- SIADH
- Vasopressin
- Vasopressin/ADH

Storage/Transport Temperature:

CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

Stability (from collection to initiation):

After separation from cells: Ambient: 2 hours; Refrigerated: Unacceptable; Frozen: 1 month

Reported:

3-11 days

CPT Codes:

84588

LOINC:

- 3126-0

Arsenic, 24 hour urine

ASU

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
ICP/MS

Reported:
Test run Tuesday-Saturday. Turnaround: 2-5 days.

Additional Information:
To convert µg/L to µmol/L (SI units) multiply by 0.0133.

Synonyms:

- As
- AS

COLLECTION

Patient Preparation:
The patient should not eat crab, lobster, shellfish, shrimp or bottom-feeders such as flounder for at least 3 days prior to specimen collection.

Sample Type:
24 hour urine collection

Collect:
Acid Wash Container Required

Amount to Collect:
Entire 24 hour urine output

Preferred Volume:
10 mL urine

Minimum Volume:
5 mL urine

PROCESSING

Test Code:
ASU

Test Group:
Arsenic

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Follow the detailed processing instructions for Trace Metal Analysis. Refrigerate 10 mL aliquot. Order Quest #36433

Preferred Volume:
10 mL urine

Minimum Volume:
5 mL urine

RESULT INTERPRETATION

Units:
µg/L (mcg/L)

Reference Interval:
< 81 µg/L (Varies w/diet)

Additional Information:
To convert µg/L to µmol/L (SI units) multiply by 0.0133.

ADMINISTRATIVE

CPT Codes:
82175-90

LOINC Codes:
21074-0

COMPLETE VIEW

Available Stat:
No

Test Code:
ASU

Test Group:
Arsenic

Performing Lab:
Quest

Sendout:
Yes

Methodology:
ICP/MS

Patient Preparation:
The patient should not eat crab, lobster, shellfish, shrimp or bottom-feeders such as flounder for at least 3 days prior to specimen collection.

Collect:
Acid Wash Container Required

Amount to Collect:
Entire 24 hour urine output

Sample Type:
24 hour urine collection

Preferred Volume:
10 mL urine

Minimum Volume:
5 mL urine

Specimen Preparation:
Follow the detailed processing instructions for Trace Metal Analysis. Refrigerate 10 mL aliquot. Order Quest #36433

Units:
µg/L (mcg/L)

Reference Interval:
< 81 µg/L (Varies w/diet)

Synonyms:

- As
- AS

Reported:
Test run Tuesday-Saturday. Turnaround: 2-5 days.

Additional Information:
To convert µg/L to µmol/L (SI units) multiply by 0.0133.

CPT Codes:
82175-90

LOINC Codes:
21074-0

Arsenic, blood

ASB

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Inductively coupled Plasma Mass Spectroscopy

Reported:
Test run Tuesday-Thursday. Turnaround: 2-7 days.

Additional Information:
To convert µg/L to µmol/L (SI units) multiply by 0.0133.

Synonyms:

- As
- AS
- heavy metal toxicity
- heavy metal poisoning
- heavy metals

COLLECTION

Patient Preparation:
Patient should refrain from eating seafood and taking herbal supplements at least 3 days prior to sample collection.

Sample Type:
EDTA whole blood

Collect:
Navy blue top (EDTA) tube

Amount to Collect:
4 mL blood

Preferred Volume:
4 mL blood

Minimum Volume:
2 mL blood

Remarks:
To avoid contamination use powderless gloves during collection. Mix well, inverting gently 5x.

Stability (from collection to initiation):
Room temp or refrigerated: 10 days

PROCESSING

Test Code:
ASB

Test Group:
Arsenic

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Follow the detailed processing instructions for Trace Metal Analysis. Do not centrifuge or transfer to another container. Refrigerate. Order Quest # 269X

Preferred Volume:
4 mL blood

Minimum Volume:
2 mL blood

Stability (from collection to initiation):
Room temp or refrigerated: 10 days

RESULT INTERPRETATION

Units:
µg/L (mcg/L)

Reference Interval:
<= 60 µg/L

Critical Values:
Quest Priority-2: > 60 µg/L

Additional Information:
To convert µg/L to µmol/L (SI units) multiply by 0.0133.

ADMINISTRATIVE

CPT Codes:
82175-90

LOINC Codes:
5583-0

COMPLETE VIEW

Available Stat:
No

Test Code:
ASB

Test Group:
Arsenic

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Inductively coupled Plasma Mass Spectroscopy

Patient Preparation:
Patient should refrain from eating seafood and taking herbal supplements at least 3 days prior to sample collection.

Remarks:
To avoid contamination use powderless gloves during collection. Mix well, inverting gently 5x.

Collect:
Navy blue top (EDTA) tube

Amount to Collect:
4 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
4 mL blood

Minimum Volume:
2 mL blood

Specimen Preparation:
Follow the detailed processing instructions for Trace Metal Analysis. Do not centrifuge or transfer to another container. Refrigerate. Order Quest # 269X

Units:
µg/L (mcg/L)

Reference Interval:
<= 60 µg/L

Critical Values:
Quest Priority-2: > 60 µg/L

Synonyms:

- As
- AS
- heavy metal toxicity
- heavy metal poisoning
- heavy metals

Stability (from collection to initiation):
Room temp or refrigerated: 10 days

Reported:
Test run Tuesday-Thursday. Turnaround: 2-7 days.

Additional Information:
To convert µg/L to µmol/L (SI units) multiply by 0.0133.

CPT Codes:
82175-90

LOINC Codes:
5583-0

Arsenic, random urine

ASUR

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Inductively-Coupled Plasma Mass Spectroscopy

Reported:
Performed 5x per week. Turnaround 6-10 days

Synonyms:

- As
- AS

COLLECTION

Patient Preparation:
The patient should not eat crab, lobster, shellfish, shrimp or bottom-feeders such as flounder for at least 3 days prior to specimen collection.

Sample Type:
Random urine (second AM void preferred)

Collect:
Urine cup

Amount to Collect:
7 mL urine

Preferred Volume:
7 mL urine

Minimum Volume:
3.5 mL urine

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 5 days, frozen at -20C 2 weeks

PROCESSING

Test Code:
ASUR

Test Group:
Arsenic

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate aliquot. Order Quest test # 84913N

Preferred Volume:
7 mL urine

Minimum Volume:
3.5 mL urine

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 5 days, frozen at -20C 2 weeks

RESULT INTERPRETATION

Units:
µg/g creatinine

Reference Interval:
Non-exposed >= 18 year old: <= 50 µg/g creatinine

ADMINISTRATIVE

CPT Codes:
82175-90, 82570-90

LOINC Codes:
13463-5

COMPLETE VIEW

Available Stat:
No

Test Code:
ASUR

Test Group:
Arsenic

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Inductively-Coupled Plasma Mass Spectroscopy

Patient Preparation:
The patient should not eat crab, lobster, shellfish, shrimp or bottom-feeders such as flounder for at least 3 days prior to specimen collection.

Collect:
Urine cup

Amount to Collect:
7 mL urine

Sample Type:
Random urine (second AM void preferred)

Preferred Volume:
7 mL urine

Minimum Volume:
3.5 mL urine

Specimen Preparation:
Refrigerate aliquot. Order Quest test # 84913N

Units:
µg/g creatinine

Reference Interval:
Non-exposed >= 18 year old: <= 50 µg/g creatinine

Synonyms:

- As
- AS

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 5 days, frozen at -20C 2 weeks

Reported:
Performed 5x per week. Turnaround 6-10 days

CPT Codes:
82175-90, 82570-90

LOINC Codes:
13463-5

ARU Test Aspirin Reaction

ARU

ORDERING

Approval Required:
No, but must be collected at Parnassus location. Contact Hematology Lab at 415-353-1747 to receive special collection kit. For Neurointerventional radiology only.

Available Stat:
No

Performing Lab:
Hematology, Parnassus

Performed:
Monday - Friday 0800 - 1600
Saturday - Sunday 0800 - 1545

Methodology:
VerifyNow System

Reported:
4 hours

Additional Information:
The VerifyNow Aspirin Test is designed to measure aspirin's expected antiplatelet effect.

Plavix®, Ticlid®, and Effient® are commonly prescribed in conjunction with aspirin. While infrequent, these agents may cause a reduction of ARU in some patients.

Test performance was not affected by hematocrit values between 29-56%, platelet count values of >= 92,000/µL or moderate to extensive blood hemolysis induced by physical manipulation. Based on an in-house study performed on 3/29/16, correlation showed that as platelet count increased, ARU results increased.

According to manufacturer:
>= 550 ARU - Platelet dysfunction consistent with aspirin has not been detected

< 550 ARU - Platelet dysfunction consistent with aspirin has been detected

Results should be interpreted in conjunction with other laboratory and clinical data available to the clinician.

Synonyms:

- Aspirin Reaction

COLLECTION

Sample Type:
Citrated and EDTA anticoagulated whole blood

Collect:
1. Greiner partial fill discard
2. Greiner partial fill 3.2% Sodium citrate blue top
3. Lavender EDTA tube

Amount to Collect:
8 mL

Preferred Volume:
8 mL

Minimum Volume:
6 mL

Remarks:
Contact Hematology at 415-353-1747 for collection kits. DO NOT collect any specimens before 0800 or after 1500 from Monday to Friday; before 0800 or after 1500 on Saturday and Sunday.
1. Whole blood samples must be collected in or immediately transferred to Greiner 2.0 mL partial fill blue top tubes containing 3.2% Sodium Citrate. The tube must be filled to its intended whole blood capacity (indicated by small black line).
2. Whole blood may be collected from venous sites using a 21 gauge or larger needle in an appropriate blood collection tube.
3. Blood samples should be obtained from an extremity free of peripheral venous infusions.
4. Collect a discard tube first (approximately 2 mL), Greiner partial fill blue tops 2nd, and a lavender for CBC last.
5. Gently invert the sample tube at least 5 times to ensure complete mixing of the contents.
6. Blood must set a minimum of 30 minutes after collection before testing but no longer than 4 hours.
Samples cannot be pneumatic tubed.

Stability (from collection to initiation):
4 hours

Unacceptable Conditions:
Clotted samples or if stability period exceeded.

Incorrect tube type and/or no discard tube received.

Patients with Hct's < 33% and/or Plt's < 119

PROCESSING

Test Code:
ARU

Performing Lab:
Hematology, Parnassus

Specimen Preparation:
Deliver immediately to Hematology

Additional Processing Instructions:
An ARU will be ordered in computer. If no CBC or CBCD is requested, Central Processing will order a hematocrit (HCT) and platelet count (PLT).

Preferred Volume:
8 mL

Minimum Volume:
6 mL

Unacceptable Conditions:
Clotted samples or if stability period exceeded.

Incorrect tube type and/or no discard tube received.

Patients with Hct's < 33% and/or Plt's < 119

Stability (from collection to initiation):
4 hours

RESULT INTERPRETATION

Units:
ARU

Reference Interval:
620 - 672

Additional Information:
The VerifyNow Aspirin Test is designed to measure aspirin's expected antiplatelet effect.

Plavix®, Ticlid®, and Effient® are commonly prescribed in conjunction with aspirin. While infrequent, these agents may cause a reduction of ARU in some patients.

Test performance was not affected by hematocrit values between 29-56%, platelet count values of >= 92,000/µL or moderate to extensive blood hemolysis induced by physical manipulation. Based on an in-house study performed on 3/29/16, correlation showed that as platelet count increased, ARU results increased.

According to manufacturer:
>= 550 ARU - Platelet dysfunction consistent with aspirin has not been detected

< 550 ARU - Platelet dysfunction consistent with aspirin has been detected

Results should be interpreted in conjunction with other laboratory and clinical data available to the clinician.

ADMINISTRATIVE

CPT Codes:
85576

LOINC Codes:
49011-0

COMPLETE VIEW

Approval Required:
No, but must be collected at Parnassus location. Contact Hematology Lab at 415-353-1747 to receive special collection kit. For Neurointerventional radiology only.

Available Stat:
No

Test Code:
ARU

Performing Lab:
Hematology, Parnassus

Performed:
Monday - Friday 0800 - 1600
Saturday - Sunday 0800 - 1545

Methodology:
VerifyNow System

Remarks:
Contact Hematology at 415-353-1747 for collection kits. DO NOT collect any specimens before 0800 or after 1500 from Monday to Friday; before 0800 or after 1500 on Saturday and Sunday.
1. Whole blood samples must be collected in or immediately transferred to Greiner 2.0 mL partial fill blue top tubes containing 3.2% Sodium Citrate. The tube must be filled to its intended whole blood capacity (indicated by small black line).
2. Whole blood may be collected from venous sites using a 21 gauge or larger needle in an appropriate blood collection tube.
3. Blood samples should be obtained from an extremity free of peripheral venous infusions.
4. Collect a discard tube first (approximately 2 mL), Greiner partial fill blue tops 2nd, and a lavender for CBC last.
5. Gently invert the sample tube at least 5 times to ensure complete mixing of the contents.
6. Blood must set a minimum of 30 minutes after collection before testing but no longer than 4 hours.
Samples cannot be pneumatic tubed.

Collect:
1. Greiner partial fill discard
2. Greiner partial fill 3.2% Sodium citrate blue top
3. Lavender EDTA tube

Amount to Collect:
8 mL

Sample Type:
Citrated and EDTA anticoagulated whole blood

Preferred Volume:
8 mL

Minimum Volume:
6 mL

Unacceptable Conditions:
Clotted samples or if stability period exceeded.

Incorrect tube type and/or no discard tube received.

Patients with Hct's < 33% and/or Plt's < 119

Specimen Preparation:
Deliver immediately to Hematology

Additional Processing Instructions:
An ARU will be ordered in computer. If no CBC or CBCD is requested, Central Processing will order a hematocrit (HCT) and platelet count (PLT).

Units:
ARU

Reference Interval:
620 - 672

Synonyms:

- Aspirin Reaction

Stability (from collection to initiation):
4 hours

Reported:
4 hours

Additional Information:

The VerifyNow Aspirin Test is designed to measure aspirin's expected antiplatelet effect.

Plavix®, Ticlid®, and Effient® are commonly prescribed in conjunction with aspirin. While infrequent, these agents may cause a reduction of ARU in some patients.

Test performance was not affected by hematocrit values between 29-56%, platelet count values of >= 92,000/µL or moderate to extensive blood hemolysis induced by physical manipulation. Based on an in-house study performed on 3/29/16, correlation showed that as platelet count increased, ARU results increased.

According to manufacturer:
>= 550 ARU - Platelet dysfunction consistent with aspirin has not been detected

< 550 ARU - Platelet dysfunction consistent with aspirin has been detected

Results should be interpreted in conjunction with other laboratory and clinical data available to the clinician.

CPT Codes:

85576

LOINC Codes:

49011-0

Ascaris lumbricoides eggs

P401

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Test performed Monday-Friday, 0800-1500 only.

Reported:
1-3 days

Additional Information:
Because of the large number of eggs produced, stool examination is generally the diagnostic method of choice. See Parasites-Sputum, Parasites-Stool, and Parasites-Worm Identification.

Synonyms:

- O&P

COLLECTION

Sample Type:
Stool

Collect:
O&P vials

Unacceptable Conditions:
Unpreserved stool received > 1 hour after collection. Stool in a preservative other than SAF. More than one sample received within 24 hours.

PROCESSING

Test Code:
P401

Test Group:
Ascaris

Performing Lab:
Microbiology

Specimen Preparation:
Refrigerated unpreserved samples: 24 hours
SAF preserved samples at room temperature: indefinite

Unacceptable Conditions:
Unpreserved stool received > 1 hour after collection. Stool in a preservative other than SAF. More than one sample received within 24 hours.

RESULT INTERPRETATION

Additional Information:
Because of the large number of eggs produced, stool examination is generally the diagnostic method of choice. See Parasites-Sputum, Parasites-Stool, and Parasites-Worm Identification.

ADMINISTRATIVE

CPT Codes:
87177, 87207, 87209

LOINC Codes:
10704-5

COMPLETE VIEW

Available Stat:
No

Test Code:
P401

Test Group:
Ascaris

Performing Lab:
Microbiology

Performed:
Test performed Monday-Friday, 0800-1500 only.

Collect:
O&P vials

Sample Type:
Stool

Unacceptable Conditions:
Unpreserved stool received > 1 hour after collection. Stool in a preservative other than SAF. More than one sample received within 24 hours.

Specimen Preparation:
Refrigerated unpreserved samples: 24 hours
SAF preserved samples at room temperature: indefinite

Synonyms:

- O&P

Reported:
1-3 days

Additional Information:
Because of the large number of eggs produced, stool examination is generally the diagnostic method of choice. See Parasites-Sputum, Parasites-Stool, and Parasites-Worm Identification.

CPT Codes:
87177, 87207, 87209

LOINC Codes:
10704-5

Ascaris lumbricoides worm

P404

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Test performed Monday-Friday, 0800-1500 only.

Reported:
1-3 days

Additional Information:
Because of the large number of eggs produced, stool examination is generally the diagnostic method of choice. See Parasites-Sputum, Parasites-Stool, and Parasites-Worm Identification.

Synonyms:

- O&P

COLLECTION

Sample Type:
Worm

Collect:
Clean container with gauze moistened with water

PROCESSING

Test Code:
P404

Performing Lab:
Microbiology

Specimen Preparation:
Refrigerated: 24 hours

RESULT INTERPRETATION

Additional Information:
Because of the large number of eggs produced, stool examination is generally the diagnostic method of choice. See Parasites-Sputum, Parasites-Stool, and Parasites-Worm Identification.

ADMINISTRATIVE

CPT Codes:
87169

LOINC Codes:
673-4

COMPLETE VIEW

Available Stat:
No

Test Code:
P404

Performing Lab:
Microbiology

Performed:
Test performed Monday-Friday, 0800-1500 only.

Collect:
Clean container with gauze moistened with water

Sample Type:
Worm

Specimen Preparation:
Refrigerated: 24 hours

Synonyms:

- O&P

Reported:
1-3 days

Additional Information:
Because of the large number of eggs produced, stool examination is generally the diagnostic method of choice. See Parasites-Sputum, Parasites-Stool, and Parasites-Worm Identification.

CPT Codes:
87169

LOINC Codes:
673-4

Ascorbic Acid

ASCA

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Capillary electrophoresis

Reported:
Set up 5x per week. Turnaround time: 3-5 days

Additional Information:
Clinical use: assessment of nutritional status. To convert mg/dL to µmol/L (SI units) multiply by 56.78.

Vitamin C is an antioxidant involved in connective tissue metabolism, drug-metabolizing systems, and mixed-function oxidase systems to list a few. Vitamin C deficiency causes scurvy; manifestations include impaired formation of mature connective tissue, bleeding into the skin, weakness, fatigue, and depression.

Synonyms:

- Ascorbate
- Vitamin C
- Vit. C
- Vit C

COLLECTION

Patient Preparation:
An 8 hour fast before specimen collection is preferred. Patient should refrain from taking vitamin supplements 24 hours prior to collection.

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Remarks:
Wrap the tube in aluminum foil to protect it from light.

Stability (from collection to initiation):
Frozen at -20C 10 days.

Rejection Criteria:
Received at room temperature or refrigerated

PROCESSING

Test Code:
ASCA

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot serum in dark pour-off vial. Freeze serum at -20C. Do not thaw frozen specimen. Order Quest # 19034P

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Rejection Criteria:
Received at room temperature or refrigerated

Stability (from collection to initiation):
Frozen at -20C 10 days.

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:
0.20-1.90 mg/dL

Additional Information:
Clinical use: assessment of nutritional status. To convert mg/dL to µmol/L (SI units) multiply by 56.78.

Vitamin C is an antioxidant involved in connective tissue metabolism, drug-metabolizing systems, and mixed-function oxidase systems to list a few. Vitamin C deficiency causes scurvy; manifestations include impaired formation of mature connective tissue, bleeding into the skin, weakness, fatigue, and depression.

ADMINISTRATIVE

CPT Codes:
82180-90

LOINC Codes:
1903-4

COMPLETE VIEW

Available Stat:
No

Test Code:
ASCA

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Capillary electrophoresis

Patient Preparation:
An 8 hour fast before specimen collection is preferred. Patient should refrain from taking vitamin supplements 24 hours prior to collection.

Remarks:
Wrap the tube in aluminum foil to protect it from light.

Collect:
Gold top

Amount to Collect:
4 mL blood

Sample Type:
Serum

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Rejection Criteria:
Received at room temperature or refrigerated

Specimen Preparation:
Aliquot serum in dark pour-off vial. Freeze serum at -20C. Do not thaw frozen specimen. Order Quest # 19034P

Units:
mg/dL

Reference Interval:
0.20-1.90 mg/dL

Synonyms:

- Ascorbate
- Vitamin C
- Vit. C
- Vit C

Stability (from collection to initiation):
Frozen at -20C 10 days.

Reported:
Set up 5x per week. Turnaround time: 3-5 days

Additional Information:
Clinical use: assessment of nutritional status. To convert mg/dL to µmol/L (SI units) multiply by 56.78.

Vitamin C is an antioxidant involved in connective tissue metabolism, drug-metabolizing systems, and mixed-function oxidase systems to list a few. Vitamin C deficiency causes scurvy; manifestations include impaired formation of mature connective tissue, bleeding into the skin, weakness, fatigue, and depression.

CPT Codes:
82180-90

LOINC Codes:
1903-4

Aspartate transaminase, Plasma / Serum

AST

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Chemistry: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center (Mon-Fri 0800-1630)

Methodology:
Parnassus, Mission Bay & Mt. Zion Chemistry: NADH (without P-5'-P)-Abbot Architect c8000
Berkeley Outpatient Center: NADH (without P-5'-P)-Roche cobas c311

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
Hemolysis may artifactually increase the result by approximately 12% or more beginning at hemoglobin levels of 125 mg/dL.

Samples with AST levels above the upper limit of the assay will automatically be diluted and re-run.

Synonyms:

- SGOT
- AST
- GOT
- glutamic-oxaloacetic transaminase
- glutamic-aspartic transaminase
- transaminase A
- AAT
- AspT
- 2-oxoglutarate-glutamate aminotransferase
- aspartate alpha-ketoglutarate transaminase
- aspartate aminotransferase
- aspartate-2-oxoglutarate transaminase
- aspartic acid aminotransferase
- aspartic aminotransferase
- aspartyl aminotransferase
- glutamate-oxalacetate aminotransferase
- glutamate-oxalate transaminase
- glutamic-aspartic aminotransferase
- glutamic-oxalacetic transaminase
- glutamic oxalic transaminase
- GOT (enzyme)
- L-aspartate transaminase
- L-aspartate-alpha-ketoglutarate transaminase
- L-aspartate-2-ketoglutarate aminotransferase
- L-aspartate-2-oxoglutarate aminotransferase
- L-aspartate-2-oxoglutarate-transaminase
- L-aspartic aminotransferase
- oxaloacetate-aspartate aminotransferase
- oxaloacetate transferase
- aspartate:2-oxoglutarate aminotransferase
- glutamate oxaloacetate transaminase

COLLECTION

Sample Type:
Plasma or serum

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Parnassus, Mission Bay, Mt. Zion, and Berkeley Outpatient Center
Room temperature 4 days, refrigerated 7 days, frozen at -20C 12 weeks

NOTE: Stored specimens must be inspected for particulates. If present, mix and centrifuge the specimen to remove particulates prior to testing

PROCESSING

Test Code:
AST

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Parnassus, Mission Bay, Mt. Zion, and Berkeley Outpatient Center
Room temperature 4 days, refrigerated 7 days, frozen at -20C 12 weeks

NOTE: Stored specimens must be inspected for particulates. If present, mix and centrifuge the specimen to remove particulates prior to testing

RESULT INTERPRETATION

Units:
U/L

Reference Interval:
Parnassus, Mission Bay and Mt. Zion Chemistry

Age	Male (U/L)	Female (U/L)
0-14 days	32-162	32-162
15 days - <1 year	20-67	20-67
1-6 years	21-44	21-44
7-11 years	18-36	18-36
12-18 years	14-35	13-26
>18 years	5-44	5-44

Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, Clinical Chemistry September 2012 vol. 58, no. 5, 854-868.

Adult reference range upper limit of normal was adopted from Lee GR et al, Practical Laboratory Medicine, 2017, 9:1-11, and verified using 20 male and 20 female normal volunteers from UCSF Clinical Laboratories.

Berkeley Outpatient Center

Age	Male (U/L)	Female (U/L)
>= 19 years	14-35	11-33

Adult reference intervals adopted from an IFCC multicenter study published in Ceriotti et al, Clin Chem Lab Med, 2010; 48(11): 1593-1601 and verified by running 20 male and 20 female normal volunteers from UCSF Clinical Laboratories. This IFCC reference interval study excluded patients with diabetes mellitus, use of therapeutic drugs with an effect on serum enzyme activities, pregnancy, body mass index (BMI) of > 30 kg/m2, alcohol consumption of > 30g/day and heavy exercise in the previous days.

Additional Information:
Hemolysis may artifactually increase the result by approximately 12% or more beginning at hemoglobin levels of 125 mg/dL.

Samples with AST levels above the upper limit of the assay will automatically be diluted and re-run.

ADMINISTRATIVE

CPT Codes:
84450

LOINC Codes:
1920-8

COMPLETE VIEW

Available Stat:
Yes

Test Code:
AST

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Chemistry: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center (Mon-Fri 0800-1630)

Methodology:
Parnassus, Mission Bay & Mt. Zion Chemistry: NADH (without P-5'-P)-Abbot Architect c8000
Berkeley Outpatient Center: NADH (without P-5'-P)-Roche cobas c311

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
1 mL blood

Sample Type:
Plasma or serum

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Units:
U/L

Reference Interval:
Parnassus, Mission Bay and Mt. Zion Chemistry

Age	Male (U/L)	Female (U/L)
0-14 days	32-162	32-162
15 days - <1 year	20-67	20-67
1-6 years	21-44	21-44
7-11 years	18-36	18-36
12-18 years	14-35	13-26
>18 years	5-44	5-44

Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, Clinical Chemistry September 2012 vol. 58, no. 5, 854-868.

Adult reference range upper limit of normal was adopted from Lee GR et al, Practical Laboratory Medicine, 2017, 9:1-11, and verified using 20 male and 20 female normal volunteers from UCSF Clinical Laboratories.

Berkeley Outpatient Center

Age	Male (U/L)	Female (U/L)
>= 19 years	14-35	11-33

Adult reference intervals adopted from an IFCC multicenter study published in Ceriotti et al, Clin Chem Lab Med, 2010; 48(11): 1593-1601 and verified by running 20 male and 20 female normal volunteers from UCSF Clinical Laboratories. This IFCC reference interval study excluded patients with diabetes mellitus, use of therapeutic drugs with an effect on serum enzyme activities, pregnancy, body mass index (BMI) of > 30 kg/m2, alcohol consumption of > 30g/day and heavy exercise in the previous days.

Synonyms:

- SGOT
- AST
- GOT
- glutamic-oxaloacetic transaminase
- glutamic-aspartic transaminase
- transaminase A
- AAT
- AspT
- 2-oxoglutarate-glutamate aminotransferase
- aspartate alpha-ketoglutarate transaminase
- aspartate aminotransferase
- aspartate-2-oxoglutarate transaminase
- aspartic acid aminotransferase
- aspartic aminotransferase
- aspartyl aminotransferase
- glutamate-oxalacetate aminotransferase
- glutamate-oxalate transaminase
- glutamic-aspartic aminotransferase
- glutamic-oxalacetic transaminase
- glutamic oxalic transaminase
- GOT (enzyme)
- L-aspartate transaminase
- L-aspartate-alpha-ketoglutarate transaminase
- L-aspartate-2-ketoglutarate aminotransferase
- L-aspartate-2-oxoglutarate aminotransferase
- L-aspartate-2-oxoglutarate-transaminase
- L-aspartic aminotransferase
- oxaloacetate-aspartate aminotransferase
- oxaloacetate transferase
- aspartate:2-oxoglutarate aminotransferase
- glutamate oxaloacetate transaminase

Stability (from collection to initiation):

Parnassus, Mission Bay, Mt. Zion, and Berkeley Outpatient Center
Room temperature 4 days, refrigerated 7 days, frozen at -20C 12 weeks

NOTE: Stored specimens must be inspected for particulates. If present, mix and centrifuge the specimen to remove particulates prior to testing

Reported:

STAT 1 hour, Routine 4 hours

Additional Information:

Hemolysis may artifactually increase the result by approximately 12% or more beginning at hemoglobin levels of 125 mg/dL.

Samples with AST levels above the upper limit of the assay will automatically be diluted and re-run.

CPT Codes:

84450

LOINC Codes:

1920-8

Aspergillus Antibodies

ASPG

ORDERING

Available Stat:
No

Performing Lab:
Quest

Reported:
Test performed Monday - Friday. Turnaround time: 3-5 days.

Additional Information:
Positive result indicates exposure to Aspergillus, and the possibility of hypersensitivity pneumonia. Includes testing against A. fumigatus, A. niger and A. flavus.

Synonyms:

- Aspergillus Precipitins

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

PROCESSING

Test Code:
ASPG

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate. Order Quest # 20341X.

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
Positive result indicates exposure to Aspergillus, and the possibility of hypersensitivity pneumonia. Includes testing against A. fumigatus, A. niger and A. flavus.

ADMINISTRATIVE

CPT Codes:
86606-90

LOINC Codes:
5053-4

COMPLETE VIEW

Available Stat:
No

Test Code:
ASPG

Performing Lab:
Quest

Sendout:
Yes

Collect:
Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Specimen Preparation:
Refrigerate. Order Quest # 20341X.

Reference Interval:
Negative

Synonyms:

- Aspergillus Precipitins

Reported:
Test performed Monday - Friday. Turnaround time: 3-5 days.

Additional Information:
Positive result indicates exposure to Aspergillus, and the possibility of hypersensitivity pneumonia. Includes testing against A. fumigatus, A. niger and A. flavus.

CPT Codes:
86606-90

LOINC Codes:
5053-4

Aspergillus Culture

P259A

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Set up daily, day and evening shifts

Additional Information:
Preferable when Aspergillus species are the only fungal pathogen of concern. A separate culture for Aspergillus is unnecessary from normally sterile sites, where any fungus will not be overgrown by normal bacterial flora.

Cultures incubated 4 days.

See also Mycology section in text at front of Lab Manual.

Synonyms:

- Fungal culture

COLLECTION

Sample Type:
Aspirate, tissue, sputum

Collect:
Clean collection cup

Stability (from collection to initiation):
Refrigerated 24 hours

Unacceptable Conditions:
Samples on swabs

PROCESSING

Test Code:
P259A

Test Group:
Fungal Culture

Performing Lab:
Microbiology

Unacceptable Conditions:
Samples on swabs

Stability (from collection to initiation):
Refrigerated 24 hours

RESULT INTERPRETATION

Additional Information:
Preferable when Aspergillus species are the only fungal pathogen of concern. A separate culture for Aspergillus is unnecessary from normally sterile sites, where any fungus will not be overgrown by normal bacterial flora.

Cultures incubated 4 days.

See also Mycology section in text at front of Lab Manual.

ADMINISTRATIVE

CPT Codes:
87102

COMPLETE VIEW

Available Stat:
No

Test Code:
P259A

Test Group:
Fungal Culture

Performing Lab:
Microbiology

Performed:
Set up daily, day and evening shifts

Collect:
Clean collection cup

Sample Type:
Aspirate, tissue, sputum

Unacceptable Conditions:
Samples on swabs

Synonyms:

- Fungal culture

Stability (from collection to initiation):
Refrigerated 24 hours

Additional Information:
Preferable when Aspergillus species are the only fungal pathogen of concern. A separate culture for Aspergillus is unnecessary from normally sterile sites, where any fungus will not be overgrown by normal bacterial flora.

Cultures incubated 4 days.

See also Mycology section in text at front of Lab Manual.

CPT Codes:
87102

AUTOIMMUNE ENCEPHALOPATHY EVALUATION

ENS2

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
IFA/RIA/CBA/WB

Reported:
4-10 days

Additional Information:
This test may be useful for evaluating new onset encephalopathy (noninfectious or metabolic) comprising confusional states, psychosis, delirium, memory loss, hallucinations, movement disorders, sensory or motor complaints, seizures, dyssomnias, ataxias, nausea, vomiting, inappropriate antidiuresis, coma, dysautonomias, or hypoventilation

List of antibodies tested with reference ranges.

Reflex Testing:
Additional tests, including the following, may be reflexively added and billed for based on screening results if appropriate:

Amphiphysin Western blot
CRMP-5 Western blot confirmation
Paraneoplastic autoantibody Western blot confirmation
NMO/AQP4-IgG CBA
AMPAR-Ab titer
GABAR-Ab titer
NMDAR-Ab titer

COLLECTION

Sample Type:
Serum

Collect:
Red top or Gold top

Amount to Collect:
8 mL blood

Preferred Volume:
4 mL serum

Minimum Volume:
4 mL serum

Stability (from collection to initiation):
Room temperature 3 days, refrigerated or frozen 4 weeks.

Unacceptable Conditions:
Gross hemolysis

Rejection Criteria:
Gross hemolysis

PROCESSING

Test Code:
ENCES

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Aliquot and freeze serum. Ship to CB frozen. Order Mayo test code ENCES

Preferred Volume:
4 mL serum

Minimum Volume:
4 mL serum

Unacceptable Conditions:
Gross hemolysis

Rejection Criteria:
Gross hemolysis

Stability (from collection to initiation):
Room temperature 3 days, refrigerated or frozen 4 weeks.

RESULT INTERPRETATION

Additional Information:
This test may be useful for evaluating new onset encephalopathy (noninfectious or metabolic) comprising confusional states, psychosis, delirium, memory loss, hallucinations, movement disorders, sensory or motor complaints, seizures, dyssomnias, ataxias, nausea, vomiting, inappropriate antidiuresis, coma, dysautonomias, or hypoventilation

List of antibodies tested with reference ranges.

ADMINISTRATIVE

CPT Codes:
See vendor website.

LOINC Codes:
See vendor website.https://www.mayocliniclabs.com/test-catalog/Overview/92116

COMPLETE VIEW

Available Stat:
No

Test Code:
ENCES

Performing Lab:
Mayo

Sendout:
Yes

Methodology:
IFA/RIA/CBA/WB

Collect:
Red top or Gold top

Amount to Collect:
8 mL blood

Sample Type:
Serum

Preferred Volume:
4 mL serum

Minimum Volume:
4 mL serum

Rejection Criteria:
Gross hemolysis

Unacceptable Conditions:
Gross hemolysis

Specimen Preparation:
Aliquot and freeze serum. Ship to CB frozen. Order Mayo test code ENCES

Stability (from collection to initiation):
Room temperature 3 days, refrigerated or frozen 4 weeks.

Reported:
4-10 days

Reflex Testing:
Additional tests, including the following, may be reflexively added and billed for based on screening results if appropriate:

Amphiphysin Western blot
CRMP-5 Western blot confirmation
Paraneoplastic autoantibody Western blot confirmation
NMO/AQP4-IgG CBA
AMPAR-Ab titer
GABAR-Ab titer
NMDAR-Ab titer

Additional Information:

This test may be useful for evaluating new onset encephalopathy (noninfectious or metabolic) comprising confusional states, psychosis, delirium, memory loss, hallucinations, movement disorders, sensory or motor complaints, seizures, dyssomnias, ataxias, nausea, vomiting, inappropriate antidiuresis, coma, dysautonomias, or hypoventilation

List of antibodies tested with reference ranges.

CPT Codes:

See vendor website.

LOINC Codes:

See vendor website.https://www.mayocliniclabs.com/test-catalog/Overview/92116

Autoimmune Encephalopathy panel, CSF

ENCEC

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
IFA/RIA/CBA/WB

Additional Information:
This antibody panel may be useful for evaluating new onset encephalopathy (noninfectious or metabolic) comprising confusional states, psychosis, delirium, memory loss, hallucinations, movement disorders, sensory or motor complaints, seizures, dyssomnias, ataxias, nausea, vomiting, inappropriate antidiuresis, coma, dysautonomias, or hypoventilation.

List of antibodies tested with reference ranges.

Reflex Testing:
Additional tests, including the following, may be reflexively added and biilled for based on screening results if appropriate:

Amphiphysin Western blot
CRMP-5 Western blot confirmation
Paraneoplastic autoantibody Western blot confirmation
NMO/AQP4-IgG
CBA
AMPAR-Ab titer
GABAR-Ab titer
NMDAR-Ab titer

COLLECTION

Sample Type:
CSF

Collect:
CSF tube or sterile collection tube

Amount to Collect:
4 mL

Preferred Volume:
4 mL

Minimum Volume:
2 mL

Stability (from collection to initiation):
Room temperature 3 days, refrigerated or frozen 4 weeks

Unacceptable Conditions:
Grossly blood samples

Rejection Criteria:
Grossly blood samples

PROCESSING

Test Code:
ENCEC

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Aliquot and freeze sample. Send to CB frozen. Order Mayo test code ENCEC

Preferred Volume:
4 mL

Minimum Volume:
2 mL

Unacceptable Conditions:
Grossly blood samples

Rejection Criteria:
Grossly blood samples

Stability (from collection to initiation):
Room temperature 3 days, refrigerated or frozen 4 weeks

RESULT INTERPRETATION

Additional Information:
This antibody panel may be useful for evaluating new onset encephalopathy (noninfectious or metabolic) comprising confusional states, psychosis, delirium, memory loss, hallucinations, movement disorders, sensory or motor complaints, seizures, dyssomnias, ataxias, nausea, vomiting, inappropriate antidiuresis, coma, dysautonomias, or hypoventilation.

List of antibodies tested with reference ranges.

ADMINISTRATIVE

CPT Codes:
See vendor website.

LOINC Codes:
See vendor website.

COMPLETE VIEW

Available Stat:
No

Test Code:
ENCEC

Performing Lab:
Mayo

Sendout:
Yes

Methodology:
IFA/RIA/CBA/WB

Collect:
CSF tube or sterile collection tube

Amount to Collect:
4 mL

Sample Type:
CSF

Preferred Volume:
4 mL

Minimum Volume:
2 mL

Rejection Criteria:
Grossly blood samples

Unacceptable Conditions:
Grossly blood samples

Specimen Preparation:
Aliquot and freeze sample. Send to CB frozen. Order Mayo test code ENCEC

Stability (from collection to initiation):
Room temperature 3 days, refrigerated or frozen 4 weeks

Reflex Testing:
Additional tests, including the following, may be reflexively added and biilled for based on screening results if appropriate:

Amphiphysin Western blot
CRMP-5 Western blot confirmation
Paraneoplastic autoantibody Western blot confirmation
NMO/AQP4-IgG
CBA
AMPAR-Ab titer
GABAR-Ab titer
NMDAR-Ab titer

Additional Information:

This antibody panel may be useful for evaluating new onset encephalopathy (noninfectious or metabolic) comprising confusional states, psychosis, delirium, memory loss, hallucinations, movement disorders, sensory or motor complaints, seizures, dyssomnias, ataxias, nausea, vomiting, inappropriate antidiuresis, coma, dysautonomias, or hypoventilation.

List of antibodies tested with reference ranges.

CPT Codes:

See vendor website.

LOINC Codes:

See vendor website.

Avian Influenza A

P319

ORDERING

Available Stat:
No

Performing Lab:
State Viral & Rickettsial Disease Laboratory

Methodology:
PCR

Reported:
2 days after receipt at the State Viral & Rickettsial Disease Laboratory

Additional Information:
Avian influenza A (H5N1) testing is indicated for hospitalized patients with:

1. Radiographically confirmed pneumonia, acute respiratory distress syndrome, or other severe respiratory illness for which an alternate diagnosis has not been established, **AND**
2.History of travel within 10 days of symptom onset to a country with documented H5N1 avian influenza in poultry and/or humans.

For an updated list of countries affected by H5N1 see www.sfdph.org/cdcp and locate Avian Influenza under the tab Infectious Diseases A-Z.

Testing should be considered on a case by case basis in consultation with SFDPH for hospitalized or ambulatory patients with:

1. Documented temperature of > 38°C (> 100.4°F), **AND**
2. One or more of the following: cough, sore throat, shortness of breath, **AND**
3. History of contact with poultry OR a known or suspected human case of influenza A (H5N1) in an H5N1-affected country within 10 days of symptom onset.

Viral cultures on specimens from suspected avian influenza cases are not done in the Clinical Laboratories. Test performed by California Dept. of Health Services, Microbial Diseases Laboratory, 850 Marina Bay Parkway, Richmond, CA 94804

For UCSF Avian Influenza Guidance and Resources:
https://infectioncontrol.ucsfmedicalcenter.org/content/ucsf-avian-influenza-guidance-and-resources

Synonyms:

- H5N1

COLLECTION

Sample Type:
Nasopharyngeal swab

Collect:
Flocked swab in Universal Transport Medium (UTM)

DO NOT use cotton or calcium arginate swabs for collection

Amount to Collect:
1 Flocked swab

Preferred Volume:
1 Flocked swab

Minimum Volume:
1 Flocked swab

Remarks:
IMPORTANT: If avian influenza is suspected, call SFDPH Disease Control at (415)554-2830 immediately for consultation to determine the need for testing.

Nasopharyngeal swab: Use flocked swab/Universal Transport Medium for collection. Insert swab into the nostril, gently rotating the swab inward until resistance is met at the level of the turbinates. Rotate the swab a few times against the nasopharyngeal wall (approximately 10 sec) and then withdraw swab. Insert swab into container with Universal Transport Medium. Break end of swab so top of vial can be screwed on securely. Appropriately label specimen and send to the laboratory.

Stability (from collection to initiation):
Refrigerated 3 days, frozen 1 month

Unacceptable Conditions:
Collected with cotton or cotton alginate swabs and wooden handles

PROCESSING

Test Code:
P319

Sendout:
Yes

Performing Lab:
State Viral & Rickettsial Disease Laboratory

Specimen Preparation:
Refrigerate specimen and transport to SFDPH Laboratory with cold packs, along with a SFDPH laboratory form. Specimens are stable at 2-8°C for 72 hours. Freeze at -70°C if transport time to SFDPH is > 72 hours.

When specimen is received, notify supervisor (virologist or senior CLS after hours/weekend) to call State Viral & Rickettsial Disease lab (510)307-8585.

Preferred Volume:
1 Flocked swab

Minimum Volume:
1 Flocked swab

Unacceptable Conditions:
Collected with cotton or cotton alginate swabs and wooden handles

Stability (from collection to initiation):
Refrigerated 3 days, frozen 1 month

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
Avian influenza A (H5N1) testing is indicated for hospitalized patients with:

1. Radiographically confirmed pneumonia, acute respiratory distress syndrome, or other severe respiratory illness for which an alternate diagnosis has not been established, **AND**
2.History of travel within 10 days of symptom onset to a country with documented H5N1 avian influenza in poultry and/or humans.

For an updated list of countries affected by H5N1 see www.sfdph.org/cdcp and locate Avian Influenza under the tab Infectious Diseases A-Z.

Testing should be considered on a case by case basis in consultation with SFDPH for hospitalized or ambulatory patients with:

1. Documented temperature of > 38°C (> 100.4°F), **AND**
2. One or more of the following: cough, sore throat, shortness of breath, **AND**
3. History of contact with poultry OR a known or suspected human case of influenza A (H5N1) in an H5N1-affected country within 10 days of symptom onset.

Viral cultures on specimens from suspected avian influenza cases are not done in the Clinical Laboratories. Test performed by California Dept. of Health Services, Microbial Diseases Laboratory, 850 Marina Bay Parkway, Richmond, CA 94804

For UCSF Avian Influenza Guidance and Resources:
https://infectioncontrol.ucsfmedicalcenter.org/content/ucsf-avian-influenza-guidance-and-resources

ADMINISTRATIVE

LOINC Codes:
29257-3

COMPLETE VIEW

Available Stat:
No

Test Code:
P319

Performing Lab:
State Viral & Rickettsial Disease Laboratory

Sendout:
Yes

Methodology:
PCR

Remarks:
IMPORTANT: If avian influenza is suspected, call SFDPH Disease Control at (415)554-2830 immediately for consultation to determine the need for testing.

Nasopharyngeal swab: Use flocked swab/Universal Transport Medium for collection. Insert swab into the nostril, gently rotating the swab inward until resistance is met at the level of the turbinates. Rotate the swab a few times against the nasopharyngeal wall (approximately 10 sec) and then withdraw swab. Insert swab into container with Universal Transport Medium. Break end of swab so top of vial can be screwed on securely. Appropriately label specimen and send to the laboratory.

Collect:
Flocked swab in Universal Transport Medium (UTM)

DO NOT use cotton or calcium arginate swabs for collection

Amount to Collect:
1 Flocked swab

Sample Type:
Nasopharyngeal swab

Preferred Volume:
1 Flocked swab

Minimum Volume:
1 Flocked swab

Unacceptable Conditions:
Collected with cotton or cotton alginate swabs and wooden handles

Specimen Preparation:
Refrigerate specimen and transport to SFDPH Laboratory with cold packs, along with a SFDPH laboratory form. Specimens are stable at 2-8°C for 72 hours. Freeze at -70°C if transport time to SFDPH is > 72 hours.

When specimen is received, notify supervisor (virologist or senior CLS after hours/weekend) to call State Viral & Rickettsial Disease lab (510)307-8585.

Reference Interval:
Negative

Synonyms:

- H5N1

Stability (from collection to initiation):
Refrigerated 3 days, frozen 1 month

Reported:
2 days after receipt at the State Viral & Rickettsial Disease Laboratory

Additional Information:

Avian influenza A (H5N1) testing is indicated for hospitalized patients with:

1. Radiographically confirmed pneumonia, acute respiratory distress syndrome, or other severe respiratory illness for which an alternate diagnosis has not been established, **AND**
2.History of travel within 10 days of symptom onset to a country with documented H5N1 avian influenza in poultry and/or humans.

For an updated list of countries affected by H5N1 see www.sfdph.org/cdcp and locate Avian Influenza under the tab Infectious Diseases A-Z.

Testing should be considered on a case by case basis in consultation with SFDPH for hospitalized or ambulatory patients with:

1. Documented temperature of > 38°C (> 100.4°F), **AND**
2. One or more of the following: cough, sore throat, shortness of breath, **AND**
3. History of contact with poultry OR a known or suspected human case of influenza A (H5N1) in an H5N1-affected country within 10 days of symptom onset.

Viral cultures on specimens from suspected avian influenza cases are not done in the Clinical Laboratories. Test performed by California Dept. of Health Services, Microbial Diseases Laboratory, 850 Marina Bay Parkway, Richmond, CA 94804

For UCSF Avian Influenza Guidance and Resources:
https://infectioncontrol.ucsfmedicalcenter.org/content/ucsf-avian-influenza-guidance-and-resources

LOINC Codes:

29257-3

B CELL RECEPTOR IGH GENE REARRANGEMENT, PCR

BCIGH

ORDERING

Available Stat:
No

Performing Lab:
Quest

Performed:
Daily

Methodology:
Polymerase Chain Reaction (PCR) • Fragment Analysis

Reported:
5 days

COLLECTION

Sample Type:
Blood, bone marrow or tissue

Collect:
Lavender-top or unstained slides

Preferred Volume:
5 mL whole blood or 3 mL bone marrow aspirate collected in an EDTA (lavender-top) tube or
8 unstained charged (+) slides

Minimum Volume:
3 mL whole blood • 1 mL bone marrow aspirate • 4 unstained charged (+) slides

Stability (from collection to initiation):
Whole blood and bone marrow aspirate
Room temperature: 7 days
Refrigerated: 7 days
Frozen: Unacceptable

FFPE tissue/slides
Room temperature: 5 years
Refrigerated: 5 years
Frozen: Unacceptable

Storage/Transport Temperature:
Ambient

PROCESSING

Test Code:
BCIGH

Sendout:
Yes

Performing Lab:
Quest

Preferred Volume:
5 mL whole blood or 3 mL bone marrow aspirate collected in an EDTA (lavender-top) tube or
8 unstained charged (+) slides

Minimum Volume:
3 mL whole blood • 1 mL bone marrow aspirate • 4 unstained charged (+) slides

Stability (from collection to initiation):
Whole blood and bone marrow aspirate
Room temperature: 7 days
Refrigerated: 7 days
Frozen: Unacceptable

FFPE tissue/slides
Room temperature: 5 years
Refrigerated: 5 years
Frozen: Unacceptable

Storage/Transport Temperature:
Ambient

ADMINISTRATIVE

CPT Codes:
81261

LOINC Codes:
21747-1

COMPLETE VIEW

Available Stat:
No

Test Code:
BCIGH

Performing Lab:
Quest

Sendout:
Yes

Performed:
Daily

Methodology:
Polymerase Chain Reaction (PCR) • Fragment Analysis

Collect:
Lavender-top or unstained slides

Sample Type:
Blood, bone marrow or tissue

Preferred Volume:
5 mL whole blood or 3 mL bone marrow aspirate collected in an EDTA (lavender-top) tube or
8 unstained charged (+) slides

Minimum Volume:
3 mL whole blood • 1 mL bone marrow aspirate • 4 unstained charged (+) slides

Storage/Transport Temperature:
Ambient

Stability (from collection to initiation):
Whole blood and bone marrow aspirate
Room temperature: 7 days
Refrigerated: 7 days
Frozen: Unacceptable

FFPE tissue/slides
Room temperature: 5 years
Refrigerated: 5 years
Frozen: Unacceptable

Reported:
5 days

CPT Codes:
81261

LOINC Codes:
21747-1

B CELL RECEPTOR IGK GENE REARRANGEMENT, PCR

BCIGK

ORDERING

Available Stat:
No

Performing Lab:
Quest

Performed:
Daily

Methodology:
Polymerase Chain Reaction (PCR) • Fragment Analysis

Reported:
5 days

COLLECTION

Sample Type:
Blood, bone marrow or tissue

Collect:
Lavender-top or unstained slides

Preferred Volume:
5 mL whole blood or 3 mL bone marrow aspirate collected in an EDTA (lavender-top) tube or
8 unstained charged (+) slides

Minimum Volume:
3 mL whole blood • 1 mL bone marrow aspirate • 4 unstained charged (+) slides

Stability (from collection to initiation):
Whole blood and bone marrow aspirate
Room temperature: 7 days
Refrigerated: 7 days
Frozen: Unacceptable

FFPE tissue/slides
Room temperature: 5 years
Refrigerated: 5 years
Frozen: Unacceptable

Storage/Transport Temperature:
Ambient

PROCESSING

Test Code:
BCIGK

Sendout:
Yes

Performing Lab:
Quest

Preferred Volume:
5 mL whole blood or 3 mL bone marrow aspirate collected in an EDTA (lavender-top) tube or
8 unstained charged (+) slides

Minimum Volume:
3 mL whole blood • 1 mL bone marrow aspirate • 4 unstained charged (+) slides

Stability (from collection to initiation):
Whole blood and bone marrow aspirate
Room temperature: 7 days
Refrigerated: 7 days
Frozen: Unacceptable

FFPE tissue/slides
Room temperature: 5 years
Refrigerated: 5 years
Frozen: Unacceptable

Storage/Transport Temperature:
Ambient

ADMINISTRATIVE

CPT Codes:
81264, 84999

LOINC Codes:
21748-9

COMPLETE VIEW

Available Stat:
No

Test Code:
BCIGK

Performing Lab:
Quest

Sendout:
Yes

Performed:
Daily

Methodology:
Polymerase Chain Reaction (PCR) • Fragment Analysis

Collect:
Lavender-top or unstained slides

Sample Type:
Blood, bone marrow or tissue

Preferred Volume:
5 mL whole blood or 3 mL bone marrow aspirate collected in an EDTA (lavender-top) tube or
8 unstained charged (+) slides

Minimum Volume:
3 mL whole blood • 1 mL bone marrow aspirate • 4 unstained charged (+) slides

Storage/Transport Temperature:
Ambient

Stability (from collection to initiation):
Whole blood and bone marrow aspirate
Room temperature: 7 days
Refrigerated: 7 days
Frozen: Unacceptable

FFPE tissue/slides
Room temperature: 5 years
Refrigerated: 5 years
Frozen: Unacceptable

Reported:
5 days

CPT Codes:
81264, 84999

LOINC Codes:
21748-9

B. pertussis/parapertussis DNA

P355

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Methodology:
Nucleic Acid Amplification

Reported:
1-2 days

Synonyms:

- Whooping Cough
- Haemophilus pertussis
- Bordetella pertussis PCR
- Bordetella parapertussis
- Bordetella pertussis DNA

COLLECTION

Sample Type:
Nasopharyngeal swab

Collect:
Flocked swab in Universal Transport Medium (UTM) or Viral Holding Media (VTM), preferred. Swabs in liquid Amies elution medium (E-swab) are also acceptable.

Amount to Collect:
1 flocked swab

Remarks:
Nasopharyngeal swab: Use flocked swab/Universal Transport Medium for collection. Insert swab into the nostril, gently rotating the swab inward until resistance is met at the level of the turbinates. Rotate the swab a few times against the nasopharyngeal wall (approximately 10 sec) and then withdraw swab. Insert swab into container with Universal Transport Medium. Break end of swab so top of vial can be screwed on securely. Appropriately label specimen and send to the laboratory.

Stability (from collection to initiation):
Room temperature up to 8 hours; Refrigerated at 2-8C up to 7 days

Storage/Transport Temperature:
Refrigerate at 2-8C up to 7 days; Freeze at -70C up to 5 months

PROCESSING

Test Code:
P355

Performing Lab:
Microbiology

Stability (from collection to initiation):
Room temperature up to 8 hours; Refrigerated at 2-8C up to 7 days

Storage/Transport Temperature:
Refrigerate at 2-8C up to 7 days; Freeze at -70C up to 5 months

RESULT INTERPRETATION

Reference Interval:
Not Detected

Critical Values:
Positive for Bordetella spp.

ADMINISTRATIVE

CPT Codes:
87798 x 2

LOINC Codes:
62428-8

COMPLETE VIEW

Available Stat:
No

Test Code:
P355

Performing Lab:
Microbiology

Methodology:
Nucleic Acid Amplification

Remarks:
Nasopharyngeal swab: Use flocked swab/Universal Transport Medium for collection. Insert swab into the nostril, gently rotating the swab inward until resistance is met at the level of the turbinates. Rotate the swab a few times against the nasopharyngeal wall (approximately 10 sec) and then withdraw swab. Insert swab into container with Universal Transport Medium. Break end of swab so top of vial can be screwed on securely. Appropriately label specimen and send to the laboratory.

Collect:
Flocked swab in Universal Transport Medium (UTM) or Viral Holding Media (VTM), preferred. Swabs in liquid Amies elution medium (E-swab) are also acceptable.

Amount to Collect:
1 flocked swab

Sample Type:
Nasopharyngeal swab

Reference Interval:
Not Detected

Critical Values:
Positive for Bordetella spp.

Synonyms:

- Whooping Cough
- Haemophilus pertussis
- Bordetella pertussis PCR
- Bordetella parapertussis
- Bordetella pertussis DNA

Storage/Transport Temperature:
Refrigerate at 2-8C up to 7 days; Freeze at -70C up to 5 months

Stability (from collection to initiation):
Room temperature up to 8 hours; Refrigerated at 2-8C up to 7 days

Reported:
1-2 days

CPT Codes:
87798 x 2

LOINC Codes:
62428-8

Babesia microti Antibodies (IgG & IgM)

BABES

ORDERING

Available Stat:
No

Performing Lab:
Focus via Quest

Methodology:
Immunofluorescence assay

Reported:
Set up 5x per week. Turnaround time 4-6 days

Additional Information:
Elevated antibody levels to B.microti indicate exposure to the organism. Human babesiosis infection is transmitted by the bite of an infected Ixodes tick or less frequently from transfusion with blood from an infected donor. Definitive diagnosis is made by identifying intraerythrocytic organisms in peripheral blood. In patients with low parasitemia, antibody detection by IFA is recommended. IgG levels greater than or equal to 1:1024 can be detected in acute phase patients with parasites in blood smears. The IFA assay can be used as a seroepidemiologic tool to study the frequency and distribution of B.microti in endemic areas especially in persons with mixed infections also involving Borrelia burgdorferi.

Human Babesia antibodies may persist for 6-12 months after acute illness, and may cross-react with malaria antibodies.

Synonyms:

- Babesiosis

COLLECTION

Sample Type:
Serum

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.1 mL serum

Stability (from collection to initiation):
Room temperature 72 hours, refrigerated 1 week, frozen at -20C 1 month.

Unacceptable Conditions:
Sample collected in Gold top

PROCESSING

Test Code:
BABES

Sendout:
Yes

Performing Lab:
Focus via Quest

Specimen Preparation:
Refrigerate sample. Order Quest # 34300

Preferred Volume:
1 mL serum

Minimum Volume:
0.1 mL serum

Unacceptable Conditions:
Sample collected in Gold top

Stability (from collection to initiation):
Room temperature 72 hours, refrigerated 1 week, frozen at -20C 1 month.

RESULT INTERPRETATION

Units:
titer

Reference Interval:
Babesia Ab IgG: < 1:64 titer
Babesia Ab IgM: < 1:20 titer

Additional Information:
Elevated antibody levels to B.microti indicate exposure to the organism. Human babesiosis infection is transmitted by the bite of an infected Ixodes tick or less frequently from transfusion with blood from an infected donor. Definitive diagnosis is made by identifying intraerythrocytic organisms in peripheral blood. In patients with low parasitemia, antibody detection by IFA is recommended. IgG levels greater than or equal to 1:1024 can be detected in acute phase patients with parasites in blood smears. The IFA assay can be used as a seroepidemiologic tool to study the frequency and distribution of B.microti in endemic areas especially in persons with mixed infections also involving Borrelia burgdorferi.

Human Babesia antibodies may persist for 6-12 months after acute illness, and may cross-react with malaria antibodies.

ADMINISTRATIVE

CPT Codes:
86753-90 x2

LOINC Codes:
16427-7

COMPLETE VIEW

Available Stat:
No

Test Code:
BABES

Performing Lab:
Focus via Quest

Sendout:
Yes

Methodology:
Immunofluorescence assay

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.1 mL serum

Unacceptable Conditions:
Sample collected in Gold top

Specimen Preparation:
Refrigerate sample. Order Quest # 34300

Units:
titer

Reference Interval:
Babesia Ab IgG: < 1:64 titer
Babesia Ab IgM: < 1:20 titer

Synonyms:

- Babesiosis

Stability (from collection to initiation):
Room temperature 72 hours, refrigerated 1 week, frozen at -20C 1 month.

Reported:
Set up 5x per week. Turnaround time 4-6 days

Additional Information:

Elevated antibody levels to B.microti indicate exposure to the organism. Human babesiosis infection is transmitted by the bite of an infected Ixodes tick or less frequently from transfusion with blood from an infected donor. Definitive diagnosis is made by identifying intraerythrocytic organisms in peripheral blood. In patients with low parasitemia, antibody detection by IFA is recommended. IgG levels greater than or equal to 1:1024 can be detected in acute phase patients with parasites in blood smears. The IFA assay can be used as a seroepidemiologic tool to study the frequency and distribution of B.microti in endemic areas especially in persons with mixed infections also involving Borrelia burgdorferi.

Human Babesia antibodies may persist for 6-12 months after acute illness, and may cross-react with malaria antibodies.

CPT Codes:

86753-90 x2

LOINC Codes:

16427-7

Bacterial Culture and Gram stain, CSF

P076

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Set up daily, day and evening shifts

Methodology:
Aerobic and Anaerobic culture

Additional Information:
Performed on tube #2. Includes Aerobic & Anaerobic cultures w/ gram stain.

Reflex Testing:
If bacteria are detected that are not normal mixed flora they are automatically identified and susceptibility testing is performed.

Full ID and/or susceptibility testing may be omitted upon request when sample is submitted for testing.

COLLECTION

Sample Type:
CSF

Collect:
CSF tube or sterile collection tube

Amount to Collect:
5 mL CSF

Preferred Volume:
5 mL CSF

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Stability (from collection to initiation):
Incubated at 35-37C, 24 hours

Unacceptable Conditions:
Refrigerated samples

PROCESSING

Test Code:
P076

Test Group:
Bacterial Culture

Performing Lab:
Microbiology

Specimen Preparation:
Maintain sample at room temperature

Preferred Volume:
5 mL CSF

Unacceptable Conditions:
Refrigerated samples

Stability (from collection to initiation):
Incubated at 35-37C, 24 hours

RESULT INTERPRETATION

Additional Information:
Performed on tube #2. Includes Aerobic & Anaerobic cultures w/ gram stain.

ADMINISTRATIVE

CPT Codes:
87070; 87205; 87075

LOINC Codes:
606-4

COMPLETE VIEW

Available Stat:
No

Test Code:
P076

Test Group:
Bacterial Culture

Performing Lab:
Microbiology

Performed:
Set up daily, day and evening shifts

Methodology:
Aerobic and Anaerobic culture

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Collect:
CSF tube or sterile collection tube

Amount to Collect:
5 mL CSF

Sample Type:
CSF

Preferred Volume:
5 mL CSF

Unacceptable Conditions:
Refrigerated samples

Specimen Preparation:
Maintain sample at room temperature

Stability (from collection to initiation):
Incubated at 35-37C, 24 hours

Reflex Testing:
If bacteria are detected that are not normal mixed flora they are automatically identified and susceptibility testing is performed.

Full ID and/or susceptibility testing may be omitted upon request when sample is submitted for testing.

Additional Information:
Performed on tube #2. Includes Aerobic & Anaerobic cultures w/ gram stain.

CPT Codes:
87070; 87205; 87075

LOINC Codes:
606-4

Bacterial Culture and Gram stain, Genital

P070

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Set up daily, day and evening shifts

Additional Information:
Aerobic culture only, Includes culture for Gonococcus.

Reflex Testing:
If bacteria are detected that are not normal mixed flora they are automatically identified and susceptibility testing is performed.

Full ID and/or susceptibility testing may be omitted upon request when sample is submitted for testing.

COLLECTION

Sample Type:
Swab x2

Collect:
E-swab (liquid Amies elution medium) or Amies transport medium with charcoal. Amies Gel and Amies/Stuart Liquid Swab Transport Systems have also been validated for culture.

Remarks:
Submit two swabs.

Stability (from collection to initiation):
12 hours in appropriate transport medium

Unacceptable Conditions:
Swabs not received in transport media

PROCESSING

Test Code:
P070

Test Group:
Bacterial Culture

Performing Lab:
Microbiology

Specimen Preparation:
Maintain sample at room temperature

Unacceptable Conditions:
Swabs not received in transport media

Stability (from collection to initiation):
12 hours in appropriate transport medium

RESULT INTERPRETATION

Additional Information:
Aerobic culture only, Includes culture for Gonococcus.

ADMINISTRATIVE

CPT Codes:
87070; 87205

LOINC Codes:
10352-3

COMPLETE VIEW

Available Stat:
No

Test Code:
P070

Test Group:
Bacterial Culture

Performing Lab:
Microbiology

Performed:
Set up daily, day and evening shifts

Remarks:
Submit two swabs.

Collect:
E-swab (liquid Amies elution medium) or Amies transport medium with charcoal. Amies Gel and Amies/Stuart Liquid Swab Transport Systems have also been validated for culture.

Sample Type:
Swab x2

Unacceptable Conditions:
Swabs not received in transport media

Specimen Preparation:
Maintain sample at room temperature

Stability (from collection to initiation):
12 hours in appropriate transport medium

Reflex Testing:
If bacteria are detected that are not normal mixed flora they are automatically identified and susceptibility testing is performed.

Full ID and/or susceptibility testing may be omitted upon request when sample is submitted for testing.

Additional Information:
Aerobic culture only, Includes culture for Gonococcus.

CPT Codes:
87070; 87205

LOINC Codes:
10352-3

Bacterial Culture and Gram stain, Respiratory

P063

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Set up daily, day and evening shifts

Methodology:
Aerobic culture

Additional Information:
Includes gram stain.

Reflex Testing:
If bacteria are detected that are not normal mixed flora they are automatically identified and susceptibility testing is performed.

Full ID and/or susceptibility testing may be omitted upon request when sample is submitted for testing.

Synonyms:

- Sputum culture
- lung culture
- BAL culture

COLLECTION

Sample Type:
BAL, lung biopsy, sputum, external eye, ear, or sinus drainage.

Collect:
Clean container, swabs in transport media

Remarks:
Submit expectorated sputum in cup with screw-on or snap-on lid. For tissue samples collected by a surgical procedure, see entry for Head and Neck

Stability (from collection to initiation):
Refrigerated 24 hours

Unacceptable Conditions:
More than one sputum or ETA in 48 hours.

PROCESSING

Test Code:
P063

Test Group:
Bacterial Culture

Performing Lab:
Microbiology

Specimen Preparation:
Maintain sample at room temperature

Unacceptable Conditions:
More than one sputum or ETA in 48 hours.

Stability (from collection to initiation):
Refrigerated 24 hours

RESULT INTERPRETATION

Critical Values:
First positive Burkholderia cepacia isolate from a CF patient.

Additional Information:
Includes gram stain.

ADMINISTRATIVE

CPT Codes:
87205; 87070

LOINC Codes:
622-1

COMPLETE VIEW

Available Stat:
No

Test Code:
P063

Test Group:
Bacterial Culture

Performing Lab:
Microbiology

Performed:
Set up daily, day and evening shifts

Methodology:
Aerobic culture

Remarks:
Submit expectorated sputum in cup with screw-on or snap-on lid. For tissue samples collected by a surgical procedure, see entry for Head and Neck

Collect:
Clean container, swabs in transport media

Sample Type:
BAL, lung biopsy, sputum, external eye, ear, or sinus drainage.

Unacceptable Conditions:
More than one sputum or ETA in 48 hours.

Specimen Preparation:
Maintain sample at room temperature

Critical Values:
First positive Burkholderia cepacia isolate from a CF patient.

Synonyms:

- Sputum culture
- lung culture
- BAL culture

Stability (from collection to initiation):
Refrigerated 24 hours

Reflex Testing:
If bacteria are detected that are not normal mixed flora they are automatically identified and susceptibility testing is performed.

Full ID and/or susceptibility testing may be omitted upon request when sample is submitted for testing.

Additional Information:
Includes gram stain.

CPT Codes:
87205; 87070

LOINC Codes:
622-1

Bacterial Culture and Gram stain, Wound, Superficial skin

P080

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Daily

Reported:
2-4 days

Additional Information:
Includes aerobic culture and gram stain. Incubated for 48 hours. For anaerobic culture, order P082 Bacterial Culture, Non-sterile Site

Reflex Testing:
If bacteria are detected that are not normal mixed flora, they are automatically identified and susceptibility testing is performed if indicated.

COLLECTION

Sample Type:
Aspirate or swab

Collect:
Syringe without needle, E-swab (liquid Amies elution medium) or Amies transport medium with charcoal. Amies Gel and Amies/Stuart Liquid Swab Transport Systems have also been validated for culture.

Remarks:
Submit pus in a syringe after removing needle. If there is insufficient pus to aspirate, submit sterile swab.

Stability (from collection to initiation):
Room temperature

Unacceptable Conditions:
Swabs not received in transport media.

PROCESSING

Test Code:
P080

Test Group:
Bacterial Culture

Performing Lab:
Microbiology

Unacceptable Conditions:
Swabs not received in transport media.

Stability (from collection to initiation):
Room temperature

RESULT INTERPRETATION

Additional Information:
Includes aerobic culture and gram stain. Incubated for 48 hours. For anaerobic culture, order P082 Bacterial Culture, Non-sterile Site

ADMINISTRATIVE

CPT Codes:
87205; 87070

LOINC Codes:
6462-6

COMPLETE VIEW

Available Stat:
No

Test Code:
P080

Test Group:
Bacterial Culture

Performing Lab:
Microbiology

Performed:
Daily

Remarks:
Submit pus in a syringe after removing needle. If there is insufficient pus to aspirate, submit sterile swab.

Collect:
Syringe without needle, E-swab (liquid Amies elution medium) or Amies transport medium with charcoal. Amies Gel and Amies/Stuart Liquid Swab Transport Systems have also been validated for culture.

Sample Type:
Aspirate or swab

Unacceptable Conditions:
Swabs not received in transport media.

Stability (from collection to initiation):
Room temperature

Reported:
2-4 days

Reflex Testing:
If bacteria are detected that are not normal mixed flora, they are automatically identified and susceptibility testing is performed if indicated.

Additional Information:
Includes aerobic culture and gram stain. Incubated for 48 hours. For anaerobic culture, order P082 Bacterial Culture, Non-sterile Site

CPT Codes:
87205; 87070

LOINC Codes:
6462-6

Bacterial Culture, Non-sterile Site (excluding superficial skin) with Gram stain

P082

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Set up daily, day and evening shifts

Methodology:
Aerobic and anaerobic cultureGram stain

Reported:
Up to 4 days

Additional Information:
Includes aerobic and anaerobic cultures and Gram stain.

Reflex Testing:
If bacteria are detected that are not normal mixed flora they are automatically identified and susceptibility testing is performed.

Full ID and/or susceptibility testing may be omitted upon request when sample is submitted for testing.

COLLECTION

Sample Type:
Aspirate, unfixed tissue from normally non-sterile sites (e.g. skin biopsy, sinus), swab, drainage (e.g. bile, JP)

Collect:
Fluid: Sterile tube or container.
Swabs: E-swab (liquid Amies elution medium) or Amies transport medium with charcoal. Amies Gel and Amies/Stuart Liquid Swab Transport Systems have also been validated for culture.

Stability (from collection to initiation):
Room temperature 12 hours

Unacceptable Conditions:
Swabs not received in transport medium.
Fluids received in Red Top Serum vacutainer.

PROCESSING

Test Code:
P082

Test Group:
Bacterial culture

Performing Lab:
Microbiology

Specimen Preparation:
Maintain specimen at room temperature.

Unacceptable Conditions:
Swabs not received in transport medium.
Fluids received in Red Top Serum vacutainer.

Stability (from collection to initiation):
Room temperature 12 hours

RESULT INTERPRETATION

Additional Information:
Includes aerobic and anaerobic cultures and Gram stain.

ADMINISTRATIVE

CPT Codes:
87205, 87070, 87075

COMPLETE VIEW

Available Stat:
No

Test Code:
P082

Test Group:
Bacterial culture

Performing Lab:
Microbiology

Performed:
Set up daily, day and evening shifts

Methodology:
Aerobic and anaerobic cultureGram stain

Collect:
Fluid: Sterile tube or container.
Swabs: E-swab (liquid Amies elution medium) or Amies transport medium with charcoal. Amies Gel and Amies/Stuart Liquid Swab Transport Systems have also been validated for culture.

Sample Type:
Aspirate, unfixed tissue from normally non-sterile sites (e.g. skin biopsy, sinus), swab, drainage (e.g. bile, JP)

Unacceptable Conditions:
Swabs not received in transport medium.
Fluids received in Red Top Serum vacutainer.

Specimen Preparation:
Maintain specimen at room temperature.

Stability (from collection to initiation):
Room temperature 12 hours

Reported:
Up to 4 days

Reflex Testing:
If bacteria are detected that are not normal mixed flora they are automatically identified and susceptibility testing is performed.

Full ID and/or susceptibility testing may be omitted upon request when sample is submitted for testing.

Additional Information:
Includes aerobic and anaerobic cultures and Gram stain.

CPT Codes:
87205, 87070, 87075

Bacterial Culture, Normally Sterile Site, with Gram stain

P095

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Set up daily, day and evening shifts

Methodology:
Aerobic and anaerobic cultureGram stain

Reported:
Up to 14 days

Additional Information:
Used for normally sterile fluids except blood, urine or CSF (e.g. joint, pericardial, peritoneal, pleural or vitreous). Includes aerobic and anaerobic cultures and Gram stain.

Reflex Testing:
If bacteria are detected that are not normal mixed flora they are automatically identified and susceptibility testing is performed.

Full ID and/or susceptibility testing may be omitted upon request when sample is submitted for testing.

Synonyms:

- Surgical tissue culture, bone marrow culture

COLLECTION

Sample Type:
Body fluid, unfixed tissue from normally sterile sites, bone marrow aspirate

Collect:
Peritoneal fluid: Aerobic and anaerobic blood culture bottles, and sterile tube
Non-peritoneal fluid: Sterile tube
Tissue: Anaerobic transport vial or sterile container
Bone marrow: SPS tube (available from Hematology Laboratory)
Swabs: E-swab (liquid Amies elution medium) or Amies transport medium with charcoal. Amies Gel and Amies/Stuart Liquid Swab Transport Systems have also been validated for culture

Amount to Collect:
Peritoneal fluid: 50 mL
Non-peritoneal fluid: 25 mL
Tissue: 5 cu mm
Bone marrow aspirate: 0.5 mL

Preferred Volume:
Peritoneal fluid: 50 mL
Non-peritoneal fluid: 25 mL
Tissue: 5 cu mm
?Bone marrow aspirate: 0.5 mL

Minimum Volume:
Peritoneal fluid: 10 mL
Non-peritoneal fluid: 0.5 mL
Tissue: 1-2 cu mm
Bone marrow aspirate: 0.5 mL

Remarks:
Submitting peritoneal fluid (abdominal fluid, ascitic fluid, dialysis fluid) for bacterial culture:

1. inoculate 10 ml into each of aerobic and anaerobic blood culture bottles at the patient's bedside for optimal growth and recovery of organisms. Divide the fluid equally among the bottles if < 20 mL is obtained.

2. Submit additional fluid in a sterile tube, which allows for gram stain to be performed and faster identification of bacteria present at high concentrations.

Submitting tissue
For tissues not collected in the OR, obtain anaerobic transport medium from Microbiology L553 or from the Mount Zion OR

Submitting bone marrow aspirate
Schedule in advance at the time the bone marrow is requested.

Stability (from collection to initiation):
Room temperature 12 hours

Unacceptable Conditions:
Swabs not received in transport medium.
Fluids received in Red Top Serum vacutainer.

PROCESSING

Test Code:
P095

Test Group:
Bacterial culture

Performing Lab:
Microbiology

Specimen Preparation:
Maintain specimen at room temperature.

Preferred Volume:
Peritoneal fluid: 50 mL
Non-peritoneal fluid: 25 mL
Tissue: 5 cu mm
?Bone marrow aspirate: 0.5 mL

Minimum Volume:
Peritoneal fluid: 10 mL
Non-peritoneal fluid: 0.5 mL
Tissue: 1-2 cu mm
Bone marrow aspirate: 0.5 mL

Unacceptable Conditions:
Swabs not received in transport medium.
Fluids received in Red Top Serum vacutainer.

Stability (from collection to initiation):
Room temperature 12 hours

RESULT INTERPRETATION

Reference Interval:
No growth

Critical Values:
Positive Gram stain

Additional Information:
Used for normally sterile fluids except blood, urine or CSF (e.g. joint, pericardial, peritoneal, pleural or vitreous). Includes aerobic and anaerobic cultures and Gram stain.

ADMINISTRATIVE

CPT Codes:
87205, 87070, 87075

COMPLETE VIEW

Available Stat:
No

Test Code:
P095

Test Group:
Bacterial culture

Performing Lab:
Microbiology

Performed:
Set up daily, day and evening shifts

Methodology:
Aerobic and anaerobic cultureGram stain

Remarks:

Submitting peritoneal fluid (abdominal fluid, ascitic fluid, dialysis fluid) for bacterial culture:

1. inoculate 10 ml into each of aerobic and anaerobic blood culture bottles at the patient's bedside for optimal growth and recovery of organisms. Divide the fluid equally among the bottles if < 20 mL is obtained.

2. Submit additional fluid in a sterile tube, which allows for gram stain to be performed and faster identification of bacteria present at high concentrations.

Submitting tissue
For tissues not collected in the OR, obtain anaerobic transport medium from Microbiology L553 or from the Mount Zion OR

Submitting bone marrow aspirate
Schedule in advance at the time the bone marrow is requested.

Collect:
Peritoneal fluid: Aerobic and anaerobic blood culture bottles, and sterile tube
Non-peritoneal fluid: Sterile tube
Tissue: Anaerobic transport vial or sterile container
Bone marrow: SPS tube (available from Hematology Laboratory)
Swabs: E-swab (liquid Amies elution medium) or Amies transport medium with charcoal. Amies Gel and Amies/Stuart Liquid Swab Transport Systems have also been validated for culture

Amount to Collect:
Peritoneal fluid: 50 mL
Non-peritoneal fluid: 25 mL
Tissue: 5 cu mm
Bone marrow aspirate: 0.5 mL

Sample Type:
Body fluid, unfixed tissue from normally sterile sites, bone marrow aspirate

Preferred Volume:
Peritoneal fluid: 50 mL
Non-peritoneal fluid: 25 mL
Tissue: 5 cu mm
?Bone marrow aspirate: 0.5 mL

Minimum Volume:
Peritoneal fluid: 10 mL
Non-peritoneal fluid: 0.5 mL
Tissue: 1-2 cu mm
Bone marrow aspirate: 0.5 mL

Unacceptable Conditions:
Swabs not received in transport medium.
Fluids received in Red Top Serum vacutainer.

Specimen Preparation:
Maintain specimen at room temperature.

Reference Interval:
No growth

Critical Values:
Positive Gram stain

Synonyms:

- Surgical tissue culture, bone marrow culture

Stability (from collection to initiation):
Room temperature 12 hours

Reported:
Up to 14 days

Reflex Testing:
If bacteria are detected that are not normal mixed flora they are automatically identified and susceptibility testing is performed.

Full ID and/or susceptibility testing may be omitted upon request when sample is submitted for testing.

Additional Information:
Used for normally sterile fluids except blood, urine or CSF (e.g. joint, pericardial, peritoneal, pleural or vitreous). Includes aerobic and anaerobic cultures and Gram stain.

CPT Codes:
87205, 87070, 87075

Bacterial Culture, Stool

P166

ORDERING

Ordering Recommendations:

Patient testing for bacterial stool pathogens is included in Gastrointestinal Pathogen Panel PCR. Stool culture will be ordered and performed by the laboratory to recover an isolate for susceptibility testing as needed, for submission to public health laboratories for epidemiological investigation, or in conjunction with Infection Control as part of exposure workup.

Approval Required:

Yes, consultation required for samples submitted > 72 hours after inpatient admission. Contact Microbiology at x31268

Available Stat:

No

Performing Lab:

Microbiology

Performed:

Set up daily, all shifts

Methodology:

Culture

Reported:

3-5 days

Additional Information:

Unusual findings such as the absence of normal gram-negative enteric flora are reported.

If suspected Yersinia species [P158] and Vibrio species [P159] must be requested separately to ensure that selective media are inoculated.

C. difficile is not cultured. If C. difficile is suspected request the C. difficile antigen assay (P328).

C. difficile is not cultured. If C. difficile is suspected request the C. difficile antigen assay (P328).

Reflex Testing:

If bacteria are detected that are not normal mixed flora they are automatically identified and susceptibility testing is performed if appropriate.

Susceptibility testing may be omitted upon request when sample is submitted for testing.

Synonyms:

- Salmonella
- Shigella
- Campylobacter
- Vibrio

COLLECTION

Sample Type:

Stool

Collect:

Urine cup or C & S (Cary & Blair) transport medium.

Stool specimens received into the lab between the hours of 23:30-06:30 should be submitted to the lab in Cary & Blair transport medium.

Amount to Collect:

5 mL

Preferred Volume:

5 mL

Minimum Volume:

Fresh stool : 0.5 mL or size of pea, Stool in C & S (Cary & Blair) transport medium: 5 mL

Remarks:

Submit unpreserved stool to laboratory within 3 hours of collection.

If specimen will be submitted to the laboratory more than 3 hours after collection, or after 11 pm when Microbiology is closed, submit stool in C & S (Cary & Blair) Medium. Add stool to red line on vial and mix well with spoon.

C & S (Cary & Blair) Medium is available from Material Services. Outpatients can obtain these from the laboratories' draw stations. For patient collect samples, order PMM 68902 C & S Medium Cary Blair 2805-05-WB (with bag and instructions). PMM 49206 C & S Medium 2805-05 (without bag or instructions) also available.

Stability (from collection to initiation):
Unpreserved 3 hours, preserved 1 week.

Unacceptable Conditions:
Unpreserved stool received > 3 hours after collection. More than two samples per day.

PROCESSING

Test Code:
P166

Test Group:
Bacterial Culture

Performing Lab:
Microbiology

Specimen Preparation:
If < 5mL stool received, add 3 parts Cary & Blair medium to 1 part stool.

Preferred Volume:
5 mL

Minimum Volume:
Fresh stool : 0.5 mL or size of pea, Stool in C & S (Cary & Blair) transport medium: 5 mL

Unacceptable Conditions:
Unpreserved stool received > 3 hours after collection. More than two samples per day.

Stability (from collection to initiation):
Unpreserved 3 hours, preserved 1 week.

RESULT INTERPRETATION

Critical Values:
Inpatient results only. After hours outpatient results will be phoned the following morning.

Stools positive with E. coli O157:H7, Vibrio cholerae, Salmonella typhi, Salmonella paratyphi A, or Salmonella cholerasuis

Additional Information:
Unusual findings such as the absence of normal gram-negative enteric flora are reported.

If suspected Yersinia species [P158] and Vibrio species [P159] must be requested separately to ensure that selective media are inoculated.

C. difficile is not cultured. If C. difficile is suspected request the C. difficile antigen assay (P328).

C. difficile is not cultured. If C. difficile is suspected request the C. difficile antigen assay (P328).

ADMINISTRATIVE

CPT Codes:
87045, 87046

LOINC Codes:
625-4

COMPLETE VIEW

Approval Required:
Yes, consultation required for samples submitted > 72 hours after inpatient admission. Contact Microbiology at x31268

Available Stat:
No

Ordering Recommendations:
Patient testing for bacterial stool pathogens is included in Gastrointestinal Pathogen Panel PCR. Stool culture will be ordered and performed by the laboratory to recover an isolate for susceptibility testing as needed, for submission to public health laboratories for epidemiological investigation, or in conjunction with Infection Control as part of exposure workup.

Test Code:
P166

Test Group:
Bacterial Culture

Performing Lab:
Microbiology

Performed:
Set up daily, all shifts

Methodology:
Culture

Remarks:
Submit unpreserved stool to laboratory within 3 hours of collection.

If specimen will be submitted to the laboratory more than 3 hours after collection, or after 11 pm when Microbiology is closed, submit stool in C & S (Cary & Blair) Medium. Add stool to red line on vial and mix well with spoon.

C & S (Cary & Blair) Medium is available from Material Services. Outpatients can obtain these from the laboratories' draw stations. For patient collect samples, order PMM 68902 C & S Medium Cary Blair 2805-05-WB (with bag and instructions). PMM 49206 C & S Medium 2805-05 (without bag or instructions) also available.

Collect:
Urine cup or C & S (Cary & Blair) transport medium.

Stool specimens received into the lab between the hours of 23:30-06:30 should be submitted to the lab in Cary & Blair transport medium.

Amount to Collect:
5 mL

Sample Type:
Stool

Preferred Volume:
5 mL

Minimum Volume:
Fresh stool : 0.5 mL or size of pea, Stool in C & S (Cary & Blair) transport medium: 5 mL

Unacceptable Conditions:
Unpreserved stool received > 3 hours after collection. More than two samples per day.

Specimen Preparation:
If < 5mL stool received, add 3 parts Cary & Blair medium to 1 part stool.

Critical Values:
Inpatient results only. After hours outpatient results will be phoned the following morning.

Stools positive with E. coli O157:H7, Vibrio cholerae, Salmonella typhi, Salmonella paratyphi A, or Salmonella cholerasuis

Synonyms:

- Salmonella
- Shigella
- Campylobacter
- Vibrio

Stability (from collection to initiation):
Unpreserved 3 hours, preserved 1 week.

Reported:
3-5 days

Reflex Testing:
If bacteria are detected that are not normal mixed flora they are automatically identified and susceptibility testing is performed if appropriate.

Susceptibility testing may be omitted upon request when sample is submitted for testing.

Additional Information:
Unusual findings such as the absence of normal gram-negative enteric flora are reported.

If suspected Yersinia species [P158] and Vibrio species [P159] must be requested separately to ensure that selective media are inoculated.

C. difficile is not cultured. If C. difficile is suspected request the C. difficile antigen assay (P328).

C. difficile is not cultured. If C. difficile is suspected request the C. difficile antigen assay (P328).

CPT Codes:
87045, 87046

LOINC Codes:
625-4

Barbiturates Screen, Urine

BARB

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Competitive homogeneous enzyme immunoassay method using G6PDH labeling.

Reported:
Stat 2 hours, routine 4 hours

Additional Information:
A concentration of < 200 µg/L is considered negative by this test. A positive result is >= 200 µg/L and indicates the presence of this class of drugs. This immunoassay is only a screening test and is not definitive. Results cannot be used for medico-legal purposes.

This assay detects a number of barbiturates at varying concentrations.

Click here for a List of Cross Reactive Substances

False positive results may occur due to other cross reacting substances, however, positive results are NOT routinely confirmed by a second method. If confirmation of the test result is required, it is the responsibility of the physician to separately order a specific confirmatory test for the drug identified. Samples are held for 7 days. Contact laboratory at x 31667 to request confirmatory testing. Confirmatory test code BARQNT. False negative results are also possible.

Barbiturates can be detected in urine from 1 up to 14 days after use (especially for phenobarbital as it is long-acting).

Synonyms:

- Butisol
- Alurate
- Amobarbital
- Amytal
- Apobarbital
- Butabarbital
- Butalbital
- Fiorinal
- Gemonil
- Metharbital
- Secobarbital
- Seconal
- Tuinal

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
See preferred volume

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Stability (from collection to initiation):
Refrigerated 1 week, frozen at -20C 2 weeks

PROCESSING

Test Code:
BARB

Test Group:
Barbiturate

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Stability (from collection to initiation):
Refrigerated 1 week, frozen at -20C 2 weeks

RESULT INTERPRETATION

Reference Interval:
Negative

Note: a negative result indicates that this class of drugs is not present, or they are present at a concentration below the cutoff concentration of 200 µg/L

Additional Information:
A concentration of < 200 µg/L is considered negative by this test. A positive result is >= 200 µg/L and indicates the presence of this class of drugs. This immunoassay is only a screening test and is not definitive. Results cannot be used for medico-legal purposes.

This assay detects a number of barbiturates at varying concentrations.

Click here for a List of Cross Reactive Substances

False positive results may occur due to other cross reacting substances, however, positive results are NOT routinely confirmed by a second method. If confirmation of the test result is required, it is the responsibility of the physician to separately order a specific confirmatory test for the drug identified. Samples are held for 7 days. Contact laboratory at x 31667 to request confirmatory testing. Confirmatory test code BARQNT. False negative results are also possible.

Barbiturates can be detected in urine from 1 up to 14 days after use (especially for phenobarbital as it is long-acting).

ADMINISTRATIVE

CPT Codes:
80307

LOINC Codes:
20664-9

COMPLETE VIEW

Available Stat:
Yes

Test Code:
BARB

Test Group:
Barbiturate

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Competitive homogeneous enzyme immunoassay method using G6PDH labeling.

Collect:
Urine cup

Amount to Collect:
See preferred volume

Sample Type:
Random urine

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Reference Interval:

Negative

Note: a negative result indicates that this class of drugs is not present, or they are present at a concentration below the cutoff concentration of 200 µg/L

Synonyms:

- Butisol
- Alurate
- Amobarbital
- Amytal
- Apobarbital
- Butabarbital
- Butalbital
- Fiorinal
- Gemonil
- Metharbital
- Secobarbital
- Seconal
- Tuinal

Stability (from collection to initiation):

Refrigerated 1 week, frozen at -20C 2 weeks

Reported:

Stat 2 hours, routine 4 hours

Additional Information:

A concentration of < 200 µg/L is considered negative by this test. A positive result is >= 200 µg/L and indicates the presence of this class of drugs. This immunoassay is only a screening test and is not definitive. Results cannot be used for medico-legal purposes.

This assay detects a number of barbiturates at varying concentrations.

Click here for a List of Cross Reactive Substances

False positive results may occur due to other cross reacting substances, however, positive results are NOT routinely confirmed by a second method. If confirmation of the test result is required, it is the responsibility of the physician to separately order a specific confirmatory test for the drug identified. Samples are held for 7 days. Contact laboratory at x 31667 to request confirmatory testing. Confirmatory test code BARQNT. False negative results are also possible.

Barbiturates can be detected in urine from 1 up to 14 days after use (especially for phenobarbital as it is long-acting).

CPT Codes:

80307

LOINC Codes:

20664-9

Barbiturates, Urine, Quantitative

BARQNT

ORDERING

Ordering Recommendations:
Use to obtain quantitative results or to follow up a presumptive result. For general screening, the preferred test is Barbiturates, Urine Screen with Reflex to Quantitation (2012211).

Available Stat:
No

Performing Lab:
ARUP

Performed:
Tue, Thu, Sat

Methodology:
Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Reported:
1-7 days

Synonyms:

- Amobarbital
- Amobarbitone
- Amytal
- Axocet
- Butalbital
- Fioricet
- Fiorinal
- Luminal
- Nembutal
- Pain Management
- Pain Management, Barbiturates, Quantitative, with medMATCH, Urine
- Pain Management, Barbiturates, with Confirmation with medMATCH, Urine
- Pentobarbital
- Phenobarbital
- Phenobarbitone
- Quinalbartbitone
- Sandoptal
- Secobarbital
- Seconal
- Solfoton
- Tuinal

COLLECTION

Collect:
Random urine.

Amount to Collect:
3.5 mL

Preferred Volume:
3.5 mL

Minimum Volume:
1.5 mL

Stability (from collection to initiation):
Ambient: 1 week; Refrigerated: 1 month; Frozen: 3 years

Storage/Transport Temperature:
Room temperature.

Unacceptable Conditions:
Specimens exposed to repeated freeze/thaw cycles.

PROCESSING

Test Code:
BARQNT

ARUP Test Code:
2012213

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transfer 3.5 mL urine with no additives or preservatives to an ARUP standard transport tube. (Min: 1.5 mL)

Additional Processing Instructions:
Aliquot and freeze. Transport to CB frozen. Order ARUP test code 2012213.

Preferred Volume:
3.5 mL

Minimum Volume:
1.5 mL

Unacceptable Conditions:
Specimens exposed to repeated freeze/thaw cycles.

Stability (from collection to initiation):
Ambient: 1 week; Refrigerated: 1 month; Frozen: 3 years

Storage/Transport Temperature:
Room temperature.

RESULT INTERPRETATION

Reference Interval:

Drugs Covered	Cutoff Concentrations
Butalbital	50 ng/mL
Pentobarbital	50 ng/mL
Phenobarbital	50 ng/mL

Interpretive Data:
Methodology: Quantitative Gas Chromatography-Mass Spectrometry/Quantitative Liquid Chromatography-Tandem Mass Spectrometry.

Positive cutoff: 50 ng/mL

For medical purposes only; not valid for forensic use.

The absence of expected drug(s) and/or drug metabolite(s) may indicate noncompliance, inappropriate timing of specimen collection relative to drug administration, poor drug absorption, diluted/adulterated urine, or limitations of testing. The concentration value must be greater than or equal to the cutoff to be reported as positive. Interpretive questions should be directed to the laboratory.

ADMINISTRATIVE

CPT Codes:
80345 (Alt code: G0480)

LOINC:

- 3926-3
- 3950-3
- 11071-8

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Use to obtain quantitative results or to follow up a presumptive result. For general screening, the preferred test is Barbiturates, Urine Screen with Reflex to Quantitation (2012211).

Test Code:
BARQNT

ARUP Test Code:
2012213

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Tue, Thu, Sat

Methodology:
Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Collect:
Random urine.

Amount to Collect:
3.5 mL

Preferred Volume:
3.5 mL

Minimum Volume:
1.5 mL

Unacceptable Conditions:
Specimens exposed to repeated freeze/thaw cycles.

Specimen Preparation:
Transfer 3.5 mL urine with no additives or preservatives to an ARUP standard transport tube. (Min: 1.5 mL)

Additional Processing Instructions:
Aliquot and freeze. Transport to CB frozen. Order ARUP test code 2012213.

Reference Interval:

Drugs Covered	Cutoff Concentrations
Butalbital	50 ng/mL
Pentobarbital	50 ng/mL
Phenobarbital	50 ng/mL

Interpretive Data:
Methodology: Quantitative Gas Chromatography-Mass Spectrometry/Quantitative Liquid Chromatography-Tandem Mass Spectrometry.

Positive cutoff: 50 ng/mL

For medical purposes only; not valid for forensic use.

The absence of expected drug(s) and/or drug metabolite(s) may indicate noncompliance, inappropriate timing of specimen collection relative to drug administration, poor drug absorption, diluted/adulterated urine, or limitations of testing. The concentration value must be greater than or equal to the cutoff to be reported as positive. Interpretive questions should be directed to the laboratory.

Synonyms:

- Amobarbital
- Amobarbitone
- Amytal
- Axocet
- Butalbital
- Fioricet
- Fiorinal
- Luminal
- Nembutal
- Pain Management
- Pain Management, Barbiturates, Quantitative, with medMATCH, Urine
- Pain Management, Barbiturates, with Confirmation with medMATCH, Urine
- Pentobarbital
- Phenobarbital
- Phenobarbitone
- Quinalbartbitone
- Sandoptal
- Secobarbital
- Seconal
- Solfoton
- Tuinal

Storage/Transport Temperature:
Room temperature.

Stability (from collection to initiation):
Ambient: 1 week; Refrigerated: 1 month; Frozen: 3 years

Reported:
1-7 days

CPT Codes:
80345 (Alt code: G0480)

LOINC:

- 3926-3
- 3950-3
- 11071-8

Notes:
Compare to; Pain Management, Barbiturates, Quantitative, with medMATCH, Urine; Pain Management, Barbiturates, with Confirmation with medMATCH, Urine.

Basic Metabolic Panel, Fasting

FBMP

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Chemistry: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center (Mon-Fri 0800-1630)

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
Includes sodium, potassium, chloride, total carbon dioxide, BUN, creatinine, fasting glucose, and total calcium.

Individual tests may be ordered separately.

Synonyms:

- Chem 7
- Chem 8
- Chem 10
- BMP

COLLECTION

Sample Type:
Plasma or serum

Collect:
Light Green top preferred, Gold top acceptable

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL plasma or serum

Minimum Volume:
0.5 mL plasma or serum

PROCESSING

Test Code:
FBMP

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Preferred Volume:
2 mL plasma or serum

Minimum Volume:
0.5 mL plasma or serum

RESULT INTERPRETATION

Units:
Various (see normal ranges)

Reference Interval:
See individual test entries

Critical Values:

Sodium	< 125 or > 155 mmol/L
Potassium	< 3.0 or > 6.0 mmol/L
CO2, Total	< 15 or > 40 mmol/L
Glucose, neonate	< 30 or > 170 mg/dL
Glucose, children & adults	< 50 or > 500 mg/dL
Calcium, Total	< 6.5 or > 13.5 mg/dL

Additional Information:

Includes sodium, potassium, chloride, total carbon dioxide, BUN, creatinine, fasting glucose, and total calcium.

Individual tests may be ordered separately.

ADMINISTRATIVE

CPT Codes:
80048

LOINC Codes:
24321-2

COMPLETE VIEW

Available Stat:
Yes

Test Code:
FBMP

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Chemistry: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center (Mon-Fri 0800-1630)

Collect:
Light Green top preferred, Gold top acceptable

Amount to Collect:
4 mL blood

Sample Type:
Plasma or serum

Preferred Volume:
2 mL plasma or serum

Minimum Volume:
0.5 mL plasma or serum

Units:
Various (see normal ranges)

Reference Interval:
See individual test entries

Critical Values:

Sodium	< 125 or > 155 mmol/L
Potassium	< 3.0 or > 6.0 mmol/L
CO2, Total	< 15 or > 40 mmol/L
Glucose, neonate	< 30 or > 170 mg/dL
Glucose, children & adults	< 50 or > 500 mg/dL
Calcium, Total	< 6.5 or > 13.5 mg/dL

Synonyms:

- Chem 7
- Chem 8
- Chem 10
- BMP

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:

Includes sodium, potassium, chloride, total carbon dioxide, BUN, creatinine, fasting glucose, and total calcium.

Individual tests may be ordered separately.

CPT Codes:

80048

LOINC Codes:

24321-2

Basic Metabolic Panel, Random

NBMP

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Chemistry: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center (Mon-Fri 0800-1630)

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
Includes sodium, potassium, chloride, total carbon dioxide, BUN, creatinine, random glucose, and total calcium.

Individual tests may be ordered separately.

Synonyms:

- Chem 7
- Chem 8
- Chem 10
- BMP

COLLECTION

Sample Type:
Plasma or serum

Collect:
Light Green top preferred, Gold top acceptable

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL plasma or serum

Minimum Volume:
0.5 mL plasma or serum

PROCESSING

Test Code:
NBMP

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Preferred Volume:
2 mL plasma or serum

Minimum Volume:
0.5 mL plasma or serum

RESULT INTERPRETATION

Units:
Various (see normal ranges)

Reference Interval:
See individual test entries

Critical Values:

Sodium	< 125 or > 155 mmol/L
Potassium	< 3.0 or > 6.0 mmol/L
CO2, Total	< 15 or > 40 mmol/L
Glucose, neonate	< 30 or > 170 mg/dL
Glucose, children & adults	< 50 or > 500 mg/dL
Calcium, Total	< 6.5 or > 13.5 mg/dL

Additional Information:

Includes sodium, potassium, chloride, total carbon dioxide, BUN, creatinine, random glucose, and total calcium.

Individual tests may be ordered separately.

ADMINISTRATIVE

CPT Codes:
80048

LOINC Codes:
24321-2

COMPLETE VIEW

Available Stat:
Yes

Test Code:
NBMP

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Chemistry: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center (Mon-Fri 0800-1630)

Collect:
Light Green top preferred, Gold top acceptable

Amount to Collect:
4 mL blood

Sample Type:
Plasma or serum

Preferred Volume:
2 mL plasma or serum

Minimum Volume:
0.5 mL plasma or serum

Units:
Various (see normal ranges)

Reference Interval:
See individual test entries

Critical Values:

Sodium	< 125 or > 155 mmol/L
Potassium	< 3.0 or > 6.0 mmol/L
CO2, Total	< 15 or > 40 mmol/L
Glucose, neonate	< 30 or > 170 mg/dL
Glucose, children & adults	< 50 or > 500 mg/dL
Calcium, Total	< 6.5 or > 13.5 mg/dL

Synonyms:

- Chem 7
- Chem 8
- Chem 10
- BMP

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:

Includes sodium, potassium, chloride, total carbon dioxide, BUN, creatinine, random glucose, and total calcium.

Individual tests may be ordered separately.

CPT Codes:

80048

LOINC Codes:

24321-2

B-Cell ImmunoCompetency Panel

BCIP

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday - Thursday, day shift

Methodology:
Flow Cytometry

Reported:
2-3 days

Synonyms:

- B-Cell ImmunoComp Panel, BCIP
- B-cell Phenotyping Profile

COLLECTION

Sample Type:
Blood

Collect:
Lavender top

Amount to Collect:
3 mL

Preferred Volume:
3 mL

Minimum Volume:
2 mL

Remarks:
Do not draw samples for this test on Friday, weekends, UCSF observed holidays or long weekends. Samples drawn on the day before holidays must be received in the hospital lab by 11am (to get onto latest 11:45am courier) or they cannot be processed.

Stability (from collection to initiation):
Room temperature, within 24 hours

Unacceptable Conditions:
Refrigerated sample received. Sample > 24 hours old when received.

PROCESSING

Test Code:
BCIP

Performing Lab:
Immunology

Specimen Preparation:
DO NOT refrigerate, store at room temperature and ship to China Basin.

Samples received on Friday, weekends and UCSF holidays will not be processed or saved. Samples received on the day before holidays must be received in hospital lab by 11am (to get onto latest 11:45am courier) or it cannot be processed or saved.

Preferred Volume:
3 mL

Minimum Volume:
2 mL

Unacceptable Conditions:
Refrigerated sample received. Sample > 24 hours old when received.

Stability (from collection to initiation):
Room temperature, within 24 hours

RESULT INTERPRETATION

Units:
%

Reference Interval:

%CD19+ of total lymphs	5.3 - 23.3
%CD20+ of total lymphs	4.8 - 22.0
%CD27+ of CD19+ B-cells	10.7 - 46.2
%CD27+/IgM+/IgD+ of CD19+ B-cells	1.6 - 23.1
%CD27+/IgM-/IgD- of CD19+ B-cells	4.8 - 24.9
%CD27+/IgM+/IgD- of CD19+ B-cells	0.5 - 6.2
%IgM+ of CD19+ B-cells	21.2 - 78.7
%CD38+/IgM- of CD19+ B-cells	0.5 - 5.4
%CD38+/IgM+ of CD19+ B-cells	1.0 - 8.1
%CD21+ of CD19+ B-cells	93.7 - 100.0
%CD21- of CD19+ B-cells	0.9 - 7.0
%CD38+/CD24- of CD19+ B-cells	0.5 - 5.4
%CD38+/CD24+ of CD19+ B-cells	1.0 - 8.1

Note: Reference values are for >= 18 year olds. For pediatric ranges please see:
Piatosa, B, et al. 2010. B Cell Subsets in Healthy Children: Reference Values for Evaluation of B Cell Maturation Process in Peripheral Blood. Cytometry Part B (Clinical Cytometry) 788:372-381

ADMINISTRATIVE

CPT Codes:
88184; 88185 x 6

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BCIP

Performing Lab:
Immunology

Performed:
Monday - Thursday, day shift

Methodology:
Flow Cytometry

Remarks:
Do not draw samples for this test on Friday, weekends, UCSF observed holidays or long weekends. Samples drawn on the day before holidays must be received in the hospital lab by 11am (to get onto latest 11:45am courier) or they cannot be processed.

Collect:
Lavender top

Amount to Collect:
3 mL

Sample Type:
Blood

Preferred Volume:
3 mL

Minimum Volume:
2 mL

Unacceptable Conditions:
Refrigerated sample received. Sample > 24 hours old when received.

Specimen Preparation:

DO NOT refrigerate, store at room temperature and ship to China Basin.

Samples received on Friday, weekends and UCSF holidays will not be processed or saved. Samples received on the day before holidays must be received in hospital lab by 11am (to get onto latest 11:45am courier) or it cannot be processed or saved.

Units:

%

Reference Interval:

%CD19+ of total lymphs	5.3 - 23.3
%CD20+ of total lymphs	4.8 - 22.0
%CD27+ of CD19+ B-cells	10.7 - 46.2
%CD27+/IgM+/IgD+ of CD19+ B-cells	1.6 - 23.1
%CD27+/IgM-/IgD- of CD19+ B-cells	4.8 - 24.9
%CD27+/IgM+/IgD- of CD19+ B-cells	0.5 - 6.2
%IgM+ of CD19+ B-cells	21.2 - 78.7
%CD38+/IgM- of CD19+ B-cells	0.5 - 5.4
%CD38+/IgM+ of CD19+ B-cells	1.0 - 8.1
%CD21+ of CD19+ B-cells	93.7 - 100.0
%CD21- of CD19+ B-cells	0.9 - 7.0
%CD38+/CD24- of CD19+ B-cells	0.5 - 5.4
%CD38+/CD24+ of CD19+ B-cells	1.0 - 8.1

Note: Reference values are for >= 18 year olds. For pediatric ranges please see:
Piatosa, B, et al. 2010. B Cell Subsets in Healthy Children: Reference Values for Evaluation of B Cell Maturation Process in Peripheral Blood. Cytometry Part B (Clinical Cytometry) 788:372-381

Synonyms:

- B-Cell ImmunoComp Panel, BCIP
- B-cell Phenotyping Profile

Stability (from collection to initiation):

Room temperature, within 24 hours

Reported:

2-3 days

CPT Codes:

88184; 88185 x 6

LDT or Modified FDA:

Yes

BCL2 18q21.3 Break Apart Rearrangement FISH

BBCL2, BCL2

ORDERING

Available Stat:
No

Performing Lab:
Cytogenetics

Performed:
Daily weekdays

Methodology:
FISH

Reported:
7~14 days

Synonyms:

- BCL2 Dual Color Break Apart Rearrangement FISH, BCL2 18q21.3 Dual Color Break Apart Rearrangement FISH, blood

COLLECTION

Sample Type:
Blood

Collect:
Dark Green top for bone marrow, sterile container with medium for bone core.

Amount to Collect:
2ml blood

Preferred Volume:
2ml blood

Minimum Volume:
1ml blood

Remarks:
Mix well, do not spin, keep at room temperature.

Stability (from collection to initiation):
48 hours

Unacceptable Conditions:
Leaking, frozen and unlabeled samples.

PROCESSING

Test Code:
BBCL2: Blood
BCL2: Non-blood

Test Group:
Cytogenetics

Performing Lab:
Cytogenetics

Specimen Preparation:
Do not refrigerate or freeze sample, call lab before sample rejection.

Preferred Volume:
2ml blood

Minimum Volume:
1ml blood

Unacceptable Conditions:
Leaking, frozen and unlabeled samples.

Stability (from collection to initiation):
48 hours

ADMINISTRATIVE

CPT Codes:
88271x1, 88271x1, 88275x1

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BBCL2: Blood
BCL2: Non-blood

Test Group:
Cytogenetics

Performing Lab:
Cytogenetics

Performed:
Daily weekdays

Methodology:
FISH

Remarks:
Mix well, do not spin, keep at room temperature.

Collect:
Dark Green top for bone marrow, sterile container with medium for bone core.

Amount to Collect:
2ml blood

Sample Type:
Blood

Preferred Volume:
2ml blood

Minimum Volume:
1ml blood

Unacceptable Conditions:
Leaking, frozen and unlabeled samples.

Specimen Preparation:
Do not refrigerate or freeze sample, call lab before sample rejection.

Synonyms:

- BCL2 Dual Color Break Apart Rearrangement FISH, BCL2 18q21.3 Dual Color Break Apart Rearrangement FISH, blood

Stability (from collection to initiation):
48 hours

Reported:
7~14 days

CPT Codes:
88271x1, 88271x1, 88275x1

LDT or Modified FDA:
Yes

BCL6 Chromosome 3Q27 Rearrangement FISH

BCL6, BBCL6

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Fluorescence in situ Hybridization (break apart FISH)

Reported:
1-2 weeks

Synonyms:

- BCL6
- BBCL6

COLLECTION

Sample Type:
Heparinized whole blood, Bone marrow aspirate, Bone marrow biopsy

Collect:
Dark green top vacutainer

Amount to Collect:
Whole blood: 2 ml
Bone marrow: 2 ml
Bone core: 2 cm

Preferred Volume:
Whole blood: 2 ml
Bone marrow: 2 ml
?Bone core: 2 cm

Minimum Volume:
Whole blood: 1 ml
Bone marrow: 1 ml
?Bone core: 1 cm

Remarks:
Make sure blood or marrow aspirate is well mixed in the Dark Green top. Keep sample at room temperature

Stability (from collection to initiation):
2 days

Unacceptable Conditions:
Frozen cracked, leaking or unlabeled samples

PROCESSING

Test Code:
BBCL6: Blood
BCL6: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Preferred Volume:
Whole blood: 2 ml
Bone marrow: 2 ml
?Bone core: 2 cm

Minimum Volume:
Whole blood: 1 ml
Bone marrow: 1 ml
?Bone core: 1 cm

Unacceptable Conditions:
Frozen cracked, leaking or unlabeled samples

Stability (from collection to initiation):
2 days

ADMINISTRATIVE

CPT Codes:
88271 x2, 88275

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BBCL6: Blood
BCL6: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Fluorescence in situ Hybridization (break apart FISH)

Remarks:
Make sure blood or marrow aspirate is well mixed in the Dark Green top. Keep sample at room temperature

Collect:
Dark green top vacutainer

Amount to Collect:
Whole blood: 2 ml
Bone marrow: 2 ml
Bone core: 2 cm

Sample Type:
Heparinized whole blood, Bone marrow aspirate, Bone marrow biopsy

Preferred Volume:
Whole blood: 2 ml
Bone marrow: 2 ml
?Bone core: 2 cm

Minimum Volume:
Whole blood: 1 ml
Bone marrow: 1 ml
?Bone core: 1 cm

Unacceptable Conditions:
Frozen cracked, leaking or unlabeled samples

Synonyms:

- BCL6
- BBCL6

Stability (from collection to initiation):
2 days

Reported:
1-2 weeks

CPT Codes:
88271 x2, 88275

LDT or Modified FDA:
Yes

BCR/ABL Quantitative

BCRABL

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Molecular Diagnostics

Performed:
Run 2x per week, Monday & Wednesday, day shift only

Methodology:
Realtime qPCR

Reported:
7-14 days

Additional Information:
A reciprocal translocation between chromosomes 9 and 22 results in the Philadelphia chromosome, which is commonly associated with chronic myelogenous leukemia (CML) and to a lesser extent with acute lymphocytic leukemia (ALL) or acute myeloid leukemia (AML). The oncogenic culprit of the Philadelphia chromosome stems from the fusion of two genes BCR and ABL1, located on chromosomes 22 and 9, respectively. The resulting BCR-ABL1 fusion gene produces an abnormal protein with increased tyrosine kinase activity that activates multiple intracellular signaling pathways, culminating in excessive growth of hematopoietic cells.

Three different variants of the BCR-ABL1 fusion gene correspond to the major, minor and micro breakpoints, which encode respectively for the p210, p190 and p230 proteins, all of which are detected by this assay. The majority of CML patients carry the p210 translocation, whereas the p190 translocation is present in approximately 20% of ALL patients and occasionally in AML. While the p230 translocation has also been detected in classic CML, it has also been found in a subset of patients with chronic neutrophilic leukemia (CNL).

Treatment of patients with CML and ALL is aimed at the eradication of BCR-ABL1 positive tumor cells with tyrosine kinase inhibitors and minimal residual disease monitoring of the therapy effectiveness is achieved by this assay with the quantitative monitoring of BCR-ABL1 mRNA expression.

This realtime qPCR test will detect and quantitate the p210, p190 and p230 BCR-ABL1 translocations. The assay sensitivity is about 1 in 100,000 BCR-ABL1 positive K562 cells and spans 4-5 logs. Results are reported as on the Internal Scale (IS) for p210 (b3a2, b2a2) and as percent ratios for p190 (e1a2) and p230 (e19a2) translocations. Results of minimal residual disease testing are best interpreted in light of previous results obtained from the same laboratory. Inter-laboratory comparison of IS ratios remains variable.

This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Synonyms:

- CML
- Chronic mylogenous leukemia
- Philadelphia chromosome
- Breakpoint cluster region
- Translocation 9:22
- t(9:22)
- ALL
- Realtime-qPCR
- Ph+ Acute Lymphoblastic Leukemia
- p210
- p190
- p230

COLLECTION

Sample Type:
EDTA whole blood, Marrow

Collect:
Lavender top

Amount to Collect:
Blood: 5 mL
Bone marrow aspirate: 2 mL

Preferred Volume:
Blood: 5 mL
Bone marrow aspirate: 2 mL

Minimum Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL

Remarks:
Due to limited stability, samples for this test should not be collected the day before a holiday or 3-day weekend.

Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Stability (from collection to initiation):
Refrigerated 3 days.

Unacceptable Conditions:
Heparinized samples
Frozen samples

PROCESSING

Test Code:
BCRABL

Test Group:
BCRABL

Performing Lab:
Medical Genomics - Molecular Diagnostics

Specimen Preparation:
Do not centrifuge. Refrigerate sample, DO NOT freeze.

Preferred Volume:
Blood: 5 mL
Bone marrow aspirate: 2 mL

Minimum Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL

Unacceptable Conditions:
Heparinized samples
Frozen samples

Stability (from collection to initiation):
Refrigerated 3 days.

RESULT INTERPRETATION

Units:
% IS bcr:abl/abl ratio

Reference Interval:
No bcr:abl transcripts detected

Additional Information:

A reciprocal translocation between chromosomes 9 and 22 results in the Philadelphia chromosome, which is commonly associated with chronic myelogenous leukemia (CML) and to a lesser extent with acute lymphocytic leukemia (ALL) or acute myeloid leukemia (AML). The oncogenic culprit of the Philadelphia chromosome stems from the fusion of two genes BCR and ABL1, located on chromosomes 22 and 9, respectively. The resulting BCR-ABL1 fusion gene produces an abnormal protein with increased tyrosine kinase activity that activates multiple intracellular signaling pathways, culminating in excessive growth of hematopoietic cells.

Three different variants of the BCR-ABL1 fusion gene correspond to the major, minor and micro breakpoints, which encode respectively for the p210, p190 and p230 proteins, all of which are detected by this assay. The majority of CML patients carry the p210 translocation, whereas the p190 translocation is present in approximately 20% of ALL patients and occasionally in AML. While the p230 translocation has also been detected in classic CML, it has also been found in a subset of patients with chronic neutrophilic leukemia (CNL).

Treatment of patients with CML and ALL is aimed at the eradication of BCR-ABL1 positive tumor cells with tyrosine kinase inhibitors and minimal residual disease monitoring of the therapy effectiveness is achieved by this assay with the quantitative monitoring of BCR-ABL1 mRNA expression.

This realtime qPCR test will detect and quantitate the p210, p190 and p230 BCR-ABL1 translocations. The assay sensitivity is about 1 in 100,000 BCR-ABL1 positive K562 cells and spans 4-5 logs. Results are reported as on the Internal Scale (IS) for p210 (b3a2, b2a2) and as percent ratios for p190 (e1a2) and p230 (e19a2) translocations. Results of minimal residual disease testing are best interpreted in light of previous results obtained from the same laboratory. Inter-laboratory comparison of IS ratios remains variable.

This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

ADMINISTRATIVE

CPT Codes:
81206, 81207, 81208

LDT or Modified FDA:
Yes

LOINC Codes:
46434-7

COMPLETE VIEW

Available Stat:
No

Test Code:
BCRABL

Test Group:
BCRABL

Performing Lab:
Medical Genomics - Molecular Diagnostics

Performed:
Run 2x per week, Monday & Wednesday, day shift only

Methodology:
Realtime qPCR

Remarks:
Due to limited stability, samples for this test should not be collected the day before a holiday or 3-day weekend.

Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Collect:
Lavender top

Amount to Collect:
Blood: 5 mL
Bone marrow aspirate: 2 mL

Sample Type:
EDTA whole blood, Marrow

Preferred Volume:
Blood: 5 mL
Bone marrow aspirate: 2 mL

Minimum Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL

Unacceptable Conditions:
Heparinized samples
Frozen samples

Specimen Preparation:
Do not centrifuge. Refrigerate sample, DO NOT freeze.

Units:
% IS bcr:abl/abl ratio

Reference Interval:
No bcr:abl transcripts detected

Synonyms:

- CML
- Chronic mylogenous leukemia
- Philadelphia chromosome
- Breakpoint cluster region
- Translocation 9:22
- t(9:22)
- ALL
- Realtime-qPCR
- Ph+ Acute Lymphoblastic Leukemia
- p210
- p190
- p230

Stability (from collection to initiation):
Refrigerated 3 days.

Reported:
7-14 days

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Additional Information:
A reciprocal translocation between chromosomes 9 and 22 results in the Philadelphia chromosome, which is commonly associated with chronic myelogenous leukemia (CML) and to a lesser extent with acute lymphocytic leukemia (ALL) or acute myeloid leukemia (AML). The oncogenic culprit of the Philadelphia chromosome stems from the fusion of two genes BCR and ABL1, located on chromosomes 22 and 9, respectively. The resulting BCR-ABL1 fusion gene produces an abnormal protein with increased tyrosine kinase activity that activates multiple intracellular signaling pathways, culminating in excessive growth of hematopoietic cells.

Three different variants of the BCR-ABL1 fusion gene correspond to the major, minor and micro breakpoints, which encode respectively for the p210, p190 and p230 proteins, all of which are detected by this assay. The majority of CML patients carry the p210 translocation, whereas the p190 translocation is present in approximately 20% of ALL patients and occasionally in AML. While the p230 translocation has also been detected in classic CML, it has also been found in a subset of patients with chronic neutrophilic leukemia (CNL).

Treatment of patients with CML and ALL is aimed at the eradication of BCR-ABL1 positive tumor cells with tyrosine kinase inhibitors and minimal residual disease monitoring of the therapy effectiveness is achieved by this assay with the quantitative monitoring of BCR-ABL1 mRNA expression.

This realtime qPCR test will detect and quantitate the p210, p190 and p230 BCR-ABL1 translocations. The assay sensitivity is about 1 in 100,000 BCR-ABL1 positive K562 cells and spans 4-5 logs. Results are reported as on the Internal Scale (IS) for p210 (b3a2, b2a2) and as percent ratios for p190 (e1a2) and p230 (e19a2) translocations. Results of minimal residual disease testing are best interpreted in light of previous results obtained from the same laboratory. Inter-laboratory comparison of IS ratios remains variable.

This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

CPT Codes:
81206, 81207, 81208

LDT or Modified FDA:
Yes

LOINC Codes:
46434-7

BCR/ABL translocation FISH

TR922, BT922

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Set up Monday-Friday only.

Methodology:
Fluorescent in-situ hybridization

Reported:
2-5 days

Synonyms:

- PCR
- CML
- Chronic mylogenous leukemia
- Philadelphia chromosome
- PH1 chromosome
- Breakpoint cluster region
- Tyrosine kinase
- Translocation 9:22
- t(9:22)
- Ph' chromosome
- ALL
- Cytogenetic analysis
- Karyotype
- Karyotyping
- TR922
- BT922

COLLECTION

Sample Type:
Heparinized whole blood, bone marrow, bone core

Collect:
Blood & bone marrow aspirate: 15 mL centrifuge tube with transport media (RPMI, FBS, L-Glutamine, Sodium Heparin and PenStrep). Available from Cytogenetics, 415-353-4844. Dark Green top also acceptable

Bone marrow core: 15 mL centrifuge tube with transport media (RPMI, FBS, L-Glutamine, Sodium Heparin and PenStrep). Available from Cytogenetics, 415-353-4844.

Amount to Collect:
Bone marrow: 2 mL
Blood: 2 mL
Bone core: 2 cm

Preferred Volume:
Bone marrow: 2 mL
Blood: 2 mL
?Bone core: 2 cm

Minimum Volume:
Bone marrow: 1 mL
Blood: 1 mL
?Bone core: 1 cm

Stability (from collection to initiation):
48 hours

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

PROCESSING

Test Code:
BT922: Blood
TR922: Bone marrow

Test Group:
BCRABL

Performing Lab:
Medical Genomics - Cytogenetics

Specimen Preparation:
Maintain sample at room temperature. Transport to CB Cytogenetics within 24 hours

Preferred Volume:
Bone marrow: 2 mL
Blood: 2 mL
?Bone core: 2 cm

Minimum Volume:
Bone marrow: 1 mL
Blood: 1 mL
?Bone core: 1 cm

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

Stability (from collection to initiation):
48 hours

RESULT INTERPRETATION

Reference Interval:
Not detected

ADMINISTRATIVE

CPT Codes:
88271ZS, 88275ZS

LDT or Modified FDA:
Yes

LOINC Codes:
51867-0

COMPLETE VIEW

Available Stat:
No

Test Code:
BT922: Blood
TR922: Bone marrow

Test Group:
BCRABL

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Set up Monday-Friday only.

Methodology:
Fluorescent in-situ hybridization

Collect:
Blood & bone marrow aspirate: 15 mL centrifuge tube with transport media (RPMI, FBS, L-Glutamine, Sodium Heparin and PenStrep). Available from Cytogenetics, 415-353-4844. Dark Green top also acceptable

Bone marrow core: 15 mL centrifuge tube with transport media (RPMI, FBS, L-Glutamine, Sodium Heparin and PenStrep). Available from Cytogenetics, 415-353-4844.

Amount to Collect:
Bone marrow: 2 mL
Blood: 2 mL
Bone core: 2 cm

Sample Type:
Heparinized whole blood, bone marrow, bone core

Preferred Volume:
Bone marrow: 2 mL
Blood: 2 mL
?Bone core: 2 cm

Minimum Volume:
Bone marrow: 1 mL
Blood: 1 mL
?Bone core: 1 cm

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

Specimen Preparation:
Maintain sample at room temperature. Transport to CB Cytogenetics within 24 hours

Reference Interval:
Not detected

Synonyms:

- PCR
- CML
- Chronic mylogenous leukemia
- Philadelphia chromosome
- PH1 chromosome
- Breakpoint cluster region
- Tyrosine kinase
- Translocation 9:22
- t(9:22)
- Ph' chromosome
- ALL
- Cytogenetic analysis
- Karyotype
- Karyotyping
- TR922
- BT922

Stability (from collection to initiation):
48 hours

Reported:
2-5 days

CPT Codes:
88271ZS, 88275ZS

LDT or Modified FDA:
Yes

LOINC Codes:
51867-0

Beckwith-Wiedemann Syndrome

MOLT

ORDERING

Approval Required:
Yes

Available Stat:
No

Performing Lab:
Mayo

Methodology:
Methylation-sensitive multiple ligation-dependent probe amplification is utilized to test for the presence of large deletions, duplications, and methylation defects in the imprinting center 1 (IC1) (H19) and IC2 (LIT1) critical regions on chromosome 11p15.

Reported:
2 weeks

Additional Information:

Beckwith-Wiedemann syndrome (BWS) is a disorder characterized by prenatal and/or postnatal overgrowth, neonatal hypoglycemia, congenital malformations, and an increased risk for embryonal tumors. Physical findings are variable and can include abdominal wall defects, macroglossia, and hemihyperplasia. The predisposition for tumor development is associated with specific tumor types such as adrenal carcinoma, nephroblastoma (Wilms tumor), hepatoblastoma, and rhabdomyosarcoma. In infancy, BWS has a mortality rate of approximately 20%.

Current data suggest that the etiology of BWS is due to dysregulation of imprinted genes in the 11p15 region of chromosome 11, including H19 (maternally expressed), LIT1 (official symbol KCNQ1OT1; paternally expressed), IGF2 (paternally expressed), and CDKN1C (aliases p57 and KIP2; maternally expressed). Expression of these genes is controlled by 2 imprinting centers (IC).

Approximately 85% of BWS cases appear to be sporadic, while 15% of cases are associated with an autosomal dominant inheritance pattern. When a family history is present, the etiology is often due to inherited point mutations in CDKN1C or an unknown cause. The etiology of sporadic cases includes:

-Hypomethylation of imprinting center 2 (IC2) (LIT1): approximately 50% to 60%
-Paternal uniparental disomy of chromosome 11: approximately 10% to 20%
-Hypermethylation of imprinting center 1 (IC1) (H19): approximately 2% to 7%
-Unknown: approximately 10% to 20% -Point mutation in CDKN1C: approximately 5% to 10%
-Cytogenetic abnormality: approximately 1% to 2%
-Differentially methylated region 1 (DMR1) or DMR2 microdeletion: rare

The clinical presentation of BWS is dependent on which gene in the 11p15 region is involved. The risk for cancer has been shown to be significantly higher in patients with abnormal methylation of IC1 (H19) versus IC2 (LIT1). In patients with abnormal methylation of IC2 (LIT1), abdominal wall defects and overgrowth are seen at a higher frequency. Russell-Silver syndrome (RSS) is a rare genetic condition with an incidence of approximately 1 in 100,000. RSS is characterized by pre- and postnatal growth retardation with normal head circumference, characteristic facies, fifth finger clinodactyly, and asymmetry of the face, body, and/or limbs. Less commonly observed clinical features include cafe au lait spots, genitourinary anomalies, motor, speech, cognitive delays, and hypoglycemia. Although clinical diagnostic criteria have been developed, it has been demonstrated that many patients with molecularly confirmed RSS do not meet strict clinical diagnostic criteria for RSS. Therefore, most groups recommend a relatively low threshold for considering molecular testing in suspected cases of RSS.

RSS is a genetically heterogeneous condition that is associated with genetic and epigenetic alterations at chromosome 7 and the chromosome 11p15.5 region. The majority of cases of RSS are sporadic, although familial cases have been reported. The etiology of sporadic cases of RSS includes:

-Hypomethylation of IC1 (H19): approximately 30% to 50%
-Maternal uniparental disomy (UPD) of chromosome 7: approximately 5% to 10%*
-11p15.5 duplications: rare
-Chromosome 7 duplications: rare*

*Note that this test does not detect chromosome 7 UPD. However, testing is available; order UNIPD / Uniparental Disomy.

The clinical phenotype of RSS has been associated with the specific underlying molecular etiology. Patients with hypomethylation of IC1 (H19) are more likely to exhibit "classic" RSS phenotype (ie, severe intrauterine growth retardation, postnatal growth retardation, and asymmetry), while patients with maternal UPD7 often show a milder clinical phenotype. Despite these general genotype-phenotype correlations, many exceptions have been reported.

Methylation abnormalities of IC1 (H19) and IC2 (LIT1) can be detected by methylation-sensitive multiple ligation-dependent probe amplification. While testing can determine methylation status, it does not identify the mechanism responsible for the methylation defect (such as paternal uniparental disomy or cytogenetic abnormalities). Hypomethylation of IC2 (LIT1) is hypothesized to silence the expression of a number of maternally expressed genes, including CDKN1C. Hypermethylation of IC1 is hypothesized to silence the expression of H19, while also resulting in overexpression of IGF2. Absence of CDKN1C and H19 expression, in addition to overexpression of IGF2, is postulated to contribute to the clinical phenotype of BWS. Hypomethylation of IC1 is hypothesized to result in overexpression of H19 and underexpression of the IGF2, which is thought to contribute to the clinical phenotype of RSS.

Synonyms:

- BWS
- Overgrowth Disorder
- Imprinted disorder
- macroglossia
- LIT1

COLLECTION

Sample Type:

EDTA Whole blood, Cultured amniocytes, cultured chorionic villi

Collect:

Lavender top

Amount to Collect:
5 mL blood

Preferred Volume:
Blood: 5 mL
Cultured amniocytes: 2x T25 flasks, 80% confluent
Cultured chorionic villi: 2x T25 flasks, 80% confluent

Minimum Volume:
Blood: 3 mL
Cultured amniocytes: 2x T25 flasks, 80% confluent
?Cultured chorionic villi: 2x T25 flasks, 80% confluent

Unacceptable Conditions:
Blood collected in heparin. Deficient confluency in cultured cell flasks.

PROCESSING

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Do not centrifuge. Do not freeze. Refrigerate sample

Preferred Volume:
Blood: 5 mL
Cultured amniocytes: 2x T25 flasks, 80% confluent
Cultured chorionic villi: 2x T25 flasks, 80% confluent

Minimum Volume:
Blood: 3 mL
Cultured amniocytes: 2x T25 flasks, 80% confluent
?Cultured chorionic villi: 2x T25 flasks, 80% confluent

Unacceptable Conditions:
Blood collected in heparin. Deficient confluency in cultured cell flasks.

RESULT INTERPRETATION

Additional Information:

Beckwith-Wiedemann syndrome (BWS) is a disorder characterized by prenatal and/or postnatal overgrowth, neonatal hypoglycemia, congenital malformations, and an increased risk for embryonal tumors. Physical findings are variable and can include abdominal wall defects, macroglossia, and hemihyperplasia. The predisposition for tumor development is associated with specific tumor types such as adrenal carcinoma, nephroblastoma (Wilms tumor), hepatoblastoma, and rhabdomyosarcoma. In infancy, BWS has a mortality rate of approximately 20%.

Current data suggest that the etiology of BWS is due to dysregulation of imprinted genes in the 11p15 region of chromosome 11, including H19 (maternally expressed), LIT1 (official symbol KCNQ1OT1; paternally expressed), IGF2 (paternally expressed), and CDKN1C (aliases p57 and KIP2; maternally expressed). Expression of these genes is controlled by 2 imprinting centers (IC).

Approximately 85% of BWS cases appear to be sporadic, while 15% of cases are associated with an autosomal dominant inheritance pattern. When a family history is present, the etiology is often due to inherited point mutations in CDKN1C or an unknown cause. The etiology of sporadic cases includes:

-Hypomethylation of imprinting center 2 (IC2) (LIT1): approximately 50% to 60%
-Paternal uniparental disomy of chromosome 11: approximately 10% to 20%
-Hypermethylation of imprinting center 1 (IC1) (H19): approximately 2% to 7%
-Unknown: approximately 10% to 20% -Point mutation in CDKN1C: approximately 5% to 10%
-Cytogenetic abnormality: approximately 1% to 2%
-Differentially methylated region 1 (DMR1) or DMR2 microdeletion: rare

The clinical presentation of BWS is dependent on which gene in the 11p15 region is involved. The risk for cancer has been shown to be significantly higher in patients with abnormal methylation of IC1 (H19) versus IC2 (LIT1). In patients with abnormal methylation of IC2 (LIT1), abdominal wall defects and overgrowth are seen at a higher frequency. Russell-Silver syndrome (RSS) is a rare genetic condition with an incidence of approximately 1 in 100,000. RSS is characterized by pre- and postnatal growth retardation with normal head circumference, characteristic facies, fifth finger clinodactyly, and asymmetry of the face, body, and/or limbs. Less commonly observed clinical features include cafe au lait spots, genitourinary anomalies, motor, speech, cognitive delays, and hypoglycemia. Although clinical diagnostic criteria have been developed, it has been demonstrated that many patients with molecularly confirmed RSS do not meet strict clinical diagnostic criteria for RSS. Therefore, most groups recommend a relatively low threshold for considering molecular testing in suspected cases of RSS.

RSS is a genetically heterogeneous condition that is associated with genetic and epigenetic alterations at chromosome 7 and the chromosome 11p15.5 region. The majority of cases of RSS are sporadic, although familial cases have been reported. The etiology of sporadic cases of RSS includes:

-Hypomethylation of IC1 (H19): approximately 30% to 50%
-Maternal uniparental disomy (UPD) of chromosome 7: approximately 5% to 10%*
-11p15.5 duplications: rare
-Chromosome 7 duplications: rare*

*Note that this test does not detect chromosome 7 UPD. However, testing is available; order UNIPD / Uniparental Disomy.

The clinical phenotype of RSS has been associated with the specific underlying molecular etiology. Patients with hypomethylation of IC1 (H19) are more likely to exhibit "classic" RSS phenotype (ie, severe intrauterine growth retardation, postnatal growth retardation, and asymmetry), while patients with maternal UPD7 often show a milder clinical phenotype. Despite these general genotype-phenotype correlations, many exceptions have been reported.

Methylation abnormalities of IC1 (H19) and IC2 (LIT1) can be detected by methylation-sensitive multiple ligation-dependent probe amplification. While testing can determine methylation status, it does not identify the mechanism responsible for the methylation defect (such as paternal uniparental disomy or cytogenetic abnormalities). Hypomethylation of IC2 (LIT1) is hypothesized to silence the expression of a number of maternally expressed genes, including CDKN1C. Hypermethylation of IC1 is hypothesized to silence the expression of H19, while also resulting in overexpression of IGF2. Absence of CDKN1C and H19 expression, in addition to overexpression of IGF2, is postulated to contribute to the clinical phenotype of BWS. Hypomethylation of IC1 is hypothesized to result in overexpression of H19 and underexpression of the IGF2, which is thought to contribute to the clinical phenotype of RSS.

COMPLETE VIEW

Approval Required:
Yes

Available Stat:
No

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Performing Lab:
Mayo

Sendout:
Yes

Methodology:

Methylation-sensitive multiple ligation-dependent probe amplification is utilized to test for the presence of large deletions, duplications, and methylation defects in the imprinting center 1 (IC1) (H19) and IC2 (LIT1) critical regions on chromosome 11p15.

Collect:

Lavender top

Amount to Collect:

5 mL blood

Sample Type:

EDTA Whole blood, Cultured amniocytes, cultured chorionic villi

Preferred Volume:

Blood: 5 mL
Cultured amniocytes: 2x T25 flasks, 80% confluent
Cultured chorionic villi: 2x T25 flasks, 80% confluent

Minimum Volume:

Blood: 3 mL
Cultured amniocytes: 2x T25 flasks, 80% confluent
?Cultured chorionic villi: 2x T25 flasks, 80% confluent

Unacceptable Conditions:

Blood collected in heparin. Deficient confluency in cultured cell flasks.

Specimen Preparation:

Do not centrifuge. Do not freeze. Refrigerate sample

Synonyms:

- BWS
- Overgrowth Disorder
- Imprinted disorder
- macroglossia
- LIT1

Reported:

2 weeks

Additional Information:

Beckwith-Wiedemann syndrome (BWS) is a disorder characterized by prenatal and/or postnatal overgrowth, neonatal hypoglycemia, congenital malformations, and an increased risk for embryonal tumors. Physical findings are variable and can include abdominal wall defects, macroglossia, and hemihyperplasia. The predisposition for tumor development is associated with specific tumor types such as adrenal carcinoma, nephroblastoma (Wilms tumor), hepatoblastoma, and rhabdomyosarcoma. In infancy, BWS has a mortality rate of approximately 20%.

Current data suggest that the etiology of BWS is due to dysregulation of imprinted genes in the 11p15 region of chromosome 11, including H19 (maternally expressed), LIT1 (official symbol KCNQ1OT1; paternally expressed), IGF2 (paternally expressed), and CDKN1C (aliases p57 and KIP2; maternally expressed). Expression of these genes is controlled by 2 imprinting centers (IC).

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RSS is a genetically heterogeneous condition that is associated with genetic and epigenetic alterations at chromosome 7 and the chromosome 11p15.5 region. The majority of cases of RSS are sporadic, although familial cases have been reported. The etiology of sporadic cases of RSS includes:

-Hypomethylation of IC1 (H19): approximately 30% to 50%
-Maternal uniparental disomy (UPD) of chromosome 7: approximately 5% to 10%*
-11p15.5 duplications: rare
-Chromosome 7 duplications: rare*

*Note that this test does not detect chromosome 7 UPD. However, testing is available; order UNIPD / Uniparental Disomy.

The clinical phenotype of RSS has been associated with the specific underlying molecular etiology. Patients with hypomethylation of IC1 (H19) are more likely to exhibit "classic" RSS phenotype (ie, severe intrauterine growth retardation, postnatal growth retardation, and asymmetry), while patients with maternal UPD7 often show a milder clinical phenotype. Despite these general genotype-phenotype correlations, many exceptions have been reported.

Methylation abnormalities of IC1 (H19) and IC2 (LIT1) can be detected by methylation-sensitive multiple ligation-dependent probe amplification. While testing can determine methylation status, it does not identify the mechanism responsible for the methylation defect (such as paternal uniparental disomy or cytogenetic abnormalities). Hypomethylation of IC2 (LIT1) is hypothesized to silence the expression of a number of maternally expressed genes, including CDKN1C. Hypermethylation of IC1 is hypothesized to silence the expression of H19, while also resulting in overexpression of IGF2. Absence of CDKN1C and H19 expression, in addition to overexpression of IGF2, is postulated to contribute to the clinical phenotype of BWS. Hypomethylation of IC1 is hypothesized to result in overexpression of H19 and underexpression of the IGF2, which is thought to contribute to the clinical phenotype of RSS.

Benzodiazepines Screen, Urine

BENZ

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Homogeneous competitive enzyme immunoassay method (does not use beta-glucuronidase pretreatment)

Reported:
Stat 2 hours, routine 4 hours

Additional Information:
A level < 200 µg/L is considered negative by this test. A positive result is >= 200 µg/L and indicates the presence of this class of drugs. This immunoassay is only a screening test and is not definitive. Results cannot be used for medico-legal purposes.

This assay detects a number of benzodiazepines at varying concentrations.

Click here for a List of Cross Reactive Substances

False positive results may occur due to other cross reacting substances, however, positive results are NOT routinely confirmed by a second method. If confirmation of the test result is required, it is the responsibility of the physician to separately order a specific confirmatory test for the drug identified. Samples are held for 7 days. Contact laboratory at x 31667 to request confirmatory testing. Confirmatory test code BNZQNT. False negative results are also possible.

Benzodiazepines can be detected from 6 hours up to 14 days after a single use (Negrusz A et al, Elimination of 7-aminoclonazepam in urine after a single dose of clonazepam. Anal Bioanal Chem, 2003, 376:123-130) and for longer in chronic users (French D et al, Choosing the right benzodiazepine assay: impact on clinical decision making. Lab Medicine, 2010, 41(4):2-6)

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
See preferred volume

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Stability (from collection to initiation):
Refrigerated 1 week, frozen at -20C 2 weeks

PROCESSING

Test Code:
BENZ

Test Group:
Benzodiazepine

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Stability (from collection to initiation):
Refrigerated 1 week, frozen at -20C 2 weeks

RESULT INTERPRETATION

Reference Interval:
NegativeNote: a negative result indicates that this class of drugs is not present, or they are present at a concentration below the cutoff concentration of 200 µg/L

Additional Information:
A level < 200 µg/L is considered negative by this test. A positive result is >= 200 µg/L and indicates the presence of this class of drugs. This immunoassay is only a screening test and is not definitive. Results cannot be used for medico-legal purposes.

This assay detects a number of benzodiazepines at varying concentrations.

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ADMINISTRATIVE

CPT Codes:
80307

LOINC Codes:
14316-4

COMPLETE VIEW

Available Stat:
Yes

Test Code:
BENZ

Test Group:
Benzodiazepine

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Homogeneous competitive enzyme immunoassay method (does not use beta-glucuronidase pretreatment)

Collect:
Urine cup

Amount to Collect:
See preferred volume

Sample Type:
Random urine

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Reference Interval:
NegativeNote: a negative result indicates that this class of drugs is not present, or they are present at a concentration below the cutoff concentration of 200 µg/L

Stability (from collection to initiation):
Refrigerated 1 week, frozen at -20C 2 weeks

Reported:
Stat 2 hours, routine 4 hours

Additional Information:

A level < 200 µg/L is considered negative by this test. A positive result is >= 200 µg/L and indicates the presence of this class of drugs. This immunoassay is only a screening test and is not definitive. Results cannot be used for medico-legal purposes.

This assay detects a number of benzodiazepines at varying concentrations.

Click here for a List of Cross Reactive Substances

False positive results may occur due to other cross reacting substances, however, positive results are NOT routinely confirmed by a second method. If confirmation of the test result is required, it is the responsibility of the physician to separately order a specific confirmatory test for the drug identified. Samples are held for 7 days. Contact laboratory at x 31667 to request confirmatory testing. Confirmatory test code BNZQNT. False negative results are also possible.

Benzodiazepines can be detected from 6 hours up to 14 days after a single use (Negrusz A et al, Elimination of 7-aminoclonazepam in urine after a single dose of clonazepam. Anal Bioanal Chem, 2003, 376:123-130) and for longer in chronic users (French D et al, Choosing the right benzodiazepine assay: impact on clinical decision making. Lab Medicine, 2010, 41(4):2-6)

CPT Codes:

80307

LOINC Codes:

14316-4

Benzodiazepines, Urine, Quantitative

BNZQNT

ORDERING

Ordering Recommendations:
Use to obtain quantitative results or to follow up a presumptive result. For general screening, the preferred test is Benzodiazepines Urine Screen with Reflex to Quantitation (2012225).

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Reported:
1-5 days

Synonyms:

- Pain Management, Benzodiazepines, Quantitative, w/ medMATCH, Urine (Drugs of Abuse Confirmation/Quan
- Pain Management, Benzodiazepines, w/Confirmation w/med MATACH, Urine (Drugs of Abuse Confirmation/Qu

COLLECTION

Collect:
Random urine.

Amount to Collect:
0.5 mL

Preferred Volume:
0.5 mL

Minimum Volume:
0.3 mL

Stability (from collection to initiation):
Ambient: 1 week; Refrigerated: 1 month; Frozen: 3 years

Storage/Transport Temperature:
Room temperature.

Unacceptable Conditions:
Specimens exposed to repeated freeze/thaw cycles.

PROCESSING

Test Code:
BNZQNT

ARUP Test Code:
2008291

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transfer 0.5 mL urine with no additives or preservatives to an ARUP standard transport tube. (Min: 0.3 mL)

Additional Processing Instructions:
Aliquot and freeze sample. Transport to CB frozen. Order ARUP test code 2008291.

Preferred Volume:
0.5 mL

Minimum Volume:
0.3 mL

Unacceptable Conditions:
Specimens exposed to repeated freeze/thaw cycles.

Stability (from collection to initiation):
Ambient: 1 week; Refrigerated: 1 month; Frozen: 3 years

Storage/Transport Temperature:
Room temperature.

RESULT INTERPRETATION

Reference Interval:

Drugs Covered	Cutoff Concentrations
Alprazolam	5 ng/mL
Alpha-hydroxyalprazolam	5 ng/mL
Chlordiazepoxide	20 ng/mL
Clonazepam	5 ng/mL
7-aminoclonazepam	5 ng/mL
Diazepam	20 ng/mL
Lorazepam	20 ng/mL
Midazolam	20 ng/mL
Alpha-hydroxymidazolam	20 ng/mL
Nordiazepam	20 ng/mL
Oxazepam	20 ng/mL
Temazepam	20 ng/mL

Interpretive Data:
Methodology: Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Drugs covered: alprazolam, alpha-hydroxyalprazolam, chlordiazepoxide, clonazepam, 7-aminoclonazepam, diazepam, lorazepam, midazolam, alpha-hydroxymidazolam, nordiazepam, oxazepam and temazepam..

Positive cutoff: 20 ng/mL unless specified below:
Alprazolam: 5 ng/mL
Alpha-hydroxyalprazolam: 5 ng/mL
Clonazepam: 5 ng/mL
7-aminoclonazepam: 5 ng/mL

For medical purposes only; not valid for forensic use.

Identification of specific drug(s) taken by specimen donor is problematic due to common metabolites, some of which are prescription drugs themselves. The absence of expected drug(s) and/or drug metabolite(s) may indicate noncompliance, inappropriate timing of specimen collection relative to drug administration, poor drug absorption, diluted/adulterated urine, or limitations of testing. The concentration value must be greater than or equal to the cutoff to be reported as positive. Interpretive questions should be directed to the laboratory.

ADMINISTRATIVE

CPT Codes:
80346 (Alt code: G0480)

LOINC:

- 16233-9
- 20559-1
- 51776-3
- 16229-7
- 20522-9
- 59615-5
- 59590-0
- 16227-1
- 17088-6
- 16348-5
- 16201-6
- 16228-9

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Use to obtain quantitative results or to follow up a presumptive result. For general screening, the preferred test is Benzodiazepines Urine Screen with Reflex to Quantitation (2012225).

Test Code:
BNZQNT

ARUP Test Code:
2008291

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Collect:
Random urine.

Amount to Collect:
0.5 mL

Preferred Volume:
0.5 mL

Minimum Volume:
0.3 mL

Unacceptable Conditions:
Specimens exposed to repeated freeze/thaw cycles.

Specimen Preparation:
Transfer 0.5 mL urine with no additives or preservatives to an ARUP standard transport tube. (Min: 0.3 mL)

Additional Processing Instructions:
Aliquot and freeze sample. Transport to CB frozen. Order ARUP test code 2008291.

Reference Interval:

Drugs Covered	Cutoff Concentrations
Alprazolam	5 ng/mL
Alpha-hydroxyalprazolam	5 ng/mL
Chlordiazepoxide	20 ng/mL
Clonazepam	5 ng/mL
7-aminoclonazepam	5 ng/mL
Diazepam	20 ng/mL
Lorazepam	20 ng/mL
Midazolam	20 ng/mL
Alpha-hydroxymidazolam	20 ng/mL
Nordiazepam	20 ng/mL
Oxazepam	20 ng/mL
Temazepam	20 ng/mL

Interpretive Data:

Methodology: Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Drugs covered: alprazolam, alpha-hydroxyalprazolam, chlordiazepoxide, clonazepam, 7-aminoclonazepam, diazepam, lorazepam, midazolam, alpha-hydroxymidazolam, nordiazepam, oxazepam and temazepam..

Positive cutoff: 20 ng/mL unless specified below:
Alprazolam: 5 ng/mL
Alpha-hydroxyalprazolam: 5 ng/mL
Clonazepam: 5 ng/mL
7-aminoclonazepam: 5 ng/mL

For medical purposes only; not valid for forensic use.

Identification of specific drug(s) taken by specimen donor is problematic due to common metabolites, some of which are prescription drugs themselves. The absence of expected drug(s) and/or drug metabolite(s) may indicate noncompliance, inappropriate timing of specimen collection relative to drug administration, poor drug absorption, diluted/adulterated urine, or limitations of testing. The concentration value must be greater than or equal to the cutoff to be reported as positive. Interpretive questions should be directed to the laboratory.

Synonyms:

- Pain Management, Benzodiazepines, Quantitative, w/ medMATCH, Urine (Drugs of Abuse Confirmation/Quan
- Pain Management, Benzodiazepines, w/Confirmation w/med MATACH, Urine (Drugs of Abuse Confirmation/Qu

Storage/Transport Temperature:

Room temperature.

Stability (from collection to initiation):

Ambient: 1 week; Refrigerated: 1 month; Frozen: 3 years

Reported:

1-5 days

CPT Codes:

80346 (Alt code: G0480)

LOINC:

- 16233-9
- 20559-1
- 51776-3
- 16229-7
- 20522-9
- 59615-5
- 59590-0
- 16227-1
- 17088-6
- 16348-5
- 16201-6
- 16228-9

Notes:

Compare to Pain Management, Benzodiazepines, Quantitative, w/ medMATCH, Urine (Drugs of Abuse Confirmation/Quantitation - Benzodiazepines - Urine); Pain Management, Benzodiazepines, w/Confirmation w/med MATACH, Urine (Drugs of Abuse Confirmation/Quantitation - Benzodiazepines - Urine).

Beta Thalassemia mutations (incl. HbS, HbC, HbE)

BTHL

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Molecular Diagnostics

Performed:
Run 2x per week, Tuesday & Thursday, day shift only

Methodology:
PCR followed by reverse dot blot hybridization with allele-specific probes

Reported:
7-10 days

Additional Information:
DNA testing for beta thalassemia mutations is valuable for confirming hematological suspicion of beta-thalassemia (e.g. anemia, low MCV, elevated Hgb A2), for co-existence with iron deficiency and when prenatal diagnosis is contemplated. Iron studies, may also be of value. Include results of these tests with the thalassemia request or indicate if they were ordered at UCSF.

If a mutation is detected it is recommended that the patient seek genetic counseling.

Click here for a list of the tested mutations.

These tests were developed and their performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. They have not been cleared or approved by the U.S. FDA

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

If hemoglobin electrophoresis reveals an elevated Hb A2 and the results of the BTHL test are negative, then further testing by DNA sequencing of the beta globin gene can be performed at an additional charge.

Synonyms:

- Cooley's anemia
- Hemoglobin S
- HbS, Hgb S
- Hemoglobin C
- HbC
- Hgb C
- Hemoglobin E
- HbE
- Hgb E

COLLECTION

Sample Type:
EDTA whole blood, Amniocentesis, CVS

Collect:
Lavender top

Amount to Collect:
3 mL blood

Preferred Volume:
Blood: 3 mL
Amniotic fluid: 5 mL
CVS: 10 mg

Minimum Volume:
0.5 mL blood

Remarks:
Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

PROCESSING

Test Code:
BTHL

Test Group:
Thalassemia

Performing Lab:
Medical Genomics - Molecular Diagnostics

Specimen Preparation:
Do not centrifuge the specimen. Store at room temperature. Refrigerated samples are acceptable.

Preferred Volume:
Blood: 3 mL
Amniotic fluid: 5 mL
CVS: 10 mg

Minimum Volume:
0.5 mL blood

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
DNA testing for beta thalassemia mutations is valuable for confirming hematological suspicion of beta-thalassemia (e.g. anemia, low MCV, elevated Hgb A2), for co-existence with iron deficiency and when prenatal diagnosis is contemplated. Iron studies, may also be of value. Include results of these tests with the thalassemia request or indicate if they were ordered at UCSF.

If a mutation is detected it is recommended that the patient seek genetic counseling.

Click here for a list of the tested mutations.

These tests were developed and their performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. They have not been cleared or approved by the U.S. FDA

ADMINISTRATIVE

CPT Codes:
81361, 81362

LDT or Modified FDA:
Yes

LOINC Codes:
21691-1

COMPLETE VIEW

Available Stat:
No

Test Code:
BTHL

Test Group:
Thalassemia

Performing Lab:
Medical Genomics - Molecular Diagnostics

Performed:
Run 2x per week, Tuesday & Thursday, day shift only

Methodology:
PCR followed by reverse dot blot hybridization with allele-specific probes

Remarks:
Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Collect:
Lavender top

Amount to Collect:
3 mL blood

Sample Type:
EDTA whole blood, Amniocentesis, CVS

Preferred Volume:
Blood: 3 mL
Amniotic fluid: 5 mL
CVS: 10 mg

Minimum Volume:
0.5 mL blood

Specimen Preparation:
Do not centrifuge the specimen. Store at room temperature. Refrigerated samples are acceptable.

Reference Interval:
Negative

Synonyms:

- Cooley's anemia
- Hemoglobin S
- HbS, Hgb S
- Hemoglobin C
- HbC
- Hgb C
- Hemoglobin E
- HbE
- Hgb E

Reported:
7-10 days

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

If hemoglobin electrophoresis reveals an elevated Hb A2 and the results of the BTHL test are negative, then further testing by DNA sequencing of the beta globin gene can be performed at an additional charge.

Additional Information:
DNA testing for beta thalassemia mutations is valuable for confirming hematological suspicion of beta-thalassemia (e.g. anemia, low MCV, elevated Hgb A2), for co-existence with iron deficiency and when prenatal diagnosis is contemplated. Iron studies, may also be of value. Include results of these tests with the thalassemia request or indicate if they were ordered at UCSF.

If a mutation is detected it is recommended that the patient seek genetic counseling.

Click here for a list of the tested mutations.

These tests were developed and their performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. They have not been cleared or approved by the U.S. FDA

CPT Codes:
81361, 81362

LDT or Modified FDA:
Yes

LOINC Codes:
21691-1

Beta-2 Microglobulin, urine

B2MU

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Fixed rate time nephelometry

Reported:
Set up 6x per week. Turnaround 4-5 days

Additional Information:
Beta-2-microglobulin is unstable in acid urine. Samples should be alkalinized by laboratory staff within 2 hours of collection to prevent inaccurately low results.

Synonyms:

- Beta-microglobulin
- Microglobulin, beta-2

COLLECTION

Patient Preparation:
Patient should void bladder, then drink at least 500 mL of water. A urine sample should be collected within 1 hour.

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
10-20 mL

Preferred Volume:
10 mL urine

Minimum Volume:
10 mL urine

Remarks:
Deliver asap to laboratory as Beta-2-microglobulin in unstable in acidic urine.

Results may be inaccurate if the sample is > 2 hours old when received

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 1 week, frozen at -20C 2 months.

Unacceptable Conditions:
Delivered to lab > 30 min after collection

PROCESSING

Test Code:
B2MU

Test Group:
Beta-2-Microglobulin

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Adjust urine to pH 6-8 with 1M NaOH. Freeze aliquot. Order Quest # 4150N

Preferred Volume:
10 mL urine

Minimum Volume:
10 mL urine

Unacceptable Conditions:
Delivered to lab > 30 min after collection

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 1 week, frozen at -20C 2 months.

RESULT INTERPRETATION

Units:
µg/g Creatinine (mcg/g Creatinine)

Reference Interval:
Normal: <= 132 µg/g creatinine
OSHA Industrial Reference range: 300 µg/g creatinine

Additional Information:
Beta-2-microglobulin is unstable in acid urine. Samples should be alkalinized by laboratory staff within 2 hours of collection to prevent inaccurately low results.

ADMINISTRATIVE

CPT Codes:
82232-90, 82570-90

LOINC Codes:
13485-8

COMPLETE VIEW

Available Stat:
No

Test Code:
B2MU

Test Group:
Beta-2-Microglobulin

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Fixed rate time nephelometry

Patient Preparation:
Patient should void bladder, then drink at least 500 mL of water. A urine sample should be collected within 1 hour.

Remarks:
Deliver asap to laboratory as Beta-2-microglobulin in unstable in acidic urine.

Results may be inaccurate if the sample is > 2 hours old when received

Collect:
Urine cup

Amount to Collect:
10-20 mL

Sample Type:
Random urine

Preferred Volume:
10 mL urine

Minimum Volume:
10 mL urine

Unacceptable Conditions:
Delivered to lab > 30 min after collection

Specimen Preparation:
Adjust urine to pH 6-8 with 1M NaOH. Freeze aliquot. Order Quest # 4150N

Units:
µg/g Creatinine (mcg/g Creatinine)

Reference Interval:
Normal: <= 132 µg/g creatinine
OSHA Industrial Reference range: 300 µg/g creatinine

Synonyms:

- Beta-microglobulin
- Microglobulin, beta-2

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 1 week, frozen at -20C 2 months.

Reported:
Set up 6x per week. Turnaround 4-5 days

Additional Information:
Beta-2-microglobulin is unstable in acid urine. Samples should be alkalinized by laboratory staff within 2 hours of collection to prevent inaccurately low results.

CPT Codes:
82232-90, 82570-90

LOINC Codes:
13485-8

Beta-2-glycoprotein Antibody, IgA

B2GA

ORDERING

Available Stat:
No

Performing Lab:
Quest (Labcorp for B&T patients)

Methodology:
EIA

Reported:
Run Monday and Wednesday mornings. Results available Tuesday or Thursday afternoon.

Additional Information:
If Beta-2-Glycoprotein Antibodies are ordered without further specification, only Beta -2-Glycoprotein Antibodies IgG and IgM (B2GPG and B2GPM) will be done. These two tests are performed in house.

Antiphospholipid antibodies (APA) are associated with an increased risk of venous and arterial thrombosis and recurrent fetal loss.These antibodies can be IgG, IgM, or IgA.

Antiphospholipid antibodies require several different tests for detection. Lupus anticoagulants are detected by clotting methods. APA such as anticardiolipin antibody and anti-beta 2 glycoprotein 1 antibodies are detected by immunologic assays. Anti-Beta 2 Glycoprotein Antibodies are a more specific marker for increased risk of thrombosis than anticardiolipin assays. APA associated with thrombotic risk are persistent, and should be confirmed by a repeat positive test after 2-3 months. APA results aid in diagnosis and are helpful in determining the intensity and duration of anticoagulant treatment for patients with Antiphospholipid Syndrome and thrombosis. The clinical significance of IgA Beta-2-glycoprotein antibodies is not definitively established.

COLLECTION

Sample Type:
Serum

Collect:
Red top

Amount to Collect:
3 mL blood

Preferred Volume:
2 mL serum (Note this is sufficent to perform IgA, IgG, and IgM antibody testing)

Minimum Volume:
1 mL serum

Stability (from collection to initiation):
Frozen 1 month.

Unacceptable Conditions:
Gross hemolysis or lipemia

Rejection Criteria:
Received thawed. Gross hemolysis or lipemia

PROCESSING

Test Code:
B2GA

Test Group:
Beta-2-glycoprotein

Sendout:
Yes

Performing Lab:
Quest (Labcorp for B&T patients)

Specimen Preparation:
If Beta-2-Glycoprotein Antibodies are ordered without further specification, order Beta -2-Glycoprotein Antibodies IgG and IgM (B2GPG and B2GPM).

Centrifuge red top tube within 60 minutes of collection. Immediately freeze serum at -20C and ship frozen on dry ice. Order Quest test #36552.

For B&T patients order labCorp test # 1639000 and send serum at room temperature.

Preferred Volume:
2 mL serum (Note this is sufficent to perform IgA, IgG, and IgM antibody testing)

Minimum Volume:
1 mL serum

Unacceptable Conditions:
Gross hemolysis or lipemia

Rejection Criteria:
Received thawed. Gross hemolysis or lipemia

Stability (from collection to initiation):
Frozen 1 month.

RESULT INTERPRETATION

Units:
SAU

Reference Interval:
<= 20 SAU

Additional Information:
If Beta-2-Glycoprotein Antibodies are ordered without further specification, only Beta -2-Glycoprotein Antibodies IgG and IgM (B2GPG and B2GPM) will be done. These two tests are performed in house.

Antiphospholipid antibodies (APA) are associated with an increased risk of venous and arterial thrombosis and recurrent fetal loss.These antibodies can be IgG, IgM, or IgA.

Antiphospholipid antibodies require several different tests for detection. Lupus anticoagulants are detected by clotting methods. APA such as anticardiolipin antibody and anti-beta 2 glycoprotein 1 antibodies are detected by immunologic assays. Anti-Beta 2 Glycoprotein Antibodies are a more specific marker for increased risk of thrombosis than anticardiolipin assays. APA associated with thrombotic risk are persistent, and should be confirmed by a repeat positive test after 2-3 months. APA results aid in diagnosis and are helpful in determining the intensity and duration of anticoagulant treatment for patients with Antiphospholipid Syndrome and thrombosis. The clinical significance of IgA Beta-2-glycoprotein antibodies is not definitively established.

ADMINISTRATIVE

CPT Codes:
86146-90

LOINC Codes:
21108-6

COMPLETE VIEW

Available Stat:
No

Test Code:
B2GA

Test Group:
Beta-2-glycoprotein

Performing Lab:
Quest (Labcorp for B&T patients)

Sendout:
Yes

Methodology:
EIA

Collect:
Red top

Amount to Collect:
3 mL blood

Sample Type:
Serum

Preferred Volume:
2 mL serum (Note this is sufficent to perform IgA, IgG, and IgM antibody testing)

Minimum Volume:
1 mL serum

Rejection Criteria:
Received thawed. Gross hemolysis or lipemia

Unacceptable Conditions:
Gross hemolysis or lipemia

Specimen Preparation:
If Beta-2-Glycoprotein Antibodies are ordered without further specification, order Beta -2-Glycoprotein Antibodies IgG and IgM (B2GPG and B2GPM).

Centrifuge red top tube within 60 minutes of collection. Immediately freeze serum at -20C and ship frozen on dry ice. Order Quest test #36552.

For B&T patients order labCorp test # 1639000 and send serum at room temperature.

Units:
SAU

Reference Interval:
<= 20 SAU

Stability (from collection to initiation):
Frozen 1 month.

Reported:
Run Monday and Wednesday mornings. Results available Tuesday or Thursday afternoon.

Additional Information:
If Beta-2-Glycoprotein Antibodies are ordered without further specification, only Beta -2-Glycoprotein Antibodies IgG and IgM (B2GPG and B2GPM) will be done. These two tests are performed in house.

Antiphospholipid antibodies (APA) are associated with an increased risk of venous and arterial thrombosis and recurrent fetal loss.These antibodies can be IgG, IgM, or IgA.

Antiphospholipid antibodies require several different tests for detection. Lupus anticoagulants are detected by clotting methods. APA such as anticardiolipin antibody and anti-beta 2 glycoprotein 1 antibodies are detected by immunologic assays. Anti-Beta 2 Glycoprotein Antibodies are a more specific marker for increased risk of thrombosis than anticardiolipin assays. APA associated with thrombotic risk are persistent, and should be confirmed by a repeat positive test after 2-3 months. APA results aid in diagnosis and are helpful in determining the intensity and duration of anticoagulant treatment for patients with Antiphospholipid Syndrome and thrombosis. The clinical significance of IgA Beta-2-glycoprotein antibodies is not definitively established.

CPT Codes:
86146-90

LOINC Codes:
21108-6

Beta-2-glycoprotein Antibody, IgG

B2GPG

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Thursday (day shift)

Methodology:
Chemiluminescent Immunoassay

Reported:
Turn around time 2-8 days

Additional Information:
If Beta-2-Glycoprotein Antibodies are ordered without further specification, only Beta -2-Glycoprotein Antibodies IgG and IgM (B2GG and B2GM) will be done.

Antiphospholipid antibodies (APA) are associated with an increased risk of venous and arterial thrombosis and recurrent fetal loss.These antibodies can be IgG, IgM, or IgA.

Antiphospholipid antibodies require several different tests for detection. Lupus anticoagulants are detected by clotting methods. APA such as anticardiolipin antibody and anti-beta 2 glycoprotein 1 antibodies are detected by immunologic assays. Anti-Beta 2 Glycoprotein Antibodies are a more specific marker for increased risk of thrombosis than anticardiolipin assays. APA associated with thrombotic risk are persistent, and should be confirmed by a repeat positive test after 2-3 months. APA results aid in diagnosis and are helpful in determining the intensity and duration of anticoagulant treatment for patients with Antiphospholipid Syndrome and thrombosis.

COLLECTION

Sample Type:
Serum

Collect:
Gold top preferred, Red top acceptable

Amount to Collect:
3 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Lipemia or gross hemolysis.

PROCESSING

Test Code:
B2GPG

Test Group:
Beta-2-glycoprotein

Performing Lab:
Immunology

Specimen Preparation:
If Beta-2-Glycoprotein Antibodies are ordered without further specification, order both Beta -2-Glycoprotein Antibodies IgG and IgM (B2GPG and B2GPM).

Freeze serum at -20C.

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Lipemia or gross hemolysis.

RESULT INTERPRETATION

Units:
CU

Reference Interval:
< 20.1 CU

Additional Information:
If Beta-2-Glycoprotein Antibodies are ordered without further specification, only Beta -2-Glycoprotein Antibodies IgG and IgM (B2GG and B2GM) will be done.

Antiphospholipid antibodies (APA) are associated with an increased risk of venous and arterial thrombosis and recurrent fetal loss.These antibodies can be IgG, IgM, or IgA.

Antiphospholipid antibodies require several different tests for detection. Lupus anticoagulants are detected by clotting methods. APA such as anticardiolipin antibody and anti-beta 2 glycoprotein 1 antibodies are detected by immunologic assays. Anti-Beta 2 Glycoprotein Antibodies are a more specific marker for increased risk of thrombosis than anticardiolipin assays. APA associated with thrombotic risk are persistent, and should be confirmed by a repeat positive test after 2-3 months. APA results aid in diagnosis and are helpful in determining the intensity and duration of anticoagulant treatment for patients with Antiphospholipid Syndrome and thrombosis.

ADMINISTRATIVE

CPT Codes:
86146

COMPLETE VIEW

Available Stat:
No

Test Code:
B2GPG

Test Group:
Beta-2-glycoprotein

Performing Lab:
Immunology

Performed:
Thursday (day shift)

Methodology:
Chemiluminescent Immunoassay

Collect:
Gold top preferred, Red top acceptable

Amount to Collect:
3 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Lipemia or gross hemolysis.

Specimen Preparation:
If Beta-2-Glycoprotein Antibodies are ordered without further specification, order both Beta -2-Glycoprotein Antibodies IgG and IgM (B2GPG and B2GPM).

Freeze serum at -20C.

Units:
CU

Reference Interval:
< 20.1 CU

Reported:
Turn around time 2-8 days

Additional Information:

If Beta-2-Glycoprotein Antibodies are ordered without further specification, only Beta -2-Glycoprotein Antibodies IgG and IgM (B2GG and B2GM) will be done.

Antiphospholipid antibodies (APA) are associated with an increased risk of venous and arterial thrombosis and recurrent fetal loss.These antibodies can be IgG, IgM, or IgA.

Antiphospholipid antibodies require several different tests for detection. Lupus anticoagulants are detected by clotting methods. APA such as anticardiolipin antibody and anti-beta 2 glycoprotein 1 antibodies are detected by immunologic assays. Anti-Beta 2 Glycoprotein Antibodies are a more specific marker for increased risk of thrombosis than anticardiolipin assays. APA associated with thrombotic risk are persistent, and should be confirmed by a repeat positive test after 2-3 months. APA results aid in diagnosis and are helpful in determining the intensity and duration of anticoagulant treatment for patients with Antiphospholipid Syndrome and thrombosis.

CPT Codes:

86146

Beta-2-glycoprotein Antibody, IgM

B2GPM

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Thursday (day shift)

Methodology:
Chemiluminescent Immunoassay

Reported:
Turn around time 2-8 days

Additional Information:
If Beta-2-Glycoprotein Antibodies are ordered without further specification, both Beta -2-Glycoprotein Antibodies IgG and IgM (B2GPG and B2GPM) will be done.

Antiphospholipid antibodies (APA) are associated with an increased risk of venous and arterial thrombosis and recurrent fetal loss.These antibodies can be IgG, IgM, or IgA.

Antiphospholipid antibodies require several different tests for detection. Lupus anticoagulants are detected by clotting methods. APA such as anticardiolipin antibody and anti-beta 2 glycoprotein 1 antibodies are detected by immunologic assays. Anti-Beta 2 Glycoprotein Antibodies are a more specific marker for increased risk of thrombosis than anticardiolipin assays. APA associated with thrombotic risk are persistent, and should be confirmed by a repeat positive test after 2-3 months. APA results aid in diagnosis and are helpful in determining the intensity and duration of anticoagulant treatment for patients with Antiphospholipid Syndrome and thrombosis.

Synonyms:

- Beta-2 Glycoprotein Ab, IgM

COLLECTION

Sample Type:
Serum

Collect:
Gold top preferred, Red top acceptable

Amount to Collect:
3 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Lipemia or gross hemolysis.

PROCESSING

Test Code:
B2GPM

Test Group:
Beta-2-glycoprotein

Performing Lab:
Immunology

Specimen Preparation:
If Beta-2-Glycoprotein Antibodies are ordered without further specification, order both Beta -2-Glycoprotein Antibodies IgG and IgM (B2GPG and B2GPM).

Freeze serum at -20C.

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Lipemia or gross hemolysis.

RESULT INTERPRETATION

Units:
CU

Reference Interval:
< 20.1 CU

Additional Information:
If Beta-2-Glycoprotein Antibodies are ordered without further specification, both Beta -2-Glycoprotein Antibodies IgG and IgM (B2GPG and B2GPM) will be done.

Antiphospholipid antibodies (APA) are associated with an increased risk of venous and arterial thrombosis and recurrent fetal loss.These antibodies can be IgG, IgM, or IgA.

Antiphospholipid antibodies require several different tests for detection. Lupus anticoagulants are detected by clotting methods. APA such as anticardiolipin antibody and anti-beta 2 glycoprotein 1 antibodies are detected by immunologic assays. Anti-Beta 2 Glycoprotein Antibodies are a more specific marker for increased risk of thrombosis than anticardiolipin assays. APA associated with thrombotic risk are persistent, and should be confirmed by a repeat positive test after 2-3 months. APA results aid in diagnosis and are helpful in determining the intensity and duration of anticoagulant treatment for patients with Antiphospholipid Syndrome and thrombosis.

ADMINISTRATIVE

CPT Codes:
86146

COMPLETE VIEW

Available Stat:
No

Test Code:
B2GPM

Test Group:
Beta-2-glycoprotein

Performing Lab:
Immunology

Performed:
Thursday (day shift)

Methodology:
Chemiluminescent Immunoassay

Collect:
Gold top preferred, Red top acceptable

Amount to Collect:
3 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Lipemia or gross hemolysis.

Specimen Preparation:
If Beta-2-Glycoprotein Antibodies are ordered without further specification, order both Beta -2-Glycoprotein Antibodies IgG and IgM (B2GPG and B2GPM).

Freeze serum at -20C.

Units:
CU

Reference Interval:
< 20.1 CU

Synonyms:

- Beta-2 Glycoprotein Ab, IgM

Reported:

Turn around time 2-8 days

Additional Information:

If Beta-2-Glycoprotein Antibodies are ordered without further specification, both Beta -2-Glycoprotein Antibodies IgG and IgM (B2GPG and B2GPM) will be done.

Antiphospholipid antibodies (APA) are associated with an increased risk of venous and arterial thrombosis and recurrent fetal loss.These antibodies can be IgG, IgM, or IgA.

Antiphospholipid antibodies require several different tests for detection. Lupus anticoagulants are detected by clotting methods. APA such as anticardiolipin antibody and anti-beta 2 glycoprotein 1 antibodies are detected by immunologic assays. Anti-Beta 2 Glycoprotein Antibodies are a more specific marker for increased risk of thrombosis than anticardiolipin assays. APA associated with thrombotic risk are persistent, and should be confirmed by a repeat positive test after 2-3 months. APA results aid in diagnosis and are helpful in determining the intensity and duration of anticoagulant treatment for patients with Antiphospholipid Syndrome and thrombosis.

CPT Codes:

86146

Beta-2-Microglobulin, serum

B2MI

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Wednesday (day shift)

Methodology:
Turbidimetry

Reported:
2-8 days

Additional Information:
Patients with lymphomas, multiple myeloma, and other medical conditions may have an increased serum concentration of Beta-2-Microglobulin due to increased production.

Performed by turbidimetry using the Binding Site Optilite platform. Results determined by assay methods from other manufacturers may not be comparable.

Synonyms:

- Beta-microglobulin
- Microglobulin, beta-2

COLLECTION

Patient Preparation:
An 8 hour fast before specimen collection is preferred.

Sample Type:
Serum

Collect:
Gold top or Red top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Remarks:
Avoid hemolysis.

Unacceptable Conditions:
Hemolyzed or lipemic samples

PROCESSING

Test Code:
B2MI

Test Group:
Beta-2-Microglobulin

Performing Lab:
Immunology

Specimen Preparation:
Freeze sample at -20C.

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Hemolyzed or lipemic samples

RESULT INTERPRETATION

Units:
mg/L

Reference Interval:
< 2.35 mg/L

Additional Information:
Patients with lymphomas, multiple myeloma, and other medical conditions may have an increased serum concentration of Beta-2-Microglobulin due to increased production.

Performed by turbidimetry using the Binding Site Optilite platform. Results determined by assay methods from other manufacturers may not be comparable.

ADMINISTRATIVE

CPT Codes:
82232

LOINC Codes:
1952-1

COMPLETE VIEW

Available Stat:
No

Test Code:
B2MI

Test Group:
Beta-2-Microglobulin

Performing Lab:
Immunology

Performed:
Wednesday (day shift)

Methodology:
Turbidimetry

Patient Preparation:
An 8 hour fast before specimen collection is preferred.

Remarks:
Avoid hemolysis.

Collect:
Gold top or Red top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Hemolyzed or lipemic samples

Specimen Preparation:
Freeze sample at -20C.

Units:
mg/L

Reference Interval:
< 2.35 mg/L

Synonyms:

- Beta-microglobulin
- Microglobulin, beta-2

Reported:
2-8 days

Additional Information:

Patients with lymphomas, multiple myeloma, and other medical conditions may have an increased serum concentration of Beta-2-Microglobulin due to increased production.

Performed by turbidimetry using the Binding Site Optilite platform. Results determined by assay methods from other manufacturers may not be comparable.

CPT Codes:

82232

LOINC Codes:

1952-1

Beta-D-glucan

BDGLU

ORDERING

Available Stat:
No

Performing Lab:
Viracor

Methodology:
Limulus Amoebacyte Lysate

Reported:
3-4 days

Additional Information:
This assay does not detect certain fungal species such as Cryptococcus (Tanaka et al, 1991) or the yeast phase of Blastomyces (Girouard et al 2007) that produce very low levels of Beta-D-Glucan, The assay also does not detect fungal spercies that do not produce Beta-D-Glucan such as Absidia, Mucor and Rhizopus (Mitsuya et asl 1994).

Due to the potential for contamination by oral Candida Sp. the results from samples collected through the mouth must be evaluated with caution.

Synonyms:

- Beta D glucan

COLLECTION

Sample Type:
Serum, CSF and BAL samples are acceptable for this test

Collect:
Gold top, Red top, CSF tube, Sterile collection tube

Amount to Collect:
3 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
Infants/pediatrics: 0.2 mL serum
Adults: 0.5 mL serum

Stability (from collection to initiation):
Refrigerated 4 days.

Unacceptable Conditions:
Lipemic, icteric or hemolyzed specmens.

Rejection Criteria:
Lipemic, icteric or hemolyzed specmens.

Specimens that have been stored at ambient temperature.

Specimens that have been stored at 2-8C for >5 days. If storage longer than 5 days is needed, samples should be frozen at -20c or colder. Unless indicated as stored frozen, the specimen will be rejected if the draw date is >5 days from receipt at ViraCor.

PROCESSING

Test Code:
BDGLU

Sendout:
Yes

Performing Lab:
Viracor

Preferred Volume:
1 mL serum

Minimum Volume:
Infants/pediatrics: 0.2 mL serum
Adults: 0.5 mL serum

Unacceptable Conditions:
Lipemic, icteric or hemolyzed specmens.

Rejection Criteria:
Lipemic, icteric or hemolyzed specmens.

Specimens that have been stored at ambient temperature.

Specimens that have been stored at 2-8C for >5 days. If storage longer than 5 days is needed, samples should be frozen at -20c or colder. Unless indicated as stored frozen, the specimen will be rejected if the draw date is >5 days from receipt at ViraCor.

Stability (from collection to initiation):
Refrigerated 4 days.

RESULT INTERPRETATION

Units:
pg/mL

Reference Interval:
< 60 pg/mL

Additional Information:
This assay does not detect certain fungal species such as Cryptococcus (Tanaka et al, 1991) or the yeast phase of Blastomyces (Girouard et al 2007) that produce very low levels of Beta-D-Glucan, The assay also does not detect fungal spercies that do not produce Beta-D-Glucan such as Absidia, Mucor and Rhizopus (Mitsuya et asl 1994).

Due to the potential for contamination by oral Candida Sp. the results from samples collected through the mouth must be evaluated with caution.

ADMINISTRATIVE

CPT Codes:
87449-90

LOINC Codes:
42176-8

COMPLETE VIEW

Available Stat:
No

Test Code:
BDGLU

Performing Lab:
Viracor

Sendout:
Yes

Methodology:
Limulus Amoebacyte Lysate

Collect:
Gold top, Red top, CSF tube, Sterile collection tube

Amount to Collect:
3 mL blood

Sample Type:
Serum, CSF and BAL samples are acceptable for this test

Preferred Volume:
1 mL serum

Minimum Volume:
Infants/pediatrics: 0.2 mL serum
Adults: 0.5 mL serum

Rejection Criteria:
Lipemic, icteric or hemolyzed specmens.

Specimens that have been stored at ambient temperature.

Specimens that have been stored at 2-8C for >5 days. If storage longer than 5 days is needed, samples should be frozen at -20c or colder. Unless indicated as stored frozen, the specimen will be rejected if the draw date is >5 days from receipt at ViraCor.

Unacceptable Conditions:
Lipemic, icteric or hemolyzed specmens.

Units:
pg/mL

Reference Interval:
< 60 pg/mL

Synonyms:

- Beta D glucan

Stability (from collection to initiation):
Refrigerated 4 days.

Reported:
3-4 days

Additional Information:
This assay does not detect certain fungal species such as Cryptococcus (Tanaka et al, 1991) or the yeast phase of Blastomyces (Girouard et al 2007) that produce very low levels of Beta-D-Glucan, The assay also does not detect fungal spercies that do not produce Beta-D-Glucan such as Absidia, Mucor and Rhizopus (Mitsuya et asl 1994).

Due to the potential for contamination by oral Candida Sp. the results from samples collected through the mouth must be evaluated with caution.

CPT Codes:
87449-90

LOINC Codes:
42176-8

Beta-hCG, Quantitative (Tumor Marker)

HCGT2

ORDERING

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative Electrochemiluminescent Immunoassay

Reported:
Within 24 hours

Synonyms:

- Beta-HCG levels
- Beta-HCG serum concentration
- Beta-HCG, serum
- human chorioinic gonadotropin, serum

COLLECTION

Sample Type:
Serum

Collect:
Serum separator tube. Also acceptable: Lavender (K_2EDTA or K_3EDTA), pink (K_2EDTA), or green (lithium heparin).

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.4 mL serum

Stability (from collection to initiation):
After separation from cells: Ambient: 5 days; Refrigerated: 2 weeks; Frozen: 1 year

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
CSF (refer to Beta-hCG, Quantitative (Tumor Marker) CSF, ARUP test code 0020730). Specimens left to clot at 2-8°C or specimens subjected to repeated freeze/thaw cycles.

PROCESSING

Test Code:
HCGT2

ARUP Test Code:
0070029

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Allow specimen to clot completely at room temperature. Separate serum from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.4 mL)

Preferred Volume:
1 mL serum

Minimum Volume:
0.4 mL serum

Unacceptable Conditions:
CSF (refer to Beta-hCG, Quantitative (Tumor Marker) CSF, ARUP test code 0020730). Specimens left to clot at 2-8°C or specimens subjected to repeated freeze/thaw cycles.

Stability (from collection to initiation):
After separation from cells: Ambient: 5 days; Refrigerated: 2 weeks; Frozen: 1 year

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:
Male: 0-3 IU/L
Female: 0-5 IU/L

Interpretive Data:
Interpretive Data: Human chorionic gonadotropin (hCG) is a valuable aid in the management of patients with trophoblastic tumors, nonseminomatous testicular tumors, and seminomas when used in conjunction with information available from the clinical evaluation and other diagnostic procedures. Increased serum hCG concentrations have also been observed in melanoma, carcinomas of the breast, gastrointestinal tract, lung, and ovaries, and in benign conditions, including cirrhosis, duodenal ulcer, and inflammatory bowel disease. This result cannot be interpreted as absolute evidence of the presence or absence of malignant disease. This result is not interpretable as a tumor marker in pregnant females.

The combination of the specific monoclonal antibodies used in the Roche Beta HCG electrochemiluminescent immunoassay recognize the holo-hormone, "nicked" forms of hCG, the beta-core fragment, and the free beta-subunit. Results obtained with different test methods or kits cannot be used interchangeably. Although this assay is FDA cleared for use in the detection of pregnancy, it is not labeled for use as a tumor marker.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:
84702

LOINC:

- 21198-7

COMPLETE VIEW

Available Stat:
No

Test Code:
HCGT2

ARUP Test Code:
0070029

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative Electrochemiluminescent Immunoassay

Collect:
Serum separator tube. Also acceptable: Lavender (K_2EDTA or K_3EDTA), pink (K_2EDTA), or green (lithium heparin).

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.4 mL serum

Unacceptable Conditions:
CSF (refer to Beta-hCG, Quantitative (Tumor Marker) CSF, ARUP test code 0020730). Specimens left to clot at 2-8°C or specimens subjected to repeated freeze/thaw cycles.

Specimen Preparation:

Allow specimen to clot completely at room temperature. Separate serum from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.4 mL)

Reference Interval:

Male: 0-3 IU/L
Female: 0-5 IU/L

Interpretive Data:

Interpretive Data: Human chorionic gonadotropin (hCG) is a valuable aid in the management of patients with trophoblastic tumors, nonseminomatous testicular tumors, and seminomas when used in conjunction with information available from the clinical evaluation and other diagnostic procedures. Increased serum hCG concentrations have also been observed in melanoma, carcinomas of the breast, gastrointestinal tract, lung, and ovaries, and in benign conditions, including cirrhosis, duodenal ulcer, and inflammatory bowel disease. This result cannot be interpreted as absolute evidence of the presence or absence of malignant disease. This result is not interpretable as a tumor marker in pregnant females.

The combination of the specific monoclonal antibodies used in the Roche Beta HCG electrochemiluminescent immunoassay recognize the holo-hormone, "nicked" forms of hCG, the beta-core fragment, and the free beta-subunit. Results obtained with different test methods or kits cannot be used interchangeably. Although this assay is FDA cleared for use in the detection of pregnancy, it is not labeled for use as a tumor marker.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Synonyms:

- Beta-HCG levels
- Beta-HCG serum concentration
- Beta-HCG, serum
- human chorioinic gonadotropin, serum

Storage/Transport Temperature:

Refrigerated.

Stability (from collection to initiation):

After separation from cells: Ambient: 5 days; Refrigerated: 2 weeks; Frozen: 1 year

Reported:

Within 24 hours

CPT Codes:

84702

LOINC:

- 21198-7

Beta-Hydroxybutyrate

BHOB

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Stanbio enzymatic (D-3-hydroxybutyrate dehydrogenase)

Additional Information:
Beta-hydroxybutyrate (b-OHB) is produced from beta-fatty acid metabolism in patients suffering starvation, acute alcohol use, or in diabetic ketoacidosis. Beta-hydroxybutyrate normally accounts for 50 - 75% of the ketone bodies released into blood, with acetoacetic acid and acetone accounting for the remainder.

During extended fasting or diabetic ketoacidosis, the ratio of beta-hydroxybutyrate to acetoacetic acid is usually around 2 or 3 but can vary between 1 and 6 depending on redox state (Porter et al., Am J Clin Path 1997; 107:353-358).

Under usual circumstances, b-OHB concentrations do not exceed 1 mmol/l in type 1 diabetic subjects. In patients presenting with DKA, the mean b-OHB typically ranges between 4 and 12 mmol/l (Wallace and Matthews,. Q J Med 2004; 97:773-780).

This test may be more specific for diabetic ketoacidosis than the Acetest tablet testing for acetoacetic acid/acetone or the Ketostix dipstick test on urinalysis which primarily reacts with acetoacetic acid. In hyperglycemic patients in the emergency department, urine dipsticks may have similar sensitivity as measurements of b-OHB in blood for detecting diabetic ketoacidosis (DKA) (Arora et al, Diabetes Care 2011, 34:852-4).

Measurement of b-OHB in blood samples is important in the diagnosis and management of DKA. According to 2024 consensus guidelines, the diagnostic criteria for DKA are:

1) Diabetes/hyperglycemia defined by glucose >=200 mg/dL (11.1 mmol/L) OR prior history of diabetes

2) Ketosis defined by b-OHB concentration >=3.0 mmol/L OR urine ketone strip 2+ or greater

3) Metabolic Acidosis pH <7.3 and/or bicarbonate concentration <18 mmol/L

Management recommendations include blood sampling every 4 hours for measurement of electrolytes, phosphate, creatinine, b-OHB, and venous pH until resolution of DKA (Hyperglycemic Crises in Adults With Diabetes: A Consensus Report. Diabetes Care 2024; dci240032. https://doi.org/10.2337/dci24-0032).

Reference range adapted from studies by the assay manufacturer in healthy adults fasted for 12 hours before blood collection and verified by in house testing of 22 samples from normal volunteers.

Synonyms:

- Ketones

COLLECTION

Sample Type:
Serum or plasma

Collect:
Gold top or Light Green top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Stability (from collection to initiation):
Refrigerated 1 week

PROCESSING

Test Code:
BHOB

Test Group:
Ketones

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Stability (from collection to initiation):
Refrigerated 1 week

RESULT INTERPRETATION

Units:
mmol/L

Reference Interval:
0.02 - 0.27 mmol/L

Additional Information:
Beta-hydroxybutyrate (b-OHB) is produced from beta-fatty acid metabolism in patients suffering starvation, acute alcohol use, or in diabetic ketoacidosis. Beta-hydroxybutyrate normally accounts for 50 - 75% of the ketone bodies released into blood, with acetoacetic acid and acetone accounting for the remainder.

During extended fasting or diabetic ketoacidosis, the ratio of beta-hydroxybutyrate to acetoacetic acid is usually around 2 or 3 but can vary between 1 and 6 depending on redox state (Porter et al., Am J Clin Path 1997; 107:353-358).

Under usual circumstances, b-OHB concentrations do not exceed 1 mmol/l in type 1 diabetic subjects. In patients presenting with DKA, the mean b-OHB typically ranges between 4 and 12 mmol/l (Wallace and Matthews,. Q J Med 2004; 97:773-780).

This test may be more specific for diabetic ketoacidosis than the Acetest tablet testing for acetoacetic acid/acetone or the Ketostix dipstick test on urinalysis which primarily reacts with acetoacetic acid. In hyperglycemic patients in the emergency department, urine dipsticks may have similar sensitivity as measurements of b-OHB in blood for detecting diabetic ketoacidosis (DKA) (Arora et al, Diabetes Care 2011, 34:852-4).

Measurement of b-OHB in blood samples is important in the diagnosis and management of DKA. According to 2024 consensus guidelines, the diagnostic criteria for DKA are:

1) Diabetes/hyperglycemia defined by glucose >=200 mg/dL (11.1 mmol/L) OR prior history of diabetes

2) Ketosis defined by b-OHB concentration >=3.0 mmol/L OR urine ketone strip 2+ or greater

3) Metabolic Acidosis pH <7.3 and/or bicarbonate concentration <18 mmol/L

Management recommendations include blood sampling every 4 hours for measurement of electrolytes, phosphate, creatinine, b-OHB, and venous pH until resolution of DKA (Hyperglycemic Crises in Adults With Diabetes: A Consensus Report. Diabetes Care 2024; dci240032. https://doi.org/10.2337/dci24-0032).

Reference range adapted from studies by the assay manufacturer in healthy adults fasted for 12 hours before blood collection and verified by in house testing of 22 samples from normal volunteers.

ADMINISTRATIVE

CPT Codes:
82010

COMPLETE VIEW

Available Stat:
Yes

Test Code:
BHOB

Test Group:
Ketones

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Stanbio enzymatic (D-3-hydroxybutyrate dehydrogenase)

Collect:
Gold top or Light Green top

Amount to Collect:
2 mL blood

Sample Type:
Serum or plasma

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Units:
mmol/L

Reference Interval:
0.02 - 0.27 mmol/L

Synonyms:

- Ketones

Stability (from collection to initiation):
Refrigerated 1 week

Additional Information:
Beta-hydroxybutyrate (b-OHB) is produced from beta-fatty acid metabolism in patients suffering starvation, acute alcohol use, or in diabetic ketoacidosis. Beta-hydroxybutyrate normally accounts for 50 - 75% of the ketone bodies released into blood, with acetoacetic acid and acetone accounting for the remainder.

During extended fasting or diabetic ketoacidosis, the ratio of beta-hydroxybutyrate to acetoacetic acid is usually around 2 or 3 but can vary between 1 and 6 depending on redox state (Porter et al., Am J Clin Path 1997; 107:353-358).

Under usual circumstances, b-OHB concentrations do not exceed 1 mmol/l in type 1 diabetic subjects. In patients presenting with DKA, the mean b-OHB typically ranges between 4 and 12 mmol/l (Wallace and Matthews,. Q J Med 2004; 97:773-780).

This test may be more specific for diabetic ketoacidosis than the Acetest tablet testing for acetoacetic acid/acetone or the Ketostix dipstick test on urinalysis which primarily reacts with acetoacetic acid. In hyperglycemic patients in the emergency department, urine dipsticks may have similar sensitivity as measurements of b-OHB in blood for detecting diabetic ketoacidosis (DKA) (Arora et al, Diabetes Care 2011, 34:852-4).

Measurement of b-OHB in blood samples is important in the diagnosis and management of DKA. According to 2024 consensus guidelines, the diagnostic criteria for DKA are:

1) Diabetes/hyperglycemia defined by glucose >=200 mg/dL (11.1 mmol/L) OR prior history of diabetes

2) Ketosis defined by b-OHB concentration >=3.0 mmol/L OR urine ketone strip 2+ or greater

3) Metabolic Acidosis pH <7.3 and/or bicarbonate concentration <18 mmol/L

Management recommendations include blood sampling every 4 hours for measurement of electrolytes, phosphate, creatinine, b-OHB, and venous pH until resolution of DKA (Hyperglycemic Crises in Adults With Diabetes: A Consensus Report. Diabetes Care 2024; dci240032. https://doi.org/10.2337/dci24-0032).

Reference range adapted from studies by the assay manufacturer in healthy adults fasted for 12 hours before blood collection and verified by in house testing of 22 samples from normal volunteers.

CPT Codes:
82010

Bile Acids, Total

BILAT

ORDERING

Ordering Recommendations:
Use to detect hepatobiliary dysfunction. Do not order to detect inborn errors of bile acid metabolism. May aid in diagnosis of intrahepatic cholestasis of pregnancy.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative Enzymatic Assay

Reported:
Within 24 hours

Synonyms:

- Bile Acids, Total
- Bile Salts, Total
- Cholylglycine

COLLECTION

Patient Preparation:
Patient should fast for 8 hours prior to collection.

Collect:
Serum separator tube or plasma separator tube. Also acceptable : Lavender (EDTA), Green (Lithium heparin)

Stability (from collection to initiation):
After separation from cells: Ambient: 8 hours; Refrigerated: 2 weeks; Frozen: 3 months

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Body fluids. Hemolyzed specimens.

PROCESSING

Test Code:
BILAT

ARUP Test Code:
0070189

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Allow specimen to clot completely at room temperature before centrifugation. Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min: 0.5 mL)

Unacceptable Conditions:
Body fluids. Hemolyzed specimens.

Stability (from collection to initiation):
After separation from cells: Ambient: 8 hours; Refrigerated: 2 weeks; Frozen: 3 months

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:
0-10 µmol/L

Interpretive Data:
Reference interval applies to fasting specimens.

ADMINISTRATIVE

CPT Codes:
82239

LOINC:

- 14628-2

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Use to detect hepatobiliary dysfunction. Do not order to detect inborn errors of bile acid metabolism. May aid in diagnosis of intrahepatic cholestasis of pregnancy.

Test Code:
BILAT

ARUP Test Code:
0070189

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative Enzymatic Assay

Patient Preparation:
Patient should fast for 8 hours prior to collection.

Collect:
Serum separator tube or plasma separator tube. Also acceptable : Lavender (EDTA), Green (Lithium heparin)

Unacceptable Conditions:
Body fluids. Hemolyzed specimens.

Specimen Preparation:
Allow specimen to clot completely at room temperature before centrifugation. Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min: 0.5 mL)

Reference Interval:
0-10 µmol/L

Interpretive Data:
Reference interval applies to fasting specimens.

Synonyms:

- Bile Acids, Total
- Bile Salts, Total
- Cholylglycine

Storage/Transport Temperature:
Refrigerated.

Stability (from collection to initiation):
After separation from cells: Ambient: 8 hours; Refrigerated: 2 weeks; Frozen: 3 months

Reported:
Within 24 hours

CPT Codes:
82239

LOINC:

- 14628-2

Bilirubin, Direct, Plasma / Serum

BILD

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Spectophotometric (diazo)

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
To convert mg/dL to µmol/L (SI units) multiply by 17.1. Moderate hemolysis may artifactually decrease the result, whereas severe hemolysis may increase the result.

Synonyms:

- D bili
- Conjugated bilirubin
- DBIL
- Bile

COLLECTION

Sample Type:
Plasma or serum

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

PROCESSING

Test Code:
BILD

Test Group:
Bilirubin

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:

Age	mg/dL
0 to <15 days	0.3-0.7
15 days to <1 year	0.1-0.3
1 to <9 years	0.1-0.2
9 to <13 years	0.1-0.3
13 to 18 years	0.1-0.4
>18 years	<0.6

Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database Caliper study. https://caliper.research.sickkids.ca/#/

UCSF Clinical Labs verified the adult reference range stated in the Abbott Bilirubin, Direct package insert February 2017 by running 20 male and 20 female lab volunteers.

Additional Information:

To convert mg/dL to µmol/L (SI units) multiply by 17.1. Moderate hemolysis may artifactually decrease the result, whereas severe hemolysis may increase the result.

ADMINISTRATIVE

CPT Codes:
82248

LOINC Codes:
34543-9

COMPLETE VIEW

Available Stat:
Yes

Test Code:
BILD

Test Group:
Bilirubin

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Spectophotometric (diazo)

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
1 mL blood

Sample Type:
Plasma or serum

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Units:
mg/dL

Reference Interval:

Age	mg/dL
0 to <15 days	0.3-0.7
15 days to <1 year	0.1-0.3
1 to <9 years	0.1-0.2
9 to <13 years	0.1-0.3
13 to 18 years	0.1-0.4
>18 years	<0.6

Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database Caliper study. https://caliper.research.sickkids.ca/#/

UCSF Clinical Labs verified the adult reference range stated in the Abbott Bilirubin, Direct package insert February 2017 by running 20 male and 20 female lab volunteers.

Synonyms:

- D bili
- Conjugated bilirubin
- DBIL
- Bile

Reported:

STAT 1 hour, Routine 4 hours

Additional Information:

To convert mg/dL to µmol/L (SI units) multiply by 17.1. Moderate hemolysis may artifactually decrease the result, whereas severe hemolysis may increase the result.

CPT Codes:

82248

LOINC Codes:

34543-9

Bilirubin, Total, Body Fluid

BILTBF

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Continuous daily.

Methodology:
Spectrophotometric (diazonium salt)

Reported:
Stat: 1 hour, Routine: 4 hours

Additional Information:
Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context.

Interpretive information on this testing can be found at https://aruplab.com/bodyfluids

To convert mg/dL to µmol/L (SI units) multiply by 17.1.

Hemolysis may artifactually increase the result; lipemia may decrease the result.

Body fluid bilirubin levels are sometimes used to investigate the possibility of bile leaks or bile peritonitis. Although there are no reference ranges available, one recent study suggests that a ratio of the bilirubin concentration in Jackson Pratt drain fluid to the bilirubin concentration in serum of greater than 5.0 is indicative of a bile leak. Darwin, PE, Goldberg, EM, and Uradomo, LT. (2008). Jackson Pratt Drain Fluid to Serum Bilirubin Concentration Ratio for the Diagnosis of Bile Leaks. Gastrointestinal Endoscopy 67(5): AB159.

Ascitic fluid bilirubin levels have also been examined in patients with various forms of ascites. An ascitic fluid bilirubin concentration greater than 6 mg/dL and an ascitic fluid to serum bilirubin ratio of greater than 1.0 appears to be consistent with bile peritonitis. Runyon, BA. (1987). Ascitic fluid bilirubin concentration as a key to choleperitoneum. J Clin Gastroenterol 9(5): 543-545.

COLLECTION

Sample Type:
Body fluid

Collect:
Clean, empty container OR red top (no additives)
Note: Do NOT collect in red top with clot activator (silicone coated).

Amount to Collect:
5 ml fluid

Preferred Volume:
1 mL fluid

Minimum Volume:
0.2 mL fluid

Stability (from collection to initiation):
Room Temperature: 1 day
Refrigerated (2-8 C): 7 days
Frozen (-20 C or colder): 6 months

PROCESSING

Test Code:
BILTBF

Test Group:
Bilirubin

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
1 mL fluid

Minimum Volume:
0.2 mL fluid

Stability (from collection to initiation):
Room Temperature: 1 day
Refrigerated (2-8 C): 7 days
Frozen (-20 C or colder): 6 months

RESULT INTERPRETATION

Units:
mg/dL

Additional Information:
Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context.

Interpretive information on this testing can be found at https://aruplab.com/bodyfluids

To convert mg/dL to µmol/L (SI units) multiply by 17.1.

Hemolysis may artifactually increase the result; lipemia may decrease the result.

Body fluid bilirubin levels are sometimes used to investigate the possibility of bile leaks or bile peritonitis. Although there are no reference ranges available, one recent study suggests that a ratio of the bilirubin concentration in Jackson Pratt drain fluid to the bilirubin concentration in serum of greater than 5.0 is indicative of a bile leak. Darwin, PE, Goldberg, EM, and Uradomo, LT. (2008). Jackson Pratt Drain Fluid to Serum Bilirubin Concentration Ratio for the Diagnosis of Bile Leaks. Gastrointestinal Endoscopy 67(5): AB159.

Ascitic fluid bilirubin levels have also been examined in patients with various forms of ascites. An ascitic fluid bilirubin concentration greater than 6 mg/dL and an ascitic fluid to serum bilirubin ratio of greater than 1.0 appears to be consistent with bile peritonitis. Runyon, BA. (1987). Ascitic fluid bilirubin concentration as a key to choleperitoneum. J Clin Gastroenterol 9(5): 543-545.

ADMINISTRATIVE

CPT Codes:
82247

COMPLETE VIEW

Available Stat:
Yes

Test Code:
BILTBF

Test Group:
Bilirubin

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Continuous daily.

Methodology:
Spectrophotometric (diazonium salt)

Collect:
Clean, empty container OR red top (no additives)
Note: Do NOT collect in red top with clot activator (silicone coated).

Amount to Collect:
5 ml fluid

Sample Type:
Body fluid

Preferred Volume:
1 mL fluid

Minimum Volume:
0.2 mL fluid

Units:
mg/dL

Stability (from collection to initiation):
Room Temperature: 1 day
Refrigerated (2-8 C): 7 days
Frozen (-20 C or colder): 6 months

Reported:

Stat: 1 hour, Routine: 4 hours

Additional Information:

Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context.

Interpretive information on this testing can be found at https://aruplab.com/bodyfluids

To convert mg/dL to µmol/L (SI units) multiply by 17.1.

Hemolysis may artifactually increase the result; lipemia may decrease the result.

Body fluid bilirubin levels are sometimes used to investigate the possibility of bile leaks or bile peritonitis. Although there are no reference ranges available, one recent study suggests that a ratio of the bilirubin concentration in Jackson Pratt drain fluid to the bilirubin concentration in serum of greater than 5.0 is indicative of a bile leak. Darwin, PE, Goldberg, EM, and Uradomo, LT. (2008). Jackson Pratt Drain Fluid to Serum Bilirubin Concentration Ratio for the Diagnosis of Bile Leaks. Gastrointestinal Endoscopy 67(5): AB159.

Ascitic fluid bilirubin levels have also been examined in patients with various forms of ascites. An ascitic fluid bilirubin concentration greater than 6 mg/dL and an ascitic fluid to serum bilirubin ratio of greater than 1.0 appears to be consistent with bile peritonitis. Runyon, BA. (1987). Ascitic fluid bilirubin concentration as a key to choleperitoneum. J Clin Gastroenterol 9(5): 543-545.

CPT Codes:

82247

Bilirubin, Total, Plasma / Serum

BILT

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Chemistry: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center (Mon-Fri 0800-1630)

Methodology:
Parnassus, Mission Bay & Mt. Zion Chemistry:
Spectophotometric (diazonium salt) on Abbott Architect
Berkeley Outpatient Center:
Spectophotometric (diazonium salt) on Roche cobas c311

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
Eltrombopag up to 200 mcg/mL had negligible effects on total bilirubin concentrations when measured using the Abbott or Roche diazo methods. Ref: Adams DF and Sellers TS, Arch Pathol Lab Med, 2016, 140(5): 391-392

These pediatric critical cutoffs were recommended by Dr. Tom Newman in the Department of Pediatrics based in part on the nomogram of Bhutani et al for well newborns (gestational age of 36 weeks or more with birth weight of at least 2000 g, or a gestational age of 35 weeks or more with birth weight of at least 2500 g). Reference: Management of Hyperbilirubinemia in the Newborn Infant 35 or More Weeks of Gestation, Pediatrics 114:297-316, 2004.

The cutoffs take into consideration uncertainty about the exact age of the infant as reported by the hospital computer; the dating of age by the hospital computer system is not entirely accurate and cannot provide patient age in hours. Detailed information on hourly bilirubin levels at specific time points after birth to 6 days of age which predict risk of developing severe hyperbilirubinemia are available at www.bilitool.org.

Synonyms:

- T bili
- TBIL
- Conjugated and unconjugated bilirubin
- Bile

COLLECTION

Sample Type:
Plasma or serum

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):

Parnassus, Mission Bay & Mt. Zion Chemistry
Room temperature 2.5 months, refrigerated 5 months, frozen at -20C 3 months
Berkeley Outpatient Center:
Room temperature 1 day, refrigerated 7 days, frozen at -20C 6 months

PROCESSING

Test Code:
BILT

Test Group:
Bilirubin

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):

Parnassus, Mission Bay & Mt. Zion Chemistry
Room temperature 2.5 months, refrigerated 5 months, frozen at -20C 3 months
Berkeley Outpatient Center:
Room temperature 1 day, refrigerated 7 days, frozen at -20C 6 months

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:
Parnassus, Mission Bay & Mt. Zion Chemistry

Age	mg/dL
0 to 6 days	See www.bilitool.org
>6 to <15 days	0.2-16.6
15 days to <1 year	0.1-0.7
1 to <9 years	0.1-0.4
9 to <12 years	0.1-0.6
12 to <15 years	0.1-0.7
15 to <19 years	0.1-0.8
>=19 years	0.2-1.2

Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database Caliper study.
https://caliper.research.sickkids.ca/#/

UCSF Clinical Labs verified the adult reference range stated in the Abbott Total Bilirubin package insert November 2016 by running 20 male and 20 female lab volunteers.

Berkeley Outpatient Center

Age	mg/dL
>= 19 years	0.2-1.2

UCSF Clinical Labs at Berkeley Outpatient Center verified the adult reference range (>=19 years) stated in the Abbott Architect Total Bilirubin package insert by running samples from 20 male and 20 female lab volunteers.

Critical Values:
Only applicable for infants < 30 days old:

AGE IN DAYS	CRITICAL VALUE (mg/dL)
0	> 6
1	> 9
2	> 12
3	> 15
4	>18
5-30	> 21

Additional Information:

Eltrombopag up to 200 mcg/mL had negligible effects on total bilirubin concentrations when measured using the Abbott or Roche diazo methods. Ref: Adams DF and Sellers TS, Arch Pathol Lab Med, 2016, 140(5): 391-392

These pediatric critical cutoffs were recommended by Dr. Tom Newman in the Department of Pediatrics based in part on the nomogram of Bhutani et al for well newborns (gestational age of 36 weeks or more with birth weight of at least 2000 g, or a gestational age of 35 weeks or more with birth weight of at least 2500 g). Reference: Management of Hyperbilirubinemia in the Newborn Infant 35 or More Weeks of Gestation, Pediatrics 114:297-316, 2004.

The cutoffs take into consideration uncertainty about the exact age of the infant as reported by the hospital computer; the dating of age by the hospital computer system is not entirely accurate and cannot provide patient age in hours. Detailed information on hourly bilirubin levels at specific time points after birth to 6 days of age which predict risk of developing severe hyperbilirubinemia are available at www.bilitool.org.

ADMINISTRATIVE

CPT Codes:
82247

LOINC Codes:
34543-9

COMPLETE VIEW

Available Stat:
Yes

Test Code:
BILT

Test Group:
Bilirubin

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Chemistry: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center (Mon-Fri 0800-1630)

Methodology:
Parnassus, Mission Bay & Mt. Zion Chemistry:
Spectophotometric (diazonium salt) on Abbott Architect
Berkeley Outpatient Center:
Spectophotometric (diazonium salt) on Roche cobas c311

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
1 mL blood

Sample Type:
Plasma or serum

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Units:
mg/dL

Reference Interval:

Parnassus, Mission Bay & Mt. Zion Chemistry

Age	mg/dL
0 to 6 days	See www.bilitool.org
>6 to <15 days	0.2-16.6
15 days to <1 year	0.1-0.7
1 to <9 years	0.1-0.4
9 to <12 years	0.1-0.6
12 to <15 years	0.1-0.7
15 to <19 years	0.1-0.8
>=19 years	0.2-1.2

Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database Caliper study. https://caliper.research.sickkids.ca/#/

UCSF Clinical Labs verified the adult reference range stated in the Abbott Total Bilirubin package insert November 2016 by running 20 male and 20 female lab volunteers.

Berkeley Outpatient Center

Age	mg/dL
>= 19 years	0.2-1.2

UCSF Clinical Labs at Berkeley Outpatient Center verified the adult reference range (>=19 years) stated in the Abbott Architect Total Bilirubin package insert by running samples from 20 male and 20 female lab volunteers.

Critical Values:

Only applicable for infants < 30 days old:

AGE IN DAYS	CRITICAL VALUE (mg/dL)
0	> 6
1	> 9
2	> 12
3	> 15
4	>18
5-30	> 21

Synonyms:

- T bili
- TBIL
- Conjugated and unconjugated bilirubin
- Bile

Stability (from collection to initiation):

Parnassus, Mission Bay & Mt. Zion Chemistry
Room temperature 2.5 months, refrigerated 5 months, frozen at -20C 3 months
Berkeley Outpatient Center:
Room temperature 1 day, refrigerated 7 days, frozen at -20C 6 months

Reported:

STAT 1 hour, Routine 4 hours

Additional Information:

Eltrombopag up to 200 mcg/mL had negligible effects on total bilirubin concentrations when measured using the Abbott or Roche diazo methods. Ref: Adams DF and Sellers TS, Arch Pathol Lab Med, 2016, 140(5): 391-392

These pediatric critical cutoffs were recommended by Dr. Tom Newman in the Department of Pediatrics based in part on the nomogram of Bhutani et al for well newborns (gestational age of 36 weeks or more with birth weight of at least 2000 g, or a gestational age of 35 weeks or more with birth weight of at least 2500 g). Reference: Management of Hyperbilirubinemia in the Newborn Infant 35 or More Weeks of Gestation, Pediatrics 114:297-316, 2004.

The cutoffs take into consideration uncertainty about the exact age of the infant as reported by the hospital computer; the dating of age by the hospital computer system is not entirely accurate and cannot provide patient age in hours. Detailed information on hourly bilirubin levels at specific time points after birth to 6 days of age which predict risk of developing severe hyperbilirubinemia are available at www.bilitool.org.

CPT Codes:

82247

LOINC Codes:
34543-9

Biopterin (Newborn Screening follow-up only)

ORDERING

Available Stat:
No

Performing Lab:
Calif. Dept. of Public Health

Supplemental Test Request Form Required:
Yes

COLLECTION

Sample Type:
Whole blood & urine

Collect:
Newborn Screening Specimen Collection Card
Urine container

Amount to Collect:
4 blood spot circles & 10 mL urine

Preferred Volume:
4 paper filter blood spots
10 mL urine

Minimum Volume:
4 paper filter blood spots
10 mL urine

Remarks:
Blood: Fill a minimum of 4 circles on the Newborn Screening Specimen Collection Card and allow to air dry for 3 hours. keep sample away from direct sunlight and heat. Peel off one barcode label from the Newborn Screening Specimen Collection Card and apply to the Biopterin Specimen Collection form.

Urine: Collect 10 mL urine. Protect collection container from light by wrapping in aluminum foil. Provide pink copy of Biopterin Specimen Collection form to parents. Send the Biopterin Specimen Collection form, Newborn Screening Specimen Collection Card, and urine sample to laboratory for shipment.

Collection Instructions

PROCESSING

Sendout:
Yes

Performing Lab:
Calif. Dept. of Public Health

Specimen Preparation:
Freeze the Newborn Screening Specimen Collection Card in a plastic bag at -20C.

Transfer urine into light protected container. Apply the second bar code label from the Newborn Screening Specimen Collection Card to the urine container. Wrap the urine sample with aluminum foil and freeze at -20C.

Samples can only be shipped Monday-Thursday. Ship urine, Newborn Screening Specimen Collection Card, along with 2 white copies of the Biopterin Specimen Collection form, on dry ice to:

California Department of Public Health Genetic Disease Laboratory Branch
850 Marina Bay Parkway, C222 for Biopterin
Richmond, CA 94804

For questions contact Ram Mathur at (510) 231-1790 or (510) 231-1793.

Preferred Volume:
4 paper filter blood spots
10 mL urine

Minimum Volume:
4 paper filter blood spots
10 mL urine

COMPLETE VIEW

Available Stat:
No

Performing Lab:
Calif. Dept. of Public Health

Sendout:
Yes

Remarks:
Blood: Fill a minimum of 4 circles on the Newborn Screening Specimen Collection Card and allow to air dry for 3 hours. keep sample away from direct sunlight and heat. Peel off one barcode label from the Newborn Screening Specimen Collection Card and apply to the Biopterin Specimen Collection form.

Urine: Collect 10 mL urine. Protect collection container from light by wrapping in aluminum foil. Provide pink copy of Biopterin Specimen Collection form to parents. Send the Biopterin Specimen Collection form, Newborn Screening Specimen Collection Card, and urine sample to laboratory for shipment.

Collection Instructions

Collect:
Newborn Screening Specimen Collection Card
Urine container

Amount to Collect:
4 blood spot circles & 10 mL urine

Sample Type:
Whole blood & urine

Preferred Volume:
4 paper filter blood spots
10 mL urine

Minimum Volume:
4 paper filter blood spots
10 mL urine

Specimen Preparation:
Freeze the Newborn Screening Specimen Collection Card in a plastic bag at -20C.

Transfer urine into light protected container. Apply the second bar code label from the Newborn Screening Specimen Collection Card to the urine container. Wrap the urine sample with aluminum foil and freeze at -20C.

Samples can only be shipped Monday-Thursday. Ship urine, Newborn Screening Specimen Collection Card, along with 2 white copies of the Biopterin Specimen Collection form, on dry ice to:

California Department of Public Health Genetic Disease Laboratory Branch
850 Marina Bay Parkway, C222 for Biopterin
Richmond, CA 94804

For questions contact Ram Mathur at (510) 231-1790 or (510) 231-1793.

Supplemental Test Request Form Required:
Yes

Biotinidase

BIOTI

ORDERING

Available Stat:
No

Performing Lab:
Lucille-Packard Childrens Hospital

Reported:
Test batched weekly. Turnaround time: 1 week.

Additional Information:
This quantitative, spectrophotometric assay identifies patients with biotinidase deficiency, or late-onset multiple carboxylase deficiency.

COLLECTION

Sample Type:
Heparinized plasma or serum

Collect:
Dark Green top, Gold top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

PROCESSING

Test Code:
BIOTI

Sendout:
Yes

Performing Lab:
Lucille-Packard Childrens Hospital

Specimen Preparation:
Serum/Plasma must be frozen and stored frozen at -20C. Specimen pickup by Stanford Courier Services Monday-Friday. Maintain specimen in frozen condition to Stanford Hospital Clinical Laboratories for testing at Lucille Packard Children's Hospital.

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

RESULT INTERPRETATION

Units:
nmol/min/mL

Reference Interval:
3.3-8.7 nmol/min/mL

Additional Information:
This quantitative, spectrophotometric assay identifies patients with biotinidase deficiency, or late-onset multiple carboxylase deficiency.

ADMINISTRATIVE

CPT Codes:
82261-90

LOINC Codes:
32619-9

COMPLETE VIEW

Available Stat:
No

Test Code:
BIOTI

Performing Lab:
Lucille-Packard Childrens Hospital

Sendout:
Yes

Collect:
Dark Green top, Gold top

Amount to Collect:
1 mL blood

Sample Type:
Heparinized plasma or serum

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

Specimen Preparation:
Serum/Plasma must be frozen and stored frozen at -20C. Specimen pickup by Stanford Courier Services Monday-Friday. Maintain specimen in frozen condition to Stanford Hospital Clinical Laboratories for testing at Lucille Packard Children's Hospital.

Units:
nmol/min/mL

Reference Interval:
3.3-8.7 nmol/min/mL

Reported:
Test batched weekly. Turnaround time: 1 week.

Additional Information:
This quantitative, spectrophotometric assay identifies patients with biotinidase deficiency, or late-onset multiple carboxylase deficiency.

CPT Codes:
82261-90

LOINC Codes:
32619-9

BK virus, DNA, Quantitative, plasma

BKV

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Test performed 3x per week.

Methodology:
Real-Time PCR

Reported:
1-4 days.

Synonyms:

- BKV
- Polyoma virus

COLLECTION

Sample Type:
Plasma

Collect:
Lavender top

Amount to Collect:
>2 mL blood

Preferred Volume:
1.2 mL plasma

Minimum Volume:
0.6 mL plasma

Stability (from collection to initiation):
Freeze plasma at -80 degrees Celsius.

Unacceptable Conditions:
Grossly hemolyzed specimens and specimens collected in heparin tubes will be rejected.

PROCESSING

Test Code:
BKV

Performing Lab:
Microbiology

Specimen Preparation:
Separate plasma from blood cells within 6 hour of collection.

Preferred Volume:
1.2 mL plasma

Minimum Volume:
0.6 mL plasma

Unacceptable Conditions:
Grossly hemolyzed specimens and specimens collected in heparin tubes will be rejected.

Stability (from collection to initiation):
Freeze plasma at -80 degrees Celsius.

RESULT INTERPRETATION

Units:
International Units per Milliliter (IU/mL)

Reference Interval:
Linear range: 100 IU/mL to 2 x 10^7 IU/mL

ADMINISTRATIVE

CPT Codes:
87799

LDT or Modified FDA:
Yes

LOINC Codes:
42587-6

COMPLETE VIEW

Available Stat:
No

Test Code:
BKV

Performing Lab:
Microbiology

Performed:
Test performed 3x per week.

Methodology:
Real-Time PCR

Collect:
Lavender top

Amount to Collect:
>2 mL blood

Sample Type:
Plasma

Preferred Volume:
1.2 mL plasma

Minimum Volume:
0.6 mL plasma

Unacceptable Conditions:
Grossly hemolyzed specimens and specimens collected in heparin tubes will be rejected.

Specimen Preparation:
Separate plasma from blood cells within 6 hour of collection.

Units:
International Units per Milliliter (IU/mL)

Reference Interval:
Linear range: 100 IU/mL to 2 x 10^7 IU/mL

Synonyms:

- BKV
- Polyoma virus

Stability (from collection to initiation):
Freeze plasma at -80 degrees Celsius.

Reported:
1-4 days.

CPT Codes:
87799

LDT or Modified FDA:
Yes

LOINC Codes:
42587-6

BK virus, DNA, Quantitative, urine

BKVU

ORDERING

Approval Required:
Approval by microbiology section chief is required for testing >1 sample submitted within 5 days. Call 415-353-1268.

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Test performed 3x per week

Methodology:
Real-Time PCR

Reported:
1-4 days

Synonyms:

- BKV
- Polyoma virus
- BK Virus

COLLECTION

Sample Type:
Urine

Collect:
Urine in a sterile screw top tube

Amount to Collect:
1.2 mL

Preferred Volume:
1.2 mL

Minimum Volume:
0.6 mL

Storage/Transport Temperature:
Freeze at -80 degrees Celsius

Unacceptable Conditions:
Grossly bloody specimens will be rejected. Duplicate samples submitted within 5 days will be rejected.

PROCESSING

Test Code:
BKVU

Performing Lab:
Microbiology

Preferred Volume:
1.2 mL

Minimum Volume:
0.6 mL

Unacceptable Conditions:
Grossly bloody specimens will be rejected. Duplicate samples submitted within 5 days will be rejected.

Storage/Transport Temperature:
Freeze at -80 degrees Celsius

RESULT INTERPRETATION

Units:
International Units per Milliliter (IU/mL)

Reference Interval:
Not detected

Interpretive Data:
Linear range: 1000 IU/mL to 2 x 10^7 IU/mL

ADMINISTRATIVE

CPT Codes:
87799

LDT or Modified FDA:
Yes

COMPLETE VIEW

Approval Required:
Approval by microbiology section chief is required for testing >1 sample submitted within 5 days. Call 415-353-1268.

Available Stat:
No

Test Code:
BKVU

Performing Lab:
Microbiology

Performed:
Test performed 3x per week

Methodology:
Real-Time PCR

Collect:
Urine in a sterile screw top tube

Amount to Collect:
1.2 mL

Sample Type:
Urine

Preferred Volume:
1.2 mL

Minimum Volume:
0.6 mL

Unacceptable Conditions:
Grossly bloody specimens will be rejected. Duplicate samples submitted within 5 days will be rejected.

Units:
International Units per Milliliter (IU/mL)

Reference Interval:
Not detected

Interpretive Data:
Linear range: 1000 IU/mL to 2 x 10^7 IU/mL

Synonyms:

- BKV
- Polyoma virus
- BK Virus

Storage/Transport Temperature:
Freeze at -80 degrees Celsius

Reported:
1-4 days

CPT Codes:
87799

LDT or Modified FDA:
Yes

Bladder Cancer by FISH

UROV

ORDERING

Ordering Recommendations:
May aid in diagnosis of urothelial carcinoma and monitoring for tumor recurrence.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Mon-Fri

Methodology:
Qualitative Fluorescence in situ Hybridization (FISH)/Computer Assisted Analysis/Microscopy

Reported:
4-14 days

Synonyms:

- Bladder Cancer
- Bladder Cancer FISH
- Bladder Tumor
- Bladder Tumor FISH
- Cytology
- FISH
- Urinary Tract Cancer
- Urothelial Carcinoma
- Urovysion
- UroVysion

COLLECTION

Sample Type:
Urine

Collect:
Second-morning, clean-catch voided urine specimen collected in PreservCyt collection vial included in UroCyte Urine Collection Kit (ARUP Supply #41440). Collection kit is available online through eSupply using ARUP Connector contact Client Services at 800-522-2787. For specific instructions refer to Specimen Collection & Handling.

Minimum Volume:
35 mL

Remarks:
Submit source information with the specimen.

Stability (from collection to initiation):
Ambient: 1 week from collection; Refrigerated: 1 week from collection; Frozen: Unacceptable

Storage/Transport Temperature:
Ambient or refrigerated

Unacceptable Conditions:
Unfixed specimens not in PreservCyt fixative. Frozen specimens. Specimens submitted in expired collection vials.

PROCESSING

Test Code:
UROV

ARUP Test Code:
3016627

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Specimens must be transported in PreservCyt fixative. Acceptable source is voided urine. (Min: 35 mL)

Minimum Volume:
35 mL

Unacceptable Conditions:
Unfixed specimens not in PreservCyt fixative. Frozen specimens. Specimens submitted in expired collection vials.

Stability (from collection to initiation):
Ambient: 1 week from collection; Refrigerated: 1 week from collection; Frozen: Unacceptable

Storage/Transport Temperature:
Ambient or refrigerated

RESULT INTERPRETATION

Reference Interval:
Negative: No evidence of numeric chromosomal aberrations associated with urothelial carcinoma identified.
Positive: Numeric chromosomal aberrations associated with urothelial carcinoma identified.

Interpretive Data:
NEGATIVE results indicate a lack of evidence for the presence of numeric chromosomal abnormalities commonly associated with urothelial carcinoma within the cells collected in this specimen. Negative results in the presence of other symptoms/signs of urothelial carcinoma may suggest the possibility of a false negative test. In this circumstance, additional clinical studies to exclude urothelial carcinoma should be pursued, as clinically indicated. Although this test was designed to detect genetic abnormality associated with most urothelial cancers, there will be some urothelial cancers whose genetic changes cannot be detected by this test.

POSITIVE results indicate the presence of one or more numeric chromosomal abnormalities commonly associated with urothelial carcinoma within the cells collected in this specimen. Positive results in the absence of clinical documentation of urothelial carcinoma within the bladder suggest the possibility of urothelial carcinoma or other urologic malignancy from another site (including ureter, kidney, urethra, and prostate). In this circumstance, further clinical evaluation to exclude these as a source of the abnormal cells is justified.

The UroVysion Bladder Cancer Kit probes were used to detect aneuploidy for chromosomes 3, 7, 17, and/or loss of 9p21 locus via fluorescence in situ hybridization (FISH). Results from this test are intended for use in conjunction with, and not in lieu of, current standard diagnostic procedures, as an aid for initial diagnosis of urothelial carcinoma and for monitoring for tumor recurrence in conjunction with cystoscopy in patients with previously diagnosed bladder cancer.

ADMINISTRATIVE

CPT Codes:
88121

LOINC:

- 66746-9
- 22634-0
- 22636-5
- 8100-0

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
May aid in diagnosis of urothelial carcinoma and monitoring for tumor recurrence.

Test Code:
UROV

ARUP Test Code:
3016627

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Mon-Fri

Methodology:
Qualitative Fluorescence in situ Hybridization (FISH)/Computer Assisted Analysis/Microscopy

Remarks:
Submit source information with the specimen.

Collect:
Second-morning, clean-catch voided urine specimen collected in PreservCyt collection vial included in UroCyte Urine Collection Kit (ARUP Supply #41440). Collection kit is available online through eSupply using ARUP Connector contact Client Services at 800-522-2787. For specific instructions refer to Specimen Collection & Handling.

Sample Type:
Urine

Minimum Volume:
35 mL

Unacceptable Conditions:
Unfixed specimens not in PreservCyt fixative. Frozen specimens. Specimens submitted in expired collection vials.

Specimen Preparation:
Specimens must be transported in PreservCyt fixative. Acceptable source is voided urine. (Min: 35 mL)

Reference Interval:
Negative: No evidence of numeric chromosomal aberrations associated with urothelial carcinoma identified.
Positive: Numeric chromosomal aberrations associated with urothelial carcinoma identified.

Interpretive Data:
NEGATIVE results indicate a lack of evidence for the presence of numeric chromosomal abnormalities commonly associated with urothelial carcinoma within the cells collected in this specimen. Negative results in the presence of other symptoms/signs of urothelial carcinoma may suggest the possibility of a false negative test. In this circumstance, additional clinical studies to exclude urothelial carcinoma should be pursued, as clinically indicated. Although this test was designed to detect genetic abnormality associated with most urothelial cancers, there will be some urothelial cancers whose genetic changes cannot be detected by this test.

POSITIVE results indicate the presence of one or more numeric chromosomal abnormalities commonly associated with urothelial carcinoma within the cells collected in this specimen. Positive results in the absence of clinical documentation of urothelial carcinoma within the bladder suggest the possibility of urothelial carcinoma or other urologic malignancy from another site (including ureter, kidney, urethra, and prostate). In this circumstance, further clinical evaluation to exclude these as a source of the abnormal cells is justified.

The UroVysion Bladder Cancer Kit probes were used to detect aneuploidy for chromosomes 3, 7, 17, and/or loss of 9p21 locus via fluorescence in situ hybridization (FISH). Results from this test are intended for use in conjunction with, and not in lieu of, current standard diagnostic procedures, as an aid for initial diagnosis of urothelial carcinoma and for monitoring for tumor recurrence in conjunction with cystoscopy in patients with previously diagnosed bladder cancer.

Synonyms:

- Bladder Cancer
- Bladder Cancer FISH
- Bladder Tumor
- Bladder Tumor FISH
- Cytology
- FISH
- Urinary Tract Cancer
- Urothelial Carcinoma
- Urovysion
- UroVysion

Storage/Transport Temperature:
Ambient or refrigerated

Stability (from collection to initiation):
Ambient: 1 week from collection; Refrigerated: 1 week from collection; Frozen: Unacceptable

Reported:
4-14 days

CPT Codes:
88121

LOINC:

- 66746-9
- 22634-0
- 22636-5
- 8100-0

Blastomycosis Antibody

BLAS

ORDERING

Available Stat:
No

Performing Lab:
Focus via Quest

Methodology:
Immunodiffusion

Reported:
Set up 5x per week. Turnaround time 4-6 days

Additional Information:
Blastomycosis, caused by the fungus Blastomyces dermatitidis, occurs most commonly in men ages 20-69 years. Infection may be transient or lead to chronic, progressive pulmonary disease.

A positive result is diagnostic of active or recent blastomycosis and is found in approximately 80% of proven cases of blastomycosis.

COLLECTION

Sample Type:
Serum

Collect:
Red top (Gold top acceptable)

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.1 mL serum

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 3 days, frozen at -20C 6 months.

PROCESSING

Test Code:
BLAS

Sendout:
Yes

Performing Lab:
Focus via Quest

Specimen Preparation:
Freeze sample. Order Quest #932. For B&T patients order LabCorp test # 164293

Preferred Volume:
1 mL serum

Minimum Volume:
0.1 mL serum

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 3 days, frozen at -20C 6 months.

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
Blastomycosis, caused by the fungus Blastomyces dermatitidis, occurs most commonly in men ages 20-69 years. Infection may be transient or lead to chronic, progressive pulmonary disease.

A positive result is diagnostic of active or recent blastomycosis and is found in approximately 80% of proven cases of blastomycosis.

ADMINISTRATIVE

CPT Codes:
86612-90`

LOINC Codes:
5058-3

COMPLETE VIEW

Available Stat:
No

Test Code:
BLAS

Performing Lab:
Focus via Quest

Sendout:
Yes

Methodology:
Immunodiffusion

Collect:
Red top (Gold top acceptable)

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.1 mL serum

Specimen Preparation:
Freeze sample. Order Quest #932. For B&T patients order LabCorp test # 164293

Reference Interval:
Negative

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 3 days, frozen at -20C 6 months.

Reported:
Set up 5x per week. Turnaround time 4-6 days

Additional Information:
Blastomycosis, caused by the fungus Blastomyces dermatitidis, occurs most commonly in men ages 20-69 years. Infection may be transient or lead to chronic, progressive pulmonary disease.

A positive result is diagnostic of active or recent blastomycosis and is found in approximately 80% of proven cases of blastomycosis.

CPT Codes:
86612-90`

LOINC Codes:
5058-3

Blood Bank Outside Lab Test

BOLT

ORDERING

Approval Required:
YES. Test should be ordered only after consult with Blood Bank Physician.

Available Stat:
No

Methodology:
Test specific

Additional Information:
Please order BOLT for Immunohematology Reference Lab Send Out Tests like RBC Genotyping, DAT Negative Hemolytic Anemia work up, Platelet Antibody Screen for Platelet, MMA, etc.

Synonyms:

- Immunohematology Reference Lab Send Out Test

COLLECTION

Patient Preparation:
Specific to test being ordered - call Blood Bank for details.

Sample Type:
Specific to test being ordered - call Blood Bank for details.

Collect:
Specific to test being ordered - call Blood Bank for details.

Amount to Collect:
Specific to test being ordered - call Blood Bank for details.

Stability (from collection to initiation):
Specific to test being ordered - call Blood Bank for details.

Storage/Transport Temperature:
Specific to test being ordered - call Blood Bank for details.

Rejection Criteria:
Quantity not sufficient, incorrect specimen tubes/types

PROCESSING

Test Code:
BOLT

Test Group:
Blood Bank Send out test

Sendout:
Yes

Specimen Preparation:
Send samples to Blood Bank to be shipped to American Red Cross Reference Lab. Do not separate plasma or serum.

Rejection Criteria:
Quantity not sufficient, incorrect specimen tubes/types

Stability (from collection to initiation):
Specific to test being ordered - call Blood Bank for details.

Storage/Transport Temperature:
Specific to test being ordered - call Blood Bank for details.

RESULT INTERPRETATION

Additional Information:
Please order BOLT for Immunohematology Reference Lab Send Out Tests like RBC Genotyping, DAT Negative Hemolytic Anemia work up, Platelet Antibody Screen for Platelet, MMA, etc.

COMPLETE VIEW

Approval Required:
YES. Test should be ordered only after consult with Blood Bank Physician.

Available Stat:
No

Test Code:
BOLT

Test Group:
Blood Bank Send out test

Sendout:
Yes

Methodology:
Test specific

Patient Preparation:
Specific to test being ordered - call Blood Bank for details.

Collect:
Specific to test being ordered - call Blood Bank for details.

Amount to Collect:
Specific to test being ordered - call Blood Bank for details.

Sample Type:
Specific to test being ordered - call Blood Bank for details.

Rejection Criteria:
Quantity not sufficient, incorrect specimen tubes/types

Specimen Preparation:
Send samples to Blood Bank to be shipped to American Red Cross Reference Lab. Do not separate plasma or serum.

Synonyms:

- Immunohematology Reference Lab Send Out Test

Storage/Transport Temperature:
Specific to test being ordered - call Blood Bank for details.

Stability (from collection to initiation):
Specific to test being ordered - call Blood Bank for details.

Additional Information:
Please order BOLT for Immunohematology Reference Lab Send Out Tests like RBC Genotyping, DAT Negative Hemolytic Anemia work up, Platelet Antibody Screen for Platelet, MMA, etc.

Blood Gas Panels, Whole Blood

ARTBGL, VENBGL

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay and Mt Zion Chemistry

Methodology:
Radiometer ABL 90 FLEX Plus

Additional Information:
The following blood gas panels are available (click on the hyperlinks for detailed information about each component):
Cooximetry only (includes CAHB, O2HB, COHB, MEHB, O2HX)CPCOOX: Capillary source or syringe
Blood gas only (includes PH37, PCO2, PO2, BEX, HCO3, SAO2)ABGO: Arterial source
VBGO: Venous source
CVBGO: Central venous source
MVBGO: Mixed venous source
CAPBGO: Capillary source
CORBGA: Arterial cord blood source
CORBGV: Venous cord blood source
Blood gas with Cooximetry (includes PH37, PCO2, PO2, BEX, HCO3, SAO2, CAHB, O2HB, COHB, MEHB, O2HX)ABGCOX: Arterial source
VBGCOX: Venous source
CVBGCX: Central venous source
Blood Gas, electrolytes (Na, K, Cl, iCa), glucose, hemoglobin/hematocrit, lactate (includes PH37, PCO2, PO2, BEX, HCO3, SAO2, NAWB, KSB, CAIB, CLWB, CAIB, GLB, CAHB, NHCT, LACTWB)ARTBGL: Arterial source
VENBGL: Venous source
CVBGL: Central venous source
MVBGL: Mixed venous source
CAPBG: Capillary source (Note: does NOT include lactate)
Blood Gas, electrolytes (Na, K, Cl, iCa), hemoglobin/hematocrit from Circuit source (includes PH37, PCO2, PO2, BEX, HCO3, SAO2, NAWB, KSB, CAIB, CLWB, CAIB, CAHB, NHCT)MVBGCX: Mixed venous circuit source
CIRBGA: Arterial circuit source
CIRBGV: Venous circuit source

Synonyms:

- pH
- pCO2
- pO2
- O2 Saturation
- O2 Sat
- Base excess
- A-a gradient
- HCO3-
- ABG
- BG
- BE
- oxygen
- carbon dioxide
- bicarbonate
- electrolytes
- glucose
- lactate
- hemoximetry, cooximetry
- hemoglobin
- hematocrit
- sodium
- potassium
- chloride
- ionized calcium
- CPCOOX
- ABGO
- VBGO
- CVBGO
- MVBGO
- CAPBGO
- CORBGA
- CORBGV
- ABGCOX
- VBGCOX
- CVBGCX
- CVBGL
- MVBGL
- CAPBG
- MVBGCX
- CIRBGA
- CIRBGV

COLLECTION

Sample Type:
Heparinized whole blood

Collect:
Plastic blood gas syringe containing 100 U of dry heparin or 70 IU/ml with dry electrolyte-balanced heparin capillary tube.

Amount to Collect:
3 mL blood

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood

Remarks:

Arterial puncture:
Due to the risk of arterial damage and subsequent distal ischemia, prior to puncturing an artery the RN assesses the collateral circulation. If the radial artery is to be punctured, then the pulse of the ulnar artery is assessed. If the dorsalis pedis artery is to be accessed then the posterial tibial pulse is assessed and likewise if the posterial tibial approach is used the dorsalis pedis pulse is assessed. The modified Allens's test may be used to assess collateral circulation of the ulnar artery before a radial artery puncture, but it does not always ensure adequate flow. A Doppler ultrasound flow indicator may be used to verify collateral circulation. If the collateral circulation is poor and the RN cannot palpate a pulse then the physician should be notified before proceeding. If for any reason the circulation is compromised to the extremity being assessed for arterial puncture then the physician should be notified prior to proceeding.

1. Palpate the radial artery and identify the site where the pulse is the strongest. Avoid areas with overlying veins to prevent venous admixture.
2. Prepare the patient's skin with an alcohol or 2% chlorhexidine wipe/swab.
3. Place two or three fingers along the course of the artery both to locate its position and direction, and to stabilize it.
4. Penetrate the skin smoothly holding the needle at 30-60 degree angle with the needle bevel up and pointed proximally. The angle of the "butterfly" IV catheter should not exceed 45° for pediatric patients.
5. Re-establish the position and direction of the artery by palpation.
6. Gently and slowly advance the needle or "butterfly", aiming directly for the area of maximum pulsation.
7. When the arterial lumen has been entered, less resistance is felt and blood appears in the syringe above the needle hub.
8. Obtain required amount of arterial blood for test(s).
9. If blood is not obtained on first attempt, withdraw the needle to just below the skin surface and advance needle at same angle but at 1 mm to either side of previous attempt.
10. Place the 2x2 gauze over the site of the puncture then withdraw the needle from the artery. Press firmly at the site for at least five minutes, or until the bleeding stops. Apply bandage or pressure dressing.
11. Expel any air bubble in the syringe with air filter cap placed on specimen syringe.
12. Label sample with patient's name, ID number and DOB.

Venous samples:
1. Avoid excessive venous stasis from prolonged tourniquet application or clenching of the fist prior to sample collection.
2. For central line draws make sure to waste a full red top tube then draw via the blood gas syringe as noted above.
3. Fill syringe completely, remove needle (in peripheral draws), cap sample, expel all bubbles (while holding syringe upright) until blood hits the top of cap.
4. Label sample with patient's name, ID number and DOB.

Capillary Samples:
1. The following are recommended sampling sites: earlobe, finger tip, big toe, heel. The heel and big toe are more suitable for use on neonates and infants.
2. Warm the area or puncture site for 5 to 10 minutes prior to actual sampling. This accelerates flow for blood to be representative of general status of patient.
3. Make a puncture using a lancet or similar device. Do not squeeze the area to avoid tissue juice from mixing into blood sample.
4. Wipe off the first drop of blood. Take the sample from the center of the second drop of blood and hold the capillary at a slightly downward angle for an uninterrupted blood flow. Avoid getting air bubbles in the specimen.
5. Refrain from squeezing or milking the puncture site as this may result in faulty measurements or cause hemolysis of blood sample and cause elevated K+ readings.
6. Apply accompanying caps to both ends of the capillary tube and mix the sample with the heparin immediately after collection to prevent blood from clotting. The manufacturer recommends the use of a mixing wire and magnet for capillary samples.
7. Label sample with patient's name, ID and DOB.

Deliver samples immediately to lab for testing. Samples delivered to the lab > 30 minutes after collection may yield erroneous results.

Stability (from collection to initiation):
< 30 minutes

PROCESSING

Test Code:
See 'Additional Information' for relevant test codes.

Performing Lab:
Parnassus, Mission Bay and Mt Zion Chemistry

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood

Stability (from collection to initiation):
< 30 minutes

RESULT INTERPRETATION

Reference Interval:

See separate entries for:

Blood gases

Cooximetry

Electrolytes

Glucose

Hematocrit

Lactate

Critical Values:

See above hyperlinks

Additional Information:

The following blood gas panels are available (click on the hyperlinks for detailed information about each component):
Cooximetry only (includes CAHB, O2HB, COHB, MEHB, O2HX)CPCOOX: Capillary source or syringe
Blood gas only (includes PH37, PCO2, PO2, BEX, HCO3, SAO2)ABGO: Arterial source
VBGO: Venous source
CVBGO: Central venous source
MVBGO: Mixed venous source
CAPBGO: Capillary source
CORBGA: Arterial cord blood source
CORBGV: Venous cord blood source
Blood gas with Cooximetry (includes PH37, PCO2, PO2, BEX, HCO3, SAO2, CAHB, O2HB, COHB, MEHB, O2HX)ABGCOX: Arterial source
VBGCOX: Venous source
CVBGCX: Central venous source
Blood Gas, electrolytes (Na, K, Cl, iCa), glucose, hemoglobin/hematocrit, lactate (includes PH37, PCO2, PO2, BEX, HCO3, SAO2, NAWB, KSB, CAIB, CLWB, CAIB, GLB, CAHB, NHCT, LACTWB)ARTBGL: Arterial source
VENBGL: Venous source
CVBGL: Central venous source
MVBGL: Mixed venous source
CAPBG: Capillary source (Note: does NOT include lactate)
Blood Gas, electrolytes (Na, K, Cl, iCa), hemoglobin/hematocrit from Circuit source (includes PH37, PCO2, PO2, BEX, HCO3, SAO2, NAWB, KSB, CAIB, CLWB, CAIB, CAHB, NHCT)MVBGCX: Mixed venous circuit source
CIRBGA: Arterial circuit source
CIRBGV: Venous circuit source

COMPLETE VIEW

Available Stat:

Yes

Test Code:

See 'Additional Information' for relevant test codes.

Performing Lab:

Parnassus, Mission Bay and Mt Zion Chemistry

Methodology:

Radiometer ABL 90 FLEX Plus

Remarks:

Arterial puncture:

Due to the risk of arterial damage and subsequent distal ischemia, prior to puncturing an artery the RN assesses the collateral circulation. If the radial artery is to be punctured, then the pulse of the ulnar artery is assessed. If the dorsalis pedis artery is to be accessed then the posterial tibial pulse is assessed and likewise if the posterial tibial approach is used the dorsalis pedis pulse is assessed. The modified Allens's test may be used to assess collateral circulation of the ulnar artery before a radial artery puncture, but it does not always ensure adequate flow. A Doppler ultrasound flow indicator may be used to verify collateral circulation. If the collateral circulation is poor and the RN cannot palpate a pulse then the physician should be notified before proceeding. If for any reason the circulation is compromised to the extremity being assessed for arterial puncture then the physician should be notified prior to proceeding.

1. Palpate the radial artery and identify the site where the pulse is the strongest. Avoid areas with overlying veins to prevent venous admixture.
2. Prepare the patient's skin with an alcohol or 2% chlorhexidine wipe/swab.
3. Place two or three fingers along the course of the artery both to locate its position and direction, and to stabilize it.
4. Penetrate the skin smoothly holding the needle at 30-60 degree angle with the needle bevel up and pointed proximally. The angle of the "butterfly" IV catheter should not exceed 45° for pediatric patients.
5. Re-establish the position and direction of the artery by palpation.
6. Gently and slowly advance the needle or "butterfly", aiming directly for the area of maximum pulsation.
7. When the arterial lumen has been entered, less resistance is felt and blood appears in the syringe above the needle hub.
8. Obtain required amount of arterial blood for test(s).
9. If blood is not obtained on first attempt, withdraw the needle to just below the skin surface and advance needle at same angle but at 1 mm to either side of previous attempt.
10. Place the 2x2 gauze over the site of the puncture then withdraw the needle from the artery. Press firmly at the site for at least five minutes, or until the bleeding stops. Apply bandage or pressure dressing.
11. Expel any air bubble in the syringe with air filter cap placed on specimen syringe.
12. Label sample with patient's name, ID number and DOB.

Venous samples:

1. Avoid excessive venous stasis from prolonged tourniquet application or clenching of the fist prior to sample collection.
2. For central line draws make sure to waste a full red top tube then draw via the blood gas syringe as noted above.
3. Fill syringe completely, remove needle (in peripheral draws), cap sample, expel all bubbles (while holding syringe upright) until blood hits the top of cap.
4. Label sample with patient's name, ID number and DOB.

Capillary Samples:

1. The following are recommended sampling sites: earlobe, finger tip, big toe, heel. The heel and big toe are more suitable for use on neonates and infants.
2. Warm the area or puncture site for 5 to 10 minutes prior to actual sampling. This accelerates flow for blood to be representative of general status of patient.
3. Make a puncture using a lancet or similar device. Do not squeeze the area to avoid tissue juice from mixing into blood sample.
4. Wipe off the first drop of blood. Take the sample from the center of the second drop of blood and hold the capillary at a slightly downward angle for an uninterrupted blood flow. Avoid getting air bubbles in the specimen.
5. Refrain from squeezing or milking the puncture site as this may result in faulty measurements or cause hemolysis of blood sample and cause elevated K+ readings.
6. Apply accompanying caps to both ends of the capillary tube and mix the sample with the heparin immediately after collection to prevent blood from clotting. The manufacturer recommends the use of a mixing wire and magnet for capillary samples.
7. Label sample with patient's name, ID and DOB.

Deliver samples immediately to lab for testing. Samples delivered to the lab > 30 minutes after collection may yield erroneous results.

Collect:

Plastic blood gas syringe containing 100 U of dry heparin or 70 IU/ml with dry electrolyte-balanced heparin capillary tube.

Amount to Collect:

3 mL blood

Sample Type:

Heparinized whole blood

Preferred Volume:

3 mL blood

Minimum Volume:

1 mL blood

Reference Interval:

See separate entries for:

Blood gases

Cooximetry

Electrolytes

Glucose

Hematocrit

Lactate

Critical Values:

See above hyperlinks

Synonyms:

- pH
- pCO2
- pO2
- O2 Saturation
- O2 Sat
- Base excess
- A-a gradient
- HCO3-
- ABG
- BG
- BE
- oxygen
- carbon dioxide
- bicarbonate
- electrolytes
- glucose
- lactate
- hemoximetry, cooximetry
- hemoglobin
- hematocrit
- sodium
- potassium
- chloride
- ionized calcium
- CPCOOX
- ABGO
- VBGO
- CVBGO
- MVBGO
- CAPBGO
- CORBGA
- CORBGV
- ABGCOX
- VBGCOX
- CVBGCX
- CVBGL
- MVBGL
- CAPBG
- MVBGCX
- CIRBGA
- CIRBGV

Stability (from collection to initiation):

< 30 minutes

Additional Information:

The following blood gas panels are available (click on the hyperlinks for detailed information about each component):
Cooximetry only (includes CAHB, O2HB, COHB, MEHB, O2HX)CPCOOX: Capillary source or syringe
Blood gas only (includes PH37, PCO2, PO2, BEX, HCO3, SAO2)ABGO: Arterial source
VBGO: Venous source
CVBGO: Central venous source
MVBGO: Mixed venous source
CAPBGO: Capillary source
CORBGA: Arterial cord blood source
CORBGV: Venous cord blood source
Blood gas with Cooximetry (includes PH37, PCO2, PO2, BEX, HCO3, SAO2, CAHB, O2HB, COHB, MEHB, O2HX)ABGCOX: Arterial source
VBGCOX: Venous source
CVBGCX: Central venous source
Blood Gas, electrolytes (Na, K, Cl, iCa), glucose, hemoglobin/hematocrit, lactate (includes PH37, PCO2, PO2, BEX, HCO3, SAO2, NAWB, KSB, CAIB, CLWB, CAIB, GLB, CAHB, NHCT, LACTWB)ARTBGL: Arterial source
VENBGL: Venous source
CVBGL: Central venous source
MVBGL: Mixed venous source
CAPBG: Capillary source (Note: does NOT include lactate)
Blood Gas, electrolytes (Na, K, Cl, iCa), hemoglobin/hematocrit from Circuit source (includes PH37, PCO2, PO2, BEX, HCO3, SAO2, NAWB, KSB, CAIB, CLWB, CAIB, CAHB, NHCT)MVBGCX: Mixed venous circuit source
CIRBGA: Arterial circuit source
CIRBGV: Venous circuit source

Blood Gases, Whole Blood

ABGO, VBGO

ORDERING

Ordering Recommendations:
Follow the link for information about Blood Gas Panels that contain this test.

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay and Mt Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Radiometer ABL 90 FLEX Plus

Reported:
10 min

Additional Information:
This panel includes the following: pH (PH37), pCO2 (PCO2), pO2 (PO2), Base excess (BEX), Bicarb (HCO3) and oxygen saturation (SAO2)
All reported values are corrected to 37C unless otherwise specified. Results beyond the linear range of the instrument will be reported as < or > the extreme of the linear range. Samples containing small bubbles may be run at the laboratory's discretion. If analyzed, a comment will be added to the result regarding the presence of bubbles in the sample.

Synonyms:

- pH
- pCO2
- pO2
- O2 Saturation
- O2 Sat
- Base excess
- A-a gradient
- HCO3-
- ABG
- BG
- BE
- oxygen
- carbon dioxide
- bicarbonate
- MVBGO
- CVBGO
- CAPBGO
- CORBGA
- CORBGV
- ABGCOX
- VBGCOX
- CVBGCX
- ARTBGL
- VENBGL
- CVBGL
- MVBGL
- CAPBG
- MVBGCX
- CIRBGA
- CIRBGV

COLLECTION

Sample Type:
Heparinized whole blood

Collect:
Plastic blood gas syringe containing 100 U of dry heparin or 70 IU/mL with dry electrolyte-balanced heparin capillary tube.

Amount to Collect:
3 mL blood

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood

Remarks:

Arterial puncture:
Due to the risk of arterial damage and subsequent distal ischemia, prior to puncturing an artery the RN assesses the collateral circulation. If the radial artery is to be punctured, then the pulse of the ulnar artery is assessed. If the dorsalis pedis artery is to be accessed then the posterial tibial pulse is assessed and likewise if the posterial tibial approach is used the dorsalis pedis pulse is assessed. The modified Allens's test may be used to assess collateral circulation of the ulnar artery before a radial artery puncture, but it does not always ensure adequate flow. A Doppler ultrasound flow indicator may be used to verify collateral circulation. If the collateral circulation is poor and the RN cannot palpate a pulse then the physician should be notified before proceeding. If for any reason the circulation is compromised to the extremity being assessed for arterial puncture then the physician should be notified prior to proceeding.

1. Palpate the radial artery and identify the site where the pulse is the strongest. Avoid areas with overlying veins to prevent venous admixture.
2. Prepare the patient's skin with an alcohol or 2% chlorhexidine wipe/swab.
3. Place two or three fingers along the course of the artery both to locate its position and direction, and to stabilize it.
4. Penetrate the skin smoothly holding the needle at 30-60 degree angle with the needle bevel up and pointed proximally. The angle of the butterfly" IV catheter should not exceed 45° for pediatric patients.
5. Re-establish the position and direction of the artery by palpation.
6. Gently and slowly advance the needle or butterfly", aiming directly for the area of maximum pulsation.
7. When the arterial lumen has been entered, less resistance is felt and blood appears in the syringe above the needle hub.
8. Obtain required amount of arterial blood for test(s).
9. If blood is not obtained on first attempt, withdraw the needle to just below the skin surface and advance needle at same angle but at 1 mm to either side of previous attempt.
10. Place the 2x2 gauze over the site of the puncture then withdraw the needle from the artery. Press firmly at the site for at least five minutes, or until the bleeding stops. Apply bandage or pressure dressing.
11. Expel any air bubble in the syringe with air filter cap placed on specimen syringe.
12. Label sample with patient's name, ID number and DOB.

Venous samples:
1. Avoid excessive venous stasis from prolonged tourniquet application or clenching of the fist prior to sample collection.
2. For central line draws make sure to waste a full red top tube then draw via the blood gas syringe as noted above.
3. Fill syringe completely, remove needle (in peripheral draws), cap sample, expel all bubbles (while holding syringe upright) until blood hits the top of cap.
4. Label sample with patient's name, ID number and DOB.

Capillary Samples:
1. The following are recommended sampling sites: earlobe, finger tip, big toe, heel. The heel and big toe are more suitable for use on neonates and infants.
2. Warm the area or puncture site for 5 to 10 minutes prior to actual sampling. This accelerates flow for blood to be representative of general status of patient.
3. Make a puncture using a lancet or similar device. Do not squeeze the area to avoid tissue juice from mixing into blood sample.
4. Wipe off the first drop of blood. Take the sample from the center of the second drop of blood and hold the capillary at a slightly downward angle for an uninterrupted blood flow. Avoid getting air bubbles in the specimen.
5. Refrain from squeezing or milking the puncture site as this may result in faulty measurements or cause hemolysis of blood sample and cause elevated K+ readings.
6. Apply accompanying caps to both ends of the capillary tube and mix the sample with the heparin immediately after collection to prevent blood from clotting. The manufacturer recommends the use of a mixing wire and magnet for capillary samples.
7. Label sample with patient's name, ID and DOB.

Deliver samples immediately to lab for testing. Samples delivered to the lab > 30 minutes after collection may yield erroneous results.

Stability (from collection to initiation):
30 min.

Unacceptable Conditions:
Samples submitted > 30 min after collection. Samples with needle attached, containing large bubbles, unlabeled, mislabeled, clotted or of insufficient volume for testing.

PROCESSING

Test Code:
ABGO (blood gas from arterial source)
VBGO (blood gas from venous source)
MVBGO (blood gas from mixed venous source)
CVBGO (blood gas from central venous source)
CAPBGO (blood gas from capillary source)

Test Group:
Blood Gases

Performing Lab:
Parnassus, Mission Bay and Mt Zion Chemistry

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood

Unacceptable Conditions:
Samples submitted > 30 min after collection. Samples with needle attached, containing large bubbles, unlabeled, mislabeled, clotted or of insufficient volume for testing.

Stability (from collection to initiation):
30 min.

RESULT INTERPRETATION

Units:
mmHg, mmol/L, %

Reference Interval:

Analyte	Age	Arterial	Venous
pH	All	7.35-7.45	7.29-7.41
pCO2	< 1 year	27-41 mmHg	37-65 mmHg
pCO2	>= 1 year	32-46 mmHg	37-65 mmHg
pO2	< 30 days	80-100 mmHg	Not applicable
pO2	>= 30 days	83-108 mmHg	Not applicable
HCO3-	All	23-29 mmol/L	23-31 mmol/L
Base Excess (BE)	All	-3 to 3 mmol/L	Not applicable
Oxygen saturation (SaO2)	All	95-100%	Not applicable

Arterial reference ranges for pH and pO2 adopted from the UCSF reference range previously used with the ABL 835 blood gas analyzers.

Arterial reference range for base excess and oxygen saturation adopted from Klaestrup et al, 2011, Clin Chem Lab Med, 49(9): 1495-1500 using the ABL 837 and 725 blood gas analyzers. Arterial reference range for pCO2 (adult) and bicarbonate was adopted from Klaestrup et al, with modifications made for the ABL 90 Flex Plus analyzers. Pediatric arterial reference range for pCO2 adopted from Radiometer Acute Care Testing Handbook," 2014.

Venous reference ranges for pH and bicarbonate were adopted from Ress KL et al, Pathology, 2018, volume 50, supplement page S94. Venous reference ranges for pCO2 were calculated using the Robust method in MedCalc. Reference ranges were verified by running 25 male and 25 female normal volunteers from UCSF Clinical Laboratories.

Note: it is not recommended to use venous blood for assessing oxygenation status.

Critical Values:

Arterial:

pH	< 7.20	> 7.55
pCO2	< 25 mmHg	> 65 mmHg
pO2 (patient age <30 days old)	< 40 mmHg	> 100 mmHg
pO2 (patient age >=30 days old)	< 40 mmHg	

Venous:

pH	< 7.20
pCO2	> 75 mm Hg

Capillary (Parnassus only):

pH	< 7.20	> 7.55
pCO2	< 25 mmHg	> 65 mm Hg

Capillary (Mission Bay and Mount Zion):

pH	< 7.20
pCO2	> 75 mm Hg

Cord Blood*:

pH	< 7.0
Base excess	< -10

* Only called to ICN

Additional Information:

This panel includes the following: pH (PH37), pCO2 (PCO2), pO2 (PO2), Base excess (BEX), Bicarb (HCO3) and oxygen saturation (SAO2)

All reported values are corrected to 37C unless otherwise specified. Results beyond the linear range of the instrument will be reported as < or > the extreme of the linear range. Samples containing small bubbles may be run at the laboratory's discretion. If analyzed, a comment will be added to the result regarding the presence of bubbles in the sample.

COMPLETE VIEW

Available Stat:

Yes

Ordering Recommendations:

Follow the link for information about Blood Gas Panels that contain this test.

Test Code:

ABGO (blood gas from arterial source)
VBGO (blood gas from venous source)
MVBGO (blood gas from mixed venous source)
CVBGO (blood gas from central venous source)
CAPBGO (blood gas from capillary source)

Test Group:

Blood Gases

Performing Lab:

Parnassus, Mission Bay and Mt Zion Chemistry

Performed:

Test available 24 hours per day 7 days per week

Methodology:

Radiometer ABL 90 FLEX Plus

Remarks:

Arterial puncture:

Due to the risk of arterial damage and subsequent distal ischemia, prior to puncturing an artery the RN assesses the collateral circulation. If the radial artery is to be punctured, then the pulse of the ulnar artery is assessed. If the dorsalis pedis artery is to be accessed then the posterial tibial pulse is assessed and likewise if the posterial tibial approach is used the dorsalis pedis pulse is assessed. The modified Allens's test may be used to assess collateral circulation of the ulnar artery before a radial artery puncture, but it does not always ensure adequate flow. A Doppler ultrasound flow indicator may be used to verify collateral circulation. If the collateral circulation is poor and the RN cannot palpate a pulse then the physician should be notified before proceeding. If for any reason the circulation is compromised to the extremity being assessed for arterial puncture then the physician should be notified prior to proceeding.

1. Palpate the radial artery and identify the site where the pulse is the strongest. Avoid areas with overlying veins to prevent venous admixture.
2. Prepare the patient's skin with an alcohol or 2% chlorhexidine wipe/swab.
3. Place two or three fingers along the course of the artery both to locate its position and direction, and to stabilize it.
4. Penetrate the skin smoothly holding the needle at 30-60 degree angle with the needle bevel up and pointed proximally. The angle of the butterfly" IV catheter should not exceed 45° for pediatric patients.
5. Re-establish the position and direction of the artery by palpation.
6. Gently and slowly advance the needle or butterfly", aiming directly for the area of maximum pulsation.
7. When the arterial lumen has been entered, less resistance is felt and blood appears in the syringe above the needle hub.
8. Obtain required amount of arterial blood for test(s).
9. If blood is not obtained on first attempt, withdraw the needle to just below the skin surface and advance needle at same angle but at 1 mm to either side of previous attempt.
10. Place the 2x2 gauze over the site of the puncture then withdraw the needle from the artery. Press firmly at the site for at least five minutes, or until the bleeding stops. Apply bandage or pressure dressing.
11. Expel any air bubble in the syringe with air filter cap placed on specimen syringe.
12. Label sample with patient's name, ID number and DOB.

Venous samples:

1. Avoid excessive venous stasis from prolonged tourniquet application or clenching of the fist prior to sample collection.
2. For central line draws make sure to waste a full red top tube then draw via the blood gas syringe as noted above.
3. Fill syringe completely, remove needle (in peripheral draws), cap sample, expel all bubbles (while holding syringe upright) until blood hits the top of cap.
4. Label sample with patient's name, ID number and DOB.

Capillary Samples:

1. The following are recommended sampling sites: earlobe, finger tip, big toe, heel. The heel and big toe are more suitable for use on neonates and infants.
2. Warm the area or puncture site for 5 to 10 minutes prior to actual sampling. This accelerates flow for blood to be representative of general status of patient.
3. Make a puncture using a lancet or similar device. Do not squeeze the area to avoid tissue juice from mixing into blood sample.
4. Wipe off the first drop of blood. Take the sample from the center of the second drop of blood and hold the capillary at a slightly downward angle for an uninterrupted blood flow. Avoid getting air bubbles in the specimen.
5. Refrain from squeezing or milking the puncture site as this may result in faulty measurements or cause hemolysis of blood sample and cause elevated K+ readings.
6. Apply accompanying caps to both ends of the capillary tube and mix the sample with the heparin immediately after collection to prevent blood from clotting. The manufacturer recommends the use of a mixing wire and magnet for capillary samples.
7. Label sample with patient's name, ID and DOB.

Deliver samples immediately to lab for testing. Samples delivered to the lab > 30 minutes after collection may yield erroneous results.

Collect:

Plastic blood gas syringe containing 100 U of dry heparin or 70 IU/mL with dry electrolyte-balanced heparin capillary tube.

Amount to Collect:

3 mL blood

Sample Type:

Heparinized whole blood

Preferred Volume:

3 mL blood

Minimum Volume:

1 mL blood

Unacceptable Conditions:

Samples submitted > 30 min after collection. Samples with needle attached, containing large bubbles, unlabeled, mislabeled, clotted or of insufficient volume for testing.

Units:

mmHg, mmol/L, %

Reference Interval:

Analyte	Age	Arterial	Venous
pH	All	7.35-7.45	7.29-7.41
pCO2	< 1 year	27-41 mmHg	37-65 mmHg
pCO2	>= 1 year	32-46 mmHg	37-65 mmHg
pO2	< 30 days	80-100 mmHg	Not applicable
pO2	>= 30 days	83-108 mmHg	Not applicable
HCO3-	All	23-29 mmol/L	23-31 mmol/L
Base Excess (BE)	All	-3 to 3 mmol/L	Not applicable
Oxygen saturation (SaO2)	All	95-100%	Not applicable

Arterial reference ranges for pH and pO2 adopted from the UCSF reference range previously used with the ABL 835 blood gas analyzers.

Arterial reference range for base excess and oxygen saturation adopted from Klaestrup et al, 2011, Clin Chem Lab Med, 49(9): 1495-1500 using the ABL 837 and 725 blood gas analyzers. Arterial reference range for pCO2 (adult) and bicarbonate was adopted from Klaestrup et al, with modifications made for the ABL 90 Flex Plus analyzers. Pediatric arterial reference range for pCO2 adopted from Radiometer Acute Care Testing Handbook," 2014.

Venous reference ranges for pH and bicarbonate were adopted from Ress KL et al, Pathology, 2018, volume 50, supplement page S94. Venous reference ranges for pCO2 were calculated using the Robust method in MedCalc. Reference ranges were verified by running 25 male and 25 female normal volunteers from UCSF Clinical Laboratories.

Note: it is not recommended to use venous blood for assessing oxygenation status.

Critical Values:

Arterial:

pH	< 7.20	> 7.55
pCO2	< 25 mmHg	> 65 mmHg
pO2 (patient age <30 days old)	< 40 mmHg	> 100 mmHg
pO2 (patient age >=30 days old)	< 40 mmHg	

Venous:

pH	< 7.20
pCO2	> 75 mm Hg

Capillary (Parnassus only):

pH	< 7.20	> 7.55
pCO2	< 25 mmHg	> 65 mm Hg

Capillary (Mission Bay and Mount Zion):

pH	< 7.20
pCO2	> 75 mm Hg

Cord Blood*:

pH	< 7.0
Base excess	< -10

* Only called to ICN

Synonyms:

- pH
- pCO2
- pO2
- O2 Saturation
- O2 Sat
- Base excess
- A-a gradient
- HCO3-
- ABG
- BG
- BE
- oxygen
- carbon dioxide
- bicarbonate
- MVBGO
- CVBGO
- CAPBGO
- CORBGA
- CORBGV
- ABGCOX
- VBGCOX
- CVBGCX
- ARTBGL
- VENBGL
- CVBGL
- MVBGL
- CAPBG
- MVBGCX
- CIRBGA
- CIRBGV

Stability (from collection to initiation):

30 min.

Reported:

10 min

Additional Information:

This panel includes the following: pH (PH37), pCO2 (PCO2), pO2 (PO2), Base excess (BEX), Bicarb (HCO3) and oxygen saturation (SAO2)

All reported values are corrected to 37C unless otherwise specified. Results beyond the linear range of the instrument will be reported as < or > the extreme of the linear range. Samples containing small bubbles may be run at the laboratory's discretion. If analyzed, a comment will be added to the result regarding the presence of bubbles in the sample.

Blood Smear Morphology

MORP

ORDERING

Available Stat:
No, except by Hematology/ Oncology only.

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology

Performed:
24 hours a day

Methodology:
Microscopic examination of Wright-Giemsa stained smear

Additional Information:
Automatically included when Automated Differential is inadequate and a Manual Differential must be done.

WBC abnormalities reported include blasts, immature granulocytes, hyposegmented and hypersegmented neutrophils, toxic granulation, Dohle bodies, inclusions, variant lymphocytes and abnormal lymphocytes.

Platelet abnormalities reported include hypo- and agranular platelets, giant platelets and megakaryocyte nuclear fragments.

Small numbers of RBCs with "abnormal" morphology may be seen in smears from normal individuals. In an effort to simplify and standardize the reporting of smears, the Clinical Laboratories reports the average number of abnormal RBCs seen in at least 10 high power fields (/HPF). The relation of these numbers to qualitative reports is shown below.

Abnormal RBCs per high power field (/HPF)

Abnormality	Normal	Rare	Few	Moderate
Acanthocytes	None	0-1	2-5	>= 6
Burr cells	0-1	0-1	2-5	>= 6
Drepanocytes (sickle)	None	0-1	2-5	>= 6
Elliptocytes	0-1	0-1	2-5	>= 6
Howell-Jolly bodies	None	0-1	2-5	>= 6
Polychromatic cells	0-1	0-1	2-5	>= 6
Spherocytes	None	0-1	2-5*	>= 6*
Schistocytes	None	0-1	2-5*	>= 6*
Basophilic stippled cells	None	0-1	2-5	>= 6
Target cells	0-1	0-1	2-5	>= 6
Tear drop cells	0-1	0-1	2-5	>= 6

* Automatically reviewed by a physician

See also CBC w/Differential and Parasites.

Reflex Testing:
If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

Synonyms:

- Red cell morphology
- Howell-Jolly bodies
- Leukocyte morphology
- WBC morphology
- Schistocyte
- Acanthocyte
- Macrocyte
- Microcyte
- Spherocyte
- Ovalocyte
- Dacrocyte
- Target cell
- Burr cell
- Hypersegmentation
- Hyposegmentation
- Pseudo Pelger-Huet
- Atypical lymphocyte
- Variant lymphocyte
- Blast
- Myeloblast
- Lymphoblast
- NRBC
- Nucleated red cell
- Nucleated red blood cell
- Dohle bodies
- Pappenheimer bodies
- Plasma cell
- Promyelocyte
- Myelocyte
- Metamyelocyte
- band
- Seg
- Segmented neutrophil
- PMN

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top

Amount to Collect:
1 mL blood

Preferred Volume:
1 mL blood

PROCESSING

Test Code:
MORP

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology

Preferred Volume:
1 mL blood

RESULT INTERPRETATION

Reference Interval:
Normal

Critical Values:
Blasts not previously identified

Additional Information:

Automatically included when Automated Differential is inadequate and a Manual Differential must be done.

WBC abnormalities reported include blasts, immature granulocytes, hyposegmented and hypersegmented neutrophils, toxic granulation, Dohle bodies, inclusions, variant lymphocytes and abnormal lymphocytes.

Platelet abnormalities reported include hypo- and agranular platelets, giant platelets and megakaryocyte nuclear fragments.

Small numbers of RBCs with "abnormal" morphology may be seen in smears from normal individuals. In an effort to simplify and standardize the reporting of smears, the Clinical Laboratories reports the average number of abnormal RBCs seen in at least 10 high power fields (/HPF). The relation of these numbers to qualitative reports is shown below.

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Howell-Jolly bodies	None	0-1	2-5	>= 6
Polychromatic cells	0-1	0-1	2-5	>= 6
Spherocytes	None	0-1	2-5*	>= 6*
Schistocytes	None	0-1	2-5*	>= 6*
Basophilic stippled cells	None	0-1	2-5	>= 6
Target cells	0-1	0-1	2-5	>= 6
Tear drop cells	0-1	0-1	2-5	>= 6

* Automatically reviewed by a physician

See also CBC w/Differential and Parasites.

ADMINISTRATIVE

CPT Codes:
85008

LOINC Codes:
34994-4

COMPLETE VIEW

Available Stat:
No, except by Hematology/ Oncology only.

Test Code:
MORP

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology

Performed:
24 hours a day

Methodology:
Microscopic examination of Wright-Giemsa stained smear

Collect:
Lavender top

Amount to Collect:
1 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
1 mL blood

Reference Interval:
Normal

Critical Values:
Blasts not previously identified

Synonyms:

- Red cell morphology
- Howell-Jolly bodies
- Leukocyte morphology
- WBC morphology
- Schistocyte
- Acanthocyte
- Macrocyte
- Microcyte
- Spherocyte
- Ovalocyte
- Dacrocyte
- Target cell
- Burr cell
- Hypersegmentation
- Hyposegmentation
- Pseudo Pelger-Huet
- Atypical lymphocyte
- Variant lymphocyte
- Blast
- Myeloblast
- Lymphoblast
- NRBC
- Nucleated red cell
- Nucleated red blood cell
- Dohle bodies
- Pappenheimer bodies
- Plasma cell
- Promyelocyte
- Myelocyte
- Metamyelocyte
- band
- Seg
- Segmented neutrophil
- PMN

Reflex Testing:

If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

Additional Information:

Automatically included when Automated Differential is inadequate and a Manual Differential must be done.

WBC abnormalities reported include blasts, immature granulocytes, hyposegmented and hypersegmented neutrophils, toxic granulation, Dohle bodies, inclusions, variant lymphocytes and abnormal lymphocytes.

Platelet abnormalities reported include hypo- and agranular platelets, giant platelets and megakaryocyte nuclear fragments.

Small numbers of RBCs with "abnormal" morphology may be seen in smears from normal individuals. In an effort to simplify and standardize the reporting of smears, the Clinical Laboratories reports the average number of abnormal RBCs seen in at least 10 high power fields (/HPF). The relation of these numbers to qualitative reports is shown below.

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Elliptocytes	0-1	0-1	2-5	>= 6
Howell-Jolly bodies	None	0-1	2-5	>= 6
Polychromatic cells	0-1	0-1	2-5	>= 6
Spherocytes	None	0-1	2-5*	>= 6*
Schistocytes	None	0-1	2-5*	>= 6*
Basophilic stippled cells	None	0-1	2-5	>= 6
Target cells	0-1	0-1	2-5	>= 6
Tear drop cells	0-1	0-1	2-5	>= 6

* Automatically reviewed by a physician

See also CBC w/Differential and Parasites.

CPT Codes:
85008

LOINC Codes:
34994-4

Blood Smear Preparation

SLID

ORDERING

Available Stat:
No

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology

Performed:
24 hours a day

Additional Information:
The purpose of this 'test' is to allow physicians to order a peripheral blood smear to be made for teaching and other non-diagnostic purposes. There is no billing for this service.

This **DOES NOT** include a review of the smear by either laboratory staff or faculty. If a morphologic review of a patients peripheral smear is desired order "Blood Smear for Morphology" (MORP).

COLLECTION

Sample Type:
EDTA whole blood

Amount to Collect:
3 mL blood

Preferred Volume:
3 mL blood

PROCESSING

Test Code:
SLID

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology

Preferred Volume:
3 mL blood

RESULT INTERPRETATION

Additional Information:
The purpose of this 'test' is to allow physicians to order a peripheral blood smear to be made for teaching and other non-diagnostic purposes. There is no billing for this service.

This **DOES NOT** include a review of the smear by either laboratory staff or faculty. If a morphologic review of a patients peripheral smear is desired order "Blood Smear for Morphology" (MORP).

COMPLETE VIEW

Available Stat:
No

Test Code:
SLID

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology

Performed:
24 hours a day

Amount to Collect:
3 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
3 mL blood

Additional Information:

The purpose of this 'test' is to allow physicians to order a peripheral blood smear to be made for teaching and other non-diagnostic purposes. There is no billing for this service.

This **DOES NOT** include a review of the smear by either laboratory staff or faculty. If a morphologic review of a patients peripheral smear is desired order "Blood Smear for Morphology" (MORP).

Blood Type Confirmation

CHEK

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay and Mt. Zion Blood Banks

Performed:
test available 24 hours a day 7 days a week

Reported:
Stat 1 hour, Routine 4 hours

Additional Information:
See the Lab Manual's Transfusion Medicine Guide for additional information.

Reflex Testing:
An in-date Type and Screen specimen is required before blood products can be set up. To minimize delays in product availability, if the provider mistakenly places an order for a duplicate ABO/Rh confirmation test, the Blood Bank will reflexively convert that order to a Type and Screen test (test code TYSC).

Synonyms:

- Check specimen
- check sample
- ABO/RH Confirmation

COLLECTION

Sample Type:
EDTA Whole blood

Collect:
Lavender top (3 mL)

Amount to Collect:
See Preferred Volume.

Preferred Volume:

< 4 mo	Full Microtainer (0.8 mL)
4 mo - 1 year	1 mL
1 -18 years	2 mL (1 mL OK for small children)
> 18 years	2 mL

Minimum Volume:

< 4 mo	Full Microtainer (0.8 mL)
> 4 mo	1 mL

Remarks:
Must be drawn during a separate phlebotomy from the initial Type and Screen specimen.

Release of order within APeX is performed by Blood Bank staff.

Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Unacceptable Conditions:
Unsigned, mislabeled, unlabeled or hemolyzed sample.

PROCESSING

Test Code:
CHEK

Performing Lab:
Parnassus, Mission Bay and Mt. Zion Blood Banks

Preferred Volume:

< 4 mo	Full Microtainer (0.8 mL)
4 mo - 1 year	1 mL
1 -18 years	2 mL (1 mL OK for small children)
> 18 years	2 mL

Minimum Volume:

< 4 mo	Full Microtainer (0.8 mL)
> 4 mo	1 mL

Unacceptable Conditions:
Unsigned, mislabeled, unlabeled or hemolyzed sample.

RESULT INTERPRETATION

Additional Information:
See the Lab Manual's Transfusion Medicine Guide for additional information.

ADMINISTRATIVE

CPT Codes:
86900, 86901

COMPLETE VIEW

Available Stat:
Yes

Test Code:
CHEK

Performing Lab:
Parnassus, Mission Bay and Mt. Zion Blood Banks

Performed:
test available 24 hours a day 7 days a week

Remarks:
Must be drawn during a separate phlebotomy from the initial Type and Screen specimen.

Release of order within APeX is performed by Blood Bank staff.

Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Collect:
Lavender top (3 mL)

Amount to Collect:
See Preferred Volume.

Sample Type:
EDTA Whole blood

Preferred Volume:

< 4 mo	Full Microtainer (0.8 mL)
4 mo - 1 year	1 mL
1 -18 years	2 mL (1 mL OK for small children)
> 18 years	2 mL

Minimum Volume:

< 4 mo	Full Microtainer (0.8 mL)
> 4 mo	1 mL

Unacceptable Conditions:
Unsigned, mislabeled, unlabeled or hemolyzed sample.

Synonyms:

- Check specimen
- check sample
- ABO/RH Confirmation

Reported:

Stat 1 hour, Routine 4 hours

Reflex Testing:

An in-date Type and Screen specimen is required before blood products can be set up. To minimize delays in product availability, if the provider mistakenly places an order for a duplicate ABO/Rh confirmation test, the Blood Bank will reflexively convert that order to a Type and Screen test (test code TYSC).

Additional Information:

See the Lab Manual's Transfusion Medicine Guide for additional information.

CPT Codes:

86900, 86901

Body Surface Area

BSA

ORDERING

Available Stat:
No

Additional Information:
BSA (m2) = 0.007184 x (Ht in cm)0.725 x (Wt in kg)0.425*

An approximation suitable for most calculators is: BSA (m2) = ([Ht in cm] x [Wt in kg]/3600)0.5**

*Du Bois D, Du Bois EF. Arch Intern Med 1916;17:863.
**Mosteller RD. New Engl J Med 1987;317:1098.

PROCESSING

Test Code:
BSA

RESULT INTERPRETATION

Additional Information:
BSA (m2) = 0.007184 x (Ht in cm)0.725 x (Wt in kg)0.425*

An approximation suitable for most calculators is: BSA (m2) = ([Ht in cm] x [Wt in kg]/3600)0.5**

*Du Bois D, Du Bois EF. Arch Intern Med 1916;17:863.
**Mosteller RD. New Engl J Med 1987;317:1098.

COMPLETE VIEW

Available Stat:
No

Test Code:
BSA

Additional Information:
BSA (m2) = 0.007184 x (Ht in cm)0.725 x (Wt in kg)0.425*

An approximation suitable for most calculators is: BSA (m2) = ([Ht in cm] x [Wt in kg]/3600)0.5**

*Du Bois D, Du Bois EF. Arch Intern Med 1916;17:863.
**Mosteller RD. New Engl J Med 1987;317:1098.

Bone Marrow Collection and Examination

ORDERING

Available Stat:
No

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology

Performed:
Parnassus, Mission Bay, Mt. Zion Hematology

Reported:
Slides are available in 3 hours, the final report in 2-7 days.

Additional Information:
For reports, call laboratory medicine resident, x31343 or pager 443-3518.

We recommend that a CBC with Differential and - if anemia is the indication for the marrow examination - a Reticulocyte Count be ordered on the same day as the bone marrow collection.

Order Iron Stains separately, if desired. Ordering provider agrees to additional ancillary testing ordered at pathologist's discretion.

Processing of bone marrow samples for histologic examination during non-routine times: the material, in 10% neutral buffered formalin fixative, will be prepared and stored in Hematology until routinely processed by Histopathology. Questions about Histopathology processing during non-routine times should be directed to the Anatomic Pathology Resident on call.

COLLECTION

Sample Type:
Aspirated bone marrow and/or bone biopsy

Preferred Volume:
1.5-2.0 mL aspirate preferred

Remarks:
Schedule in advance by calling Hematology:

353-1747 for Parnassus inpatients
353-2736 for Parnassus outpatients
476-0194 for Mission Bay
885-7531 for Mt. Zion

Note: Collection assistance is no longer offered at Mission Bay or Mt. Zion.

Be certain to state the location of the bone marrow collection. Please arrange that patient is prepped and anesthetized by the time the technologist arrives.

PROCESSING

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology

Preferred Volume:
1.5-2.0 mL aspirate preferred

RESULT INTERPRETATION

Additional Information:
For reports, call laboratory medicine resident, x31343 or pager 443-3518.

We recommend that a CBC with Differential and - if anemia is the indication for the marrow examination - a Reticulocyte Count be ordered on the same day as the bone marrow collection.

Order Iron Stains separately, if desired. Ordering provider agrees to additional ancillary testing ordered at pathologist's discretion.

Processing of bone marrow samples for histologic examination during non-routine times: the material, in 10% neutral buffered formalin fixative, will be prepared and stored in Hematology until routinely processed by Histopathology. Questions about Histopathology processing during non-routine times should be directed to the Anatomic Pathology Resident on call.

COMPLETE VIEW

Available Stat:
No

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology

Performed:
Parnassus, Mission Bay, Mt. Zion Hematology

Remarks:
Schedule in advance by calling Hematology:

353-1747 for Parnassus inpatients
353-2736 for Parnassus outpatients
476-0194 for Mission Bay
885-7531 for Mt. Zion

Note: Collection assistance is no longer offered at Mission Bay or Mt. Zion.

Be certain to state the location of the bone marrow collection. Please arrange that patient is prepped and anesthetized by the time the technologist arrives.

Sample Type:
Aspirated bone marrow and/or bone biopsy

Preferred Volume:
1.5-2.0 mL aspirate preferred

Reported:
Slides are available in 3 hours, the final report in 2-7 days.

Additional Information:
For reports, call laboratory medicine resident, x31343 or pager 443-3518.

We recommend that a CBC with Differential and - if anemia is the indication for the marrow examination - a Reticulocyte Count be ordered on the same day as the bone marrow collection.

Order Iron Stains separately, if desired. Ordering provider agrees to additional ancillary testing ordered at pathologist's discretion.

Processing of bone marrow samples for histologic examination during non-routine times: the material, in 10% neutral buffered formalin fixative, will be prepared and stored in Hematology until routinely processed by Histopathology. Questions about Histopathology processing during non-routine times should be directed to the Anatomic Pathology Resident on call.

Bone Marrow Storage

BMST

ORDERING

Available Stat:
No

Performing Lab:
Blood Bank

Additional Information:
Frozen in liquid N2 for up to 5 years

COLLECTION

Remarks:
By prior arrangement with Blood Bank, x3-1313.

PROCESSING

Test Code:
BMST

Performing Lab:
Blood Bank

RESULT INTERPRETATION

Additional Information:
Frozen in liquid N2 for up to 5 years

COMPLETE VIEW

Available Stat:
No

Test Code:
BMST

Performing Lab:
Blood Bank

Remarks:
By prior arrangement with Blood Bank, x3-1313.

Additional Information:
Frozen in liquid N2 for up to 5 years

Bordetella pertussis Antibody (IgG/IgA)

BPAB

ORDERING

Ordering Recommendations:

Serologic testing for B. pertussis infection includes IgG and IgA antibodies, which are seen in remote and recent infection, respectively. IgM antibodies are less sensitive and are not offered at UCSF. For diagnosis of active infection, PCR is the preferred method.

Available Stat:

No

Performing Lab:

Focus via Quest

Methodology:

Multi-Analyte Immunodetection (MAID)

Reported:

Test performed 5 days a week. Turnaround time: 1-3 days.

Additional Information:

Some adult patients may develop a subacute illness characterized by a prolonged period of coughing-for a month or more-following Bordetella infection. As these patients have often been treated with antibiotics and because organisms often cannot found by PCR or culture in late stages of illness, an elevated antibody titer may be the only way to confirm the suspected diagnosis of adult pertussis. A rise in titer between paired sera, one collected within 1 week of onset of illness and another 2-3 weeks later, is most suggestive of a recent infection, but a single convalescent serum specimen will be accepted. Under some circumstances, sera can be forwarded to CDC for further evaluation.

Serologic testing for B. pertussis infection includes IgG and IgA antibodies, which are seen in remote and recent infection, respectively. IgM antibodies are less sensitive and are not offered at UCSF. For diagnosis of active infection, PCR is the preferred method.

Synonyms:

- Whooping Cough
- Haemophilus pertussis

COLLECTION

Sample Type:

Serum

Collect:

Red top

Amount to Collect:

2 mL blood

Preferred Volume:

1 mL serum

Minimum Volume:

0.5 mL serum

PROCESSING

Test Code:

BPAB

Sendout:

Yes

Performing Lab:

Focus via Quest

Specimen Preparation:

Allow blood to clot at room temperature and separate serum from cells within 2 hours of collection. Transfer serum to sterile, plastic screw-capped, aliquot tubes and store refrigerated or frozen.

Preferred Volume:

1 mL serum

Minimum Volume:

0.5 mL serum

RESULT INTERPRETATION

Units:
IU/mL

Reference Interval:
PT IgG: < 45 IU/mL
PT IgA: < 10 IU/mL
FHA IgG: < 90 IU/mL
FHA IgA: < 50 IU/mL

Additional Information:
Some adult patients may develop a subacute illness characterized by a prolonged period of coughing-for a month or more-following Bordetella infection. As these patients have often been treated with antibiotics and because organisms often cannot found by PCR or culture in late stages of illness, an elevated antibody titer may be the only way to confirm the suspected diagnosis of adult pertussis. A rise in titer between paired sera, one collected within 1 week of onset of illness and another 2-3 weeks later, is most suggestive of a recent infection, but a single convalescent serum specimen will be accepted. Under some circumstances, sera can be forwarded to CDC for further evaluation.

Serologic testing for B. pertussis infection includes IgG and IgA antibodies, which are seen in remote and recent infection, respectively. IgM antibodies are less sensitive and are not offered at UCSF. For diagnosis of active infection, PCR is the preferred method.

ADMINISTRATIVE

CPT Codes:
86615-90 x4

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Serologic testing for B. pertussis infection includes IgG and IgA antibodies, which are seen in remote and recent infection, respectively. IgM antibodies are less sensitive and are not offered at UCSF. For diagnosis of active infection, PCR is the preferred method.

Test Code:
BPAB

Performing Lab:
Focus via Quest

Sendout:
Yes

Methodology:
Multi-Analyte Immunodetection (MAID)

Collect:
Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Specimen Preparation:
Allow blood to clot at room temperature and separate serum from cells within 2 hours of collection. Transfer serum to sterile, plastic screw-capped, aliquot tubes and store refrigerated or frozen.

Units:
IU/mL

Reference Interval:
PT IgG: < 45 IU/mL
PT IgA: < 10 IU/mL
FHA IgG: < 90 IU/mL
FHA IgA: < 50 IU/mL

Synonyms:

- Whooping Cough
- Haemophilus pertussis

Reported:

Test performed 5 days a week. Turnaround time: 1-3 days.

Additional Information:

Some adult patients may develop a subacute illness characterized by a prolonged period of coughing-for a month or more-following Bordetella infection. As these patients have often been treated with antibiotics and because organisms often cannot found by PCR or culture in late stages of illness, an elevated antibody titer may be the only way to confirm the suspected diagnosis of adult pertussis. A rise in titer between paired sera, one collected within 1 week of onset of illness and another 2-3 weeks later, is most suggestive of a recent infection, but a single convalescent serum specimen will be accepted. Under some circumstances, sera can be forwarded to CDC for further evaluation.

Serologic testing for B. pertussis infection includes IgG and IgA antibodies, which are seen in remote and recent infection, respectively. IgM antibodies are less sensitive and are not offered at UCSF. For diagnosis of active infection, PCR is the preferred method.

CPT Codes:

86615-90 x4

Botulism Toxin, Adults and Children > 12 months old

P319

ORDERING

Approval Required:
Patient's physician must discuss the case and receive approval for submission of specimens from the SF Department of Public Health Communicable Disease Control Unit (415) 554-2830, 24 hours/day, 7 days/wk. The patient's physician will then be contacted by the State Communicable Disease Control Duty Officer of the Day for approval **PRIOR** to submission of specimens.

Available Stat:
No

Performing Lab:
California State Public Health Reference Laboratory

Performed:
Sent out Monday-Friday, day shift only

Test run Monday-Friday at the State Laboratory.

Reported:
2-4 days typically but may take up to 2 weeks

Additional Information:
Positive results are reported by the Communicable Disease Control Unit to the physician who ordered the test. The patient's physician is required by law to report suspected botulism to the local health department (SF: 554-2800) so that control measures can be formulated.

To learn more about Botulism Click here

Synonyms:

- Botulism immune globulin
- BIG

Supplemental Test Request Form Required:
Yes

COLLECTION

Sample Type:
Serum (see Collection instructions)

Collect:
Gold top

Amount to Collect:
30 mL blood

Preferred Volume:
15 mL serum

Remarks:
Patient's physician must discuss the case and receive approval for submission of specimens from the SF Department of Public Health Communicable Disease Control Unit (415) 554-2830, 24 hours/day, 7 days/wk. The patient's physician will then be contacted by the State Communicable Disease Control Duty Officer of the Day for approval **PRIOR** to submission of specimens.

Pre-Antitoxin blood: Collect 30 mL blood (Gold top vacutainers x 6), label with patient name, MR#, time & date of collection and "Pre-antitoxin"

Additional samples: To be collected **ONLY** when recommended by the public health epidemiologist.

(a) 25 gm feces unpreserved or 25 ml of a sterile water enema. Transport immediately to lab or refrigerate.
(b) 25 ml gastric aspirate, if taken within 72 hours of symptom onset.

Transport immediately to lab or refrigerate. Label all samples with patient name, MR# and date and time of collection. An SFPH laboratory request form must be printed out, completed and sent with a Microbiology requisition and sample to lab. Click here for form

Unacceptable Conditions:
No prior approval from Public health authorities. Inadequate or improperly collected sample(s). Name and/or date of collection not on label

PROCESSING

Test Code:
P319

Test Group:
Botulism

Sendout:
Yes

Performing Lab:
California State Public Health Reference Laboratory

Specimen Preparation:
Samples will normally be processed by Microbiology.

If samples are received after Micro hours, processing should spin the blood, aliquot serum and refrigerate. Stool/enema samples should be refrigerated.

Transport all samples at 4-10C (do not allow cold packs to touch samples) to China Basin Microbiology for referral to:

San Francisco Public Health Laboratory, 101 Grove St, Rm 412, SF, CA 94102 (415) 554-2800 for arrival Monday through Friday 8 am through 4 pm.

Preferred Volume:
15 mL serum

Unacceptable Conditions:
No prior approval from Public health authorities. Inadequate or improperly collected sample(s). Name and/or date of collection not on label

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
Positive results are reported by the Communicable Disease Control Unit to the physician who ordered the test. The patient's physician is required by law to report suspected botulism to the local health department (SF: 554-2800) so that control measures can be formulated.

To learn more about Botulism Click here

ADMINISTRATIVE

LOINC Codes:
29257-3

COMPLETE VIEW

Approval Required:
Patient's physician must discuss the case and receive approval for submission of specimens from the SF Department of Public Health Communicable Disease Control Unit (415) 554-2830, 24 hours/day, 7 days/wk. The patient's physician will then be contacted by the State Communicable Disease Control Duty Officer of the Day for approval **PRIOR** to submission of specimens.

Available Stat:
No

Test Code:
P319

Test Group:
Botulism

Performing Lab:
California State Public Health Reference Laboratory

Sendout:
Yes

Performed:
Sent out Monday-Friday, day shift only

Test run Monday-Friday at the State Laboratory.

Remarks:

Patient's physician must discuss the case and receive approval for submission of specimens from the SF Department of Public Health Communicable Disease Control Unit (415) 554-2830, 24 hours/day, 7 days/wk. The patient's physician will then be contacted by the State Communicable Disease Control Duty Officer of the Day for approval **PRIOR** to submission of specimens.

Pre-Antitoxin blood: Collect 30 mL blood (Gold top vacutainers x 6), label with patient name, MR#, time & date of collection and "Pre-antitoxin"

Additional samples: To be collected **ONLY** when recommended by the public health epidemiologist.

(a) 25 gm feces unpreserved or 25 ml of a sterile water enema. Transport immediately to lab or refrigerate.
(b) 25 ml gastric aspirate, if taken within 72 hours of symptom onset.

Transport immediately to lab or refrigerate. Label all samples with patient name, MR# and date and time of collection. An SFPH laboratory request form must be printed out, completed and sent with a Microbiology requisition and sample to lab. Click here for form

Collect:

Gold top

Amount to Collect:

30 mL blood

Sample Type:

Serum (see Collection instructions)

Preferred Volume:

15 mL serum

Unacceptable Conditions:

No prior approval from Public health authorities. Inadequate or improperly collected sample(s). Name and/or date of collection not on label

Specimen Preparation:

Samples will normally be processed by Microbiology.

If samples are received after Micro hours, processing should spin the blood, aliquot serum and refrigerate. Stool/enema samples should be refrigerated.

Transport all samples at 4-10C (do not allow cold packs to touch samples) to China Basin Microbiology for referral to:

San Francisco Public Health Laboratory, 101 Grove St, Rm 412, SF, CA 94102 (415) 554-2800 for arrival Monday through Friday 8 am through 4 pm.

Reference Interval:

Negative

Synonyms:

- Botulism immune globulin
- BIG

Reported:

2-4 days typically but may take up to 2 weeks

Additional Information:

Positive results are reported by the Communicable Disease Control Unit to the physician who ordered the test. The patient's physician is required by law to report suspected botulism to the local health department (SF: 554-2800) so that control measures can be formulated.

To learn more about Botulism Click here

LOINC Codes:

29257-3

Supplemental Test Request Form Required:

Yes

Botulism Toxin, Children < 12 months old

P319

ORDERING

Approval Required:
Physicians seeking testing for their patients should contact the infant Botulism Treatment and Prevention Program (IBTPP) physician-on-call prior to submission of specimens. Any specimens received without prior authorization will not be tested until such authorization is obtained. Call (510) 231-7600 24 hours/day, 7 days/week.

Available Stat:
No

Performing Lab:
California State Public Health Reference Laboratory

Performed:
Sent out Monday-Friday, day shift only

Reported:
2-4 days typically but may take up to 2 weeks.

Additional Information:
For more information on Infant botulism Click here

Synonyms:

- Botulism immune globulin
- BIG

Supplemental Test Request Form Required:
Yes

COLLECTION

Sample Type:
Stool or enema fluid

Collect:
Urine cup (Do not use fixatives or preservatives)

Amount to Collect:
15 mL Stool or enema fluid

Preferred Volume:
15 mL stool or enema fluid

Minimum Volume:
5 mL stool or enema fluid

Remarks:

Physicians seeking testing for their patients should contact the Infant Botulism Treatment and Prevention Program (IBTPP) physician-on-call prior to submission of specimens. Any specimens received without prior authorization will not be tested until such authorization is obtained. Call (510) 231-7600 24 hours/day, 7 days/week.

If passed stool is difficult to obtain due to constipation, an attempt to collect stool in the rectal vault should be made by **gentle** digital examination by the team member with the smallest fifth finger. If no stool can be obtained digitally, do not wait for a spontaneous bowel movement. Instead, please follow the enema collection procedure outlined below.

Important: *Note that glycerin suppositories yield an unsatisfactory specimen and* ***should not be*** *used. The procedure described below will yield the best specimen for diagnostic purposes.*

Enema Collection Procedure

1. Attach a 12 to 16 French red rubber (Robinson) catheter to a tapered, catheter-tip syringe.
2. Trim catheter tip to enlarge hole.
3. Lubricate the catheter tip with petroleum jelly or equivalent and insert into distal colon.
4. The volume of sterile, **non-bacteriostatic** water to use should be a bedside clinical decision based on the patient's body mass.
5. Inject **up to** 30 ml of sterile, **non-bacteriostatic** water slowly into distal colon and maintain catheter in rectum. Please note that a **minimum volume of 5 ml** is required to enable the most accurate diagnostic analysis.
6. Wait approximately 3 minutes, and then draw enema effluent into the syringe.
7. Have an assistant hold a sterile urine container under the anus during this time to collect any expelled material.
8. Expel all fluid collected in the syringe into the same sterile urine container.
9. Tightly seal the lid. Properly label the container with patient's name, date and time of collection.
10. If more than 5 ml of water is retained in the colon, exert gentle pressure onto left lower abdomen (with your hand or with infant's knee to abdomen) to aid in excretion and to minimize intestinal absorption of water.

An SFPH laboratory request form must be printed out, completed and sent with a Microbiology requisition and sample to lab. Click here for form

Unacceptable Conditions:

No prior approval from Public health authorities. Inadequate or improperly collected sample(s).

PROCESSING

Test Code:

P319

Test Group:

Botulism

Sendout:

Yes

Performing Lab:

California State Public Health Reference Laboratory

Specimen Preparation:

Speciems will be processed by Microbiology. If received after hours refrigerate sample.

Send the enema specimen to Microbiology along with a completed SFPH Laboratory Request form with an order to keep the sample refrigerated and to expedite shipment to the appropriate botulism diagnostic laboratory.

Preferred Volume:

15 mL stool or enema fluid

Minimum Volume:

5 mL stool or enema fluid

Unacceptable Conditions:

No prior approval from Public health authorities. Inadequate or improperly collected sample(s).

RESULT INTERPRETATION

Reference Interval:

Negative

Additional Information:

For more information on Infant botulism Click here

ADMINISTRATIVE

LOINC Codes:

29257-3

COMPLETE VIEW

Approval Required:
Physicians seeking testing for their patients should contact the infant Botulism Treatment and Prevention Program (IBTPP) physician-on-call prior to submission of specimens. Any specimens received without prior authorization will not be tested until such authorization is obtained. Call (510) 231-7600 24 hours/day, 7 days/week.

Available Stat:
No

Test Code:
P319

Test Group:
Botulism

Performing Lab:
California State Public Health Reference Laboratory

Sendout:
Yes

Performed:
Sent out Monday-Friday, day shift only

Remarks:
Physicians seeking testing for their patients should contact the Infant Botulism Treatment and Prevention Program (IBTPP) physician-on-call prior to submission of specimens. Any specimens received without prior authorization will not be tested until such authorization is obtained. Call (510) 231-7600 24 hours/day, 7 days/week.

If passed stool is difficult to obtain due to constipation, an attempt to collect stool in the rectal vault should be made by **gentle** digital examination by the team member with the smallest fifth finger. If no stool can be obtained digitally, do not wait for a spontaneous bowel movement. Instead, please follow the enema collection procedure outlined below.

Important: *Note that glycerin suppositories yield an unsatisfactory specimen and* ***should not be*** *used. The procedure described below will yield the best specimen for diagnostic purposes.*

Enema Collection Procedure
1. Attach a 12 to 16 French red rubber (Robinson) catheter to a tapered, catheter-tip syringe.
2. Trim catheter tip to enlarge hole.
3. Lubricate the catheter tip with petroleum jelly or equivalent and insert into distal colon.
4. The volume of sterile, **non-bacteriostatic** water to use should be a bedside clinical decision based on the patient's body mass.
5. Inject **up to** 30 ml of sterile, **non-bacteriostatic** water slowly into distal colon and maintain catheter in rectum. Please note that a **minimum volume of 5 ml** is required to enable the most accurate diagnostic analysis.
6. Wait approximately 3 minutes, and then draw enema effluent into the syringe.
7. Have an assistant hold a sterile urine container under the anus during this time to collect any expelled material.
8. Expel all fluid collected in the syringe into the same sterile urine container.
9. Tightly seal the lid. Properly label the container with patient's name, date and time of collection.
10. If more than 5 ml of water is retained in the colon, exert gentle pressure onto left lower abdomen (with your hand or with infant's knee to abdomen) to aid in excretion and to minimize intestinal absorption of water.

An SFPH laboratory request form must be printed out, completed and sent with a Microbiology requisition and sample to lab. Click here for form

Collect:
Urine cup (Do not use fixatives or preservatives)

Amount to Collect:
15 mL Stool or enema fluid

Sample Type:
Stool or enema fluid

Preferred Volume:
15 mL stool or enema fluid

Minimum Volume:
5 mL stool or enema fluid

Unacceptable Conditions:
No prior approval from Public health authorities. Inadequate or improperly collected sample(s).

Specimen Preparation:
Speciems will be processed by Microbiology. If received after hours refrigerate sample.

Send the enema specimen to Microbiology along with a completed SFPH Laboratory Request form with an order to keep the sample refrigerated and to expedite shipment to the appropriate botulism diagnostic laboratory.

Reference Interval:
Negative

Synonyms:

- Botulism immune globulin
- BIG

Reported:
2-4 days typically but may take up to 2 weeks.

Additional Information:
For more information on Infant botulism Click here

LOINC Codes:
29257-3

Supplemental Test Request Form Required:
Yes

Brazil Nut Component

BCOMP

ORDERING

Available Stat:
No

Performing Lab:
Quest

Performed:
Tuesday-Saturday

Methodology:
Immunoassay

Reported:
1-3 days

Additional Information:
This test tests for the rBer e 1 component.

Synonyms:

- Brazil nut Component IgE
- rBer e 1 Ab

COLLECTION

Sample Type:
Serum

Collect:
Gold or Red-top

Amount to Collect:
1.0 mL blood

Preferred Volume:
0.5 mL blood

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Room Temperature and Refrigerated: 14 days
Frozen: 30 days

Storage/Transport Temperature:
Frozen

PROCESSING

Test Code:
BCOMP

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot and freeze. Send to China Basin frozen. Order Quest test code 94469.

Preferred Volume:
0.5 mL blood

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Room Temperature and Refrigerated: 14 days
Frozen: 30 days

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Units:
kU/L

Reference Interval:
< 0.10

Additional Information:
This test tests for the rBer e 1 component.

ADMINISTRATIVE

CPT Codes:
86008

LOINC Codes:
64963-2

COMPLETE VIEW

Available Stat:
No

Test Code:
BCOMP

Performing Lab:
Quest

Sendout:
Yes

Performed:
Tuesday-Saturday

Methodology:
Immunoassay

Collect:
Gold or Red-top

Amount to Collect:
1.0 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL blood

Minimum Volume:
0.3 mL serum

Specimen Preparation:
Aliquot and freeze. Send to China Basin frozen. Order Quest test code 94469.

Units:
kU/L

Reference Interval:
< 0.10

Synonyms:

- Brazil nut Component IgE
- rBer e 1 Ab

Storage/Transport Temperature:
Frozen

Stability (from collection to initiation):
Room Temperature and Refrigerated: 14 days
Frozen: 30 days

Reported:
1-3 days

Additional Information:
This test tests for the rBer e 1 component.

CPT Codes:
86008

LOINC Codes:
64963-2

B-Type Natriuretic Peptide

BNP

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Membrane Immunofluorescence Assay

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
BNP is released from the heart (mainly the left ventricle) in response to increased wall tension and has both diuretic and natriuretic effects. BNP testing appears most useful for helping to rule out congestive heart failure in patients presenting with acute dsypnea. In patients being evaluated for acute dyspnea, BNP levels > 100 pg/mL had a sensitivity of 90% and specificity of 73% in diagnosing congestive heart failure (CHF) (McCullough PA et al Circulation 2002 106(4):416-422). In patients with BNP levels < 50 pg/mL, the negative predictive value for CHF was 96% (Maisel AS N Engl J Med 2002 347(3):161-7).

BNP levels have been shown to correlate with both NYHA functional class and invasively measured hemodynamic parameters. Treatment with ACE inhibitors, diuretics, and nitrates has been shown to decrease BNP levels in parallel with improving clinical symptoms (Richards, AM et al. Trends Endocr. Metabol. 13(4): 151-155. 2002). In patients with acute coronary syndromes, increased BNP levels are associated with increased risk for death during the subsequent 10 months as well with increased risk for myocardial infarction or heart failure (NEJM 345:1014-1021, 2001). Although BNP is renally cleared, acute and chronic renal failure per se do not appear to increase serum BNP significantly.

WARNING: Although normal BNP levels indicate a low probability of CHF, they do not exclude the possibility of heart failure or other serious cardiovascular or pulmonary disorders. Increased BNP levels are also not specific for CHF and can occur in patients with other serious conditions including pulmonary embolism, pulmonary hypertension, or acute myocardial infarction. BNP testing is not a substitute for careful cardiopulmonary evaluation and should not be the sole criterion for determining whether to admit or discharge a patient with dyspnea or other cardiovascular or pulmonary symptoms. BNP testing is also not recommended for screening for LV dysfunction or left ventricular hypertrophy in the general population (JAMA 288:1252-1259, 2002).

Higher levels of BNP are seen in women and older individuals. Age and gender specific reference ranges are listed above (from assay manufacturer, Biosite). Sensitivity and Specificity for Diagnosis of CHF in Patients Presenting to ED with Dyspnea:

BNP level (pg/mL)	>50	>80	>100	>125	>150
Sensitivity (%)	97	93	90	87	85
Specificity (%)	62	74	76	79	83
PPV (%)	71	77	79	80	83

from Maisel AS, N Engl. J. Med. 2002 347(3):161-7

Synonyms:

- BNP
- brain type
- ANF
- ANH
- Atrial Natriuretic factor
- Atrial Natriuretic Hormone

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top

Amount to Collect:
1 mL blood

Preferred Volume:
1 mL blood

Minimum Volume:
0.3 mL blood

Stability (from collection to initiation):
Room temperature or refrigerated 7 hours.

PROCESSING

Test Code:
BNP

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
1 mL blood

Minimum Volume:
0.3 mL blood

Stability (from collection to initiation):
Room temperature or refrigerated 7 hours.

RESULT INTERPRETATION

Units:
pg/mL

Reference Interval:

Age (yrs)	Male (pg/mL)	Female (pg/mL)
< 45	< 25	< 48
45-54	< 40	< 73
55-64	< 73	< 82
65-74	< 64	< 96
> 74	< 79	< 181

Additional Information:

BNP is released from the heart (mainly the left ventricle) in response to increased wall tension and has both diuretic and natriuretic effects. BNP testing appears most useful for helping to rule out congestive heart failure in patients presenting with acute dsypnea. In patients being evaluated for acute dyspnea, BNP levels > 100 pg/mL had a sensitivity of 90% and specificity of 73% in diagnosing congestive heart failure (CHF) (McCullough PA et al Circulation 2002 106(4):416-422). In patients with BNP levels < 50 pg/mL, the negative predictive value for CHF was 96% (Maisel AS N Engl J Med 2002 347(3):161-7).

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BNP level (pg/mL)	>50	>80	>100	>125	>150
Sensitivity (%)	97	93	90	87	85
Specificity (%)	62	74	76	79	83
PPV (%)	71	77	79	80	83

from Maisel AS, N Engl. J. Med. 2002 347(3):161-7

ADMINISTRATIVE

CPT Codes:
83880

LOINC Codes:
42637-9

COMPLETE VIEW

Available Stat:
Yes

Test Code:
BNP

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Membrane Immunofluorescence Assay

Collect:
Lavender top

Amount to Collect:
1 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
1 mL blood

Minimum Volume:
0.3 mL blood

Units:
pg/mL

Reference Interval:

Age (yrs)	Male (pg/mL)	Female (pg/mL)
< 45	< 25	< 48
45-54	< 40	< 73
55-64	< 73	< 82
65-74	< 64	< 96
> 74	< 79	< 181

Synonyms:

- BNP
- brain type
- ANF
- ANH
- Atrial Natriuretic factor
- Atrial Natriuretic Hormone

Stability (from collection to initiation):
Room temperature or refrigerated 7 hours.

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:

BNP is released from the heart (mainly the left ventricle) in response to increased wall tension and has both diuretic and natriuretic effects. BNP testing appears most useful for helping to rule out congestive heart failure in patients presenting with acute dsypnea. In patients being evaluated for acute dyspnea, BNP levels > 100 pg/mL had a sensitivity of 90% and specificity of 73% in diagnosing congestive heart failure (CHF) (McCullough PA et al Circulation 2002 106(4):416-422). In patients with BNP levels < 50 pg/mL, the negative predictive value for CHF was 96% (Maisel AS N Engl J Med 2002 347(3):161-7).

BNP levels have been shown to correlate with both NYHA functional class and invasively measured hemodynamic parameters. Treatment with ACE inhibitors, diuretics, and nitrates has been shown to decrease BNP levels in parallel with improving clinical symptoms (Richards, AM et al. Trends Endocr. Metabol. 13(4): 151-155. 2002). In patients with acute coronary syndromes, increased BNP levels are associated with increased risk for death during the subsequent 10 months as well with increased risk for myocardial infarction or heart failure (NEJM 345:1014-1021, 2001). Although BNP is renally cleared, acute and chronic renal failure per se do not appear to increase serum BNP significantly.

WARNING: Although normal BNP levels indicate a low probability of CHF, they do not exclude the possibility of heart failure or other serious cardiovascular or pulmonary disorders. Increased BNP levels are also not specific for CHF and can occur in patients with other serious conditions including pulmonary embolism, pulmonary hypertension, or acute myocardial infarction. BNP testing is not a substitute for careful cardiopulmonary evaluation and should not be the sole criterion for determining whether to admit or discharge a patient with dyspnea or other cardiovascular or pulmonary symptoms. BNP testing is also not recommended for screening for LV dysfunction or left ventricular hypertrophy in the general population (JAMA 288:1252-1259, 2002).

Higher levels of BNP are seen in women and older individuals. Age and gender specific reference ranges are listed above (from assay manufacturer, Biosite). Sensitivity and Specificity for Diagnosis of CHF in Patients Presenting to ED with Dyspnea:

BNP level (pg/mL)	>50	>80	>100	>125	>150
Sensitivity (%)	97	93	90	87	85
Specificity (%)	62	74	76	79	83
PPV (%)	71	77	79	80	83

from Maisel AS, N Engl. J. Med. 2002 347(3):161-7

CPT Codes:

83880

LOINC Codes:

42637-9

Bullous pemphigoid Antibodies

BPPAB

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
ELISA

Reported:
5-7 days

Additional Information:
Bullous pemphigoid (BP) is chronic pruritic blistering disorder found mainly in aged persons, characterized by the development of tense blisters over an erythematous or urticarial base. IgG antibasement membrane zone antibodies are found in the serum of patients, and linear IgG and C3 sediment is found on the basement membrane zone of the lesion. Several well characterized variants exist including localized, mucous membrane predominant and pemphigoid gestationis, also referred to as herpes gestationis.

Target antigens of the autoantibodies in BP patient serum are BP230 and BP180 also called BPAG1 and BPAG2. Molecular weight of these antigens is 230 kD and 180 kD, respectively. BP180 is thought to be the direct target of the autoantibody because of its location along the basement membranes, and the autoantibody against BP230 is thought to be secondarily produced.

Antibodies to bullous pemphigoid (BP) BP180 and BP230 have been shown to be present in most patients with pemphigoid. Adequate sensitivities and specificity for disease are documented and Mayo's experience demonstrates a very good correlation between BP180 and BP230 results and the presence of pemphigoid (see “Supportive Data"). However, in those patients strongly suspected to have pemphigoid, either by clinical findings or by routine biopsy, and in whom the BP180/BP230 assay is negative, follow-up testing by #8052 “Cutaneous Immunofluorescence Antibodies (IgG), Serum" is recommended.

Antibody titer correlates with disease activity in many patients. Patients with severe disease can usually be expected to have high titers of antibodies to BP. Titers are expected to decrease with clinical improvement.

Synonyms:

- BP180 AB
- BP180 Antibody
- BP230 AB
- BP230 Antibody
- BPAG1 AB
- BPAG1 Antibody
- BPAG2 AB
- BPAG2 Antibody

COLLECTION

Sample Type:
Serum

Collect:
Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature 1.5 days, refrigerated 1 week, frozen 2 weeks

Unacceptable Conditions:
Collected in Gold top. Gross hemolysis, lipemia or icterus

Rejection Criteria:
Gross hemolysis, lipemia or icterus

PROCESSING

Test Code:
BPPAB

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Spin and freeze aliquot at -20 C. Ship to China basin.

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Collected in Gold top. Gross hemolysis, lipemia or icterus

Rejection Criteria:
Gross hemolysis, lipemia or icterus

Stability (from collection to initiation):
Room temperature 1.5 days, refrigerated 1 week, frozen 2 weeks

RESULT INTERPRETATION

Units:
U

Reference Interval:
< 9.0 U

Additional Information:
Bullous pemphigoid (BP) is chronic pruritic blistering disorder found mainly in aged persons, characterized by the development of tense blisters over an erythematous or urticarial base. IgG antibasement membrane zone antibodies are found in the serum of patients, and linear IgG and C3 sediment is found on the basement membrane zone of the lesion. Several well characterized variants exist including localized, mucous membrane predominant and pemphigoid gestationis, also referred to as herpes gestationis.

Target antigens of the autoantibodies in BP patient serum are BP230 and BP180 also called BPAG1 and BPAG2. Molecular weight of these antigens is 230 kD and 180 kD, respectively. BP180 is thought to be the direct target of the autoantibody because of its location along the basement membranes, and the autoantibody against BP230 is thought to be secondarily produced.

Antibodies to bullous pemphigoid (BP) BP180 and BP230 have been shown to be present in most patients with pemphigoid. Adequate sensitivities and specificity for disease are documented and Mayo's experience demonstrates a very good correlation between BP180 and BP230 results and the presence of pemphigoid (see “Supportive Data"). However, in those patients strongly suspected to have pemphigoid, either by clinical findings or by routine biopsy, and in whom the BP180/BP230 assay is negative, follow-up testing by #8052 “Cutaneous Immunofluorescence Antibodies (IgG), Serum" is recommended.

Antibody titer correlates with disease activity in many patients. Patients with severe disease can usually be expected to have high titers of antibodies to BP. Titers are expected to decrease with clinical improvement.

ADMINISTRATIVE

CPT Codes:
83516-90 x2

COMPLETE VIEW

Available Stat:
No

Test Code:
BPPAB

Performing Lab:
Mayo

Sendout:
Yes

Methodology:
ELISA

Collect:
Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Rejection Criteria:
Gross hemolysis, lipemia or icterus

Unacceptable Conditions:
Collected in Gold top. Gross hemolysis, lipemia or icterus

Specimen Preparation:
Spin and freeze aliquot at -20 C. Ship to China basin.

Units:
U

Reference Interval:
< 9.0 U

Synonyms:

- BP180 AB
- BP180 Antibody
- BP230 AB
- BP230 Antibody
- BPAG1 AB
- BPAG1 Antibody
- BPAG2 AB
- BPAG2 Antibody

Stability (from collection to initiation):
Room temperature 1.5 days, refrigerated 1 week, frozen 2 weeks

Reported:
5-7 days

Additional Information:
Bullous pemphigoid (BP) is chronic pruritic blistering disorder found mainly in aged persons, characterized by the development of tense blisters over an erythematous or urticarial base. IgG antibasement membrane zone antibodies are found in the serum of patients, and linear IgG and C3 sediment is found on the basement membrane zone of the lesion. Several well characterized variants exist including localized, mucous membrane predominant and pemphigoid gestationis, also referred to as herpes gestationis.

Target antigens of the autoantibodies in BP patient serum are BP230 and BP180 also called BPAG1 and BPAG2. Molecular weight of these antigens is 230 kD and 180 kD, respectively. BP180 is thought to be the direct target of the autoantibody because of its location along the basement membranes, and the autoantibody against BP230 is thought to be secondarily produced.

Antibodies to bullous pemphigoid (BP) BP180 and BP230 have been shown to be present in most patients with pemphigoid. Adequate sensitivities and specificity for disease are documented and Mayo's experience demonstrates a very good correlation between BP180 and BP230 results and the presence of pemphigoid (see “Supportive Data"). However, in those patients strongly suspected to have pemphigoid, either by clinical findings or by routine biopsy, and in whom the BP180/BP230 assay is negative, follow-up testing by #8052 “Cutaneous Immunofluorescence Antibodies (IgG), Serum" is recommended.

Antibody titer correlates with disease activity in many patients. Patients with severe disease can usually be expected to have high titers of antibodies to BP. Titers are expected to decrease with clinical improvement.

CPT Codes:
83516-90 x2

Buprenorphine and Metabolites, Urine, Quantitative

BUPM

ORDERING

Ordering Recommendations:

Use to obtain quantitative results or to follow up a presumptive result. For general screening, the preferred test is Buprenorphine, Urine Screen with Reflex to Quantitation (2012273).

Available Stat:

No

Performing Lab:

ARUP

Performed:

Sun-Sat

Methodology:

Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Reported:

1-4 days

Synonyms:

- Buprenex (Buprenorphine & Metabolites - Confirmation/Quantitation - Urine)
- Buprenorphine (Buprenorphine & Metabolites - Confirmation/Quantitation - Urine)
- Buprenorphine Glucuronide (Buprenorphine & Metabolites - Confirmation/Quantitation - Urine)
- Buprenorphine Screen & Metabolite (Buprenorphine & Metabolites - Confirmation/Quantitation - Urine)
- Butrans (Buprenorphine & Metabolites - Confirmation/Quantitation - Urine)
- Norbuprenorphine (Buprenorphine & Metabolites - Confirmation/Quantitation - Urine)
- Norbuprenorphine Glucuronide (Buprenorphine & Metabolites - Confirmation/Quantitation - Urine)
- Norspan (Buprenorphine & Metabolites - Confirmation/Quantitation - Urine)
- Pain Management (Buprenorphine & Metabolites - Confirmation/Quantitation - Urine)
- Pain Management, Buprenorphine, Quantitative, w/ medMATCH, Urine (Buprenorphine & Metabolites-Confir
- Pain Management, Buprenorphine, w/ Confirmation w/ medMATCH, Urine (Buprenorphine & Metabolites-Conf
- Suboxone (Buprenorphine & Metabolites - Confirmation/Quantitation - Urine)
- Subutex (Buprenorphine & Metabolites - Confirmation/Quantitation - Urine)
- Temgesic (Buprenorphine & Metabolites - Confirmation/Quantitation - Urine)
- Transtec (Buprenorphine & Metabolites - Confirmation/Quantitation - Urine)
- Vetergesic (Buprenorphine & Metabolites - Confirmation/Quantitation - Urine)
- Narcan
- Pain Management
- Sublocade
- Suboxone
- Subutex
- Transtec
- Vetergesic
- Zubsolv
- Belbuca
- Buprenex
- Butrans
- Medication Adherence
- Opioids use disorders
- Probuphine
- Temgesic

COLLECTION

Collect:

Random urine.

Stability (from collection to initiation):

Ambient: 1 week; Refrigerated: 1 month; Frozen: 3 years (Avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:

Room temperature.

PROCESSING

Test Code:

BUPM

ARUP Test Code:

2010092

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transfer 2 mL urine with no additives or preservatives to an ARUP standard transport tube. (Min: 1 mL)

Stability (from collection to initiation):
Ambient: 1 week; Refrigerated: 1 month; Frozen: 3 years (Avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
Room temperature.

RESULT INTERPRETATION

Reference Interval:
Effective August 17, 2015

Drugs Covered	Cutoff Concentrations
Buprenorphine	2 ng/mL
Norbuprenorphine	2 ng/mL
Buprenorphine glucuronide	5 ng/mL
Norbuprenorphine glucuronide	5 ng/mL
Naloxone	100 ng/mL

Interpretive Data:
Methodology: Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Positive cutoff:
Buprenorphine: 2 ng/mL
Norbuprenorphine: 2 ng/mL
Buprenorphine glucuronide: 5 ng/mL
Norbuprenorphine glucuronide: 5 ng/mL
Naloxone: 100 ng/mL

For medical purposes only; not valid for forensic use.

The presence of metabolite(s) without parent drug is common and may indicate use of parent drug during the prior week. Naloxone is included to detect the addition of a naloxone-containing drug directly into the urine.

The absence of expected drug(s) and/or drug metabolite(s) may indicate noncompliance, inappropriate timing of specimen collection relative to drug administration, poor drug absorption, diluted/adulterated urine, or limitations of testing. The concentration value must be greater than or equal to the cutoff to be reported as positive. Interpretive questions should be directed to the laboratory.

ADMINISTRATIVE

CPT Codes:
80348 (Alt code: G0480)

LOINC:

- 77207-9
- 49753-7
- 49751-1
- 3415-7

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Use to obtain quantitative results or to follow up a presumptive result. For general screening, the preferred test is Buprenorphine, Urine Screen with Reflex to Quantitation (2012273).

Test Code:
BUPM

ARUP Test Code:
2010092

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Collect:
Random urine.

Specimen Preparation:
Transfer 2 mL urine with no additives or preservatives to an ARUP standard transport tube. (Min: 1 mL)

Reference Interval:
Effective August 17, 2015

Drugs Covered	Cutoff Concentrations
Buprenorphine	2 ng/mL
Norbuprenorphine	2 ng/mL
Buprenorphine glucuronide	5 ng/mL
Norbuprenorphine glucuronide	5 ng/mL
Naloxone	100 ng/mL

Interpretive Data:
Methodology: Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Positive cutoff:
Buprenorphine: 2 ng/mL
Norbuprenorphine: 2 ng/mL
Buprenorphine glucuronide: 5 ng/mL
Norbuprenorphine glucuronide: 5 ng/mL
Naloxone: 100 ng/mL

For medical purposes only; not valid for forensic use.

The presence of metabolite(s) without parent drug is common and may indicate use of parent drug during the prior week. Naloxone is included to detect the addition of a naloxone-containing drug directly into the urine.

The absence of expected drug(s) and/or drug metabolite(s) may indicate noncompliance, inappropriate timing of specimen collection relative to drug administration, poor drug absorption, diluted/adulterated urine, or limitations of testing. The concentration value must be greater than or equal to the cutoff to be reported as positive. Interpretive questions should be directed to the laboratory.

Synonyms:

- Buprenex (Buprenorphine & Metabolites - Confirmation/Quantitation - Urine)
- Buprenorphine (Buprenorphine & Metabolites - Confirmation/Quantitation - Urine)
- Buprenorphine Glucuronide (Buprenorphine & Metabolites - Confirmation/Quantitation - Urine)
- Buprenorphine Screen & Metabolite (Buprenorphine & Metabolites - Confirmation/Quantitation - Urine)
- Butrans (Buprenorphine & Metabolites - Confirmation/Quantitation - Urine)
- Norbuprenorphine (Buprenorphine & Metabolites - Confirmation/Quantitation - Urine)
- Norbuprenorphine Glucuronide (Buprenorphine & Metabolites - Confirmation/Quantitation - Urine)
- Norspan (Buprenorphine & Metabolites - Confirmation/Quantitation - Urine)
- Pain Management (Buprenorphine & Metabolites - Confirmation/Quantitation - Urine)
- Pain Management, Buprenorphine, Quantitative, w/ medMATCH, Urine (Buprenorphine & Metabolites-Confir
- Pain Management, Buprenorphine, w/ Confirmation w/ medMATCH, Urine (Buprenorphine & Metabolites-Conf
- Suboxone (Buprenorphine & Metabolites - Confirmation/Quantitation - Urine)
- Subutex (Buprenorphine & Metabolites - Confirmation/Quantitation - Urine)
- Temgesic (Buprenorphine & Metabolites - Confirmation/Quantitation - Urine)
- Transtec (Buprenorphine & Metabolites - Confirmation/Quantitation - Urine)
- Vetergesic (Buprenorphine & Metabolites - Confirmation/Quantitation - Urine)
- Narcan
- Pain Management
- Sublocade
- Suboxone
- Subutex
- Transtec
- Vetergesic
- Zubsolv
- Belbuca
- Buprenex
- Butrans
- Medication Adherence
- Opioids use disorders
- Probuphine
- Temgesic

Storage/Transport Temperature:
Room temperature.

Stability (from collection to initiation):
Ambient: 1 week; Refrigerated: 1 month; Frozen: 3 years (Avoid repeated freeze/thaw cycles)

Reported:
1-4 days

CPT Codes:
80348 (Alt code: G0480)

LOINC:

- 77207-9
- 49753-7
- 49751-1
- 3415-7

Buprenorphine, Urine Screen with Reflex to Quantitation

BUPUS

ORDERING

Ordering Recommendations:
Useful for general screening in contexts of compliance and/or abuse. A screen with reflex testing is the preferred method for ruling out buprenorphine exposure. For follow-up testing of a presumptive result, Buprenorphine and Metabolites, Urine, Quantitative (2010092) is preferred.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Qualitative Enzyme Immunoassay/Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Reported:
1-4 days

Synonyms:

- Buprenex
- Buprenorphine
- Butrans
- Glucuronide
- Norbuprenorphine
- Norbuprenorphine Glucuronide
- Norspan
- Suboxone
- Temgesic
- Vetergesic

COLLECTION

Collect:
Random urine.

Stability (from collection to initiation):
Ambient: 1 week; Refrigerated: 1 month; Frozen: 1 month

Storage/Transport Temperature:
Room temperature.

Unacceptable Conditions:
Unknown fluids, pharmaceutical preparations, and breast milk. Specimens exposed to repeated freeze/thaw cycles.

PROCESSING

Test Code:
BUPUS

ARUP Test Code:
2012273

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transfer 4 mL urine with no additives or preservatives to an ARUP Standard Transport Tube (Min: 2 mL)

Unacceptable Conditions:
Unknown fluids, pharmaceutical preparations, and breast milk. Specimens exposed to repeated freeze/thaw cycles.

Stability (from collection to initiation):
Ambient: 1 week; Refrigerated: 1 month; Frozen: 1 month

Storage/Transport Temperature:
Room temperature.

RESULT INTERPRETATION

Reference Interval:
Screen cutoff concentration: 5 ng/mL

Interpretive Data:
The absence of expected drug(s) and/or drug metabolite(s) may indicate non-compliance, inappropriate timing of specimen collection relative to drug administration, poor drug absorption, diluted/adulterated urine, or limitations of testing. The concentration at which the screening test can detect a drug or metabolite varies. Specimens for which drugs or drug classes are detected by the screen are reflexed to a second, more specific technology (GC/MS and/or LC-MS/MS). The concentration value must be greater than or equal to the cutoff to be reported as positive. Interpretive questions should be directed to the laboratory.

For medical purposes only; not valid for forensic use.

ADMINISTRATIVE

CPT Codes:
80307; if reflexed, add 80348 (Reflexed Alt Code: G0480)

LOINC:

- 54247-2
- 93494-3

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Useful for general screening in contexts of compliance and/or abuse. A screen with reflex testing is the preferred method for ruling out buprenorphine exposure. For follow-up testing of a presumptive result, Buprenorphine and Metabolites, Urine, Quantitative (2010092) is preferred.

Test Code:
BUPUS

ARUP Test Code:
2012273

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Qualitative Enzyme Immunoassay/Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Collect:
Random urine.

Unacceptable Conditions:
Unknown fluids, pharmaceutical preparations, and breast milk. Specimens exposed to repeated freeze/thaw cycles.

Specimen Preparation:
Transfer 4 mL urine with no additives or preservatives to an ARUP Standard Transport Tube (Min: 2 mL)

Reference Interval:
Screen cutoff concentration: 5 ng/mL

Interpretive Data:
The absence of expected drug(s) and/or drug metabolite(s) may indicate non-compliance, inappropriate timing of specimen collection relative to drug administration, poor drug absorption, diluted/adulterated urine, or limitations of testing. The concentration at which the screening test can detect a drug or metabolite varies. Specimens for which drugs or drug classes are detected by the screen are reflexed to a second, more specific technology (GC/MS and/or LC-MS/MS). The concentration value must be greater than or equal to the cutoff to be reported as positive. Interpretive questions should be directed to the laboratory.

For medical purposes only; not valid for forensic use.

Synonyms:

- Buprenex
- Buprenorphine
- Butrans
- Glucuronide
- Norbuprenorphine
- Norbuprenorphine Glucuronide
- Norspan
- Suboxone
- Temgesic
- Vetergesic

Storage/Transport Temperature:
Room temperature.

Stability (from collection to initiation):
Ambient: 1 week; Refrigerated: 1 month; Frozen: 1 month

Reported:
1-4 days

CPT Codes:
80307; if reflexed, add 80348 (Reflexed Alt Code: G0480)

LOINC:

- 54247-2
- 93494-3

Notes:
If the specimen screens positive, then Confirmation/Quantitation by LC-MS/MS (ARUP test code 2010092) will be added to confirm result. Additional charges apply.

Busulfan Pharmacokinetics, Adult

BUSUA, BUSAR2

ORDERING

Available Stat:
No

Performing Lab:
China Basin Chemistry

Performed:
Run Monday-Friday AM (excluding holidays) with prior notice

Methodology:
Liquid chromatography-tandem mass spectrometry (LC-MS/MS)

Reported:
Results available next day by 1300 hours

Additional Information:
Chemistry China Basin will report the busulfan concentration of each sample and the Area Under the Curve (AUC).

For questions contact China Basin Chemistry at 415-353-4820

Synonyms:

- Busulfex
- BUSUA, BUSAR2, BUSAR3, BUSAR4, BUSAR5, BUSAR6, BUSAR7

Supplemental Test Request Form Required:
Yes

COLLECTION

Sample Type:
Heparinized plasma

Collect:
Dark green top on ice drawn at specific times

Amount to Collect:
2 mL blood for each sample

Preferred Volume:
1 ml heparinized plasma for each sample

Minimum Volume:
1 ml heparinized plasma for each sample

Remarks:
Samples should only be collected Sunday through Thursday and the collection MUST be completed and the last sample delivered to the laboratory by 4AM in order to provide results the next/same day.

Testing should be ordered in APeX.

Label the samples with the patient registration label and write the EXACT time of collection on the label. Hand carry the samples to lab on ice. Make sure to notify lab staff that you are delivering a Busulfan sample, DO NOT simply leave it at the desk. With the last sample, bring the completed busulfan PK sheet to the lab.

Busulfan is unstable therefore EACH sample must be transported on ice to the laboratory immediately after collection for processing and freezing.

Stability (from collection to initiation):
Before separation from cells Refrigerated (4C) for 24 hoursAfter separation from cells Frozen (-70C) for 2 years.

Unacceptable Conditions:
Sample not received on ice. Not collected in Dark green top tube.

PROCESSING

Test Code:
BUSUA, BUSAR2, BUSAR3, BUSAR4, BUSAR5, BUSAR6, BUSAR7

Test Group:
Busulfan

Performing Lab:
China Basin Chemistry

Specimen Preparation:

Samples must be processed immediately upon receipt. When the samples arrive, receive them in Sunquest with the EXACT collection time as hand-written on the label. Place a Sunquest label on the tube.

Spin sample down immediately in refrigerated centrifuge, aliquot 1 mL into plastic vial and label with the exact time of collection then freeze at -70C.

As additional samples arrive receive them in Sunquest under Order/Receipt Modify. Then process each sample as above. When all samples have been processed, send them on dry ice to China Basin Chemistry.

NOTE: The back-up laboratory for this test is the Mayo Clinic. A busulfan information sheet for the Mayo Clinic needs to be completed for each set of samples: Click here for form

Using the information entered in Apex for this patient, complete the busulfan information sheet (e.g. the dose, dose number, infusion start time, infusion stop time and EXACT collection time of each sample). Insert the pager or phone number of the doctor who ordered the busulfan testing in the results reporting box. Ship the samples on dry ice with the busulfan information sheet to the Mayo Clinic.

Preferred Volume:

1 ml heparinized plasma for each sample

Minimum Volume:

1 ml heparinized plasma for each sample

Unacceptable Conditions:

Sample not received on ice. Not collected in Dark green top tube.

Stability (from collection to initiation):

Before separation from cells Refrigerated (4C) for 24 hoursAfter separation from cells Frozen (-70C) for 2 years.

RESULT INTERPRETATION

Units:

Busulfan concentration in each individual sample: ng/mL
Area under the curve (AUC): µmol*min

Additional Information:

Chemistry China Basin will report the busulfan concentration of each sample and the Area Under the Curve (AUC).

For questions contact China Basin Chemistry at 415-353-4820

ADMINISTRATIVE

CPT Codes:

80299 x number of samples drawn

LDT or Modified FDA:

Yes

COMPLETE VIEW

Available Stat:

No

Test Code:

BUSUA, BUSAR2, BUSAR3, BUSAR4, BUSAR5, BUSAR6, BUSAR7

Test Group:

Busulfan

Performing Lab:

China Basin Chemistry

Performed:

Run Monday-Friday AM (excluding holidays) with prior notice

Methodology:

Liquid chromatography-tandem mass spectrometry (LC-MS/MS)

Remarks:

Samples should only be collected Sunday through Thursday and the collection MUST be completed and the last sample delivered to the laboratory by 4AM in order to provide results the next/same day.

Testing should be ordered in APeX.

Label the samples with the patient registration label and write the EXACT time of collection on the label. Hand carry the samples to lab on ice. Make sure to notify lab staff that you are delivering a Busulfan sample, DO NOT simply leave it at the desk. With the last sample, bring the completed busulfan PK sheet to the lab.

Busulfan is unstable therefore EACH sample must be transported on ice to the laboratory immediately after collection for processing and freezing.

Collect:

Dark green top on ice drawn at specific times

Amount to Collect:

2 mL blood for each sample

Sample Type:

Heparinized plasma

Preferred Volume:

1 ml heparinized plasma for each sample

Minimum Volume:

1 ml heparinized plasma for each sample

Unacceptable Conditions:

Sample not received on ice. Not collected in Dark green top tube.

Specimen Preparation:

Samples must be processed immediately upon receipt. When the samples arrive, receive them in Sunquest with the EXACT collection time as hand-written on the label. Place a Sunquest label on the tube.

Spin sample down immediately in refrigerated centrifuge, aliquot 1 mL into plastic vial and label with the exact time of collection then freeze at -70C.

As additional samples arrive receive them in Sunquest under Order/Receipt Modify. Then process each sample as above. When all samples have been processed, send them on dry ice to China Basin Chemistry.

NOTE: The back-up laboratory for this test is the Mayo Clinic. A busulfan information sheet for the Mayo Clinic needs to be completed for each set of samples: Click here for form

Using the information entered in Apex for this patient, complete the busulfan information sheet (e.g. the dose, dose number, infusion start time, infusion stop time and EXACT collection time of each sample). Insert the pager or phone number of the doctor who ordered the busulfan testing in the results reporting box. Ship the samples on dry ice with the busulfan information sheet to the Mayo Clinic.

Units:

Busulfan concentration in each individual sample: ng/mL
Area under the curve (AUC): µmol*min

Synonyms:

- Busulfex
- BUSUA, BUSAR2, BUSAR3, BUSAR4, BUSAR5, BUSAR6, BUSAR7

Stability (from collection to initiation):

Before separation from cells Refrigerated (4C) for 24 hoursAfter separation from cells Frozen (-70C) for 2 years.

Reported:

Results available next day by 1300 hours

Additional Information:

Chemistry China Basin will report the busulfan concentration of each sample and the Area Under the Curve (AUC).

For questions contact China Basin Chemistry at 415-353-4820

CPT Codes:

80299 x number of samples drawn

LDT or Modified FDA:

Yes

Supplemental Test Request Form Required:

Yes

Busulfan Pharmacokinetics, Pediatric (Non-Research)

BUSRP1, BUSRP2, BUSRP3, BUSRP4, BUSRP5, BUSRP6, BU

ORDERING

Available Stat:
No

Performing Lab:
China Basin Chemistry

Performed:
Run Monday-Friday AM with prior notice (excluding holidays)

Methodology:
Liquid chromatography-tandem mass spectrometry (LC-MS/MS)

Reported:
Results available next day by 1300 hours (Monday through Friday, excluding holidays)

Additional Information:
Chemistry China Basin will report the busulfan concentration of each sample.

For questions contact China Basin Chemistry at 415 353 4820

Synonyms:

- Busulfex

COLLECTION

Sample Type:
Heparinized plasma

Collect:
Dark green top on ice drawn at specific times

Amount to Collect:
2 mL blood for each sample

Preferred Volume:
1 ml heparinized plasma for each sample

Minimum Volume:
1 ml heparinized plasma for each sample

Remarks:
Testing should be ordered in APeX.

For PK studies on the first busulfan dose, the first sample should be drawn immediately after termination of the IV infusion. For PK studies on the steady state busulfan doses, the first sample should be drawn immediately before the start of the IV infusion. The remaining samples should be drawn at the times listed on the busulfan PK sheets (use correct PK sheet for each study: e.g. Q6hr, Q12hr or Q24hr).

Each patient sample should have a label affixed to it, and the EXACT time of collection should be written on the label or the APeX requisition and on the busulfan PK sheet. Hand-carry the sample to lab on ice with the requisition. Make sure to notify lab staff that you are delivering a busulfan sample, DO NOT simply leave it at the desk. Busulfan is unstable therefore EACH sample must be transported on ice to the laboratory immediately after collection for processing and freezing. With the final sample, bring the busulfan PK sheet with the correct collect times completed for each sample to the lab.

Stability (from collection to initiation):
Before separation from cells: Refrigerated (4C) for 24 hours.
After separation from cells: Frozen (-70C) for 2 years.

Unacceptable Conditions:
Sample not received on ice. Not collected in Dark green top tube.

PROCESSING

Test Code:
BUSRP1, BUSRP2, BUSRP3, BUSRP4, BUSRP5, BUSRP6, BUSRP7

Test Group:
Busulfan

Performing Lab:
China Basin Chemistry

Specimen Preparation:

Samples must be processed immediately upon receipt. When the samples arrive, receive them in Sunquest with the EXACT collection time as hand-written on the label or ApeX requisition. Place a Sunquest label on the tube. Spin sample down immediately in refrigerated centrifuge, aliquot 1 mL into plastic vial and label with the exact time of collection then freeze at -70C.

As additional samples arrive receive them in Sunquest under Order/Receipt Modify. Then process each sample as above. When all samples have been processed, send them on dry ice to China Basin Chemistry.

Preferred Volume:

1 ml heparinized plasma for each sample

Minimum Volume:

1 ml heparinized plasma for each sample

Unacceptable Conditions:

Sample not received on ice. Not collected in Dark green top tube.

Stability (from collection to initiation):

Before separation from cells: Refrigerated (4C) for 24 hours.
After separation from cells: Frozen (-70C) for 2 years.

RESULT INTERPRETATION

Units:

ng/mL

Additional Information:

Chemistry China Basin will report the busulfan concentration of each sample.

For questions contact China Basin Chemistry at 415 353 4820

ADMINISTRATIVE

CPT Codes:

80299 x number of samples tested

LDT or Modified FDA:

Yes

COMPLETE VIEW

Available Stat:

No

Test Code:

BUSRP1, BUSRP2, BUSRP3, BUSRP4, BUSRP5, BUSRP6, BUSRP7

Test Group:

Busulfan

Performing Lab:

China Basin Chemistry

Performed:

Run Monday-Friday AM with prior notice (excluding holidays)

Methodology:

Liquid chromatography-tandem mass spectrometry (LC-MS/MS)

Remarks:

Testing should be ordered in APeX.

For PK studies on the first busulfan dose, the first sample should be drawn immediately after termination of the IV infusion. For PK studies on the steady state busulfan doses, the first sample should be drawn immediately before the start of the IV infusion. The remaining samples should be drawn at the times listed on the busulfan PK sheets (use correct PK sheet for each study: e.g. Q6hr, Q12hr or Q24hr).

Each patient sample should have a label affixed to it, and the EXACT time of collection should be written on the label or the APeX requisition and on the busulfan PK sheet. Hand-carry the sample to lab on ice with the requisition. Make sure to notify lab staff that you are delivering a busulfan sample, DO NOT simply leave it at the desk. Busulfan is unstable therefore EACH sample must be transported on ice to the laboratory immediately after collection for processing and freezing. With the final sample, bring the busulfan PK sheet with the correct collect times completed for each sample to the lab.

Collect:

Dark green top on ice drawn at specific times

Amount to Collect:

2 mL blood for each sample

Sample Type:
Heparinized plasma

Preferred Volume:
1 ml heparinized plasma for each sample

Minimum Volume:
1 ml heparinized plasma for each sample

Unacceptable Conditions:
Sample not received on ice. Not collected in Dark green top tube.

Specimen Preparation:
Samples must be processed immediately upon receipt. When the samples arrive, receive them in Sunquest with the EXACT collection time as hand-written on the label or ApeX requisition. Place a Sunquest label on the tube. Spin sample down immediately in refrigerated centrifuge, aliquot 1 mL into plastic vial and label with the exact time of collection then freeze at -70C.

As additional samples arrive receive them in Sunquest under Order/Receipt Modify. Then process each sample as above. When all samples have been processed, send them on dry ice to China Basin Chemistry.

Units:
ng/mL

Synonyms:

- Busulfex

Stability (from collection to initiation):
Before separation from cells: Refrigerated (4C) for 24 hours.
After separation from cells: Frozen (-70C) for 2 years.

Reported:
Results available next day by 1300 hours (Monday through Friday, excluding holidays)

Additional Information:
Chemistry China Basin will report the busulfan concentration of each sample.

For questions contact China Basin Chemistry at 415 353 4820

CPT Codes:
80299 x number of samples tested

LDT or Modified FDA:
Yes

C1 Esterase Inhibitor Deficiency Panel

C1EI

ORDERING

Available Stat:
No

Performing Lab:
Quest

Reported:
Test performed Tuesday and Thursday. Turnaround time: 3-8 days.

Additional Information:
Includes C1EI activity, C1EI quantitation and C1q quantitation.

The results expected of these assays in the different clinical settings in which low C4 levels are seen are:

Basis of Complement Abnormality	C1-eterase activity by C1r decay	Inhibitor Antigen Quantitation	C1q Antigen Quantitation
Hereditary angioedema-Classic	Abnormal	Decreased	Normal
Hereditary angioedema-Variant	? Abnormal	Normal	Normal
Acquired	? Abnormal	Decreased	Decreased
Secondary involvement	Normal	Normal	Normal

Synonyms:

- Angioedema Panel
- C1-esterase inhibitor
- angioneurotic edema
- anti-C1r
- C1r
- C4DX/C4 ratio
- HAE
- HAN E
- Hereditary angioneurotic edema

COLLECTION

Patient Preparation:
An 8 hour fast before specimen collection is preferred

Sample Type:
Serum
EDTA Plasma for B&T patients

Collect:
Red top on ice (Gold top **NOT** acceptable)
Lavender top on ice for B&T patients

Amount to Collect:
6 mL blood

Preferred Volume:
3 mL serum in 3 aliquots of 1 mL each

Minimum Volume:
0.5 mL serum each

Remarks:
Collect and allow to clot in ice slurry. Bring immediately to lab on ice.

Note special sample requirements for B&T patients.

Unacceptable Conditions:
Not delivered on ice. Sample collected in Gold top

PROCESSING

Test Code:
C1EI

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Centrifuge immediately under refrigeration. Freeze three separate aliquots at <= 60C in plastic tubes and ship on dry ice.
Order Quest # 44768P, 298 and 44784P

Note that LabCorp requires EDTA plasma for B&T patients.

Preferred Volume:
3 mL serum in 3 aliquots of 1 mL each

Minimum Volume:
0.5 mL serum each

Unacceptable Conditions:
Not delivered on ice. Sample collected in Gold top

RESULT INTERPRETATION

Units:
see normal ranges

Reference Interval:
C1EI activity (by decay of C1r):
Normal: > 67%
Equivocal: 41-67%
Abnormal: < 41%

C1EI quantitation: 11-26 mg/dL
C1q quantitation: 5.0-8.6 mg/dL

Additional Information:
Includes C1EI activity, C1EI quantitation and C1q quantitation.

The results expected of these assays in the different clinical settings in which low C4 levels are seen are:

Basis of Complement Abnormality	C1-eterase activity by C1r decay	Inhibitor Antigen Quantitation	C1q Antigen Quantitation
Hereditary angioedema-Classic	Abnormal	Decreased	Normal
Hereditary angioedema-Variant	? Abnormal	Normal	Normal
Acquired	? Abnormal	Decreased	Decreased
Secondary involvement	Normal	Normal	Normal

ADMINISTRATIVE

CPT Codes:
86161-90

LOINC Codes:
4477-6

COMPLETE VIEW

Available Stat:
No

Test Code:
C1EI

Performing Lab:
Quest

Sendout:
Yes

Patient Preparation:
An 8 hour fast before specimen collection is preferred

Remarks:
Collect and allow to clot in ice slurry. Bring immediately to lab on ice.

Note special sample requirements for B&T patients.

Collect:
Red top on ice (Gold top **NOT** acceptable)
Lavender top on ice for B&T patients

Amount to Collect:
6 mL blood

Sample Type:
Serum
EDTA Plasma for B&T patients

Preferred Volume:
3 mL serum in 3 aliquots of 1 mL each

Minimum Volume:
0.5 mL serum each

Unacceptable Conditions:
Not delivered on ice. Sample collected in Gold top

Specimen Preparation:
Centrifuge immediately under refrigeration. Freeze three separate aliquots at <= 60C in plastic tubes and ship on dry ice.
Order Quest # 44768P, 298 and 44784P

Note that LabCorp requires EDTA plasma for B&T patients.

Units:
see normal ranges

Reference Interval:
C1EI activity (by decay of C1r):
Normal: > 67%
Equivocal: 41-67%
Abnormal: < 41%

C1EI quantitation: 11-26 mg/dL
C1q quantitation: 5.0-8.6 mg/dL

Synonyms:

- Angioedema Panel
- C1-esterase inhibitor
- angioneurotic edema
- anti-C1r
- C1r
- C4DX/C4 ratio
- HAE
- HAN E
- Hereditary angioneurotic edema

Reported:
Test performed Tuesday and Thursday. Turnaround time: 3-8 days.

Additional Information:
Includes C1EI activity, C1EI quantitation and C1q quantitation.

The results expected of these assays in the different clinical settings in which low C4 levels are seen are:

Basis of Complement Abnormality	C1-eterase activity by C1r decay	Inhibitor Antigen Quantitation	C1q Antigen Quantitation
Hereditary angioedema-Classic	Abnormal	Decreased	Normal
Hereditary angioedema-Variant	? Abnormal	Normal	Normal
Acquired	? Abnormal	Decreased	Decreased
Secondary involvement	Normal	Normal	Normal

CPT Codes:
86161-90

LOINC Codes:
4477-6

C3d Fixing Antibody - Class I

HT3CDAB1 (Sunquest: ILC3D1)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Luminex-based

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Additional Information:
This test assigns cPRA (calculated PRA) and determines specific Class II antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring. This test is NOT for evaluation of transfusion-related fever or refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

Reflex Testing:
Yes

Synonyms:

- Class II Single Antigen Testing by Luminex, Single Antigen Specificity Class II

COLLECTION

Sample Type:
Serum

Collect:
Red top x2

Amount to Collect:
12 mL blood

Preferred Volume:
6 mL serum

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

PROCESSING

Test Code:
HT3CDAB1 (Sunquest: ILC3D1)

Test Group:
HLA Antibody Testing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Preferred Volume:
6 mL serum

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

RESULT INTERPRETATION

Additional Information:
This test assigns cPRA (calculated PRA) and determines specific Class II antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring. This test is NOT for evaluation of transfusion-related fever or refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

ADMINISTRATIVE

CPT Codes:
86833

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HT3CDAB1 (Sunquest: ILC3D1)

Test Group:
HLA Antibody Testing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Luminex-based

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Collect:
Red top x2

Amount to Collect:
12 mL blood

Sample Type:
Serum

Preferred Volume:
6 mL serum

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Synonyms:

- Class II Single Antigen Testing by Luminex, Single Antigen Specificity Class II

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Reflex Testing:
Yes

Additional Information:
This test assigns cPRA (calculated PRA) and determines specific Class II antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring. This test is NOT for evaluation of transfusion-related fever or refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

CPT Codes:
86833

C3d Fixing Antibody - Class II

HT3CDAB2 (Sunquest: ILC3D2)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Luminex-based

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Additional Information:
This test assigns cPRA (calculated PRA) and determines specific Class II antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring. This test is NOT for evaluation of transfusion-related fever or refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

Reflex Testing:
Yes

Synonyms:

- Class II Single Antigen Testing by Luminex, Single Antigen Specificity Class II

COLLECTION

Sample Type:
Serum

Collect:
Red top x2

Amount to Collect:
12 mL blood

Preferred Volume:
6 mL serum

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

PROCESSING

Test Code:
HT3CDAB2 (Sunquest: ILC3D2)

Test Group:
HLA Antibody Testing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Preferred Volume:
6 mL serum

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

RESULT INTERPRETATION

Additional Information:
This test assigns cPRA (calculated PRA) and determines specific Class II antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring. This test is NOT for evaluation of transfusion-related fever or refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

ADMINISTRATIVE

CPT Codes:
86833

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HT3CDAB2 (Sunquest: ILC3D2)

Test Group:
HLA Antibody Testing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Luminex-based

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Collect:
Red top x2

Amount to Collect:
12 mL blood

Sample Type:
Serum

Preferred Volume:
6 mL serum

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Synonyms:

- Class II Single Antigen Testing by Luminex, Single Antigen Specificity Class II

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Reflex Testing:
Yes

Additional Information:
This test assigns cPRA (calculated PRA) and determines specific Class II antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring. This test is NOT for evaluation of transfusion-related fever or refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

CPT Codes:
86833

Cadmium

CADM

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
ICP/MS

Reported:
Test performed Monday-Friday. Turnaround time: 3-5 days.

COLLECTION

Patient Preparation:
Patient should refrain from eating seafood at least three days prior to specimen collection.

Sample Type:
EDTA whole blood

Collect:
Navy blue top (EDTA) tube

Amount to Collect:
4 mL blood

Preferred Volume:
4 mL blood

Minimum Volume:
2 mL blood

Remarks:
To avoid contamination during collection use powderless gloves.

Mix well, inverting gently 5x.

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 5 days, frozen at -20C unaceptable

Unacceptable Conditions:
Hemolyzed samples

Rejection Criteria:
Room temp, frozen, hemolysis

PROCESSING

Test Code:
CADM

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Follow the detailed processing instructions for Trace Metal Analysis. Do not centrifuge or transfer to another container. Refrigerate DO NOT freeze. Order Quest # 299

Preferred Volume:
4 mL blood

Minimum Volume:
2 mL blood

Unacceptable Conditions:
Hemolyzed samples

Rejection Criteria:
Room temp, frozen, hemolysis

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 5 days, frozen at -20C unaceptable

RESULT INTERPRETATION

Units:
µg/L (mcg/L)

Reference Interval:
Non-smokers: < 1.7 µg/L
>= 18 year old smokers: < 5.0 µg/L
OSHA reference range: < 5.0 µg/L
Potentially toxic: 30 µg/L

Critical Values:
Quest Priority-1: >= 50 µg/L
Quest Priority-2: 40.0-49.9 µg/L

ADMINISTRATIVE

CPT Codes:
82300-90

LOINC Codes:
5609-3

COMPLETE VIEW

Available Stat:
No

Test Code:
CADM

Performing Lab:
Quest

Sendout:
Yes

Methodology:
ICP/MS

Patient Preparation:
Patient should refrain from eating seafood at least three days prior to specimen collection.

Remarks:
To avoid contamination during collection use powderless gloves.

Mix well, inverting gently 5x.

Collect:
Navy blue top (EDTA) tube

Amount to Collect:
4 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
4 mL blood

Minimum Volume:
2 mL blood

Rejection Criteria:
Room temp, frozen, hemolysis

Unacceptable Conditions:
Hemolyzed samples

Specimen Preparation:
Follow the detailed processing instructions for Trace Metal Analysis. Do not centrifuge or transfer to another container. Refrigerate DO NOT freeze. Order Quest # 299

Units:
µg/L (mcg/L)

Reference Interval:
Non-smokers: < 1.7 µg/L
>= 18 year old smokers: < 5.0 µg/L
OSHA reference range: < 5.0 µg/L
Potentially toxic: 30 µg/L

Critical Values:
Quest Priority-1: >= 50 µg/L
Quest Priority-2: 40.0-49.9 µg/L

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 5 days, frozen at -20C unaceptable

Reported:
Test performed Monday-Friday. Turnaround time: 3-5 days.

CPT Codes:
82300-90

LOINC Codes:
5609-3

Caffeine

CAFF

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Immunoassay

Reported:
Test run Monday-Friday mornings. Turnaround time: 1-4 days.

Additional Information:
Expected levels in individuals taking over-the-counter caffeine preparations are 3-6 mg/L.

COLLECTION

Sample Type:
Serum

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Remarks:
For therapeutic monitoring draw trough level just before next dose.

Stability (from collection to initiation):
Room temperature 5 days, refrigerated 1 week, frozen at -20C 1 month

Unacceptable Conditions:
Sample collected in Gold top

PROCESSING

Test Code:
CAFF

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate serum. Order Quest # 305

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Sample collected in Gold top

Stability (from collection to initiation):
Room temperature 5 days, refrigerated 1 week, frozen at -20C 1 month

RESULT INTERPRETATION

Units:
mg/L

Reference Interval:
Therapeutic: 8-20 mg/L
Potentially Toxic: > 50 mg/L

Additional Information:
Expected levels in individuals taking over-the-counter caffeine preparations are 3-6 mg/L.

ADMINISTRATIVE

CPT Codes:
80155

LOINC Codes:
3422-3

COMPLETE VIEW

Available Stat:
No

Test Code:
CAFF

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Immunoassay

Remarks:
For therapeutic monitoring draw trough level just before next dose.

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Sample collected in Gold top

Specimen Preparation:
Refrigerate serum. Order Quest # 305

Units:
mg/L

Reference Interval:
Therapeutic: 8-20 mg/L
Potentially Toxic: > 50 mg/L

Stability (from collection to initiation):
Room temperature 5 days, refrigerated 1 week, frozen at -20C 1 month

Reported:
Test run Monday-Friday mornings. Turnaround time: 1-4 days.

Additional Information:
Expected levels in individuals taking over-the-counter caffeine preparations are 3-6 mg/L.

CPT Codes:
80155

LOINC Codes:
3422-3

Calcitonin

CATN

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Chemiluminescent Immunoassay

Reported:
Test set up Tuesday-Saturday. Turnaround time: 5-8 days

Additional Information:
Infant/toddler ranges obtained with the Nichols Institute Diagnostics calcitonin-IMCA (Clinical Chemistry 2004;50:1828-9)

Synonyms:

- CT
- thyrocalcitonin

COLLECTION

Patient Preparation:
An 8 hour fast before specimen collection is preferred

Sample Type:
Serum

Collect:
Red top or Gold Top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature unacceptable, refrigerated 1 day, frozen at -20C 28 days.

Rejection Criteria:
Room temperature sample

PROCESSING

Test Code:
CATN

Test Group:
Calcitonin

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze separated serum at -20C. Order Quest # 30742X

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Rejection Criteria:
Room temperature sample

Stability (from collection to initiation):
Room temperature unacceptable, refrigerated 1 day, frozen at -20C 28 days.

RESULT INTERPRETATION

Units:
pg/mL

Reference Interval:
>= 18 year old males: <= 10 pg/mL
>= 18 year old females: <= 5 pg/mL

Pediatrics (Males and Females):
< 6 months: <= 41 pg/mL
6 months-3 years: <= 14 pg/mL
3-17 years: <= 6 pg/mL

Additional Information:
Infant/toddler ranges obtained with the Nichols Institute Diagnostics calcitonin-IMCA (Clinical Chemistry 2004;50:1828-9)

ADMINISTRATIVE

CPT Codes:
82308-90

LOINC Codes:
1992-7

COMPLETE VIEW

Available Stat:
No

Test Code:
CATN

Test Group:
Calcitonin

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Chemiluminescent Immunoassay

Patient Preparation:
An 8 hour fast before specimen collection is preferred

Collect:
Red top or Gold Top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Rejection Criteria:
Room temperature sample

Specimen Preparation:
Freeze separated serum at -20C. Order Quest # 30742X

Units:
pg/mL

Reference Interval:
>= 18 year old males: <= 10 pg/mL
>= 18 year old females: <= 5 pg/mL

Pediatrics (Males and Females):
< 6 months: <= 41 pg/mL
6 months-3 years: <= 14 pg/mL
3-17 years: <= 6 pg/mL

Synonyms:

- CT
- thyrocalcitonin

Stability (from collection to initiation):
Room temperature unacceptable, refrigerated 1 day, frozen at -20C 28 days.

Reported:
Test set up Tuesday-Saturday. Turnaround time: 5-8 days

Additional Information:
Infant/toddler ranges obtained with the Nichols Institute Diagnostics calcitonin-IMCA (Clinical Chemistry 2004;50:1828-9)

CPT Codes:
82308-90

LOINC Codes:
1992-7

Calcitonin Stimulation Test

CATN

ORDERING

Available Stat:
No

Performing Lab:
Quest performs calcitonin testing

Reported:
Test set up Tuesday-Saturday. Turnaround time: 5-8 days

Additional Information:
The combined stimuli are usually reserved for those who do not respond to pentagastrin alone.

COLLECTION

Patient Preparation:
An 8 hour fast before specimen collection is preferred

Sample Type:
Serum

Amount to Collect:
2 mL blood per sample

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Remarks:

Pentagastrin stimulation:
Collect specimens taken before and 1, 2 and 5 minutes after the administration iv over 5 seconds of 0.5 µg/kg.

Pentagastrin/Calcium Infusion:
Give 2 mg/kg iv of elemental calcium (usually as the gluconate) at a constant rate over 1 min; followed immediately with iv pentagastrin as described above. Collect specimens at the same times.

PROCESSING

Test Code:
CATN x mult

Test Group:
Calcitonin

Sendout:
Yes

Performing Lab:
Quest performs calcitonin testing

Specimen Preparation:
Process individual specimens as described above; be sure to enter any descriptive information supplied. Freeze separated serum at -20C. Order Quest # 30742X

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

RESULT INTERPRETATION

Units:
pg/mL

Reference Interval:

Normal response:

Pentagastrin alone	Male	Female
1 or 2 min	<= 106 pg/mL	<= 29 pg/mL
at 5 min	<= 106 pg/mL	<= 23 pg/mL

Ca++ & Pentagastrin	Male	Female
at 1 min	<= 324 pg/mL	<= 41 pg/mL
at 2 min	10-491 pg/mL	<= 70 pg/mL
at 5 min	8-343 pg/mL	<= 39 pg/mL
at 10 min	<= 112 pg/mL	<= 23 pg/mL

Additional Information:

The combined stimuli are usually reserved for those who do not respond to pentagastrin alone.

ADMINISTRATIVE

CPT Codes:

82308-90

COMPLETE VIEW

Available Stat:

No

Test Code:

CATN x mult

Test Group:

Calcitonin

Performing Lab:

Quest performs calcitonin testing

Sendout:

Yes

Patient Preparation:

An 8 hour fast before specimen collection is preferred

Remarks:

Pentagastrin stimulation:

Collect specimens taken before and 1, 2 and 5 minutes after the administration iv over 5 seconds of 0.5 µg/kg.

Pentagastrin/Calcium Infusion:

Give 2 mg/kg iv of elemental calcium (usually as the gluconate) at a constant rate over 1 min; followed immediately with iv pentagastrin as described above. Collect specimens at the same times.

Amount to Collect:

2 mL blood per sample

Sample Type:

Serum

Preferred Volume:

1 mL serum

Minimum Volume:

0.5 mL serum

Specimen Preparation:

Process individual specimens as described above; be sure to enter any descriptive information supplied. Freeze separated serum at -20C. Order Quest # 30742X

Units:

pg/mL

Reference Interval:

Normal response:

Pentagastrin alone	Male	Female
1 or 2 min	<= 106 pg/mL	<= 29 pg/mL
at 5 min	<= 106 pg/mL	<= 23 pg/mL

Ca++ & Pentagastrin	Male	Female
at 1 min	<= 324 pg/mL	<= 41 pg/mL
at 2 min	10-491 pg/mL	<= 70 pg/mL
at 5 min	8-343 pg/mL	<= 39 pg/mL
at 10 min	<= 112 pg/mL	<= 23 pg/mL

Reported:

Test set up Tuesday-Saturday. Turnaround time: 5-8 days

Additional Information:

The combined stimuli are usually reserved for those who do not respond to pentagastrin alone.

CPT Codes:

82308-90

Calcium, Ionized, Plasma / Serum

CAI

ORDERING

Ordering Recommendations:

Ionized calcium should be measured in situations where total calcium measurements may not accurately reflect the level of physiologically active free (ionized) calcium. Because equations proposed for estimating free calcium levels from measurements of total albumin and calcium are poor surrogates for true ionized calcium (1-4), direct measurements of ionized calcium should be obtained when free calcium levels are needed. Measurements of ionized calcium may be particularly useful in patients with: altered albumin concentration, acid-base disturbances, multiple myeloma, chronic kidney disease, organ transplants, borderline hypercalcemia, suspected hyperparathyroidism and normal or slightly elevated total calcium values, or symptoms of hypocalcemia despite a normal total calcium.

Note, however, that measurement of ionized calcium is significantly more labor intensive for laboratory staff than measurement of Total Calcium. In stable patients with the above abnormalities it may not be necessary to monitor the patient with repeated ionized calcium levels. In many situations determining both the ionized calcium and Total Calcium on the same sample allows the values to be compared and the patient can then be monitored with the Total Calcium alone.

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Ion selective electrode (ISE), Radiometer ABL 90 FLEX Plus

Reported:
STAT 1 hour, Routine 3 hours

Additional Information:
NOTE - the results for serum or plasma ionized calcium are adjusted (normalized) to a standard pH of 7.40. To obtain ionized calcium results that are not adjusted to a standard pH of 7.40, order whole blood ionized calcium (e.g., in patients with possible acid-base disturbances including those with symptoms of hypocalcemia suspected to be secondary to respiratory alkalosis).

1. Ladenson JH, et al. Failure of total calcium corrected for protein, albumin, and pH to correctly assess free calcium status. J Clin Endocrinol Metab 46:986-993, 1978
2. Gauci C, et al. Pitfalls of Measuring Total Blood Calcium in Patients with CKD. J Am Soc Nephrol 19: 1592-1598, 2008
3. Bjorkman MP, et al. Calculated serum calcium is an insufficient surrogate for measured ionized calcium. Archives of Gerontology and Geriatrics, 2009
4. Thode, J. et al. Comparison of serum total calcium, albumin-corrected total calcium, and ionized calcium in 1213 patients with suspected calcium disorders. Scand. J. Clin. Lab. Invest. 49, 217-223, 1989

Synonyms:

- iCa
- Free calcium
- Calcium, ionized
- calcium, free
- Ca
- Ca++

COLLECTION

Sample Type:
Plasma or serum

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL plasma or serum

Minimum Volume:
0.3 mL plasma or serum

Remarks:
Fill collection container completely. Deliver immediately to lab. Not acceptable as an "add-on" if tube has already been processed for other routine tests

Unacceptable Conditions:
Delivered to lab > 30 min after collection

PROCESSING

Test Code:
CAI

Test Group:
Calcium

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Specimen Preparation:
Do not centrifuge or open tube. Deliver immediately to Chemistry. Not acceptable as an "add-on" if tube has already been processed for other routine tests

Preferred Volume:
1 mL plasma or serum

Minimum Volume:
0.3 mL plasma or serum

Unacceptable Conditions:
Delivered to lab > 30 min after collection

RESULT INTERPRETATION

Units:
mmol/L

Reference Interval:
< 1 month: 1.00-1.50 mmol/L
>= 1 month - <= 6 months: 0.95-1.50 mmol/L
>= 6 months: 1.14-1.34 mmol/L

Adult reference range adopted from the UCSF reference range previously used with the Nova8 ionized calcium analyzer and adjusted based on the results of method comparison studies with the ABL 90 Flex Plus.

Sources of pediatric reference ranges:
1. Snell J, Greeley C, Colaco A, et al. Pediatric reference ranges for arterial pH, whole blood electrolytes and glucose. Clin Chem 1993:39;1173 (Abstract) as referenced in “Pediatric Reference Intervals" AACC Press, 6th ed. 2007
2. J Pediatrics 114:952-956, 1989
3. European J of Pediatrics 150:464-167, 1991

Critical Values:
< 0.80 mmol/L or > 1.55 mmol/L

Note: Panic values from Post-filter samples are not phoned.

Additional Information:
NOTE - the results for serum or plasma ionized calcium are adjusted (normalized) to a standard pH of 7.40. To obtain ionized calcium results that are not adjusted to a standard pH of 7.40, order whole blood ionized calcium (e.g., in patients with possible acid-base disturbances including those with symptoms of hypocalcemia suspected to be secondary to respiratory alkalosis).

1. Ladenson JH, et al. Failure of total calcium corrected for protein, albumin, and pH to correctly assess free calcium status. J Clin Endocrinol Metab 46:986-993, 1978
2. Gauci C, et al. Pitfalls of Measuring Total Blood Calcium in Patients with CKD. J Am Soc Nephrol 19: 1592-1598, 2008
3. Bjorkman MP, et al. Calculated serum calcium is an insufficient surrogate for measured ionized calcium. Archives of Gerontology and Geriatrics, 2009
4. Thode, J. et al. Comparison of serum total calcium, albumin-corrected total calcium, and ionized calcium in 1213 patients with suspected calcium disorders. Scand. J. Clin. Lab. Invest. 49, 217-223, 1989

ADMINISTRATIVE

CPT Codes:
82330

LOINC Codes:
1995-0

COMPLETE VIEW

Available Stat:
Yes

Ordering Recommendations:

Ionized calcium should be measured in situations where total calcium measurements may not accurately reflect the level of physiologically active free (ionized) calcium. Because equations proposed for estimating free calcium levels from measurements of total albumin and calcium are poor surrogates for true ionized calcium (1-4), direct measurements of ionized calcium should be obtained when free calcium levels are needed. Measurements of ionized calcium may be particularly useful in patients with: altered albumin concentration, acid-base disturbances, multiple myeloma, chronic kidney disease, organ transplants, borderline hypercalcemia, suspected hyperparathyroidism and normal or slightly elevated total calcium values, or symptoms of hypocalcemia despite a normal total calcium.

Note, however, that measurement of ionized calcium is significantly more labor intensive for laboratory staff than measurement of Total Calcium. In stable patients with the above abnormalities it may not be necessary to monitor the patient with repeated ionized calcium levels. In many situations determining both the ionized calcium and Total Calcium on the same sample allows the values to be compared and the patient can then be monitored with the Total Calcium alone.

Test Code:
CAI

Test Group:
Calcium

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Ion selective electrode (ISE), Radiometer ABL 90 FLEX Plus

Remarks:
Fill collection container completely. Deliver immediately to lab. Not acceptable as an "add-on" if tube has already been processed for other routine tests

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
2 mL blood

Sample Type:
Plasma or serum

Preferred Volume:
1 mL plasma or serum

Minimum Volume:
0.3 mL plasma or serum

Unacceptable Conditions:
Delivered to lab > 30 min after collection

Specimen Preparation:
Do not centrifuge or open tube. Deliver immediately to Chemistry. Not acceptable as an "add-on" if tube has already been processed for other routine tests

Units:
mmol/L

Reference Interval:
< 1 month: 1.00-1.50 mmol/L
>= 1 month - <= 6 months: 0.95-1.50 mmol/L
>= 6 months: 1.14-1.34 mmol/L

Adult reference range adopted from the UCSF reference range previously used with the Nova8 ionized calcium analyzer and adjusted based on the results of method comparison studies with the ABL 90 Flex Plus.

Sources of pediatric reference ranges:
1. Snell J, Greeley C, Colaco A, et al. Pediatric reference ranges for arterial pH, whole blood electrolytes and glucose. Clin Chem 1993:39;1173 (Abstract) as referenced in “Pediatric Reference Intervals" AACC Press, 6th ed. 2007
2. J Pediatrics 114:952-956, 1989
3. European J of Pediatrics 150:464-167, 1991

Critical Values:
< 0.80 mmol/L or > 1.55 mmol/L

Note: Panic values from Post-filter samples are not phoned.

Synonyms:

- iCa
- Free calcium
- Calcium, ionized
- calcium, free
- Ca
- Ca++

Reported:

STAT 1 hour, Routine 3 hours

Additional Information:

NOTE - the results for serum or plasma ionized calcium are adjusted (normalized) to a standard pH of 7.40. To obtain ionized calcium results that are not adjusted to a standard pH of 7.40, order whole blood ionized calcium (e.g., in patients with possible acid-base disturbances including those with symptoms of hypocalcemia suspected to be secondary to respiratory alkalosis).

1. Ladenson JH, et al. Failure of total calcium corrected for protein, albumin, and pH to correctly assess free calcium status. J Clin Endocrinol Metab 46:986-993, 1978
2. Gauci C, et al. Pitfalls of Measuring Total Blood Calcium in Patients with CKD. J Am Soc Nephrol 19: 1592-1598, 2008
3. Bjorkman MP, et al. Calculated serum calcium is an insufficient surrogate for measured ionized calcium. Archives of Gerontology and Geriatrics, 2009
4. Thode, J. et al. Comparison of serum total calcium, albumin-corrected total calcium, and ionized calcium in 1213 patients with suspected calcium disorders. Scand. J. Clin. Lab. Invest. 49, 217-223, 1989

CPT Codes:

82330

LOINC Codes:

1995-0

Calcium, Ionized, post-filter

PCAI

ORDERING

Ordering Recommendations:

This test should ONLY be ordered when testing post-filter samples in patients on dialysis with citrate anticoagulation. It should not be ordered for monitoring a patient's systemic ionized calcium level. See Calcium, Ionized, serum/plasma (CAI).

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Ion selective electrode (ISE)ABL 90 Flex Plus

Reported:
STAT 1 hour, Routine 3 hours

Additional Information:
NOTE - the results for serum or plasma ionized calcium are adjusted (normalized) to a standard pH of 7.40. To obtain ionized calcium results that are not adjusted to a standard pH of 7.40, order whole blood ionized calcium (e.g., in patients with possible acid-base disturbances including those with symptoms of hypocalcemia suspected to be secondary to respiratory alkalosis).

Synonyms:

- iCa
- Free calcium
- Calcium, ionized
- calcium, free
- Ca
- Ca++
- Ionized calcium

COLLECTION

Sample Type:
Plasma or serum

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

Remarks:
Fill collection container completely. Deliver immediately to lab. Not acceptable as an "add-on" if tube has already been processed for other routine tests.

Note: Please submit sample in its own separate biohazard bag with Apex requisition before sending to the lab.

Unacceptable Conditions:
Delivered to lab > 60 min after collection

PROCESSING

Test Code:
PCAI

Test Group:
Calcium

Performing Lab:
Parnassus & Mission Bay Chemistry

Specimen Preparation:
Do not centrifuge or open tube. Deliver immediately to Chemistry. Not acceptable as an "add-on" if tube has already been processed for other routine tests

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

Unacceptable Conditions:
Delivered to lab > 60 min after collection

RESULT INTERPRETATION

Units:
mmol/L

Additional Information:
NOTE - the results for serum or plasma ionized calcium are adjusted (normalized) to a standard pH of 7.40. To obtain ionized calcium results that are not adjusted to a standard pH of 7.40, order whole blood ionized calcium (e.g., in patients with possible acid-base disturbances including those with symptoms of hypocalcemia suspected to be secondary to respiratory alkalosis).

ADMINISTRATIVE

CPT Codes:
82330

LOINC Codes:
1995-0

COMPLETE VIEW

Available Stat:
Yes

Ordering Recommendations:

This test should ONLY be ordered when testing post-filter samples in patients on dialysis with citrate anticoagulation. It should not be ordered for monitoring a patient's systemic ionized calcium level. See Calcium, Ionized, serum/plasma (CAI).

Test Code:
PCAI

Test Group:
Calcium

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Ion selective electrode (ISE)ABL 90 Flex Plus

Remarks:
Fill collection container completely. Deliver immediately to lab. Not acceptable as an "add-on" if tube has already been processed for other routine tests.

Note: Please submit sample in its own separate biohazard bag with Apex requisition before sending to the lab.

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
2 mL blood

Sample Type:
Plasma or serum

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

Unacceptable Conditions:
Delivered to lab > 60 min after collection

Specimen Preparation:

Do not centrifuge or open tube. Deliver immediately to Chemistry. Not acceptable as an "add-on" if tube has already been processed for other routine tests

Units:

mmol/L

Synonyms:

- iCa
- Free calcium
- Calcium, ionized
- calcium, free
- Ca
- Ca++
- Ionized calcium

Reported:

STAT 1 hour, Routine 3 hours

Additional Information:

NOTE - the results for serum or plasma ionized calcium are adjusted (normalized) to a standard pH of 7.40. To obtain ionized calcium results that are not adjusted to a standard pH of 7.40, order whole blood ionized calcium (e.g., in patients with possible acid-base disturbances including those with symptoms of hypocalcemia suspected to be secondary to respiratory alkalosis).

CPT Codes:

82330

LOINC Codes:

1995-0

Calcium, Ionized, Whole Blood

CAIB

ORDERING

Ordering Recommendations:
Follow the link for information about Blood Gas Panels that contain this test.

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay and Mt. Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Direct ion selective electrode (ISE), Radiometer ABL 90 FLEX Plus

Reported:
Stat 15 min, Routine 30 min

Synonyms:

- iCa
- Ca
- Ca++
- Free calcium
- Calcium, free
- Ionized calcium
- ARTBGL
- VENBGL
- CVBGL
- MVBGL
- CAPBG
- MVBGCX
- CIRBGA
- CIRBGV
- NLYTE
- Electrolytes
- Blood gas
- ABG

COLLECTION

Sample Type:
Heparinized whole blood (Blood gas syringe only)

Collect:
Plastic syringe containing 100U of dry heparin. remove needle, expel any bubbles, cap syringe and transport immediately to lab.

Amount to Collect:
3 mL blood

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood

Remarks:

Arterial puncture:

Due to the risk of arterial damage and subsequent distal ischemia, prior to puncturing an artery the RN assesses the collateral circulation. If the radial artery is to be punctured, then the pulse of the ulnar artery is assessed. If the dorsalis pedis artery is to be accessed then the posterial tibial pulse is assessed and likewise if the posterial tibial approach is used the dorsalis pedis pulse is assessed. The modified Allens's test may be used to assess collateral circulation of the ulnar artery before a radial artery puncture, but it does not always ensure adequate flow. A Doppler ultrasound flow indicator may be used to verify collateral circulation. If the collateral circulation is poor and the RN cannot palpate a pulse then the physician should be notified before proceeding. If for any reason the circulation is compromised to the extremity being assessed for arterial puncture then the physician should be notified prior to proceeding.

1. Palpate the radial artery and identify the site where the pulse is the strongest. Avoid areas with overlying veins to prevent venous admixture.
2. Prepare the patient's skin with an alcohol or 2% chlorhexidine wipe/swab.
3. Place two or three fingers along the course of the artery both to locate its position and direction, and to stabilize it.
4. Penetrate the skin smoothly holding the needle at 30-60 degree angle with the needle bevel up and pointed proximally. The angle of the butterfly" IV catheter should not exceed 45° for pediatric patients.
5. Re-establish the position and direction of the artery by palpation.
6. Gently and slowly advance the needle or butterfly", aiming directly for the area of maximum pulsation.
7. When the arterial lumen has been entered, less resistance is felt and blood appears in the syringe above the needle hub.
8. Obtain required amount of arterial blood for test(s).
9. If blood is not obtained on first attempt, withdraw the needle to just below the skin surface and advance needle at same angle but at 1 mm to either side of previous attempt.
10. Place the 2x2 gauze over the site of the puncture then withdraw the needle from the artery. Press firmly at the site for at least five minutes, or until the bleeding stops. Apply bandage or pressure dressing.
11. Expel any air bubble in the syringe with air filter cap placed on specimen syringe.
12. Label sample with patient's name, ID number and DOB.

Deliver samples immediately to lab for testing. Samples delivered to the lab >30 minutes after collection may yield erroneous results.

Stability (from collection to initiation):

10 min.

Unacceptable Conditions:

Samples submitted > 60 min. after collection. Samples with needle attached, containing large bubbles, unlabeled, clotted or of insufficient volume

PROCESSING

Test Code:

CAIB

Test Group:

Calcium

Performing Lab:

Parnassus, Mission Bay and Mt. Zion Chemistry

Preferred Volume:

3 mL blood

Minimum Volume:

1 mL blood

Unacceptable Conditions:

Samples submitted > 60 min. after collection. Samples with needle attached, containing large bubbles, unlabeled, clotted or of insufficient volume

Stability (from collection to initiation):

10 min.

RESULT INTERPRETATION

Units:

mmol/L

Reference Interval:

< 6 months: 0.93 - 1.48 mmol/L
>= 6 months: 1.13 - 1.27 mmol/L

Reference range adopted from the UCSF reference range previously used with the ABL 835 blood gas analyzers and adjusted based on the results of method comparison studies with the ABL 90 Flex Plus.

Critical Values:

< 0.80 mmol/L or > 1.55 mmol/L

ADMINISTRATIVE

CPT Codes:
82330

COMPLETE VIEW

Available Stat:
Yes

Ordering Recommendations:
Follow the link for information about Blood Gas Panels that contain this test.

Test Code:
CAIB

Test Group:
Calcium

Performing Lab:
Parnassus, Mission Bay and Mt. Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Direct ion selective electrode (ISE), Radiometer ABL 90 FLEX Plus

Remarks:

Arterial puncture:
Due to the risk of arterial damage and subsequent distal ischemia, prior to puncturing an artery the RN assesses the collateral circulation. If the radial artery is to be punctured, then the pulse of the ulnar artery is assessed. If the dorsalis pedis artery is to be accessed then the posterial tibial pulse is assessed and likewise if the posterial tibial approach is used the dorsalis pedis pulse is assessed. The modified Allens's test may be used to assess collateral circulation of the ulnar artery before a radial artery puncture, but it does not always ensure adequate flow. A Doppler ultrasound flow indicator may be used to verify collateral circulation. If the collateral circulation is poor and the RN cannot palpate a pulse then the physician should be notified before proceeding. If for any reason the circulation is compromised to the extremity being assessed for arterial puncture then the physician should be notified prior to proceeding.

1. Palpate the radial artery and identify the site where the pulse is the strongest. Avoid areas with overlying veins to prevent venous admixture.
2. Prepare the patient's skin with an alcohol or 2% chlorhexidine wipe/swab.
3. Place two or three fingers along the course of the artery both to locate its position and direction, and to stabilize it.
4. Penetrate the skin smoothly holding the needle at 30-60 degree angle with the needle bevel up and pointed proximally. The angle of the butterfly" IV catheter should not exceed 45° for pediatric patients.
5. Re-establish the position and direction of the artery by palpation.
6. Gently and slowly advance the needle or butterfly", aiming directly for the area of maximum pulsation.
7. When the arterial lumen has been entered, less resistance is felt and blood appears in the syringe above the needle hub.
8. Obtain required amount of arterial blood for test(s).
9. If blood is not obtained on first attempt, withdraw the needle to just below the skin surface and advance needle at same angle but at 1 mm to either side of previous attempt.
10. Place the 2x2 gauze over the site of the puncture then withdraw the needle from the artery. Press firmly at the site for at least five minutes, or until the bleeding stops. Apply bandage or pressure dressing.
11. Expel any air bubble in the syringe with air filter cap placed on specimen syringe.
12. Label sample with patient's name, ID number and DOB.

Deliver samples immediately to lab for testing. Samples delivered to the lab >30 minutes after collection may yield erroneous results.

Collect:
Plastic syringe containing 100U of dry heparin. remove needle, expel any bubbles, cap syringe and transport immediately to lab.

Amount to Collect:
3 mL blood

Sample Type:
Heparinized whole blood (Blood gas syringe only)

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood

Unacceptable Conditions:
Samples submitted > 60 min. after collection. Samples with needle attached, containing large bubbles, unlabeled, clotted or of insufficient volume

Units:
mmol/L

Reference Interval:

< 6 months: 0.93 - 1.48 mmol/L
>= 6 months: 1.13 - 1.27 mmol/L

Reference range adopted from the UCSF reference range previously used with the ABL 835 blood gas analyzers and adjusted based on the results of method comparison studies with the ABL 90 Flex Plus.

Critical Values:
< 0.80 mmol/L or > 1.55 mmol/L

Synonyms:

- iCa
- Ca
- Ca++
- Free calcium
- Calcium, free
- Ionized calcium
- ARTBGL
- VENBGL
- CVBGL
- MVBGL
- CAPBG
- MVBGCX
- CIRBGA
- CIRBGV
- NLYTE
- Electrolytes
- Blood gas
- ABG

Stability (from collection to initiation):
10 min.

Reported:
Stat 15 min, Routine 30 min

CPT Codes:
82330

Calcium, total, 24 hour urine

CAU

ORDERING

Available Stat:
No

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 7 days per week from 8:00 AM to midnight only.

Methodology:
Arsenazo III spectrophotometric method

Reported:
Day & evenings 4 hours. Samples received after 2000 hours will be tested the following day.

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by 0.25.

Output varies with the diet. 24 hour specimens are preferable; a urine creatinine should be ordered on a spot specimen in order that any comparison of results in serial specimens can be normalized for creatinine excretion.

This calcium assay with arsenazo-III dye is not affected by concentrations of gadolinium based contrast agents usually achieved in clinical practice (Yan R et al, Clinical Biochemistry 47:648-653, 2014). However, calcium measurements in blood sampled from an intravenous line used for contrast administration could be falsely elevated by the contrast agent gadodiamide. Measurements of ionized calcium are not affected by gadolinium based contrast agents. Effects of gadolinium on urine calcium concentrations measured using this assay are unknown.

Synonyms:

- Ca
- Ca++

COLLECTION

Sample Type:
24 hour urine collection. No preservative preferred but acid wash, 30mL 6N HCl and 10g boric acid containers acceptable.

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container, 30mL 6N HCL, 10g Boric Acid

Amount to Collect:
Entire 24 hour urine output.

Preferred Volume:
2 mL urine

Minimum Volume:
1 mL urine

Remarks:
Refrigerate container during collection period

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 4 days, frozen at -20C 3 weeks

PROCESSING

Test Code:
CAU

Test Group:
Calcium

Performing Lab:
Parnassus & Mission Bay Chemistry

Specimen Preparation:
Mix the 24-hour urine specimen well. Aliquot 1 mL of urine and add 1 drop of 6N HCl to acidify. Mix well.

Preferred Volume:
2 mL urine

Minimum Volume:
1 mL urine

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 4 days, frozen at -20C 3 weeks

RESULT INTERPRETATION

Units:
mg/D

Reference Interval:

Calcium Diet	mg/D
Calcium-free	5-40
Low to average	50-150
Average (800 mg/day)	100-300

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by 0.25.

Output varies with the diet. 24 hour specimens are preferable; a urine creatinine should be ordered on a spot specimen in order that any comparison of results in serial specimens can be normalized for creatinine excretion.

This calcium assay with arsenazo-III dye is not affected by concentrations of gadolinium based contrast agents usually achieved in clinical practice (Yan R et al, Clinical Biochemistry 47:648-653, 2014). However, calcium measurements in blood sampled from an intravenous line used for contrast administration could be falsely elevated by the contrast agent gadodiamide. Measurements of ionized calcium are not affected by gadolinium based contrast agents. Effects of gadolinium on urine calcium concentrations measured using this assay are unknown.

ADMINISTRATIVE

CPT Codes:
82340

COMPLETE VIEW

Available Stat:
No

Test Code:
CAU

Test Group:
Calcium

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 7 days per week from 8:00 AM to midnight only.

Methodology:
Arsenazo III spectrophotometric method

Remarks:
Refrigerate container during collection period

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container, 30mL 6N HCL, 10g Boric Acid

Amount to Collect:
Entire 24 hour urine output.

Sample Type:
24 hour urine collection. No preservative preferred but acid wash, 30mL 6N HCl and 10g boric acid containers acceptable.

Preferred Volume:
2 mL urine

Minimum Volume:
1 mL urine

Specimen Preparation:
Mix the 24-hour urine specimen well. Aliquot 1 mL of urine and add 1 drop of 6N HCl to acidify. Mix well.

Units:
mg/D

Reference Interval:

Calcium Diet	mg/D
Calcium-free	5-40
Low to average	50-150
Average (800 mg/day)	100-300

Synonyms:

- Ca
- Ca++

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 4 days, frozen at -20C 3 weeks

Reported:
Day & evenings 4 hours. Samples received after 2000 hours will be tested the following day.

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by 0.25.

Output varies with the diet. 24 hour specimens are preferable; a urine creatinine should be ordered on a spot specimen in order that any comparison of results in serial specimens can be normalized for creatinine excretion.

This calcium assay with arsenazo-III dye is not affected by concentrations of gadolinium based contrast agents usually achieved in clinical practice (Yan R et al, Clinical Biochemistry 47:648-653, 2014). However, calcium measurements in blood sampled from an intravenous line used for contrast administration could be falsely elevated by the contrast agent gadodiamide. Measurements of ionized calcium are not affected by gadolinium based contrast agents. Effects of gadolinium on urine calcium concentrations measured using this assay are unknown.

CPT Codes:
82340

Calcium, total, Plasma / Serum

CA

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Chemistry: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center (Mon-Fri 0800-1630)

Methodology:
Parnassus, Mission Bay & Mt. Zion Chemistry - Arsenazo III spectrophotometric method

Berkeley Outpatient Center - NM-BAPTA spectrophotometric method

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by 0.25.

The Abbott calcium assay with arsenazo-III dye is not affected by concentrations of gadolinium-based contrast agents usually achieved in clinical practice (Ref: Yan R et al, Clinical Biochemistry 47:648-653, 2014). The Roche calcium assay with NM-BAPTA is not affected by concentrations of gadodiamide (Omniscan) usually achieved in clinical practice but can be affected by concentrations of gadoversetamide (Optimark) usually achieved in clinical practice (Ref: Roche package insert). Calcium measurements in blood sampled from an intravenous line used for contrast administration could be falsely elevated by the contrast agent gadodiamide in the Abbott and Roche assays and an interference from the contrast agent gadoversetamide could be observed in the Roche assay.

Measurements of ionized calcium are not affected by gadolinium-based contrast agents.

Synonyms:

- Ca
- Ca++

COLLECTION

Sample Type:
Plasma or serum

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Parnassus, Mission Bay, Mt. Zion, and Berkeley Outpatient Center
Room temperature 7 days, refrigerated 3 weeks, frozen at -20C 8 months

PROCESSING

Test Code:
CA

Test Group:
Calcium

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Parnassus, Mission Bay, Mt. Zion, and Berkeley Outpatient Center
Room temperature 7 days, refrigerated 3 weeks, frozen at -20C 8 months

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:
Parnassus, Mission Bay & Mt. Zion Chemistry

Age	mg/dL
0 to <1 year	8.5-11
1 to 18 years	9.2-10.5
>18 years	8.4-10.5

Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, Clinical Chemistry September 2012 vol. 58 no. 5 854-868.

UCSF Clinical Labs verified the adult reference range from Vanderbilt University Medical Center (May 2019) by running 20 male and 20 female lab volunteers.

Berkeley Outpatient Center

Age	mg/dL
>= 19 years	8.8-10.4

Adult reference intervals adopted from a study published by N Jassam et al, Ann of Clinical Biochem 2020; 57(5) 373-381. The reference intervals were verified at the Berkeley Outpatient Center by running 20 male and 20 female lab volunteers.

Critical Values:
< 6.5 mg/dL or > 13.5 mg/dL

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by 0.25.

The Abbott calcium assay with arsenazo-III dye is not affected by concentrations of gadolinium-based contrast agents usually achieved in clinical practice (Ref: Yan R et al, Clinical Biochemistry 47:648-653, 2014). The Roche calcium assay with NM-BAPTA is not affected by concentrations of gadodiamide (Omniscan) usually achieved in clinical practice but can be affected by concentrations of gadoversetamide (Optimark) usually achieved in clinical practice (Ref: Roche package insert). Calcium measurements in blood sampled from an intravenous line used for contrast administration could be falsely elevated by the contrast agent gadodiamide in the Abbott and Roche assays and an interference from the contrast agent gadoversetamide could be observed in the Roche assay.

Measurements of ionized calcium are not affected by gadolinium-based contrast agents.

ADMINISTRATIVE

CPT Codes:
82310

LOINC Codes:
17861-6

COMPLETE VIEW

Available Stat:
Yes

Test Code:
CA

Test Group:
Calcium

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Chemistry: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center (Mon-Fri 0800-1630)

Methodology:
Parnassus, Mission Bay & Mt. Zion Chemistry - Arsenazo III spectrophotometric method

Berkeley Outpatient Center - NM-BAPTA spectrophotometric method

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
1 mL blood

Sample Type:
Plasma or serum

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Units:
mg/dL

Reference Interval:
Parnassus, Mission Bay & Mt. Zion Chemistry

Age	mg/dL
0 to <1 year	8.5-11
1 to 18 years	9.2-10.5
>18 years	8.4-10.5

Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, Clinical Chemistry September 2012 vol. 58 no. 5 854-868.

UCSF Clinical Labs verified the adult reference range from Vanderbilt University Medical Center (May 2019) by running 20 male and 20 female lab volunteers.

Berkeley Outpatient Center

Age	mg/dL
>= 19 years	8.8-10.4

Adult reference intervals adopted from a study published by N Jassam et al, Ann of Clinical Biochem 2020; 57(5) 373-381. The reference intervals were verified at the Berkeley Outpatient Center by running 20 male and 20 female lab volunteers.

Critical Values:
< 6.5 mg/dL or > 13.5 mg/dL

Synonyms:

- Ca
- Ca++

Stability (from collection to initiation):
Parnassus, Mission Bay, Mt. Zion, and Berkeley Outpatient Center
Room temperature 7 days, refrigerated 3 weeks, frozen at -20C 8 months

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by 0.25.

The Abbott calcium assay with arsenazo-III dye is not affected by concentrations of gadolinium-based contrast agents usually achieved in clinical practice (Ref: Yan R et al, Clinical Biochemistry 47:648-653, 2014). The Roche calcium assay with NM-BAPTA is not affected by concentrations of gadodiamide (Omniscan) usually achieved in clinical practice but can be affected by concentrations of gadoversetamide (Optimark) usually achieved in clinical practice (Ref: Roche package insert). Calcium measurements in blood sampled from an intravenous line used for contrast administration could be falsely elevated by the contrast agent gadodiamide in the Abbott and Roche assays and an interference from the contrast agent gadoversetamide could be observed in the Roche assay.

Measurements of ionized calcium are not affected by gadolinium-based contrast agents.

CPT Codes:
82310

LOINC Codes:
17861-6

Calcium, total, random urine

CAUR

ORDERING

Available Stat:
No

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available day and evening shift only 7 days a week.

Methodology:
Arsenazo III spectrophotometric method

Reported:
Day & evenings 4 hours. Samples received after 2000 hours will be tested the following day.

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by 0.25.

Output varies with the diet. 24 hour specimens are preferable; a urine creatinine should be ordered on a spot specimen in order that any comparison of results in serial specimens can be normalized for creatinine excretion.

This calcium assay with arsenazo-III dye is not affected by concentrations of gadolinium based contrast agents usually achieved in clinical practice (Yan R et al, Clinical Biochemistry 47:648-653, 2014). However, calcium measurements in blood sampled from an intravenous line used for contrast administration could be falsely elevated by the contrast agent gadodiamide. Measurements of ionized calcium are not affected by gadolinium based contrast agents. Effects of gadolinium on urine calcium concentrations measured using this assay are unknown.

Synonyms:

- Ca
- Ca++

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Preferred Volume:
2 mL urine

Minimum Volume:
1 mL urine

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 4 days, frozen at -20C 3 weeks

PROCESSING

Test Code:
CAUR

Test Group:
Calcium

Performing Lab:
Parnassus & Mission Bay Chemistry

Specimen Preparation:
Aliquot 1 mL and add 1 drop of 6N HCl to acidify.

Preferred Volume:
2 mL urine

Minimum Volume:
1 mL urine

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 4 days, frozen at -20C 3 weeks

RESULT INTERPRETATION

Units:
mg/dL

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by 0.25.

Output varies with the diet. 24 hour specimens are preferable; a urine creatinine should be ordered on a spot specimen in order that any comparison of results in serial specimens can be normalized for creatinine excretion.

This calcium assay with arsenazo-III dye is not affected by concentrations of gadolinium based contrast agents usually achieved in clinical practice (Yan R et al, Clinical Biochemistry 47:648-653, 2014). However, calcium measurements in blood sampled from an intravenous line used for contrast administration could be falsely elevated by the contrast agent gadodiamide. Measurements of ionized calcium are not affected by gadolinium based contrast agents. Effects of gadolinium on urine calcium concentrations measured using this assay are unknown.

ADMINISTRATIVE

CPT Codes:
82340

LOINC Codes:
17862-4

COMPLETE VIEW

Available Stat:
No

Test Code:
CAUR

Test Group:
Calcium

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available day and evening shift only 7 days a week.

Methodology:
Arsenazo III spectrophotometric method

Collect:
Urine cup

Sample Type:
Random urine

Preferred Volume:
2 mL urine

Minimum Volume:
1 mL urine

Specimen Preparation:
Aliquot 1 mL and add 1 drop of 6N HCl to acidify.

Units:
mg/dL

Synonyms:

- Ca
- Ca++

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 4 days, frozen at -20C 3 weeks

Reported:
Day & evenings 4 hours. Samples received after 2000 hours will be tested the following day.

Additional Information:

To convert mg/dL to mmol/L (SI units) multiply by 0.25.

Output varies with the diet. 24 hour specimens are preferable; a urine creatinine should be ordered on a spot specimen in order that any comparison of results in serial specimens can be normalized for creatinine excretion.

This calcium assay with arsenazo-III dye is not affected by concentrations of gadolinium based contrast agents usually achieved in clinical practice (Yan R et al, Clinical Biochemistry 47:648-653, 2014). However, calcium measurements in blood sampled from an intravenous line used for contrast administration could be falsely elevated by the contrast agent gadodiamide. Measurements of ionized calcium are not affected by gadolinium based contrast agents. Effects of gadolinium on urine calcium concentrations measured using this assay are unknown.

CPT Codes:

82340

LOINC Codes:

17862-4

Calculi (Stone) Analysis

CALCLI

ORDERING

Ordering Recommendations:
Determine composition of calculi.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative Reflectance Fourier Transform Infrared Spectroscopy/Quantitative Polarizing Microscopy

Reported:
1-4 days

Synonyms:

- Bile Stone
- Calculus (Stone) Analysis
- Calculus Analysis
- Kidney Stone
- Prostatic Stones
- Renal Calculi
- Renal Stone
- Stone
- Urinary Calculi
- Urinary Stone Analysis
- Urinary Tract Stone

COLLECTION

Collect:
Calculus specimen.

Remarks:
Calculi specimens transported in liquid, received in gel, or contaminated with blood require special handling which will delay analysis. Specimens that are wrapped in tape or embedded in wax will delay or prevent analysis and should not be submitted.

Stability (from collection to initiation):
Ambient: Indefinitely; Refrigerated: Indefitnitely; Frozen: Indefinitely

Storage/Transport Temperature:
Room temperature. Also acceptable: Frozen or refrigerated.

Unacceptable Conditions:
Any collection or shipping container with a needle attached.

PROCESSING

Test Code:
CALCLI

ARUP Test Code:
0099460

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Air dry calculi and transfer to an ARUP standard transport tube. Larger calculi specimens may be transferred to a clean, empty urine cup (150 mL) or similar container.

Unacceptable Conditions:
Any collection or shipping container with a needle attached.

Stability (from collection to initiation):
Ambient: Indefinitely; Refrigerated: Indefitnitely; Frozen: Indefinitely

Storage/Transport Temperature:
Room temperature. Also acceptable: Frozen or refrigerated.

RESULT INTERPRETATION

Reference Interval:
By report

Interpretive Data:
Calculi are the products of physiological processes that yield crystalline compounds in a matrix of biological compounds and blood. Matrix components are not reported. The clinically significant crystalline components identified in calculi specimens are reported. Gross description may not be consistent with the composition determined by FTIR analysis.

ADMINISTRATIVE

CPT Codes:
82365

LOINC:

- 3154-2
- 14618-3
- 9795-6

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Determine composition of calculi.

Test Code:
CALCLI

ARUP Test Code:
0099460

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative Reflectance Fourier Transform Infrared Spectroscopy/Quantitative Polarizing Microscopy

Remarks:
Calculi specimens transported in liquid, received in gel, or contaminated with blood require special handling which will delay analysis. Specimens that are wrapped in tape or embedded in wax will delay or prevent analysis and should not be submitted.

Collect:
Calculus specimen.

Unacceptable Conditions:
Any collection or shipping container with a needle attached.

Specimen Preparation:
Air dry calculi and transfer to an ARUP standard transport tube. Larger calculi specimens may be transferred to a clean, empty urine cup (150 mL) or similar container.

Reference Interval:
By report

Interpretive Data:
Calculi are the products of physiological processes that yield crystalline compounds in a matrix of biological compounds and blood. Matrix components are not reported. The clinically significant crystalline components identified in calculi specimens are reported. Gross description may not be consistent with the composition determined by FTIR analysis.

Synonyms:

- Bile Stone
- Calculus (Stone) Analysis
- Calculus Analysis
- Kidney Stone
- Prostatic Stones
- Renal Calculi
- Renal Stone
- Stone
- Urinary Calculi
- Urinary Stone Analysis
- Urinary Tract Stone

Storage/Transport Temperature:
Room temperature. Also acceptable: Frozen or refrigerated.

Stability (from collection to initiation):
Ambient: Indefinitely; Refrigerated: Indefitnitely; Frozen: Indefinitely

Reported:
1-4 days

CPT Codes:
82365

LOINC:

- 3154-2
- 14618-3
- 9795-6

Notes:
Calculi samples that are transported in liquid or gel and received wet or bloody will be dried for 48-72 hours prior to analysis.

Calculi Risk Assessment, Urine

CRA

ORDERING

Ordering Recommendations:
Use for kidney stone risk assessment and monitoring. Panel includes calcium, chloride, citric acid, creatinine, magnesium, oxalate, pH, phosphorus, potassium, sodium, and uric acid.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Mon-Fri

Methodology:
Quantitative Spectrophotometry/Quantitative Enzymatic Assay/Quantitative Ion-Selective Electrode

Reported:
1-7 days

Synonyms:

- Renal Stone Risk Panel II (Kidney Stone Risk Panel II, Urine)

COLLECTION

Collect:
24-hour urine. Refrigerate during collection.

Remarks:
Record total volume and collection time interval on transport tube and test request form.

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: Unacceptable; Frozen: 2 weeks

Storage/Transport Temperature:
Frozen.

PROCESSING

Test Code:
CRA

ARUP Test Code:
2008708

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Thoroughly mix entire collection (24-hour) in one container. Transport four separate 4 mL aliquots of urine using Calculi Risk/Supersaturation Urine Collection Kit (ARUP supply# 46007). Available online through eSupply using ARUP Connect(TM) or contact Client Services at (800) 522-2787. Do not exceed 4 mL in tubes.
Aliquot according to the following specifications:
1st aliquot (pH 2): Transfer 4 mL urine into a Sulfamic Acid Tube. (Min: 4 mL) Mix well. Freeze immediately.
2nd aliquot (pH 2): Transfer 4 mL urine into a Sulfamic Acid Tube. (Min: 4 mL) Mix well. Freeze immediately.
3rd aliquot (pH 9): Transfer 4 mL urine into a Sodium Carbonate Tube. (Min: 4mL) Mix well. Freeze immediately.
4th aliquot: Transfer 4 mL urine into an Unpreserved Tube. (Min: 4 mL) Freeze immediately.
If collection kit is unavailable, transport four 4 mL unadjusted aliquots of urine.

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: Unacceptable; Frozen: 2 weeks

Storage/Transport Temperature:
Frozen.

RESULT INTERPRETATION

Reference Interval:

Components	Reference Interval
Calcium, Urine - per 24h	
Creatinine, Urine - per 24h	
Magnesium, Urine per 24h	12-199 mg/d
Phosphorus, Urine - per 24h	400-1300 mg/d
Uric Acid, Urine - per 24h	250-750 mg/d
Citric Acid, Urine - per 24h	18 years and older: 320-1240 mg/d
Oxalate, Urine - per 24h	
Sodium, Urine - per 24h	51-286 mmol/d
Potassium, Urine - per 24h	25-125 mmol/d
Chloride, Urine - per 24h	140-250 mmol/d
pH, Urine	5.00-7.50

Calcium, Urine - per 24h:

Diet	Reference Interval (mg/d)
Calcium-free diet	5-40
Low calcium diet (less than 800 mg/d)	50-150
Average calcium diet (about 800 mg/d)	100-250
High calcium diet (greater than 800 mg/d)	> 250

Creatinine, Urine - per 24h:

Age	Male (mg/d)	Female (mg/d)
3-8 years	140-700	140-700
9-12 years	300-1300	300-1300
13-17 years	500-2300	400-1600
18-50 years	1000-2500	700-1600
51-80 years	800-2100	500-1400
81 years and older	600-2000	400-1300

Oxalate, Urine - per 24h:

Age	Male (mg/d)	Female (mg/d)
0-12 years	7-31	7-31
13 years and older	16-49	13-40

Interpretive Data:

Per 24h calculations are provided to aid interpretation for collections with a duration of 24 hours and an average daily urine volume. For specimens with notable deviations in collection time or volume, ratios of analytes to a corresponding urine creatinine concentration may assist in result interpretation.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:

82340; 82436; 82507; 83735; 83945; 83986; 84105; 84133; 84300; 84560

LOINC:

- 2829-0
- 24447-5
- 17862-4
- 2955-3
- 2701-1
- 2161-8
- 2079-2
- 2078-4
- 2756-5
- 3087-4
- 2128-7
- 19153-6
- 6687-8
- 19124-7
- 2700-3
- 2779-7
- 11502-2
- 6874-2
- 2778-9
- 3086-6
- 2828-2
- 2956-1
- 2162-6
- 30211-7

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Use for kidney stone risk assessment and monitoring. Panel includes calcium, chloride, citric acid, creatinine, magnesium, oxalate, pH, phosphorus, potassium, sodium, and uric acid.

Test Code:
CRA

ARUP Test Code:
2008708

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Mon-Fri

Methodology:
Quantitative Spectrophotometry/Quantitative Enzymatic Assay/Quantitative Ion-Selective Electrode

Remarks:
Record total volume and collection time interval on transport tube and test request form.

Collect:
24-hour urine. Refrigerate during collection.

Specimen Preparation:
Thoroughly mix entire collection (24-hour) in one container. Transport four separate 4 mL aliquots of urine using Calculi Risk/Supersaturation Urine Collection Kit (ARUP supply# 46007). Available online through eSupply using ARUP Connect(TM) or contact Client Services at (800) 522-2787. Do not exceed 4 mL in tubes.
Aliquot according to the following specifications:
1st aliquot (pH 2): Transfer 4 mL urine into a Sulfamic Acid Tube. (Min: 4 mL) Mix well. Freeze immediately.
2nd aliquot (pH 2): Transfer 4 mL urine into a Sulfamic Acid Tube. (Min: 4 mL) Mix well. Freeze immediately.
3rd aliquot (pH 9): Transfer 4 mL urine into a Sodium Carbonate Tube. (Min: 4mL) Mix well. Freeze immediately.
4th aliquot: Transfer 4 mL urine into an Unpreserved Tube. (Min: 4 mL) Freeze immediately.
If collection kit is unavailable, transport four 4 mL unadjusted aliquots of urine.

Reference Interval:

Components	Reference Interval
Calcium, Urine - per 24h	

Diet	Reference Interval (mg/d)
Calcium-free diet	5-40
Low calcium diet (less than 800 mg/d)	50-150
Average calcium diet (about 800 mg/d)	100-250
High calcium diet (greater than 800 mg/d)	> 250

Creatinine, Urine - per 24h	

Age	Male (mg/d)	Female (mg/d)
3-8 years	140-700	140-700
9-12 years	300-1300	300-1300
13-17 years	500-2300	400-1600
18-50 years	1000-2500	700-1600
51-80 years	800-2100	500-1400
81 years and older	600-2000	400-1300

Magnesium, Urine per 24h	12-199 mg/d
Phosphorus, Urine - per 24h	400-1300 mg/d
Uric Acid, Urine - per 24h	250-750 mg/d
Citric Acid, Urine - per 24h	18 years and older: 320-1240 mg/d
Oxalate, Urine - per 24h	

Age	Male (mg/d)	Female (mg/d)
0-12 years	7-31	7-31
13 years and older	16-49	13-40

Sodium, Urine - per 24h	51-286 mmol/d
Potassium, Urine - per 24h	25-125 mmol/d
Chloride, Urine - per 24h	140-250 mmol/d
pH, Urine	5.00-7.50

Interpretive Data:

Per 24h calculations are provided to aid interpretation for collections with a duration of 24 hours and an average daily urine volume. For specimens with notable deviations in collection time or volume, ratios of analytes to a corresponding urine creatinine concentration may assist in result interpretation.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Synonyms:

- Renal Stone Risk Panel II (Kidney Stone Risk Panel II, Urine)

Storage/Transport Temperature:

Frozen.

Stability (from collection to initiation):

Ambient: Unacceptable; Refrigerated: Unacceptable; Frozen: 2 weeks

Reported:

1-7 days

CPT Codes:

82340; 82436; 82507; 83735; 83945; 83986; 84105; 84133; 84300; 84560

LOINC:

- 2829-0
- 24447-5
- 17862-4
- 2955-3
- 2701-1
- 2161-8
- 2079-2
- 2078-4
- 2756-5
- 3087-4
- 2128-7
- 19153-6
- 6687-8
- 19124-7
- 2700-3
- 2779-7
- 11502-2
- 6874-2
- 2778-9
- 3086-6
- 2828-2
- 2956-1
- 2162-6
- 30211-7

Notes:

This panel includes the following tests: Calcium, Chloride, Citric Acid, Creatinine, Magnesium, Oxalate, pH, Phosphorus, Potassium, Sodium, and Uric Acid.

Calprotectin, Fecal by Immunoassay

CPRN

ORDERING

Ordering Recommendations:
Aids in differentiation of inflammatory bowel disease (IBD) from irritable bowel syndrome (IBS) and other functional disorders of the gastrointestinal (GI) system. Aids in monitoring IBD and prediction of relapse.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative Chemiluminescent Immunoassay (CLIA)

Reported:
1-4 days

Synonyms:

- Fecal calprotectin
- Cal pro
- Calpro
- Fecal Calprotectin
- IBD
- IBS
- Stool Calprotectin

COLLECTION

Sample Type:
Stool

Collect:
Stool.

Amount to Collect:
5 g stool

Preferred Volume:
5 g stool

Minimum Volume:
1 g stool

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 7 days; Frozen: 30 days

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Specimens in media or preservatives.

PROCESSING

Test Code:
CPRN

ARUP Test Code:
3002859

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transfer 5 g stool to an unpreserved stool transport vial (ARUP Supply #40910). Available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at 800-522-2787. (Min: 1 g)

Preferred Volume:
5 g stool

Minimum Volume:
1 g stool

Unacceptable Conditions:
Specimens in media or preservatives.

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 7 days; Frozen: 30 days

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:

49 µg/g or less	Normal
50-120 µg/g	Borderline elevated, test should be re-evaluated in 4-6 weeks.
121 µg/g	Elevated

Interpretive Data:
Fecal Calprotectin is an indicator of the presence of neutrophils in stool and is not specific for IBD. Other intestinal ailments including GI infections and colorectal cancer can result in elevated concentrations of calprotectin. The diagnosis of IBD cannot be established solely on the basis of a positive calprotectin result. Patients with IBD fluctuate between active and inactive stages of disease. Calprotectin results may also fluctuate.

ADMINISTRATIVE

CPT Codes:
83993

LOINC:

- 38445-3

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Aids in differentiation of inflammatory bowel disease (IBD) from irritable bowel syndrome (IBS) and other functional disorders of the gastrointestinal (GI) system. Aids in monitoring IBD and prediction of relapse.

Test Code:
CPRN

ARUP Test Code:
3002859

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative Chemiluminescent Immunoassay (CLIA)

Collect:
Stool.

Amount to Collect:
5 g stool

Sample Type:
Stool

Preferred Volume:
5 g stool

Minimum Volume:
1 g stool

Unacceptable Conditions:
Specimens in media or preservatives.

Specimen Preparation:
Transfer 5 g stool to an unpreserved stool transport vial (ARUP Supply #40910). Available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at 800-522-2787. (Min: 1 g)

Reference Interval:

49 µg/g or less	Normal
50-120 µg/g	Borderline elevated, test should be re-evaluated in 4-6 weeks.
121 µg/g	Elevated

Interpretive Data:

Fecal Calprotectin is an indicator of the presence of neutrophils in stool and is not specific for IBD. Other intestinal ailments including GI infections and colorectal cancer can result in elevated concentrations of calprotectin. The diagnosis of IBD cannot be established solely on the basis of a positive calprotectin result. Patients with IBD fluctuate between active and inactive stages of disease. Calprotectin results may also fluctuate.

Synonyms:

- Fecal calprotectin
- Cal pro
- Calpro
- Fecal Calprotectin
- IBD
- IBS
- Stool Calprotectin

Storage/Transport Temperature:

Refrigerated.

Stability (from collection to initiation):

Ambient: Unacceptable; Refrigerated: 7 days; Frozen: 30 days

Reported:

1-4 days

CPT Codes:

83993

LOINC:

- 38445-3

Calreticulin, Exon 9 Mutation Analysis

CALR

ORDERING

Available Stat:
No

Performing Lab:
Genomic Services - Molecular Diagnostics

Performed:
Batched assay performed once every 1-2 weeks

Methodology:
PCR/Fragment analysis and Direct Sequencing

Reported:
10-14 days

Additional Information:
Somatic calreticulin (CALR) exon 9 mutations have been reported in 70-84% of patients with essential thrombocythemia (ET) or primary myelofibrosis (PMF), without JAK2 or MPL mutations. The risk of thrombosis in patients with CALR-mutated ET was found to be significantly lower than in those with JAK2-mutated ET. These indel frameshift mutations occur in the C-terminus negatively charged domain of the CALR protein and result in a positively charged domain that exhibits cellular localization outside of the endoplasmic reticulum.

Synonyms:

- CALR

COLLECTION

Sample Type:
Blood and bone marrow aspirates

Collect:
Lavender top

Preferred Volume:
Blood: 3 mL
Bone marrow aspirates: 1 mL

Minimum Volume:
Blood: 1 mL
Bone marrow aspirates: 0.5 mL

Remarks:
Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Stability (from collection to initiation):
Room temperature: 3 days
Refrigerated: 1 week
Frozen at -20C: Unacceptable.

Unacceptable Conditions:
Heparinized sample submitted.

PROCESSING

Test Code:
CALR

Performing Lab:
Genomic Services - Molecular Diagnostics

Specimen Preparation:
Do not centrifuge. Refrigerate sample but do not freeze. Ship room temperature.

Preferred Volume:
Blood: 3 mL
Bone marrow aspirates: 1 mL

Minimum Volume:
Blood: 1 mL
Bone marrow aspirates: 0.5 mL

Unacceptable Conditions:
Heparinized sample submitted.

Stability (from collection to initiation):
Room temperature: 3 days
Refrigerated: 1 week
Frozen at -20C: Unacceptable.

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
Somatic calreticulin (CALR) exon 9 mutations have been reported in 70-84% of patients with essential thrombocythemia (ET) or primary myelofibrosis (PMF), without JAK2 or MPL mutations. The risk of thrombosis in patients with CALR-mutated ET was found to be significantly lower than in those with JAK2-mutated ET. These indel frameshift mutations occur in the C-terminus negatively charged domain of the CALR protein and result in a positively charged domain that exhibits cellular localization outside of the endoplasmic reticulum.

ADMINISTRATIVE

CPT Codes:
81219

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
CALR

Performing Lab:
Genomic Services - Molecular Diagnostics

Performed:
Batched assay performed once every 1-2 weeks

Methodology:
PCR/Fragment analysis and Direct Sequencing

Remarks:
Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Collect:
Lavender top

Sample Type:
Blood and bone marrow aspirates

Preferred Volume:
Blood: 3 mL
Bone marrow aspirates: 1 mL

Minimum Volume:
Blood: 1 mL
Bone marrow aspirates: 0.5 mL

Unacceptable Conditions:
Heparinized sample submitted.

Specimen Preparation:
Do not centrifuge. Refrigerate sample but do not freeze. Ship room temperature.

Reference Interval:
Negative

Synonyms:

- CALR

Stability (from collection to initiation):
Room temperature: 3 days
Refrigerated: 1 week
Frozen at -20C: Unacceptable.

Reported:
10-14 days

Additional Information:

Somatic calreticulin (CALR) exon 9 mutations have been reported in 70-84% of patients with essential thrombocythemia (ET) or primary myelofibrosis (PMF), without JAK2 or MPL mutations. The risk of thrombosis in patients with CALR-mutated ET was found to be significantly lower than in those with JAK2-mutated ET. These indel frameshift mutations occur in the C-terminus negatively charged domain of the CALR protein and result in a positively charged domain that exhibits cellular localization outside of the endoplasmic reticulum.

CPT Codes:

81219

LDT or Modified FDA:

Yes

Cancer Antigen 125

C125

ORDERING

Available Stat:
No

Performing Lab:
China Basin Chemistry

Performed:
Monday - Friday (day shift)

Methodology:
Chemiluminescent Microparticle Immunoassay (Abbott Architect i2000)

Reported:
1-4 days

Additional Information:
Method changed from Siemens Centaur XP platform to Abbott Architect i2000 platform on X3/19/2018. The Abbott Architect method reads approximately 30% higher than the Centaur method. No changes were made to the reference range.

Results for this test are generated by immunoassay using the Abbott Architect i2000 platform. Results for this test determined by assay methods from other manufacturers may not be comparable.

The ARCHITECT CA 125 II Calibrators are manufactured volumetrically and are referenced to this standard prepared by Fujirebio Diagnostics, Inc. There is no internationally recognized CA 125 standard available at this time.

Synonyms:

- CA125
- C125

COLLECTION

Sample Type:
Serum

Collect:
Gold or Red top preferred. Dark green or light green acceptable.

Amount to Collect:
1 mL blood

Preferred Volume:
0.3 mL serum

Minimum Volume:
0.1 mL serum

Stability (from collection to initiation):
Refrigerated (2-8°C): 7 days
Frozen (-20°C or colder): 12 months

If testing will be delayed more than 24 hours, remove serum from clot, red blood cells or serum separator gel.

Avoid multiple freeze-thaw cycles.

Storage/Transport Temperature:
-20°C or colder

PROCESSING

Test Code:
C125

Performing Lab:
China Basin Chemistry

Specimen Preparation:
Aliquot and refrigerate serum at 2-8°C.

Preferred Volume:
0.3 mL serum

Minimum Volume:
0.1 mL serum

Stability (from collection to initiation):
Refrigerated (2-8°C): 7 days
Frozen (-20°C or colder): 12 months

If testing will be delayed more than 24 hours, remove serum from clot, red blood cells or serum separator gel.

Avoid multiple freeze-thaw cycles.

Storage/Transport Temperature:
-20°C or colder

RESULT INTERPRETATION

Units:
U/mL

Reference Interval:
Adult Female Reference Range

Age	Reference Range (U/mL)
>= 18 years	< 36

Reference range adopted from Abbott (vendor) based on in-house verification study of 20 normal female normal volunteers (>18 years old) in the UCSF Laboratory.

Pediatric Female Reference Range

Age	Reference Range (U/mL)
0 - < 4 months	2 - 22
4 months - < 5 years	6-39
5 years - < 11 years	5 - 30
11 years - < 18 years	8-33

Pediatric reference ranges adopted from CALIPER Pediatric Reference Interval study performed on random samples using the Abbott Architect i2000 assay.

Reference range is not established for males.

Additional Information:
Method changed from Siemens Centaur XP platform to Abbott Architect i2000 platform on X3/19/2018. The Abbott Architect method reads approximately 30% higher than the Centaur method. No changes were made to the reference range.

Results for this test are generated by immunoassay using the Abbott Architect i2000 platform. Results for this test determined by assay methods from other manufacturers may not be comparable.

The ARCHITECT CA 125 II Calibrators are manufactured volumetrically and are referenced to this standard prepared by Fujirebio Diagnostics, Inc. There is no internationally recognized CA 125 standard available at this time.

ADMINISTRATIVE

CPT Codes:
86304

LOINC Codes:
10334-1

COMPLETE VIEW

Available Stat:
No

Test Code:
C125

Performing Lab:
China Basin Chemistry

Performed:
Monday - Friday (day shift)

Methodology:
Chemiluminescent Microparticle Immunoassay (Abbott Architect i2000)

Collect:
Gold or Red top preferred. Dark green or light green acceptable.

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.3 mL serum

Minimum Volume:
0.1 mL serum

Specimen Preparation:
Aliquot and refrigerate serum at 2-8°C.

Units:
U/mL

Reference Interval:
Adult Female Reference Range

Age	Reference Range (U/mL)
>= 18 years	< 36

Reference range adopted from Abbott (vendor) based on in-house verification study of 20 normal female normal volunteers (>18 years old) in the UCSF Laboratory.

Pediatric Female Reference Range

Age	Reference Range (U/mL)
0 - < 4 months	2 - 22
4 months - < 5 years	6-39
5 years - < 11 years	5 - 30
11 years - < 18 years	8-33

Pediatric reference ranges adopted from CALIPER Pediatric Reference Interval study performed on random samples using the Abbott Architect i2000 assay.

Reference range is not established for males.

Synonyms:

- CA125
- C125

Storage/Transport Temperature:
-20°C or colder

Stability (from collection to initiation):
Refrigerated (2-8°C): 7 days
Frozen (-20°C or colder): 12 months

If testing will be delayed more than 24 hours, remove serum from clot, red blood cells or serum separator gel.

Avoid multiple freeze-thaw cycles.

Reported:
1-4 days

Additional Information:
Method changed from Siemens Centaur XP platform to Abbott Architect i2000 platform on X3/19/2018. The Abbott Architect method reads approximately 30% higher than the Centaur method. No changes were made to the reference range.

Results for this test are generated by immunoassay using the Abbott Architect i2000 platform. Results for this test determined by assay methods from other manufacturers may not be comparable.

The ARCHITECT CA 125 II Calibrators are manufactured volumetrically and are referenced to this standard prepared by Fujirebio Diagnostics, Inc. There is no internationally recognized CA 125 standard available at this time.

CPT Codes:
86304

LOINC Codes:
10334-1

Cancer Antigen 15-3

CA15

ORDERING

Available Stat:
No

Performing Lab:
China Basin Chemistry

Performed:
Monday (day shift)

Methodology:
Chemiluminescent Microparticle Immunoassay (Abbott Architect i2000)

Reported:
1-8 days

Additional Information:
Method changed from Siemens Centaur XP platform to Abbott Architect i2000 platform on 3/26/18. The Abbott Architect method reads approximately 16% higher than the Centaur method. No significant changes to the reference range.

Results for this test are generated by immunoassay using the Abbott Architect i2000 platform. Results for this test determined by assay methods from other manufacturers may not be comparable.

The calibrators for the ARCHITECT CA 15-3 assay are manufacturered volumetrically and are referenced to this standard prepared by Fujirebio Diagnostics, Inc. There is no internationally recognized CA 15-3 standard available at this time.

CA 15-3 is a serum marker commonly elevated in patients with breast cancer. It is a useful prognostic marker with higher levels being associated with advanced disease stage, and it can be used to monitor patients during and following treatment. CA 15-3 is neither a sensitive nor specific marker for early disease and should not be used for screening purposes. A small proportion of apparently healthy individuals (up to 5% of the general population) have an elevated CA 15-3 level as well as some patients with liver disease and other types of carcinoma. Clin Chem 52:345-351 2006.

Not covered by Medicare for screening purposes (Medicare Bulletin 98-7, December, 1998)

Synonyms:

- CA15-3

COLLECTION

Sample Type:
Serum

Collect:
Gold or red top preferred.
Dark green or light green acceptable.

Amount to Collect:
1 mL blood

Preferred Volume:
0.3 mL serum

Minimum Volume:
0.15 mL serum

PROCESSING

Test Code:
CA15

Performing Lab:
China Basin Chemistry

Specimen Preparation:
Freeze serum at -20°C.

Preferred Volume:
0.3 mL serum

Minimum Volume:
0.15 mL serum

RESULT INTERPRETATION

Units:
U/mL

Reference Interval:
Adult Reference Range

Age	Reference Range (U/mL)
>= 18 years	< 32

Adult reference range adopted from Abbott (vendor) based on in-house verification studies of 25 (18 years old) normal volunteers in the UCSF Laboratory.

Pediatric Reference Range

Age	Reference Range (U/mL)
0 - < 1 week	3 - 24
1 week - < 1 year	5 - 33
1 year - < 18 years	4 - 21

Pediatric reference ranges adopted from CALIPER Pediatric Reference Interval study performed on random samples using the Abbott Architect i2000 assay.

Additional Information:
Method changed from Siemens Centaur XP platform to Abbott Architect i2000 platform on 3/26/18. The Abbott Architect method reads approximately 16% higher than the Centaur method. No significant changes to the reference range.

Results for this test are generated by immunoassay using the Abbott Architect i2000 platform. Results for this test determined by assay methods from other manufacturers may not be comparable.

The calibrators for the ARCHITECT CA 15-3 assay are manufacturered volumetrically and are referenced to this standard prepared by Fujirebio Diagnostics, Inc. There is no internationally recognized CA 15-3 standard available at this time.

CA 15-3 is a serum marker commonly elevated in patients with breast cancer. It is a useful prognostic marker with higher levels being associated with advanced disease stage, and it can be used to monitor patients during and following treatment. CA 15-3 is neither a sensitive nor specific marker for early disease and should not be used for screening purposes. A small proportion of apparently healthy individuals (up to 5% of the general population) have an elevated CA 15-3 level as well as some patients with liver disease and other types of carcinoma. Clin Chem 52:345-351 2006.

Not covered by Medicare for screening purposes (Medicare Bulletin 98-7, December, 1998)

ADMINISTRATIVE

CPT Codes:
86300

LOINC Codes:
6875-9

COMPLETE VIEW

Available Stat:
No

Test Code:
CA15

Performing Lab:
China Basin Chemistry

Performed:
Monday (day shift)

Methodology:
Chemiluminescent Microparticle Immunoassay (Abbott Architect i2000)

Collect:
Gold or red top preferred.
Dark green or light green acceptable.

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.3 mL serum

Minimum Volume:
0.15 mL serum

Specimen Preparation:
Freeze serum at -20°C.

Units:
U/mL

Reference Interval:
Adult Reference Range

Age	Reference Range (U/mL)
>= 18 years	< 32

Adult reference range adopted from Abbott (vendor) based on in-house verification studies of 25 (18 years old) normal volunteers in the UCSF Laboratory.

Pediatric Reference Range

Age	Reference Range (U/mL)
0 - < 1 week	3 - 24
1 week - < 1 year	5 - 33
1 year - < 18 years	4 - 21

Pediatric reference ranges adopted from CALIPER Pediatric Reference Interval study performed on random samples using the Abbott Architect i2000 assay.

Synonyms:

- CA15-3

Reported:
1-8 days

Additional Information:
Method changed from Siemens Centaur XP platform to Abbott Architect i2000 platform on 3/26/18. The Abbott Architect method reads approximately 16% higher than the Centaur method. No significant changes to the reference range.

Results for this test are generated by immunoassay using the Abbott Architect i2000 platform. Results for this test determined by assay methods from other manufacturers may not be comparable.

The calibrators for the ARCHITECT CA 15-3 assay are manufacturered volumetrically and are referenced to this standard prepared by Fujirebio Diagnostics, Inc. There is no internationally recognized CA 15-3 standard available at this time.

CA 15-3 is a serum marker commonly elevated in patients with breast cancer. It is a useful prognostic marker with higher levels being associated with advanced disease stage, and it can be used to monitor patients during and following treatment. CA 15-3 is neither a sensitive nor specific marker for early disease and should not be used for screening purposes. A small proportion of apparently healthy individuals (up to 5% of the general population) have an elevated CA 15-3 level as well as some patients with liver disease and other types of carcinoma. Clin Chem 52:345-351 2006.

Not covered by Medicare for screening purposes (Medicare Bulletin 98-7, December, 1998)

CPT Codes:
86300

LOINC Codes:
6875-9

Cancer Antigen 19-9

CA19

ORDERING

Available Stat:
No

Performing Lab:
China Basin Chemistry

Performed:
Tuesday, Friday (day shift)

Methodology:
Chemiluminescent Microparticle Immunoassay (Abbott Architect i2000)

Reported:
1-8 days

Additional Information:
Method changed from Siemens Centaur XP platform to Abbott Architect i2000 platform on 4/24/18. The Abbott Architect method reads approximately 49% lower for results < 83 U/mL and runs 110% higher for results in the upper range (>83 U/mL) than the Centaur method. No significant changes were made to the reference range.

Results for this test are generated by immunoassay using the Abbott Architect i2000 platform. Results for this test determined by assay methods from other manufacturers may not be comparable.

The ARCHITECT CA 19-9XR Calibrators are manufactured volumetrically and are referenced to this standard prepared by Fujirebio Diagnostics, Inc. There is no internationally recognized CA 19-9 standard available at this time.

CA 19-9 is a tumor-associated carbohydrate antigen that has been found to be elevated in the serum of some patients with cancers of the pancreas, stomach, colon, bile duct, ovaries, endometrium, or lung. The serum levels of this antigen can also be elevated in benign conditions such as pancreatitis, cholangitis, and endometriosis. Although the levels of CA19-9 tend to be higher in malignant versus benign conditions, there is a substantial overlap zone, and interlaboratory variability in the measurement of CA 19-9 appears to be substantial (CV ~30% in a recent CAP survey). In one recent study of patients with pancreatic cancer versus benign pancreatic disease, the sensitivity of an elevated CA 19-9 measurement was 76%, with a specificity of 87%.

Since the CA 19-9 antigen is closely related to the Lewis blood group antigens, patients who lack Lewis antigen (approximately 7% of the general public) cannot produce CA 19-9. Additionally, the secretor status of the patient will have an influence on CA 19-9 levels.

Internal Medicine 38: 840-841 (1999). Am. J. Gastroenterology 94:1941-1946 (1999). Clin Chem 45:54-61 (1999).

Synonyms:

- CA19-9
- CA19

COLLECTION

Sample Type:
Serum

Collect:
Gold or red top preferred.
Dark green or light green acceptable.

Amount to Collect:
1 mL blood

Preferred Volume:
0.3 mL serum

Minimum Volume:
0.15 mL serum

Stability (from collection to initiation):
Refrigerated (2-8°C): 7 days
Frozen (-20°C or colder): 12 months

If testing will be delayed more than 24 hours, remove serum from clot, red blood cells or serum separator gel.

Avoid multiple freeze-thaw cycles.

PROCESSING

Test Code:
CA19

Performing Lab:
China Basin Chemistry

Specimen Preparation:
Freeze serum at -20°C.

Preferred Volume:
0.3 mL serum

Minimum Volume:
0.15 mL serum

Stability (from collection to initiation):
Refrigerated (2-8°C): 7 days
Frozen (-20°C or colder): 12 months

If testing will be delayed more than 24 hours, remove serum from clot, red blood cells or serum separator gel.

Avoid multiple freeze-thaw cycles.

RESULT INTERPRETATION

Units:
U/mL

Reference Interval:
Adult Reference Range

Age	Reference Range (U/mL)
>= 18 years	< 38

Adult reference range adopted from Abbott (vendor) based on in-house verification studies of 24 (18 years old) normal volunteers in the UCSF Laboratory.

Pediatric Reference Range

Age	Reference Range (U/mL)
0 - < 1 year	< 64
1 year - < 18 years	< 41

Pediatric reference ranges adopted from CALIPER Pediatric Reference Interval study performed on random samples using the Abbott Architect i2000 assay.

Additional Information:
Method changed from Siemens Centaur XP platform to Abbott Architect i2000 platform on 4/24/18. The Abbott Architect method reads approximately 49% lower for results < 83 U/mL and runs 110% higher for results in the upper range (>83 U/mL) than the Centaur method. No significant changes were made to the reference range.

Results for this test are generated by immunoassay using the Abbott Architect i2000 platform. Results for this test determined by assay methods from other manufacturers may not be comparable.

The ARCHITECT CA 19-9XR Calibrators are manufactured volumetrically and are referenced to this standard prepared by Fujirebio Diagnostics, Inc. There is no internationally recognized CA 19-9 standard available at this time.

CA 19-9 is a tumor-associated carbohydrate antigen that has been found to be elevated in the serum of some patients with cancers of the pancreas, stomach, colon, bile duct, ovaries, endometrium, or lung. The serum levels of this antigen can also be elevated in benign conditions such as pancreatitis, cholangitis, and endometriosis. Although the levels of CA19-9 tend to be higher in malignant versus benign conditions, there is a substantial overlap zone, and interlaboratory variability in the measurement of CA 19-9 appears to be substantial (CV ~30% in a recent CAP survey). In one recent study of patients with pancreatic cancer versus benign pancreatic disease, the sensitivity of an elevated CA 19-9 measurement was 76%, with a specificity of 87%.

Since the CA 19-9 antigen is closely related to the Lewis blood group antigens, patients who lack Lewis antigen (approximately 7% of the general public) cannot produce CA 19-9. Additionally, the secretor status of the patient will have an influence on CA 19-9 levels.

Internal Medicine 38: 840-841 (1999). Am. J. Gastroenterology 94:1941-1946 (1999). Clin Chem 45:54-61 (1999).

ADMINISTRATIVE

CPT Codes:
86301

LOINC Codes:
24108-3

COMPLETE VIEW

Available Stat:
No

Test Code:
CA19

Performing Lab:
China Basin Chemistry

Performed:
Tuesday, Friday (day shift)

Methodology:
Chemiluminescent Microparticle Immunoassay (Abbott Architect i2000)

Collect:
Gold or red top preferred.
Dark green or light green acceptable.

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.3 mL serum

Minimum Volume:
0.15 mL serum

Specimen Preparation:
Freeze serum at -20°C.

Units:
U/mL

Reference Interval:
Adult Reference Range

Age	Reference Range (U/mL)
>= 18 years	< 38

Adult reference range adopted from Abbott (vendor) based on in-house verification studies of 24 (18 years old) normal volunteers in the UCSF Laboratory.

Pediatric Reference Range

Age	Reference Range (U/mL)
0 - < 1 year	< 64
1 year - < 18 years	< 41

Pediatric reference ranges adopted from CALIPER Pediatric Reference Interval study performed on random samples using the Abbott Architect i2000 assay.

Synonyms:

- CA19-9
- CA19

Stability (from collection to initiation):
Refrigerated (2-8°C): 7 days
Frozen (-20°C or colder): 12 months

If testing will be delayed more than 24 hours, remove serum from clot, red blood cells or serum separator gel.

Avoid multiple freeze-thaw cycles.

Reported:
1-8 days

Additional Information:

Method changed from Siemens Centaur XP platform to Abbott Architect i2000 platform on 4/24/18. The Abbott Architect method reads approximately 49% lower for results < 83 U/mL and runs 110% higher for results in the upper range (>83 U/mL) than the Centaur method. No significant changes were made to the reference range.

Results for this test are generated by immunoassay using the Abbott Architect i2000 platform. Results for this test determined by assay methods from other manufacturers may not be comparable.

The ARCHITECT CA 19-9XR Calibrators are manufactured volumetrically and are referenced to this standard prepared by Fujirebio Diagnostics, Inc. There is no internationally recognized CA 19-9 standard available at this time.

CA 19-9 is a tumor-associated carbohydrate antigen that has been found to be elevated in the serum of some patients with cancers of the pancreas, stomach, colon, bile duct, ovaries, endometrium, or lung. The serum levels of this antigen can also be elevated in benign conditions such as pancreatitis, cholangitis, and endometriosis. Although the levels of CA19-9 tend to be higher in malignant versus benign conditions, there is a substantial overlap zone, and interlaboratory variability in the measurement of CA 19-9 appears to be substantial (CV ~30% in a recent CAP survey). In one recent study of patients with pancreatic cancer versus benign pancreatic disease, the sensitivity of an elevated CA 19-9 measurement was 76%, with a specificity of 87%.

Since the CA 19-9 antigen is closely related to the Lewis blood group antigens, patients who lack Lewis antigen (approximately 7% of the general public) cannot produce CA 19-9. Additionally, the secretor status of the patient will have an influence on CA 19-9 levels.

Internal Medicine 38: 840-841 (1999). Am. J. Gastroenterology 94:1941-1946 (1999). Clin Chem 45:54-61 (1999).

CPT Codes:

86301

LOINC Codes:

24108-3

Cancer Antigen 27.29

C2729

ORDERING

Ordering Recommendations:
Monitor therapy and identify disease recurrence in individuals with a metastatic breast cancer diagnosis. Do not use for diagnosis or screening of breast cancer.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative Chemiluminescent Immunoassay

Reported:
Within 24 hours

Synonyms:

- Breast Cancer Tumor Markers
- Breast Carcinoma-Associated Antigen (CA 27.29), Serum
- CA 27-29
- CA 27.29
- MAM 6
- Milk Mucin

COLLECTION

Sample Type:
Serum

Collect:
Plain red or serum separator tube or EDTA plasma.

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
After separation from cells: Ambient: 8 hours; Refrigerated: 7 days; Frozen: 3 months

Storage/Transport Temperature:
Frozen.

PROCESSING

Test Code:
C2729

ARUP Test Code:
0080392

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Allow specimen to clot completely at room temperature. Separate serum from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min: 0.5 mL)

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
After separation from cells: Ambient: 8 hours; Refrigerated: 7 days; Frozen: 3 months

Storage/Transport Temperature:
Frozen.

RESULT INTERPRETATION

Units:
U/mL

Reference Interval:
Effective August 16, 2021
Less than or equal to 39 U/mL

Interpretive Data:
Test Information: The CA 27.29 assay is intended for use in monitoring: 1) disease progression and/or response to therapy in patients with metastatic disease, and 2) disease recurrence in patients treated previously for stages II or III breast carcinoma who are clinically free of the disease. Serial testing in patients who are clinically free of disease should be used in conjunction with other clinical methods for early detection of cancer recurrence.

Limitations: Patients with confirmed breast carcinoma frequently have CA 27.29 assay values in the same range as healthy individuals. Elevations may also be observed in patients with non-malignant disease. Results of this test must always be interpreted in the context of morphologic and other relevant data and should not be used alone for a diagnosis of malignancy.

Methodology: Siemens Atellica IM BR 27.29 (BR) chemiluminescent immunoassay was used. Results obtained with different assay methods or kits cannot be used interchangeably.

ADMINISTRATIVE

CPT Codes:
86300

LOINC:

- 17842-6

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Monitor therapy and identify disease recurrence in individuals with a metastatic breast cancer diagnosis. Do not use for diagnosis or screening of breast cancer.

Test Code:
C2729

ARUP Test Code:
0080392

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative Chemiluminescent Immunoassay

Collect:
Plain red or serum separator tube or EDTA plasma.

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Specimen Preparation:
Allow specimen to clot completely at room temperature. Separate serum from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min: 0.5 mL)

Units:
U/mL

Reference Interval:
Effective August 16, 2021
Less than or equal to 39 U/mL

Interpretive Data:
Test Information: The CA 27.29 assay is intended for use in monitoring: 1) disease progression and/or response to therapy in patients with metastatic disease, and 2) disease recurrence in patients treated previously for stages II or III breast carcinoma who are clinically free of the disease. Serial testing in patients who are clinically free of disease should be used in conjunction with other clinical methods for early detection of cancer recurrence.

Limitations: Patients with confirmed breast carcinoma frequently have CA 27.29 assay values in the same range as healthy individuals. Elevations may also be observed in patients with non-malignant disease. Results of this test must always be interpreted in the context of morphologic and other relevant data and should not be used alone for a diagnosis of malignancy.

Methodology: Siemens Atellica IM BR 27.29 (BR) chemiluminescent immunoassay was used. Results obtained with different assay methods or kits cannot be used interchangeably.

Synonyms:

- Breast Cancer Tumor Markers
- Breast Carcinoma-Associated Antigen (CA 27.29), Serum
- CA 27-29
- CA 27.29
- MAM 6
- Milk Mucin

Storage/Transport Temperature:
Frozen.

Stability (from collection to initiation):
After separation from cells: Ambient: 8 hours; Refrigerated: 7 days; Frozen: 3 months

Reported:
Within 24 hours

CPT Codes:
86300

LOINC:

- 17842-6

Candida auris by PCR

AURIS

ORDERING

Available Stat:
No

Performing Lab:
UCSF Clinical Microbiology Lab at China Basin

Methodology:
Real time PCR, qualitative

Reported:
1-2 days

Synonyms:

- Candida auris PCR
- auris surveillance

COLLECTION

Sample Type:
Skin swab from Axilla and Groin

Collect:
ESwab - regular flocked swab with liquid Amies medium (PMM # 45258)

Collection tip sheet

Stability (from collection to initiation):
5 days at room temp, 7 days refrigerated

Storage/Transport Temperature:
room temp or refrigerated (2-8 deg C)

PROCESSING

Performing Lab:
UCSF Clinical Microbiology Lab at China Basin

Stability (from collection to initiation):
5 days at room temp, 7 days refrigerated

Storage/Transport Temperature:
room temp or refrigerated (2-8 deg C)

RESULT INTERPRETATION

Reference Interval:
Not Detected

Interpretive Data:
This test was developed and its performance characteristics determined by the UCSF Clinical Laboratories. It has not been cleared or approved by the U. S. Food and Drug Administration.

ADMINISTRATIVE

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Performing Lab:
UCSF Clinical Microbiology Lab at China Basin

Methodology:
Real time PCR, qualitative

Collect:
ESwab - regular flocked swab with liquid Amies medium (PMM # 45258)

Collection tip sheet

Sample Type:
Skin swab from Axilla and Groin

Reference Interval:
Not Detected

Interpretive Data:
This test was developed and its performance characteristics determined by the UCSF Clinical Laboratories. It has not been cleared or approved by the U. S. Food and Drug Administration.

Synonyms:

- Candida auris PCR
- auris surveillance

Storage/Transport Temperature:
room temp or refrigerated (2-8 deg C)

Stability (from collection to initiation):
5 days at room temp, 7 days refrigerated

Reported:
1-2 days

LDT or Modified FDA:
Yes

Carbamazepine

CZP

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days a week

Methodology:
Homogeneous particle-enhanced turbidimetric inhibition immunoassay (PETINIA)

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
See the lab manual's "A Guide on Drug Level Monitoring" (in the Chemistry Guide) for additional information.

Synonyms:

- Tegretol

COLLECTION

Sample Type:
Serum or plasma

Collect:
Gold top or Light Green top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Remarks:
Time to steady state: 2-5 days.Indicate time of draw on requisition.

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 2 days, frozen at -20C 1 week

PROCESSING

Test Code:
CZP

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 2 days, frozen at -20C 1 week

RESULT INTERPRETATION

Units:
mg/L

Reference Interval:
Therapeutic: 4-12 mg/L

Source: Carbamazepine: Drug information copyright 1978-2012, Lexicomp, Inc. Accessed at UpToDate www.uptodate.com May 2019.

Critical Values:
> 15 mg/L

Additional Information:
See the lab manual's "A Guide on Drug Level Monitoring" (in the Chemistry Guide) for additional information.

ADMINISTRATIVE

CPT Codes:
80156

LOINC Codes:
3432-2

COMPLETE VIEW

Available Stat:
Yes

Test Code:
CZP

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days a week

Methodology:
Homogeneous particle-enhanced turbidimetric inhibition immunoassay (PETINIA)

Remarks:
Time to steady state: 2-5 days.Indicate time of draw on requisition.

Collect:
Gold top or Light Green top

Amount to Collect:
1 mL blood

Sample Type:
Serum or plasma

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Units:
mg/L

Reference Interval:
Therapeutic: 4-12 mg/L

Source: Carbamazepine: Drug information copyright 1978-2012, Lexicomp, Inc. Accessed at UpToDate www.uptodate.com May 2019.

Critical Values:
> 15 mg/L

Synonyms:

- Tegretol

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 2 days, frozen at -20C 1 week

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
See the lab manual's "A Guide on Drug Level Monitoring" (in the Chemistry Guide) for additional information.

CPT Codes:
80156

LOINC Codes:
3432-2

Carbapenemase Surveillance

P112

ORDERING

Ordering Recommendations:
Test is ordered at the request of Hospital Epidemiology and Infection Prevention to guide in infection control investigations.

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Daily

Methodology:
Culture, PCR

Reported:
2-3 days

Reflex Testing:
PCR will be performed on any carbapenem resistant organisms isolated in culture.

Synonyms:

- Carbapenemase
- KPC
- OXA48
- NDM
- VIM
- IMP-1
- CP-CRE
- CRE

COLLECTION

Sample Type:
Rectal swab or stool in Copan FecalSwab transport, Stool in Cary Blair, E-swabs, other sample types may be accepted as requested by HEIP/ID service.

Collect:
Copan FecalSwab

Stability (from collection to initiation):
1 week

Storage/Transport Temperature:
Room Temperature

PROCESSING

Test Code:
P112

Performing Lab:
Microbiology

Specimen Preparation:
FecalSwab should be plated to Blood and MacConkey agar with Meropenem disk placed in the 2nd and 3rd quadrants.

Stability (from collection to initiation):
1 week

Storage/Transport Temperature:
Room Temperature

RESULT INTERPRETATION

Reference Interval:
No carbapenem resistant organisms isolated

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Test is ordered at the request of Hospital Epidemiology and Infection Prevention to guide in infection control investigations.

Test Code:
P112

Performing Lab:
Microbiology

Performed:
Daily

Methodology:
Culture, PCR

Collect:
Copan FecalSwab

Sample Type:
Rectal swab or stool in Copan FecalSwab transport, Stool in Cary Blair, E-swabs, other sample types may be accepted as requested by HEIP/ID service.

Specimen Preparation:
FecalSwab should be plated to Blood and MacConkey agar with Meropenem disk placed in the 2nd and 3rd quadrants.

Reference Interval:
No carbapenem resistant organisms isolated

Synonyms:

- Carbapenemase
- KPC
- OXA48
- NDM
- VIM
- IMP-1
- CP-CRE
- CRE

Storage/Transport Temperature:
Room Temperature

Stability (from collection to initiation):
1 week

Reported:
2-3 days

Reflex Testing:
PCR will be performed on any carbapenem resistant organisms isolated in culture.

Carbohydrate deficient transferrin, for Alcohol Abuse

CDTA

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
Affinity chromatography, Mass Spectroscopy

Synonyms:

- Transferrin electrophoresis
- glycosylation
- Transferrin isoforms

COLLECTION

Sample Type:
Serum

Collect:
Gold top or Red top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.1 mL serum

Rejection Criteria:
Thawed, room temperature or refrigerated sample received.

PROCESSING

Test Code:
CDTA

Test Group:
Transferrin

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Separate and freeze serum at -20C. Transport frozen. Order Mayo test # 82425 for CDT on Adults.

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.1 mL serum

Rejection Criteria:
Thawed, room temperature or refrigerated sample received.

RESULT INTERPRETATION

Units:
Ratio

Reference Interval:
0.00-0.10

ADMINISTRATIVE

CPT Codes:
82373-90

COMPLETE VIEW

Available Stat:
No

Test Code:
CDTA

Test Group:
Transferrin

Performing Lab:
Mayo

Sendout:
Yes

Methodology:
Affinity chromatography, Mass Spectroscopy

Collect:
Gold top or Red top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.1 mL serum

Rejection Criteria:
Thawed, room temperature or refrigerated sample received.

Specimen Preparation:
Separate and freeze serum at -20C. Transport frozen. Order Mayo test # 82425 for CDT on Adults.

Units:
Ratio

Reference Interval:
0.00-0.10

Synonyms:

- Transferrin electrophoresis
- glycosylation
- Transferrin isoforms

CPT Codes:
82373-90

Carbohydrate deficient transferrin, for Metabolic errors

CDT

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
Affinity chromatography ESI-MS

Reported:
Performed Monday, Wednesday, Friday. Turnaround 4-8 days

Synonyms:

- Transferrin electrophoresis
- glycosylation: Transferrin isoforms

COLLECTION

Sample Type:
Serum

Collect:
Red top, Gold top

Amount to Collect:
1.0 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Stability (from collection to initiation):
Frozen at -20C indefinite.

Rejection Criteria:
Thawed, room temperature or refrigerated sample received.

PROCESSING

Test Code:
CDT

Test Group:
Transferrin

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Separate and freeze serum at -20C. Transport frozen. Order Mayo test # 82414. Include patient age and reason for referral testing, if provided.

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Rejection Criteria:
Thawed, room temperature or refrigerated sample received.

Stability (from collection to initiation):
Frozen at -20C indefinite.

RESULT INTERPRETATION

Units:
Ratio

Reference Interval:

Congenital disorders of glycosylation:

Mono-oligosaccharide/Di-oligosaccharide: <= 0.10
A-oligosaccharide/Di-oligosaccharide: <= 0.05

ADMINISTRATIVE

CPT Codes:
82373-90

LOINC Codes:
13999-8

COMPLETE VIEW

Available Stat:
No

Test Code:
CDT

Test Group:
Transferrin

Performing Lab:
Mayo

Sendout:
Yes

Methodology:
Affinity chromatography ESI-MS

Collect:
Red top, Gold top

Amount to Collect:
1.0 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Rejection Criteria:
Thawed, room temperature or refrigerated sample received.

Specimen Preparation:
Separate and freeze serum at -20C. Transport frozen. Order Mayo test # 82414. Include patient age and reason for referral testing, if provided.

Units:
Ratio

Reference Interval:

Congenital disorders of glycosylation:

Mono-oligosaccharide/Di-oligosaccharide: <= 0.10
A-oligosaccharide/Di-oligosaccharide: <= 0.05

Synonyms:

- Transferrin electrophoresis
- glycosylation: Transferrin isoforms

Stability (from collection to initiation):
Frozen at -20C indefinite.

Reported:
Performed Monday, Wednesday, Friday. Turnaround 4-8 days

CPT Codes:
82373-90

LOINC Codes:
13999-8

Carbon Dioxide, Total, Plasma / Serum

CO2AN

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Chemistry: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center (Mon-Fri 0800-1630)

Methodology:
Parnassus, Mission Bay & Mt. Zion Chemistry: PEP Carboxylase on Abbott Architect

Berkeley Outpatient Center: PEP Carboxylase on Roche cobas c311

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
Hypertriglyceridemia will tend to decrease the CO2 results in both the Abbott and Roche assays. For every 1000 mg/dL increase in triglycerides, there is an approximate 10% decrease in CO2.

Abbott ref: Wiencek et al, Journal of Applied Laboratory Medicine, 2017, 02(01): 123-127.
Roche ref: Brock et al, Clinical Pathology and Research Journal, 2019, 3(1) (DOI: 10.23880/cprj-16000115).

If an interference in this total CO2 assay is suspected, the sample can be checked for a calculated bicarbonate level using the blood gas analyzers. Normally, the calculated bicarbonate reads close to the total CO2 concentration.

The anion gap is calculated from the serum Sodium, Chloride and Total CO2 values using the equation:

Na - (CL + CO2)

The calculation is automatic whenever **all three** of the electrolytes are ordered together. It is not a separately orderable test. For further information, please see the anion gap lab manual page.

Synonyms:

- CO2
- Anion gap
- Bicarbonate

COLLECTION

Sample Type:
Plasma or serum

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Keep tube tightly capped for storage. A consequent decrease in the CO2 value of up to 6 mEq/L can occur in the course of an hour once the specimen has been exposed to ambient air.

Parnassus, Mission Bay & Mt. Zion Chemistry
Room temperature 8 hours, refrigerated 3 days, frozen at -20C 2 weeks

Berkeley Outpatient Center
Room temperature 1 day, refrigerated 7 days

PROCESSING

Test Code:
CO2AN

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Keep tube tightly capped for storage. A consequent decrease in the CO2 value of up to 6 mEq/L can occur in the course of an hour once the specimen has been exposed to ambient air.

Parnassus, Mission Bay & Mt. Zion Chemistry
Room temperature 8 hours, refrigerated 3 days, frozen at -20C 2 weeks

Berkeley Outpatient Center
Room temperature 1 day, refrigerated 7 days

RESULT INTERPRETATION

Units:
mmol/L

Reference Interval:
Parnassus, Mission Bay & Mt. Zion Chemistry

Age	mmol/L
0 to 14 days	15-20
15 days to 4 year	15-24
5 to 14 years	17-26
15 to 18 years	17-28
>18 years	22-29

Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, https://caliper.research.sickkids.ca/#/

UCSF Clinical Lab verified the adult reference ranges stated in the Abbott Carbon Dioxide package insert (March 2017) by running 20 male and 20 female lab volunteers.

Berkeley Outpatient Center

Age	mmol/L
>= 19 years	22-29

UCSF Clinical Labs at Berkeley Outpatient Center verified the adult reference range (>= 19 years) stated in the Roche CO2-L package insert by running 20 male and 20 female lab volunteers.

Critical Values:
< 15 mmol/L or > 40 mmol/L

Additional Information:
Hypertriglyceridemia will tend to decrease the CO2 results in both the Abbott and Roche assays. For every 1000 mg/dL increase in triglycerides, there is an approximate 10% decrease in CO2.

Abbott ref: Wiencek et al, Journal of Applied Laboratory Medicine, 2017, 02(01): 123-127.
Roche ref: Brock et al, Clinical Pathology and Research Journal, 2019, 3(1) (DOI: 10.23880/cprj-16000115).

If an interference in this total CO2 assay is suspected, the sample can be checked for a calculated bicarbonate level using the blood gas analyzers. Normally, the calculated bicarbonate reads close to the total CO2 concentration.

The anion gap is calculated from the serum Sodium, Chloride and Total CO2 values using the equation:

Na - (CL + CO2)

The calculation is automatic whenever **all three** of the electrolytes are ordered together. It is not a separately orderable test. For further information, please see the anion gap lab manual page.

ADMINISTRATIVE

CPT Codes:
82374

LOINC Codes:
2028-9

COMPLETE VIEW

Available Stat:
Yes

Test Code:
CO2AN

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Chemistry: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center (Mon-Fri 0800-1630)

Methodology:
Parnassus, Mission Bay & Mt. Zion Chemistry: PEP Carboxylase on Abbott Architect

Berkeley Outpatient Center: PEP Carboxylase on Roche cobas c311

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
1 mL blood

Sample Type:
Plasma or serum

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Units:
mmol/L

Reference Interval:
Parnassus, Mission Bay & Mt. Zion Chemistry

Age	mmol/L
0 to 14 days	15-20
15 days to 4 year	15-24
5 to 14 years	17-26
15 to 18 years	17-28
>18 years	22-29

Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, https://caliper.research.sickkids.ca/#/

UCSF Clinical Lab verified the adult reference ranges stated in the Abbott Carbon Dioxide package insert (March 2017) by running 20 male and 20 female lab volunteers.

Berkeley Outpatient Center

Age	mmol/L
>= 19 years	22-29

UCSF Clinical Labs at Berkeley Outpatient Center verified the adult reference range (>= 19 years) stated in the Roche CO2-L package insert by running 20 male and 20 female lab volunteers.

Critical Values:
< 15 mmol/L or > 40 mmol/L

Synonyms:

- CO2
- Anion gap
- Bicarbonate

Stability (from collection to initiation):

Keep tube tightly capped for storage. A consequent decrease in the CO2 value of up to 6 mEq/L can occur in the course of an hour once the specimen has been exposed to ambient air.

Parnassus, Mission Bay & Mt. Zion Chemistry
Room temperature 8 hours, refrigerated 3 days, frozen at -20C 2 weeks

Berkeley Outpatient Center
Room temperature 1 day, refrigerated 7 days

Reported:

STAT 1 hour, Routine 4 hours

Additional Information:

Hypertriglyceridemia will tend to decrease the CO2 results in both the Abbott and Roche assays. For every 1000 mg/dL increase in triglycerides, there is an approximate 10% decrease in CO2.

Abbott ref: Wiencek et al, Journal of Applied Laboratory Medicine, 2017, 02(01): 123-127.
Roche ref: Brock et al, Clinical Pathology and Research Journal, 2019, 3(1) (DOI: 10.23880/cprj-16000115).

If an interference in this total CO2 assay is suspected, the sample can be checked for a calculated bicarbonate level using the blood gas analyzers. Normally, the calculated bicarbonate reads close to the total CO2 concentration.

The anion gap is calculated from the serum Sodium, Chloride and Total CO2 values using the equation:

Na - (CL + CO2)

The calculation is automatic whenever **all three** of the electrolytes are ordered together. It is not a separately orderable test. For further information, please see the anion gap lab manual page.

CPT Codes:

82374

LOINC Codes:

2028-9

Carcinoembryonic Antigen

CEA

ORDERING

Available Stat:
No

Performing Lab:
China Basin Chemistry

Performed:
Monday, Wednesday, Friday (day shift)

Methodology:
Chemiluminescent Microparticle Immunoassay (Abbott Architect i2000)

Reported:
1-4 days

Additional Information:
Method changed from Siemens Centaur XP platform to Abbott Architect i2000 platform on 3/19/2018. The Abbott Architect method reads approximately 63% higher than the Centaur method. Please note that the reference ranges have changed.

Results for this test are generated by immunoassay using the Abbott Architect i2000 platform. Results for this test determined by assay methods from other manufacturers may not be comparable.

The Architect CEA internal standards are traceable to the World Health Organization (WHO) 1st International Standard 73/601 for CEA at each concentration level. Architect CEA Calibrators are manufactured by dilution and tested against these internal reference standards.

Synonyms:

- CEA

COLLECTION

Sample Type:
Serum

Collect:
Gold or Red Top

Amount to Collect:
1 mL blood

Preferred Volume:
0.3 mL serum

Minimum Volume:
0.1 mL serum

Stability (from collection to initiation):
Room Temperature: 24 hours
Refrigerated (2-8°C): 7 days

If testing will be delayed more than 7 days, remove serum from clot, red blood cells, or serum separator gel and store at -20°C or colder.

Avoid more than 5 freeze/thaw cycles.

Storage/Transport Temperature:
-20°C or colder

PROCESSING

Test Code:
CEA

Test Group:
Carcinoembryonic Antigen

Performing Lab:
China Basin Chemistry

Specimen Preparation:
Aliquot and freeze at -20C.

Preferred Volume:
0.3 mL serum

Minimum Volume:
0.1 mL serum

Stability (from collection to initiation):
Room Temperature: 24 hours
Refrigerated (2-8°C): 7 days

If testing will be delayed more than 7 days, remove serum from clot, red blood cells, or serum separator gel and store at -20°C or colder.

Avoid more than 5 freeze/thaw cycles.

Storage/Transport Temperature:
-20°C or colder

RESULT INTERPRETATION

Units:
µg/L

Reference Interval:
Adult Reference Range:

Age	Reference Range (ug/L)
>= 18 years	< 5.1

Reference range adopted from vendor (Abbott) based on in-house verification study of 24 lab (>18 years old) normal volunteers in the UCSF Laboratory.

Pediatric Reference Range:

Age	Reference Range (ug/L)
0 - < 7 days	8.1 - 62.0
7 days - < 2 years	< 4.8
2 years - < 18 years	< 2.7

Pediatric reference ranges adopted from CALIPER Pediatric Reference Interval study performed on random samples using the Abbott Architect i2000 assay.

Additional Information:
Method changed from Siemens Centaur XP platform to Abbott Architect i2000 platform on 3/19/2018. The Abbott Architect method reads approximately 63% higher than the Centaur method. Please note that the reference ranges have changed.

Results for this test are generated by immunoassay using the Abbott Architect i2000 platform. Results for this test determined by assay methods from other manufacturers may not be comparable.

The Architect CEA internal standards are traceable to the World Health Organization (WHO) 1st International Standard 73/601 for CEA at each concentration level. Architect CEA Calibrators are manufactured by dilution and tested against these internal reference standards.

ADMINISTRATIVE

CPT Codes:
82378

LOINC Codes:
2039-6

COMPLETE VIEW

Available Stat:
No

Test Code:
CEA

Test Group:
Carcinoembryonic Antigen

Performing Lab:
China Basin Chemistry

Performed:
Monday, Wednesday, Friday (day shift)

Methodology:
Chemiluminescent Microparticle Immunoassay (Abbott Architect i2000)

Collect:
Gold or Red Top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.3 mL serum

Minimum Volume:
0.1 mL serum

Specimen Preparation:
Aliquot and freeze at -20C.

Units:
µg/L

Reference Interval:
Adult Reference Range:

Age	Reference Range (ug/L)
>= 18 years	< 5.1

Reference range adopted from vendor (Abbott) based on in-house verification study of 24 lab (>18 years old) normal volunteers in the UCSF Laboratory.

Pediatric Reference Range:

Age	Reference Range (ug/L)
0 - < 7 days	8.1 - 62.0
7 days - < 2 years	< 4.8
2 years - < 18 years	< 2.7

Pediatric reference ranges adopted from CALIPER Pediatric Reference Interval study performed on random samples using the Abbott Architect i2000 assay.

Synonyms:

- CEA

Storage/Transport Temperature:
-20°C or colder

Stability (from collection to initiation):
Room Temperature: 24 hours
Refrigerated (2-8°C): 7 days

If testing will be delayed more than 7 days, remove serum from clot, red blood cells, or serum separator gel and store at -20°C or colder.

Avoid more than 5 freeze/thaw cycles.

Reported:
1-4 days

Additional Information:
Method changed from Siemens Centaur XP platform to Abbott Architect i2000 platform on 3/19/2018. The Abbott Architect method reads approximately 63% higher than the Centaur method. Please note that the reference ranges have changed.

Results for this test are generated by immunoassay using the Abbott Architect i2000 platform. Results for this test determined by assay methods from other manufacturers may not be comparable.

The Architect CEA internal standards are traceable to the World Health Organization (WHO) 1st International Standard 73/601 for CEA at each concentration level. Architect CEA Calibrators are manufactured by dilution and tested against these internal reference standards.

CPT Codes:
82378

LOINC Codes:
2039-6

Carcinoembryonic Antigen, Fluid

CEAFL

ORDERING

Ordering Recommendations:
Refer to aruplab.com/bodyfluids for clinical indications and interpretive information.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative Electrochemiluminescent Immunoassay

Reported:
Within 24 hours

Synonyms:

- Carcinoembryonic Antigen, fluid
- CEA

COLLECTION

Sample Type:
Body fluid in sterile container

Collect:
CSF, Pancreatic, Pericardial, Peritoneal/Ascites or Pleural fluid.

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Remarks:
Specimen source must be provided.

Stability (from collection to initiation):
Ambient: 8 hours; Refrigerated: 1 week; Frozen: 6 months

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Specimen types other than those listed. Specimens too viscous to be aspirated by instrument.

PROCESSING

Test Code:
CEAFL

ARUP Test Code:
0020742

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Centrifuge to remove cellular material. Transfer 1 mL body fluid to an ARUP Standard Transport Tube. (Min: 0.5 mL)

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Unacceptable Conditions:
Specimen types other than those listed. Specimens too viscous to be aspirated by instrument.

Stability (from collection to initiation):
Ambient: 8 hours; Refrigerated: 1 week; Frozen: 6 months

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Interpretive Data:

The Roche CEA electrochemiluminescent immunoassay is used. Results obtained with different assay methods or kits cannot be used interchangeably. The CEA assay value, regardless of level, should not be interpreted as evidence for the presence or absence of malignant disease.

For information on body fluid reference ranges and/or interpretive guidance visit http://aruplab.com/bodyfluids/

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:

82378

LOINC:

- 31208-2
- 12515-3

COMPLETE VIEW

Available Stat:

No

Ordering Recommendations:

Refer to aruplab.com/bodyfluids for clinical indications and interpretive information.

Test Code:

CEAFL

ARUP Test Code:

0020742

Performing Lab:

ARUP

Sendout:

Yes

Performed:

Sun-Sat

Methodology:

Quantitative Electrochemiluminescent Immunoassay

Remarks:

Specimen source must be provided.

Collect:

CSF, Pancreatic, Pericardial, Peritoneal/Ascites or Pleural fluid.

Sample Type:

Body fluid in sterile container

Preferred Volume:

1 mL

Minimum Volume:

0.5 mL

Unacceptable Conditions:

Specimen types other than those listed. Specimens too viscous to be aspirated by instrument.

Specimen Preparation:

Centrifuge to remove cellular material. Transfer 1 mL body fluid to an ARUP Standard Transport Tube. (Min: 0.5 mL)

Interpretive Data:

The Roche CEA electrochemiluminescent immunoassay is used. Results obtained with different assay methods or kits cannot be used interchangeably. The CEA assay value, regardless of level, should not be interpreted as evidence for the presence or absence of malignant disease.

For information on body fluid reference ranges and/or interpretive guidance visit http://aruplab.com/bodyfluids/

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Synonyms:

- Carcinoembryonic Antigen, fluid
- CEA

Storage/Transport Temperature:
Refrigerated.

Stability (from collection to initiation):
Ambient: 8 hours; Refrigerated: 1 week; Frozen: 6 months

Reported:
Within 24 hours

CPT Codes:
82378

LOINC:

- 31208-2
- 12515-3

Carnitine, plasma/serum

CARN

ORDERING

Available Stat:
No

Performing Lab:
Lucille Packard Children's Hospital

Methodology:
Stable isotope dilution LC-MS/MS

Reported:
Run 2x per week, turnaround 7-9 days

Additional Information:
Free and Total carnitine levels are measured. Results include a calculation of the ratio of acylcarnitine (esterified fraction) to free carnitine. The test is used to identify patients with either primary carnitine deficiency (i.e. carnitine uptake defect) or secondary carnitine deficiency arising from inherited defects in fatty acid or organic acid metabolism.

COLLECTION

Sample Type:
Plasma or serum

Collect:
Dark Green top, gold top or red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL plasma/serum

Minimum Volume:
0.5 mL plasma/serum

PROCESSING

Test Code:
CARN

Test Group:
Carnitine

Sendout:
Yes

Performing Lab:
Lucille Packard Children's Hospital

Specimen Preparation:
Separate plasma/serum and freeze at -20C. Ship frozen via Medical Courier to Lucille Packard Children's Hospital.

Preferred Volume:
1 mL plasma/serum

Minimum Volume:
0.5 mL plasma/serum

RESULT INTERPRETATION

Units:
µmol/L

Reference Interval:
Total carnitine: 20-71 µmole/L
Free carnitine: 18-69 µmole/L
Acyl/Free ratio: 0.1-0.4

Additional Information:
Free and Total carnitine levels are measured. Results include a calculation of the ratio of acylcarnitine (esterified fraction) to free carnitine. The test is used to identify patients with either primary carnitine deficiency (i.e. carnitine uptake defect) or secondary carnitine deficiency arising from inherited defects in fatty acid or organic acid metabolism.

ADMINISTRATIVE

CPT Codes:
82379-90

LOINC Codes:
14288-5

COMPLETE VIEW

Available Stat:
No

Test Code:
CARN

Test Group:
Carnitine

Performing Lab:
Lucille Packard Children's Hospital

Sendout:
Yes

Methodology:
Stable isotope dilution LC-MS/MS

Collect:
Dark Green top, gold top or red top

Amount to Collect:
2 mL blood

Sample Type:
Plasma or serum

Preferred Volume:
1 mL plasma/serum

Minimum Volume:
0.5 mL plasma/serum

Specimen Preparation:
Separate plasma/serum and freeze at -20C. Ship frozen via Medical Courier to Lucille Packard Children's Hospital.

Units:
µmol/L

Reference Interval:
Total carnitine: 20-71 µmole/L
Free carnitine: 18-69 µmole/L
Acyl/Free ratio: 0.1-0.4

Reported:
Run 2x per week, turnaround 7-9 days

Additional Information:
Free and Total carnitine levels are measured. Results include a calculation of the ratio of acylcarnitine (esterified fraction) to free carnitine. The test is used to identify patients with either primary carnitine deficiency (i.e. carnitine uptake defect) or secondary carnitine deficiency arising from inherited defects in fatty acid or organic acid metabolism.

CPT Codes:
82379-90

LOINC Codes:
14288-5

Carnitine, urine

UCARN

ORDERING

Available Stat:
No

Performing Lab:
Lucille-Packard Children's Hospital

Methodology:
Stable Isotope Dilution, Tandem Mass Spec

Reported:
5-7 days

Synonyms:

- Free and total carnitine

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
4 mL

Preferred Volume:
4 mL

Minimum Volume:
2 mL

PROCESSING

Test Code:
UCARN

Test Group:
Carnitine

Sendout:
Yes

Performing Lab:
Lucille-Packard Children's Hospital

Specimen Preparation:
Freeze at -20C and ship on dry ice to China Basin sendouts.

Preferred Volume:
4 mL

Minimum Volume:
2 mL

RESULT INTERPRETATION

Units:
Free Carnitine, Urine: nmol/mg Creatinine
Total Carnitine, Urine: nmol/mg Creatinine
Acyl/Free Carnitine Ratio

Reference Interval:
Free Carnitine, Urine: 10-270 nmol/mg Cr
Total Carnitine, Urine: 75-500 nmol/mg Cr
Acyl/Free Carnitine Ratio, Urine: 0.5-5.0 ratio

ADMINISTRATIVE

CPT Codes:
82379-90

LOINC Codes:
2047-9

COMPLETE VIEW

Available Stat:
No

Test Code:
UCARN

Test Group:
Carnitine

Performing Lab:
Lucille-Packard Children's Hospital

Sendout:
Yes

Methodology:
Stable Isotope Dilution, Tandem Mass Spec

Collect:
Urine cup

Amount to Collect:
4 mL

Sample Type:
Random urine

Preferred Volume:
4 mL

Minimum Volume:
2 mL

Specimen Preparation:
Freeze at -20C and ship on dry ice to China Basin sendouts.

Units:
Free Carnitine, Urine: nmol/mg Creatinine
Total Carnitine, Urine: nmol/mg Creatinine
Acyl/Free Carnitine Ratio

Reference Interval:
Free Carnitine, Urine: 10-270 nmol/mg Cr
Total Carnitine, Urine: 75-500 nmol/mg Cr
Acyl/Free Carnitine Ratio, Urine: 0.5-5.0 ratio

Synonyms:

- Free and total carnitine

Reported:
5-7 days

CPT Codes:
82379-90

LOINC Codes:
2047-9

Carotene

CARO

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
HPLC

Reported:
Test run Monday-Friday. Turnaround time: 2-6 days.

Additional Information:
This test was developed and its performance characteristics determined by Quest Nichols Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration.

COLLECTION

Patient Preparation:
An 8 hour fast before specimen collection is preferred

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Remarks:
Wrap tube in Aluminum foil to protect from light.

PROCESSING

Test Code:
CARO

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Separate serum as soon as possible after clotting. Wrap tube in Aluminum foil to protect from light and refrigerate. Order Quest # 20537P.

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

RESULT INTERPRETATION

Units:
µg/dL (mcg/dL)

Reference Interval:
PEDIATRIC
9 mo-6 years: < 48 µg/dL
7-17 years: < 95 µg/dL

>= 18 YEARS OLD
Males: 4-51 µg/dL
Females: 6-77 µg/dL

Additional Information:
This test was developed and its performance characteristics determined by Quest Nichols Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration.

ADMINISTRATIVE

CPT Codes:
82380-90

LOINC Codes:
2053-7

COMPLETE VIEW

Available Stat:
No

Test Code:
CARO

Performing Lab:
Quest

Sendout:
Yes

Methodology:
HPLC

Patient Preparation:
An 8 hour fast before specimen collection is preferred

Remarks:
Wrap tube in Aluminum foil to protect from light.

Collect:
Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Specimen Preparation:
Separate serum as soon as possible after clotting. Wrap tube in Aluminum foil to protect from light and refrigerate. Order Quest # 20537P.

Units:
µg/dL (mcg/dL)

Reference Interval:
PEDIATRIC
9 mo-6 years: < 48 µg/dL
7-17 years: < 95 µg/dL

>= 18 YEARS OLD
Males: 4-51 µg/dL
Females: 6-77 µg/dL

Reported:
Test run Monday-Friday. Turnaround time: 2-6 days.

Additional Information:
This test was developed and its performance characteristics determined by Quest Nichols Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration.

CPT Codes:
82380-90

LOINC Codes:
2053-7

Cashew Nut Component

CCOMP

ORDERING

Available Stat:
No

Performing Lab:
Quest

Performed:
Tuesday-Saturday

Methodology:
Immunoassay

Reported:
1-3 days

Additional Information:
This test tests for the Cashew Nut component (rAna o 3).

Synonyms:

- Cashew Nut Component IgE
- rAna o 3 Ab, IgE

COLLECTION

Sample Type:
Serum

Collect:
Gold or Red-top

Amount to Collect:
1.0 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Room Temperature and Refrigerated: 14 days
Frozen: 30 days

Storage/Transport Temperature:
Frozen

PROCESSING

Test Code:
CCOMP

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot and freeze. Send to China Basin frozen. Order Quest test code 94470.

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Room Temperature and Refrigerated: 14 days
Frozen: 30 days

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Units:
kU/L

Reference Interval:
< 0.10

Additional Information:
This test tests for the Cashew Nut component (rAna o 3).

ADMINISTRATIVE

CPT Codes:
86008

LOINC Codes:
82539-8

COMPLETE VIEW

Available Stat:
No

Test Code:
CCOMP

Performing Lab:
Quest

Sendout:
Yes

Performed:
Tuesday-Saturday

Methodology:
Immunoassay

Collect:
Gold or Red-top

Amount to Collect:
1.0 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Specimen Preparation:
Aliquot and freeze. Send to China Basin frozen. Order Quest test code 94470.

Units:
kU/L

Reference Interval:
< 0.10

Synonyms:

- Cashew Nut Component IgE
- rAna o 3 Ab, IgE

Storage/Transport Temperature:
Frozen

Stability (from collection to initiation):
Room Temperature and Refrigerated: 14 days
Frozen: 30 days

Reported:
1-3 days

Additional Information:
This test tests for the Cashew Nut component (rAna o 3).

CPT Codes:
86008

LOINC Codes:
82539-8

Catecholamines, Fractionated, 24-hour Urine

UCAF

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
HPLC w/ECD

Reported:
Test run Monday-Friday. Turnaround time: 2-5 days.

Additional Information:
To convert µg/d to nmol/d (SI units), multiply Epinephrine value by 5.46, Norepinephrine by 5.91, Dopamine by 6.53.

A creatinine level is measured on the same sample of urine; if total creatinine excretion is not within normal limits for patient age and sex and the patient has normal renal function, the urine collection is probably incomplete and the results invalid.

Synonyms:

- Adrenaline
- catechols
- dopamine
- noradrenaline
- norepinephrine
- epinephrine

COLLECTION

Patient Preparation:
It is preferable for the patient to be off medications for three days prior to collection. However, common antihypertensives (diuretics, ACE inhibitors, calcium channel blockers, alpha and beta blockers) cause minimal or no interference. Patients should avoid alcohol, coffee, tea, tobacco or strenuous exercise during the period of collection.

Sample Type:
24 hour urine collection

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container, 30mL 6N HCL, 10g Boric Acid

Amount to Collect:
Entire 24 hour urine output

Preferred Volume:
10 mL urine

Minimum Volume:
5 mL urine

PROCESSING

Test Code:
UCAF

Test Group:
Catecholamines

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Mix thuroughly and acidify aliquot as needed. pH of the collected urine should be between 2-5. Record total urine volume on request. Refrigerate aliquot promptly. Order Quest # 4168N.

Preferred Volume:
10 mL urine

Minimum Volume:
5 mL urine

RESULT INTERPRETATION

Units:
µg/24 hours (mcg/24 hours)

Reference Interval:
Epinephrine

3-8 years	1-7 µg/d
9-12 years	<= 8 µg/d
13-17 years	<= 11 µg/d
> 17 years	2-24 µg/d

Norepinephrine

3-8 years	5-41 µg/d
9-12 years	5-50 µg/d
13-17 years	12-88 µg/d
> 17 years	15-100 µg/d

Dopamine

3-8 years	80-378 µg/d
9-12 years	51-474 µg/d
13-17 years	51-645 µg/d
> 17 years	52-480 µg/d

Total Nor + Ep

3-8 years	9-51 µg/d
9-12 years	9-71 µg/d
13-17 years	13-90 µg/d
> 17 years	26-121 µg/d

Additional Information:
To convert µg/d to nmol/d (SI units), multiply Epinephrine value by 5.46, Norepinephrine by 5.91, Dopamine by 6.53.

A creatinine level is measured on the same sample of urine; if total creatinine excretion is not within normal limits for patient age and sex and the patient has normal renal function, the urine collection is probably incomplete and the results invalid.

ADMINISTRATIVE

CPT Codes:
82384-90

LOINC Codes:
27055-3

COMPLETE VIEW

Available Stat:
No

Test Code:
UCAF

Test Group:
Catecholamines

Performing Lab:
Quest

Sendout:
Yes

Methodology:
HPLC w/ECD

Patient Preparation:

It is preferable for the patient to be off medications for three days prior to collection. However, common antihypertensives (diuretics, ACE inhibitors, calcium channel blockers, alpha and beta blockers) cause minimal or no interference. Patients should avoid alcohol, coffee, tea, tobacco or strenuous exercise during the period of collection.

Collect:

Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container, 30mL 6N HCL, 10g Boric Acid

Amount to Collect:

Entire 24 hour urine output

Sample Type:

24 hour urine collection

Preferred Volume:

10 mL urine

Minimum Volume:

5 mL urine

Specimen Preparation:

Mix thuroughly and acidify aliquot as needed. pH of the collected urine should be between 2-5. Record total urine volume on request. Refrigerate aliquot promptly. Order Quest # 4168N.

Units:

µg/24 hours (mcg/24 hours)

Reference Interval:

Epinephrine

3-8 years	1-7 µg/d
9-12 years	<= 8 µg/d
13-17 years	<= 11 µg/d
> 17 years	2-24 µg/d

Norepinephrine

3-8 years	5-41 µg/d
9-12 years	5-50 µg/d
13-17 years	12-88 µg/d
> 17 years	15-100 µg/d

Dopamine

3-8 years	80-378 µg/d
9-12 years	51-474 µg/d
13-17 years	51-645 µg/d
> 17 years	52-480 µg/d

Total Nor + Ep

3-8 years	9-51 µg/d
9-12 years	9-71 µg/d
13-17 years	13-90 µg/d
> 17 years	26-121 µg/d

Synonyms:

- Adrenaline
- catechols
- dopamine
- noradrenaline
- norepinephrine
- epinephrine

Reported:

Test run Monday-Friday. Turnaround time: 2-5 days.

Additional Information:

To convert µg/d to nmol/d (SI units), multiply Epinephrine value by 5.46, Norepinephrine by 5.91, Dopamine by 6.53.

A creatinine level is measured on the same sample of urine; if total creatinine excretion is not within normal limits for patient age and sex and the patient has normal renal function, the urine collection is probably incomplete and the results invalid.

CPT Codes:

82384-90

LOINC Codes:

27055-3

Catecholamines, Fractionated, random urine

UCAFR

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
HPLC

Reported:
Set up 5x per week. Turnaround 5-7 days.

Synonyms:

- Adrenaline
- catechols
- dopamine
- noradrenaline
- norepinephrine
- epinephrine

COLLECTION

Patient Preparation:
Preferrable for patient to be off all medications for 3 days prior to collection. Common antihypertensives, diuretics, ACE inhibitors, calcium channel blockers, Alpha- and Beta- blockers cause minimal or no interference. Patient should avoid alcohol, coffee, tea, tobacco and strenuous exercise prior to collection.

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
10 mL urine

Preferred Volume:
10 mL urine

Minimum Volume:
5 mL urine

Stability (from collection to initiation):
Room temperature 1 week (if acidified), refrigerated 1 month (if acidified), frozen at -20C 7 weeks

PROCESSING

Test Code:
UCAFR

Test Group:
Catecholamines

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Add 6N HCl to sample to maintain pH < 3 and freeze 10 mL aliquot. If 6N HCl is not available, freeze sample asap. order Quest test # 5244

Preferred Volume:
10 mL urine

Minimum Volume:
5 mL urine

Stability (from collection to initiation):
Room temperature 1 week (if acidified), refrigerated 1 month (if acidified), frozen at -20C 7 weeks

RESULT INTERPRETATION

Units:
µg/g Creatinine (mcg/g Creatinine)

ADMINISTRATIVE

CPT Codes:
82384-90, 82570-90

LOINC Codes:
2057-8

COMPLETE VIEW

Available Stat:
No

Test Code:
UCAFR

Test Group:
Catecholamines

Performing Lab:
Quest

Sendout:
Yes

Methodology:
HPLC

Patient Preparation:
Preferrable for patient to be off all medications for 3 days prior to collection. Common antihypertensives, diuretics, ACE inhibitors, calcium channel blockers, Alpha- and Beta- blockers cause minimal or no interference. Patient should avoid alcohol, coffee, tea, tobacco and strenuous exercise prior to collection.

Collect:
Urine cup

Amount to Collect:
10 mL urine

Sample Type:
Random urine

Preferred Volume:
10 mL urine

Minimum Volume:
5 mL urine

Specimen Preparation:
Add 6N HCl to sample to maintain pH < 3 and freeze 10 mL aliquot. If 6N HCl is not available, freeze sample asap. order Quest test # 5244

Units:
µg/g Creatinine (mcg/g Creatinine)

Synonyms:

- Adrenaline
- catechols
- dopamine
- noradrenaline
- norepinephrine
- epinephrine

Stability (from collection to initiation):
Room temperature 1 week (if acidified), refrigerated 1 month (if acidified), frozen at -20C 7 weeks

Reported:
Set up 5x per week. Turnaround 5-7 days.

CPT Codes:
82384-90, 82570-90

LOINC Codes:
2057-8

CD138 positive cell selection for FISH

CD138, BCD138

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Monday - Friday day shift

Methodology:
Fluorescent in situ hybridization

Reported:
1-2 weeks

Synonyms:

- Multiple myeloma
- CD138 cell isolation
- CD138
- BCD138

COLLECTION

Sample Type:
Heparinized whole blood or bone marrow aspirate. Bone marrow core biopsy

Collect:
Dark green top

Amount to Collect:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow biopsy: 1 cm

Stability (from collection to initiation):
2 days

Unacceptable Conditions:
Frozen, leaking or unlabeled tubes

PROCESSING

Test Code:
BCD138: Blood
CD138: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Specimen Preparation:
Do not centrifuge or freeze sample. Send to Cytogenetics at China basin for processing.

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow biopsy: 1 cm

Unacceptable Conditions:
Frozen, leaking or unlabeled tubes

Stability (from collection to initiation):
2 days

ADMINISTRATIVE

CPT Codes:
88299

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BCD138: Blood
CD138: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Monday - Friday day shift

Methodology:
Fluorescent in situ hybridization

Collect:
Dark green top

Amount to Collect:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Sample Type:
Heparinized whole blood or bone marrow aspirate. Bone marrow core biopsy

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow biopsy: 1 cm

Unacceptable Conditions:
Frozen, leaking or unlabeled tubes

Specimen Preparation:
Do not centrifuge or freeze sample. Send to Cytogenetics at China basin for processing.

Synonyms:

- Multiple myeloma
- CD138 cell isolation
- CD138
- BCD138

Stability (from collection to initiation):
2 days

Reported:
1-2 weeks

CPT Codes:
88299

LDT or Modified FDA:
Yes

CD3 dose estimation

CD3D

ORDERING

Available Stat:
No

Performing Lab:
BMT Lab

Performed:
Test performed Monday-Friday at 0800, 1300, and 1500 hours.

Methodology:
Flow cytometry

Reported:
3 hours after receipt of sample or next day.

Additional Information:
This test can be ordered with the CD34 assay and performed on the same sample.

Immunology will report the percentage of the total WBCs which are CD3 cells. From the leukopheresis volume, the total leukocyte count in the pheresis, and the patient's weight, the Blood Bank will calculate the absolute number of CD3-positive cells (T lymphocytes) per kg to be infused into the patient.

This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

Synonyms:

- CD3% for dosing calculations
- flow cytometry

COLLECTION

Sample Type:
EDTA whole blood or Apheresis sample

Collect:
Lavender top for blood or Yellow top (ACD) for pheresis sample.

Amount to Collect:
1 mL blood

Preferred Volume:
1 mL blood

Minimum Volume:
0.5 mL blood

Remarks:
Specimens must reach the main laboratory a minimum of 30 minutes prior to the next scheduled run.

Testing on Saturday requires prior arrangement with HPCT Lab.

PROCESSING

Test Code:
CD3D

Test Group:
CD

Performing Lab:
BMT Lab

Specimen Preparation:
Notify HPCT (x31789) when a specimen arrives at Central Processing. Samples are prepared from leukopheresis and must be delivered to Immunology before 1200 hours.

Preferred Volume:
1 mL blood

Minimum Volume:
0.5 mL blood

RESULT INTERPRETATION

Reference Interval:
Not applicable

Additional Information:
This test can be ordered with the CD34 assay and performed on the same sample.

Immunology will report the percentage of the total WBCs which are CD3 cells. From the leukopheresis volume, the total leukocyte count in the pheresis, and the patient's weight, the Blood Bank will calculate the absolute number of CD3-positive cells (T lymphocytes) per kg to be infused into the patient.

This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

ADMINISTRATIVE

CPT Codes:
86359

LDT or Modified FDA:
Yes

LOINC Codes:
20599-7

COMPLETE VIEW

Available Stat:
No

Test Code:
CD3D

Test Group:
CD

Performing Lab:
BMT Lab

Performed:
Test performed Monday-Friday at 0800, 1300, and 1500 hours.

Methodology:
Flow cytometry

Remarks:
Specimens must reach the main laboratory a minimum of 30 minutes prior to the next scheduled run.

Testing on Saturday requires prior arrangement with HPCT Lab.

Collect:
Lavender top for blood or Yellow top (ACD) for pheresis sample.

Amount to Collect:
1 mL blood

Sample Type:
EDTA whole blood or Apheresis sample

Preferred Volume:
1 mL blood

Minimum Volume:
0.5 mL blood

Specimen Preparation:
Notify HPCT (x31789) when a specimen arrives at Central Processing. Samples are prepared from leukopheresis and must be delivered to Immunology before 1200 hours.

Reference Interval:
Not applicable

Synonyms:

- CD3% for dosing calculations
- flow cytometry

Reported:
3 hours after receipt of sample or next day.

Additional Information:

This test can be ordered with the CD34 assay and performed on the same sample.

Immunology will report the percentage of the total WBCs which are CD3 cells. From the leukopheresis volume, the total leukocyte count in the pheresis, and the patient's weight, the Blood Bank will calculate the absolute number of CD3-positive cells (T lymphocytes) per kg to be infused into the patient.

This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

CPT Codes:

86359

LDT or Modified FDA:

Yes

LOINC Codes:

20599-7

Cell Count and Differential, body fluid

CCDB

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Hematology

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Hemocytometer for cell count, Wright stained cytospin preparation for differential

Reported:
STAT 1 hour. Routine 4 hours

Additional Information:
Cell counts and differentials on biliary fluid have not proven to be useful, due to the disruption of the cellular elements by bile acids, and are thus not offered for this specimen type. An assessment for the presence of WBC in biliary drainage fluid is included in the examination of biliary fluid for crystals.

Note: Cell differentials are performed on a concentrated sample. Therefore a differential can be reported even if the reported WBC is 0 x 10^9/L.

Reflex Testing:
If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

Synonyms:

- Body fluid cell count
- pleural fluid cell count
- peritoneal fluid cell count
- synovial fluid cell count
- Pericardial fluid cell count
- joint fluid cell count

COLLECTION

Sample Type:
Body Fluid

Collect:
Lavender top or Dark Green top

Amount to Collect:
See preferred volume

Preferred Volume:
> 2 mL fluid

Minimum Volume:
1 mL fluid

Remarks:
Deliver samples **IMMEDIATELY** to the laboratory. Specimen label must contain the date and time the sample was collected and the legible name of the person who collected the sample.

Stability (from collection to initiation):
Pleural, Pericardial, Peritoneal & Bronchoalveolar Lavage (BAL): Delay in analysis will cause cell lysis, cellular degeneration, and bacterial growth which can affect the test results. Samples received two (2) hours after collection are accepted but results modified as follows: Sample stability period exceeded or collection time unknown. Cellular degeneration can begin within one hour of collection, interpret results accordingly. See Lab Manual for Moffitt-Long and Mt. Zion for more information".

Synovial: Delayed interpretation of synovial fluids may lead to false-negative findings. Studies have shown that WBC's disintegrate with time. Based on a small in-house study performed on refrigerated samples, WBC decreased by ~10% at 6 hours; although the proportion of cell loss may depend on the types of WBC's present. Studies have also shown that crystals such as CPPD dissolve with time. MSU crystals remained stable for several weeks.

Unacceptable Conditions:
Sample received in a syringe with needle attached.

PROCESSING

Test Code:
CCDB

Test Group:
Cell Count and Differential

Performing Lab:
Parnassus & Mission Bay Hematology

Specimen Preparation:
Deliver sample immediately to Hematology for testing.

Preferred Volume:
> 2 mL fluid

Minimum Volume:
1 mL fluid

Unacceptable Conditions:
Sample received in a syringe with needle attached.

Stability (from collection to initiation):
Pleural, Pericardial, Peritoneal & Bronchoalveolar Lavage (BAL): Delay in analysis will cause cell lysis, cellular degeneration, and bacterial growth which can affect the test results. Samples received two (2) hours after collection are accepted but results modified as follows: Sample stability period exceeded or collection time unknown. Cellular degeneration can begin within one hour of collection, interpret results accordingly. See Lab Manual for Moffitt-Long and Mt. Zion for more information".

Synovial: Delayed interpretation of synovial fluids may lead to false-negative findings. Studies have shown that WBC's disintegrate with time. Based on a small in-house study performed on refrigerated samples, WBC decreased by ~10% at 6 hours; although the proportion of cell loss may depend on the types of WBC's present. Studies have also shown that crystals such as CPPD dissolve with time. MSU crystals remained stable for several weeks.

RESULT INTERPRETATION

Units:
$x10^9$/L (this is equivalent to $x10^3/mm^3$ or $x10^3/\mu L$)

Reference Interval:
The reference range and other method performance specifications have not been established by the UCSF Clinical Laboratory for this body fluid. The test result must be integrated into the clinical context for interpretation.

Critical Values:
Samples positive for microorganisms from normally sterile sites

Additional Information:
Cell counts and differentials on biliary fluid have not proven to be useful, due to the disruption of the cellular elements by bile acids, and are thus not offered for this specimen type. An assessment for the presence of WBC in biliary drainage fluid is included in the examination of biliary fluid for crystals.

Note: Cell differentials are performed on a concentrated sample. Therefore a differential can be reported even if the reported WBC is 0 x 10^9/L.

ADMINISTRATIVE

CPT Codes:
89051

LOINC Codes:
34557-9

COMPLETE VIEW

Available Stat:
Yes

Test Code:
CCDB

Test Group:
Cell Count and Differential

Performing Lab:
Parnassus & Mission Bay Hematology

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Hemocytometer for cell count, Wright stained cytospin preparation for differential

Remarks:
Deliver samples **IMMEDIATELY** to the laboratory. Specimen label must contain the date and time the sample was collected and the legible name of the person who collected the sample.

Collect:
Lavender top or Dark Green top

Amount to Collect:
See preferred volume

Sample Type:
Body Fluid

Preferred Volume:
> 2 mL fluid

Minimum Volume:
1 mL fluid

Unacceptable Conditions:
Sample received in a syringe with needle attached.

Specimen Preparation:
Deliver sample immediately to Hematology for testing.

Units:
$x10^9$/L (this is equivalent to $x10^3/mm^3$ or $x10^3/\mu L$)

Reference Interval:
The reference range and other method performance specifications have not been established by the UCSF Clinical Laboratory for this body fluid. The test result must be integrated into the clinical context for interpretation.

Critical Values:
Samples positive for microorganisms from normally sterile sites

Synonyms:

- Body fluid cell count
- pleural fluid cell count
- peritoneal fluid cell count
- synovial fluid cell count
- Pericardial fluid cell count
- joint fluid cell count

Stability (from collection to initiation):
Pleural, Pericardial, Peritoneal & Bronchoalveolar Lavage (BAL): Delay in analysis will cause cell lysis, cellular degeneration, and bacterial growth which can affect the test results. Samples received two (2) hours after collection are accepted but results modified as follows: Sample stability period exceeded or collection time unknown. Cellular degeneration can begin within one hour of collection, interpret results accordingly. See Lab Manual for Moffitt-Long and Mt. Zion for more information".

Synovial: Delayed interpretation of synovial fluids may lead to false-negative findings. Studies have shown that WBC's disintegrate with time. Based on a small in-house study performed on refrigerated samples, WBC decreased by ~10% at 6 hours; although the proportion of cell loss may depend on the types of WBC's present. Studies have also shown that crystals such as CPPD dissolve with time. MSU crystals remained stable for several weeks.

Reported:
STAT 1 hour. Routine 4 hours

Reflex Testing:
If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

Additional Information:
Cell counts and differentials on biliary fluid have not proven to be useful, due to the disruption of the cellular elements by bile acids, and are thus not offered for this specimen type. An assessment for the presence of WBC in biliary drainage fluid is included in the examination of biliary fluid for crystals.

Note: Cell differentials are performed on a concentrated sample. Therefore a differential can be reported even if the reported WBC is 0×10^9/L.

CPT Codes:
89051

LOINC Codes:
34557-9

Cell Count and Differential, CSF

CCDC

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Hematology

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Hemocytometer for count and Wright stained cytocentrifuge preparation for diferential

Reported:
Stat 1 hour, Routine 2 hours

Additional Information:
Count is performed on 3rd tube unless otherwise specified. Count not performed on first tube if it is grossly more bloody than tube #3 or if tube #3 count is < 7 RBC x10^6/L.

If Pathologist review determines a # of cells reported in "Other Cells" are Blasts, the count will be moved from “Other Cells" to “Blasts" and the differential count updated. Per procedure, the lab will not notify the provider of this correction.

Note: Cell differentials are performed on a concentrated sample. Therefore a differential can be reported even if the TNC is 0 x 10^6/L.

Reflex Testing:
If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

COLLECTION

Sample Type:
CSF

Collect:
LP kit tube #3 preferred, sterile collection tube acceptable

Amount to Collect:
See preferred volume

Preferred Volume:
1 mL CSF

Remarks:
Number tubes in order of withdrawal; deliver IMMEDIATELY. Do not use Lavender top, which will alter cellular morphology. Specimen label must contain the date and time the sample was collected and the legible name of the person who collected the sample.

Cerobrospinal fluid (CSF) specimens should be transported at ambient temperature as soon as possible after collection. Cellular degeneration of CSF can begin within one hour of collection.

Stability (from collection to initiation):
Specimen should be evaluated within two (2) hours of collection. Cellular degeneration of CSF can occur within one hour of collection.

PROCESSING

Test Code:
CCDC

Test Group:
Cell Count and Differential

Performing Lab:
Parnassus & Mission Bay Hematology

Specimen Preparation:
Deliver to Hematology right after sample is received and entered in Sunquest.

Preferred Volume:
1 mL CSF

Stability (from collection to initiation):
Specimen should be evaluated within two (2) hours of collection. Cellular degeneration of CSF can occur within one hour of collection.

RESULT INTERPRETATION

Units:
x10^6/L (this is equivalent to /mm^3 or /µL)

Reference Interval:
Appearance: Clear
Xanthochromia: Negative
TNC: < 6 x10^6/L
RBC: None
Neutrophils: None

A reference range has not been established by the UCSF Clinical Laboratory for CSF TNC differential, except for neutrophil parameter. Clinical correlation required for interpretation.

Critical Values:
Samples positive for microorganisms

Additional Information:
Count is performed on 3rd tube unless otherwise specified. Count not performed on first tube if it is grossly more bloody than tube #3 or if tube #3 count is < 7 RBC x10^6/L.

If Pathologist review determines a # of cells reported in "Other Cells" are Blasts, the count will be moved from “Other Cells" to “Blasts" and the differential count updated. Per procedure, the lab will not notify the provider of this correction.

Note: Cell differentials are performed on a concentrated sample. Therefore a differential can be reported even if the TNC is 0 x 10^6/L.

ADMINISTRATIVE

CPT Codes:
89051

LOINC Codes:
34564-5

COMPLETE VIEW

Available Stat:
Yes

Test Code:
CCDC

Test Group:
Cell Count and Differential

Performing Lab:
Parnassus & Mission Bay Hematology

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Hemocytometer for count and Wright stained cytocentrifuge preparation for diferential

Remarks:
Number tubes in order of withdrawal; deliver IMMEDIATELY. Do not use Lavender top, which will alter cellular morphology. Specimen label must contain the date and time the sample was collected and the legible name of the person who collected the sample.

Cerobrospinal fluid (CSF) specimens should be transported at ambient temperature as soon as possible after collection. Cellular degeneration of CSF can begin within one hour of collection.

Collect:
LP kit tube #3 preferred, sterile collection tube acceptable

Amount to Collect:
See preferred volume

Sample Type:
CSF

Preferred Volume:
1 mL CSF

Specimen Preparation:
Deliver to Hematology right after sample is received and entered in Sunquest.

Units:
x10^6/L (this is equivalent to /mm^3 or /µL)

Reference Interval:

Appearance: Clear
Xanthochromia: Negative
TNC: < 6 $x10^6$/L
RBC: None
Neutrophils: None

A reference range has not been established by the UCSF Clinical Laboratory for CSF TNC differential, except for neutrophil parameter. Clinical correlation required for interpretation.

Critical Values:

Samples positive for microorganisms

Stability (from collection to initiation):

Specimen should be evaluated within two (2) hours of collection. Cellular degeneration of CSF can occur within one hour of collection.

Reported:

Stat 1 hour, Routine 2 hours

Reflex Testing:

If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

Additional Information:

Count is performed on 3rd tube unless otherwise specified. Count not performed on first tube if it is grossly more bloody than tube #3 or if tube #3 count is < 7 RBC $x10^6$/L.

If Pathologist review determines a # of cells reported in "Other Cells" are Blasts, the count will be moved from “Other Cells" to “Blasts" and the differential count updated. Per procedure, the lab will not notify the provider of this correction.

Note: Cell differentials are performed on a concentrated sample. Therefore a differential can be reported even if the TNC is 0 x 10^6/L.

CPT Codes:

89051

LOINC Codes:

34564-5

Central Blood Culture

P061

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Daily, all shifts

Methodology:
Culture

Reported:
Up to 6 days

Additional Information:
Notify Microbiology when Brucella is suspect so that the cultures can be incubated for 14 days.

Reflex Testing:
If bacteria are detected they are identified and susceptibility testing is performed as appropriate.

COLLECTION

Sample Type:
Blood

Collect:
Paired blood culture bottles (BD BACTEC Plus Aerobic and Lytic Anaerobic bottles)

Amount to Collect:
Adults: 20 mL total (10 mL for each bottle)

Pediatrics: Collect blood sample amount according to weight:
< 1 kg = 1 mL for aerobic only (0.5 ml for neonates < 72h old)
1 - 5 kg = 2 mL total (1 mL for each bottle)
5 - 15 kg = 3 mL total (1.5 mL for each bottle)
15 - 40 kg = 6 mL total (3 mL for each bottle)
>40 kg = 10 mL total (5 mL for each bottle)

Preferred Volume:
Adults: 20 mL total (10 mL for each bottle)

Pediatrics: Collect blood sample amount according to weight (see Amount to Collect above)

Minimum Volume:
Adults: 10 mL total (5 mL for each bottle)

Pediatrics: Draw 1.0 mL minimum for culture (0.5 ml for neonates < 72h old) when collecting aerobic only (standard). If both aerobic and anaerobic needed, instill minimum of 1 mL in each bottle when collecting.

Remarks:

1. Adults:
Collect 2 sets of cultures from different sites.
Collect at least one set of cultures from a peripheral site.

2. Pediatrics:
Amount of blood depends on weight of patient (see weight based minimums). Anaerobic sample should be sent only in the following circumstances: Outpatients, patients with immunodeficiency, malignancy or after bone or human stem cell transplant, patients with gastrointestinal disorder, or at physician's request due to concern for anaerobes. Sending only an aerobic specimen is sufficient for all other patient populations.

3. Clarify which line(s) to obtain sample from with the provider.

4. Remove plastic cap of each bottle and scrub top of each bottle with 70% alcohol prep pad.

5. Obtain sample. Instill sample into blood culture bottles. Refer to Blood Culture Methods (General) procedure in Nursing Procedures Manual.

6. Instill sample into aerobic bottle first and then into anaerobic bottle. Do not aspirate air into the anaerobic bottle. Do not add more than 10 mL into each bottle. Gently invert bottles to mix contents.

7. Label each bottle with patient's name and medical record number, type of central line, and indicate location of the line and the lumen color, if desired. Do not place label on neck of bottle or bottom (underneath) of bottle, and do not cover bar code on bottle with the label. Place label vertically on bottle.

Stability (from collection to initiation):
36 hours at room temperature

Unacceptable Conditions:
Samples that are not collected per "Collection Instructions"

PROCESSING

Test Code:
P061

Test Group:
Bacterial culture

Performing Lab:
Microbiology

Specimen Preparation:
1. If bottles are overfilled, enter OVRFIL (Blood culture appears overfilled; do not put >10ml/bottle.) in SREQ.
2. If actual source (Peripheral Blood, Central Blood) does not match order, complete a credit form and indicate reason BMIS (Specimen source on order/requisition and on bottle received do not match. Test performed and results available under separate order.)
3. Accession the specimen with the test code corresponding to the actual source, and enter MISB (Specimen source on order/requisition and on bottle received do not match. Source listed on bottle used for identification.) in SREQ.
4. If the time from collection to loading bottles on the instrument is more than 12 hours, give the bottles to a CLS to subculture before loading.

Preferred Volume:
Adults: 20 mL total (10 mL for each bottle)

Pediatrics: Collect blood sample amount according to weight (see Amount to Collect above)

Minimum Volume:
Adults: 10 mL total (5 mL for each bottle)

Pediatrics: Draw 1.0 mL minimum for culture (0.5 ml for neonates < 72h old) when collecting aerobic only (standard). If both aerobic and anaerobic needed, instill minimum of 1 mL in each bottle when collecting.

Unacceptable Conditions:
Samples that are not collected per "Collection Instructions"

Stability (from collection to initiation):
36 hours at room temperature

RESULT INTERPRETATION

Reference Interval:
No growth

Critical Values:
Inpatient results only. After hours outpatient results will be phoned the following morning. Gram stain results from the first positive blood culture on a patient will be phoned. Additional calls only made if > 7 days have elapsed since first call or a different organism is identified.

Additional Information:
Notify Microbiology when Brucella is suspect so that the cultures can be incubated for 14 days.

ADMINISTRATIVE

CPT Codes:
87040

COMPLETE VIEW

Available Stat:
No

Test Code:
P061

Test Group:
Bacterial culture

Performing Lab:
Microbiology

Performed:
Daily, all shifts

Methodology:
Culture

Remarks:
1. Adults:
Collect 2 sets of cultures from different sites.
Collect at least one set of cultures from a peripheral site.

2. Pediatrics:
Amount of blood depends on weight of patient (see weight based minimums). Anaerobic sample should be sent only in the following circumstances: Outpatients, patients with immunodeficiency, malignancy or after bone or human stem cell transplant, patients with gastrointestinal disorder, or at physician's request due to concern for anaerobes. Sending only an aerobic specimen is sufficient for all other patient populations.

3. Clarify which line(s) to obtain sample from with the provider.

4. Remove plastic cap of each bottle and scrub top of each bottle with 70% alcohol prep pad.

5. Obtain sample. Instill sample into blood culture bottles. Refer to Blood Culture Methods (General) procedure in Nursing Procedures Manual.

6. Instill sample into aerobic bottle first and then into anaerobic bottle. Do not aspirate air into the anaerobic bottle. Do not add more than 10 mL into each bottle. Gently invert bottles to mix contents.

7. Label each bottle with patient's name and medical record number, type of central line, and indicate location of the line and the lumen color, if desired. Do not place label on neck of bottle or bottom (underneath) of bottle, and do not cover bar code on bottle with the label. Place label vertically on bottle.

Collect:
Paired blood culture bottles (BD BACTEC Plus Aerobic and Lytic Anaerobic bottles)

Amount to Collect:
Adults: 20 mL total (10 mL for each bottle)

Pediatrics: Collect blood sample amount according to weight:
< 1 kg = 1 mL for aerobic only (0.5 ml for neonates < 72h old)
1 - 5 kg = 2 mL total (1 mL for each bottle)
5 - 15 kg = 3 mL total (1.5 mL for each bottle)
15 - 40 kg = 6 mL total (3 mL for each bottle)
>40 kg = 10 mL total (5 mL for each bottle)

Sample Type:
Blood

Preferred Volume:
Adults: 20 mL total (10 mL for each bottle)

Pediatrics: Collect blood sample amount according to weight (see Amount to Collect above)

Minimum Volume:
Adults: 10 mL total (5 mL for each bottle)

Pediatrics: Draw 1.0 mL minimum for culture (0.5 ml for neonates < 72h old) when collecting aerobic only (standard). If both aerobic and anaerobic needed, instill minimum of 1 mL in each bottle when collecting.

Unacceptable Conditions:

Samples that are not collected per "Collection Instructions"

Specimen Preparation:

1. If bottles are overfilled, enter OVRFIL (Blood culture appears overfilled; do not put >10ml/bottle.) in SREQ.
2. If actual source (Peripheral Blood, Central Blood) does not match order, complete a credit form and indicate reason BMIS (Specimen source on order/requisition and on bottle received do not match. Test performed and results available under separate order.)
3. Accession the specimen with the test code corresponding to the actual source, and enter MISB (Specimen source on order/requisition and on bottle received do not match. Source listed on bottle used for identification.) in SREQ.
4. If the time from collection to loading bottles on the instrument is more than 12 hours, give the bottles to a CLS to subculture before loading.

Reference Interval:

No growth

Critical Values:

Inpatient results only. After hours outpatient results will be phoned the following morning. Gram stain results from the first positive blood culture on a patient will be phoned. Additional calls only made if > 7 days have elapsed since first call or a different organism is identified.

Stability (from collection to initiation):

36 hours at room temperature

Reported:

Up to 6 days

Reflex Testing:

If bacteria are detected they are identified and susceptibility testing is performed as appropriate.

Additional Information:

Notify Microbiology when Brucella is suspect so that the cultures can be incubated for 14 days.

CPT Codes:

87040

Centromere 10 FISH

BCEP10, CEP10

ORDERING

Available Stat:
No

Performing Lab:
Molecular Genetics - Cytogenetics

Performed:
Monday - Friday 0900-1700

Methodology:
FISH

Reported:
1-2 weeks

Synonyms:

- CEP 10 FISH

COLLECTION

Sample Type:
Heparinized whole blood or bone marrow, Bone marrow core biopsy

Collect:
Dark green top

Amount to Collect:
Blood: 2 mL
Bone marrow: 2 mL
Bone marrow biopsy: 2 cm

Preferred Volume:
Blood: 2 mL
Bone marrow: 2 mL
?Bone marrow biopsy: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow: 1 mL
?Bone marrow biopsy: 1 cm

Remarks:
Mix sample well with anticoagulant. keep at room temperature

Stability (from collection to initiation):
Room temperature 2 days

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

PROCESSING

Test Code:
BCEP10: Blood
CEP10: Bone marrow

Performing Lab:
Molecular Genetics - Cytogenetics

Specimen Preparation:
Do not centrifuge, refrigerate or freeze samples. Transport to China Basin Cytogenetics asap.

Preferred Volume:
Blood: 2 mL
Bone marrow: 2 mL
?Bone marrow biopsy: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow: 1 mL
?Bone marrow biopsy: 1 cm

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

Stability (from collection to initiation):
Room temperature 2 days

ADMINISTRATIVE

CPT Codes:
88271x1, 88275x1

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BCEP10: Blood
CEP10: Bone marrow

Performing Lab:
Molecular Genetics - Cytogenetics

Performed:
Monday - Friday 0900-1700

Methodology:
FISH

Remarks:
Mix sample well with anticoagulant. keep at room temperature

Collect:
Dark green top

Amount to Collect:
Blood: 2 mL
Bone marrow: 2 mL
Bone marrow biopsy: 2 cm

Sample Type:
Heparinized whole blood or bone marrow, Bone marrow core biopsy

Preferred Volume:
Blood: 2 mL
Bone marrow: 2 mL
?Bone marrow biopsy: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow: 1 mL
?Bone marrow biopsy: 1 cm

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

Specimen Preparation:
Do not centrifuge, refrigerate or freeze samples. Transport to China Basin Cytogenetics asap.

Synonyms:

- CEP 10 FISH

Stability (from collection to initiation):
Room temperature 2 days

Reported:
1-2 weeks

CPT Codes:
88271x1, 88275x1

LDT or Modified FDA:
Yes

Centromere 4 FISH

BCEP4, CEP4

ORDERING

Available Stat:
No

Performing Lab:
Molecular Genetics - Cytogenetics

Performed:
Monday - Friday 0900-1700

Methodology:
FISH

Reported:
1-2 weeks

Synonyms:

- CEP 4 FISH

COLLECTION

Sample Type:
Heparinized whole blood or bone marrow, Bone marrow core biopsy

Collect:
Dark green top

Amount to Collect:
Blood: 2 mL
Bone marrow: 2 mL
?Bone marrow biopsy: 2 cm

Preferred Volume:
Blood: 2 mL
Bone marrow: 2 mL
?Bone marrow biopsy: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow: 1 mL
?Bone marrow biopsy: 1 cm

Remarks:
Mix sample well with anticoagulant. keep at room temperature

Stability (from collection to initiation):
Room temperature 2 days

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

PROCESSING

Test Code:
BCEP4: Blood
CEP4: Bone marrow

Performing Lab:
Molecular Genetics - Cytogenetics

Specimen Preparation:
Do not centrifuge, refrigerate or freeze samples. Transport to China Basin Cytogenetics asap.

Preferred Volume:
Blood: 2 mL
Bone marrow: 2 mL
?Bone marrow biopsy: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow: 1 mL
?Bone marrow biopsy: 1 cm

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

Stability (from collection to initiation):
Room temperature 2 days

ADMINISTRATIVE

CPT Codes:
88271 x2, 88275x1

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BCEP4: Blood
CEP4: Bone marrow

Performing Lab:
Molecular Genetics - Cytogenetics

Performed:
Monday - Friday 0900-1700

Methodology:
FISH

Remarks:
Mix sample well with anticoagulant. keep at room temperature

Collect:
Dark green top

Amount to Collect:
Blood: 2 mL
Bone marrow: 2 mL
?Bone marrow biopsy: 2 cm

Sample Type:
Heparinized whole blood or bone marrow, Bone marrow core biopsy

Preferred Volume:
Blood: 2 mL
Bone marrow: 2 mL
?Bone marrow biopsy: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow: 1 mL
?Bone marrow biopsy: 1 cm

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

Specimen Preparation:
Do not centrifuge, refrigerate or freeze samples. Transport to China Basin Cytogenetics asap.

Synonyms:

- CEP 4 FISH

Stability (from collection to initiation):
Room temperature 2 days

Reported:
1-2 weeks

CPT Codes:
88271 x2, 88275x1

LDT or Modified FDA:
Yes

Centromere Antibody, IgG

CENTG

ORDERING

Ordering Recommendations:
Aid in diagnosis of systemic sclerosis (SSc). Negative results do not rule out SSc. Preferred test is Comprehensive Systemic Sclerosis Panel (3000480).

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Semi-Quantitative Multiplex Bead Assay

Reported:
1-3 days

Synonyms:

- ACA
- Anti-centromere Antibodies
- Anti-Centromere Antibody
- Anticentromere Antibodies
- Centromere Antibodies, IgG
- CENTROMERE ANTIBODY
- Centromere Autoantibodies
- Centromere B
- CREST
- HEp-2

COLLECTION

Sample Type:
Serum

Collect:
Serum separator tube.

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.25 mL serum

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Plasma. Contaminated, hemolyzed, or severely lipemic specimens.

PROCESSING

Test Code:
CENTG

ARUP Test Code:
0050714

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate serum from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min: 0.25 mL)

Preferred Volume:
1 mL serum

Minimum Volume:
0.25 mL serum

Unacceptable Conditions:
Plasma. Contaminated, hemolyzed, or severely lipemic specimens.

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:

Components	Reference Interval
Centromere Ab, IgG	0-40 AU/mL

Interpretive Data:
When detected by this multiplex bead assay, the presence of centromere antibodies is mainly associated with CREST syndrome, a variant of systemic sclerosis (SSc). These antibodies target the centromere B, a dominant antigen of the centromeric complex associated with the centromere pattern observed in antinuclear antibody (ANA) testing by IFA. Centromere antibodies may also be seen in a varying percentage of patients with other autoimmune diseases, including diffuse cutaneous SSc, Raynaud syndrome, interstitial pulmonary fibrosis, autoimmune liver disease, systemic lupus erythematosus (SLE) and rheumatoid arthritis (RA).

A negative result indicates no detectable IgG antibodies to centromere B. If the result is negative but clinical suspicion for SSc is strong, consider testing for ANA by IFA along with other antibodies associated with SSc, including Scl-70, U3-RNP, PM/Scl, or Th/To.

Component	Interpretation
Centromere Antibody, IgG	29 AU/mL or less Negative 30-40 AU/mL Equivocal 41 AU/mL or greater Positive

ADMINISTRATIVE

CPT Codes:
83516

LOINC:

- 29966-9

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Aid in diagnosis of systemic sclerosis (SSc). Negative results do not rule out SSc. Preferred test is Comprehensive Systemic Sclerosis Panel (3000480).

Test Code:
CENTG

ARUP Test Code:
0050714

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Semi-Quantitative Multiplex Bead Assay

Collect:
Serum separator tube.

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.25 mL serum

Unacceptable Conditions:
Plasma. Contaminated, hemolyzed, or severely lipemic specimens.

Specimen Preparation:
Separate serum from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min: 0.25 mL)

Reference Interval:

Components	Reference Interval
Centromere Ab, IgG	0-40 AU/mL

Interpretive Data:
When detected by this multiplex bead assay, the presence of centromere antibodies is mainly associated with CREST syndrome, a variant of systemic sclerosis (SSc). These antibodies target the centromere B, a dominant antigen of the centromeric complex associated with the centromere pattern observed in antinuclear antibody (ANA) testing by IFA. Centromere antibodies may also be seen in a varying percentage of patients with other autoimmune diseases, including diffuse cutaneous SSc, Raynaud syndrome, interstitial pulmonary fibrosis, autoimmune liver disease, systemic lupus erythematosus (SLE) and rheumatoid arthritis (RA).

A negative result indicates no detectable IgG antibodies to centromere B. If the result is negative but clinical suspicion for SSc is strong, consider testing for ANA by IFA along with other antibodies associated with SSc, including Scl-70, U3-RNP, PM/Scl, or Th/To.

Component	Interpretation
Centromere Antibody, IgG	29 AU/mL or less Negative 30-40 AU/mL Equivocal 41 AU/mL or greater Positive

Synonyms:

- ACA
- Anti-centromere Antibodies
- Anti-Centromere Antibody
- Anticentromere Antibodies
- Centromere Antibodies, IgG
- CENTROMERE ANTIBODY
- Centromere Autoantibodies
- Centromere B
- CREST
- HEp-2

Storage/Transport Temperature:
Refrigerated.

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

Reported:
1-3 days

CPT Codes:
83516

LOINC:

- 29966-9

CEP 11 FISH

BCEP11, CEP11

ORDERING

Available Stat:
No

Performing Lab:
Cytogenetics

Performed:
Mon - Fri 9 am to 5 pm

Methodology:
FISH

Reported:
7~14 days

Synonyms:

- Centromere 11 FISH tests for non-blood samples, Centromere 11 FISH test for Blood samples

COLLECTION

Collect:
Dark Green top Sodium Heparin tube for bone marrow, sterile container with medium for bone core.

Amount to Collect:
2ml

Minimum Volume:
1ml

Remarks:
Mix well, do not spin, keep at room temperature.

Stability (from collection to initiation):
48 hours

Unacceptable Conditions:
Leaking, frozen and unlabeled samples.

PROCESSING

Test Code:
BCEP11: Blood
CEP11: Non-blood

Test Group:
Cytogenetics

Performing Lab:
Cytogenetics

Specimen Preparation:
Do not refrigerate or freeze sample, call lab before sample rejection.

Minimum Volume:
1ml

Unacceptable Conditions:
Leaking, frozen and unlabeled samples.

Stability (from collection to initiation):
48 hours

ADMINISTRATIVE

CPT Codes:
88271x1, 88275x1

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BCEP11: Blood
CEP11: Non-blood

Test Group:
Cytogenetics

Performing Lab:
Cytogenetics

Performed:
Mon - Fri 9 am to 5 pm

Methodology:
FISH

Remarks:
Mix well, do not spin, keep at room temperature.

Collect:
Dark Green top Sodium Heparin tube for bone marrow, sterile container with medium for bone core.

Amount to Collect:
2ml

Minimum Volume:
1ml

Unacceptable Conditions:
Leaking, frozen and unlabeled samples.

Specimen Preparation:
Do not refrigerate or freeze sample, call lab before sample rejection.

Synonyms:

- Centromere 11 FISH tests for non-blood samples, Centromere 11 FISH test for Blood samples

Stability (from collection to initiation):
48 hours

Reported:
7~14 days

CPT Codes:
88271x1, 88275x1

LDT or Modified FDA:
Yes

CEP 3 FISH

BCEP3, CEP3

ORDERING

Available Stat:
No

Performing Lab:
Cytogenetics

Performed:
Mon - Fri 9 am to 5 pm

Methodology:
FISH

Reported:
7~14 days

Synonyms:

- Centromere 3 FISH test

COLLECTION

Sample Type:
Dark Green top Sodium Heparin tube for Bone marrow

Collect:
Dark Green top Sodium Heparin tube for bone marrow, Sterile container with medium for bone core.

Amount to Collect:
2ml

Preferred Volume:
2ml

Minimum Volume:
1ml

Remarks:
Mix well, do not spin, keep at room temperature.

Stability (from collection to initiation):
48 hours

Unacceptable Conditions:
Leaking, frozen sample, unlabeled sample

PROCESSING

Test Code:
BCEP3: Blood
CEP3: Non-blood

Test Group:
Cytogenetics

Performing Lab:
Cytogenetics

Specimen Preparation:
Do not refrigerate or freeze sample, call lab before rejection of sample

Preferred Volume:
2ml

Minimum Volume:
1ml

Unacceptable Conditions:
Leaking, frozen sample, unlabeled sample

Stability (from collection to initiation):
48 hours

ADMINISTRATIVE

CPT Codes:
88271x1,88275x1

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BCEP3: Blood
CEP3: Non-blood

Test Group:
Cytogenetics

Performing Lab:
Cytogenetics

Performed:
Mon - Fri 9 am to 5 pm

Methodology:
FISH

Remarks:
Mix well, do not spin, keep at room temperature.

Collect:
Dark Green top Sodium Heparin tube for bone marrow, Sterile container with medium for bone core.

Amount to Collect:
2ml

Sample Type:
Dark Green top Sodium Heparin tube for Bone marrow

Preferred Volume:
2ml

Minimum Volume:
1ml

Unacceptable Conditions:
Leaking, frozen sample, unlabeled sample

Specimen Preparation:
Do not refrigerate or freeze sample, call lab before rejection of sample

Synonyms:

- Centromere 3 FISH test

Stability (from collection to initiation):
48 hours

Reported:
7~14 days

CPT Codes:
88271x1,88275x1

LDT or Modified FDA:
Yes

CEP 7 FISH

BCEP7, CEP7

ORDERING

Available Stat:
No

Performing Lab:
Cytogenetics

Performed:
Mon-Fri 9 am to 5 pm

Methodology:
FISH

Reported:
7~14 days

Synonyms:

- Centromere 7 FISH test

COLLECTION

Sample Type:
Dark Green top Sodium Heparin

Collect:
Dark Green top Sodium Heparin tube for bone marrow, Sterile container with medium for bone core

Amount to Collect:
2ml

Preferred Volume:
2ml

Minimum Volume:
1ml

Remarks:
Mix well, do not spin, keep at room temperature

Stability (from collection to initiation):
48 hours

Unacceptable Conditions:
Leaking, frozen samples, unlabeled samples

PROCESSING

Test Code:
BCEP7: Blood
CEP7: Non-blood

Test Group:
Cytogenetics

Performing Lab:
Cytogenetics

Specimen Preparation:
Do not refrigerate or freeze sample, call lab before sample rejection

Preferred Volume:
2ml

Minimum Volume:
1ml

Unacceptable Conditions:
Leaking, frozen samples, unlabeled samples

Stability (from collection to initiation):
48 hours

ADMINISTRATIVE

CPT Codes:
88271x1, 88275x1

LDT or Modified FDA:
yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BCEP7: Blood
CEP7: Non-blood

Test Group:
Cytogenetics

Performing Lab:
Cytogenetics

Performed:
Mon-Fri 9 am to 5 pm

Methodology:
FISH

Remarks:
Mix well, do not spin, keep at room temperature

Collect:
Dark Green top Sodium Heparin tube for bone marrow, Sterile container with medium for bone core

Amount to Collect:
2ml

Sample Type:
Dark Green top Sodium Heparin

Preferred Volume:
2ml

Minimum Volume:
1ml

Unacceptable Conditions:
Leaking, frozen samples, unlabeled samples

Specimen Preparation:
Do not refrigerate or freeze sample, call lab before sample rejection

Synonyms:

- Centromere 7 FISH test

Stability (from collection to initiation):
48 hours

Reported:
7~14 days

CPT Codes:
88271x1, 88275x1

LDT or Modified FDA:
yes

Ceroid Lipofucinosis

ORDERING

Available Stat:
No

Performing Lab:
Anatomic pathology

Methodology:
Electron Microscopy

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top

Amount to Collect:
15-20 mL blood

Preferred Volume:
15-20 mL blood

Minimum Volume:
5 mL blood

Remarks:
Label tube with patient's name and medical record number. Complete a Surgical pathology consultation request and deliver asap (must be received before noon) to the Electron Microscopy Lab, room S-570 (415-353-2673)

Unacceptable Conditions:
Samples received after 1130.

PROCESSING

Performing Lab:
Anatomic pathology

Preferred Volume:
15-20 mL blood

Minimum Volume:
5 mL blood

Unacceptable Conditions:
Samples received after 1130.

ADMINISTRATIVE

CPT Codes:
88348

COMPLETE VIEW

Available Stat:
No

Performing Lab:
Anatomic pathology

Methodology:
Electron Microscopy

Remarks:
Label tube with patient's name and medical record number. Complete a Surgical pathology consultation request and deliver asap (must be received before noon) to the Electron Microscopy Lab, room S-570 (415-353-2673)

Collect:
Lavender top

Amount to Collect:
15-20 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
15-20 mL blood

Minimum Volume:
5 mL blood

Unacceptable Conditions:
Samples received after 1130.

CPT Codes:
88348

Ceruloplasmin

CERU

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday, Wednesday, Friday (day shift)

Methodology:
Turbidimetry

Reported:
2-5 days

Additional Information:
Levels are very low in 80% of patients with Wilson's disease and low-intermediate in 20% of carriers. The test is not diagnostic in infants < 6 months old, who normally have low levels. Lipemia interferes with the assay.

Synonyms:

- Ferroxidase

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Refrigerated 72 hours; Frozen for longer stability

Storage/Transport Temperature:
Frozen

Unacceptable Conditions:
Lipemic and grossly hemolyzed samples

PROCESSING

Test Code:
CERU

Performing Lab:
Immunology

Specimen Preparation:
Frozen

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Lipemic and grossly hemolyzed samples

Stability (from collection to initiation):
Refrigerated 72 hours; Frozen for longer stability

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:
20-60 mg/dL

Additional Information:
Levels are very low in 80% of patients with Wilson's disease and low-intermediate in 20% of carriers. The test is not diagnostic in infants < 6 months old, who normally have low levels. Lipemia interferes with the assay.

ADMINISTRATIVE

CPT Codes:
82390

LOINC Codes:
2064-4

COMPLETE VIEW

Available Stat:
No

Test Code:
CERU

Performing Lab:
Immunology

Performed:
Monday, Wednesday, Friday (day shift)

Methodology:
Turbidimetry

Collect:
Gold top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Lipemic and grossly hemolyzed samples

Specimen Preparation:
Frozen

Units:
mg/dL

Reference Interval:
20-60 mg/dL

Synonyms:

- Ferroxidase

Storage/Transport Temperature:
Frozen

Stability (from collection to initiation):
Refrigerated 72 hours; Frozen for longer stability

Reported:
2-5 days

Additional Information:
Levels are very low in 80% of patients with Wilson's disease and low-intermediate in 20% of carriers. The test is not diagnostic in infants < 6 months old, who normally have low levels. Lipemia interferes with the assay.

CPT Codes:
82390

LOINC Codes:
2064-4

Chemistry Special Study

SPCHEM

ORDERING

Available Stat:
No

Performing Lab:
China Basin Chemistry

Additional Information:
This procedure is primarily ordered so the laboratory can obtain an additional blood sample to internally check the validity of a previously reported result (e.g, by repeat testing, parallel dilution testing, checking for an immunoassay interference from heterophile antibodies or cross-reacting substances, etc). There is no charge to the patient when this procedure is ordered. The findings are reported by sending a staff message in the Apex medical record to the ordering clinician, or by attaching a comment to a test result in the Apex medical record, and or by email to the ordering clinician.

Synonyms:

- SPCHR
- SPCHL
- SPCHLG
- SPCHG
- SPCHWB
- heterophile antibodies

COLLECTION

Sample Type:
Plasma, Serum or whole blood

Collect:
Order Code: Tube Type:
SPCHEM Light Green top (preferred)
Gold top or Red top (acceptable)
SPCHR Red top
SPCHL Lavender top
SPCHLG Light Green top
SPCHG Gold top
SPCHWB Lavender top (whole blood)

Amount to Collect:
Order Code: Volume:
SPCHEM 5 mL blood
SPCHR 5 mL blood
SPCHL 2.5 mL blood
SPCHLG 5 mL blood
SPCHG 5 mL blood
SPCHWB 2.5 mL blood

Preferred Volume:
Order Code: Volume:
SPCHEM 3 mL plasma or serum
SPCHR 3 mL serum
SPCHL 1.5 mL plasma
SPCHLG 3 mL plasma
SPCHG 3 mL serum
SPCHWB 2.5 mL whole blood

Minimum Volume:
Order Code: Volume:
SPCHEM 1 mL plasma or serum
SPCHR 1 mL serum
SPCHL 0.5 mL plasma
SPCHLG 1 mL plasma
SPCHG 1 mL serum
SPCHWB 1 mL whole blood

PROCESSING

Test Code:

SPCHEM Light Green top (preferred)
Gold top or Red top (acceptable)
SPCHR Red top
SPCHL Lavender top
SPCHLG Light Green top
SPCHG Gold top
SPCHWB Lavender top (whole blood)

Performing Lab:

China Basin Chemistry

Specimen Preparation:

Order Code: Specimen Preparation:SPCHEM Centrifuge sample and aliquot all plasma or serum. Store tightly capped at -20 C or colder.
Ship the primary tube and the aliquot tube to China Basin Chemistry.
SPCHR Centrifuge sample and aliquot all serum. Store tightly capped at -20 C or colder.
Ship the primary tube and the aliquot tube to China Basin Chemistry.SPCHL Centrifuge sample and aliquot all plasma. Store
tightly capped at -20 C or colder.
Ship the primary tube and the aliquot tube to China Basin Chemistry.
SPCHLG Centrifuge sample and aliquot all plasma. Store
tightly capped at -20 C or colder.
Ship the primary tube and the aliquot tube to China Basin Chemistry.
SPCHG Centrifuge sample and aliquot all serum. Store
tightly capped at -20 C or colder.
Ship the primary tube and the aliquot tube to China Basin Chemistry.
SPCHWB Do NOT centrifuge. Keep at 2-8 C and ship to
China Basin Chemistry

Preferred Volume:

Order Code: Volume:
SPCHEM 3 mL plasma or serum
SPCHR 3 mL serum
SPCHL 1.5 mL plasma
SPCHLG 3 mL plasma
SPCHG 3 mL serum
SPCHWB 2.5 mL whole blood

Minimum Volume:

Order Code: Volume:
SPCHEM 1 mL plasma or serum
SPCHR 1 mL serum
SPCHL 0.5 mL plasma
SPCHLG 1 mL plasma
SPCHG 1 mL serum
SPCHWB 1 mL whole blood

RESULT INTERPRETATION

Additional Information:

This procedure is primarily ordered so the laboratory can obtain an additional blood sample to internally check the validity of a previously reported result (e.g, by repeat testing, parallel dilution testing, checking for an immunoassay interference from heterophile antibodies or cross-reacting substances, etc). There is no charge to the patient when this procedure is ordered. The findings are reported by sending a staff message in the Apex medical record to the ordering clinician, or by attaching a comment to a test result in the Apex medical record, and or by email to the ordering clinician.

COMPLETE VIEW

Available Stat:

No

Test Code:

SPCHEM Light Green top (preferred)
Gold top or Red top (acceptable)
SPCHR Red top
SPCHL Lavender top
SPCHLG Light Green top
SPCHG Gold top
SPCHWB Lavender top (whole blood)

Performing Lab:

China Basin Chemistry

Collect:

Order Code: Tube Type:
SPCHEM Light Green top (preferred)
Gold top or Red top (acceptable)
SPCHR Red top
SPCHL Lavender top
SPCHLG Light Green top
SPCHG Gold top
SPCHWB Lavender top (whole blood)

Amount to Collect:

Order Code: Volume:
SPCHEM 5 mL blood
SPCHR 5 mL blood
SPCHL 2.5 mL blood
SPCHLG 5 mL blood
SPCHG 5 mL blood
SPCHWB 2.5 mL blood

Sample Type:

Plasma, Serum or whole blood

Preferred Volume:

Order Code: Volume:
SPCHEM 3 mL plasma or serum
SPCHR 3 mL serum
SPCHL 1.5 mL plasma
SPCHLG 3 mL plasma
SPCHG 3 mL serum
SPCHWB 2.5 mL whole blood

Minimum Volume:

Order Code: Volume:
SPCHEM 1 mL plasma or serum
SPCHR 1 mL serum
SPCHL 0.5 mL plasma
SPCHLG 1 mL plasma
SPCHG 1 mL serum
SPCHWB 1 mL whole blood

Specimen Preparation:

Order Code: Specimen Preparation:SPCHEM Centrifuge sample and aliquot all plasma or serum. Store tightly capped at -20 C or colder.
Ship the primary tube and the aliquot tube to China Basin Chemistry.
SPCHR Centrifuge sample and aliquot all serum. Store tightly capped at -20 C or colder.
Ship the primary tube and the aliquot tube to China Basin Chemistry.SPCHL Centrifuge sample and aliquot all plasma. Store
tightly capped at -20 C or colder.
Ship the primary tube and the aliquot tube to China Basin Chemistry.
SPCHLG Centrifuge sample and aliquot all plasma. Store
tightly capped at -20 C or colder.
Ship the primary tube and the aliquot tube to China Basin Chemistry.
SPCHG Centrifuge sample and aliquot all serum. Store
tightly capped at -20 C or colder.
Ship the primary tube and the aliquot tube to China Basin Chemistry.
SPCHWB Do NOT centrifuge. Keep at 2-8 C and ship to
China Basin Chemistry

Synonyms:

- SPCHR
- SPCHL
- SPCHLG
- SPCHG
- SPCHWB
- heterophile antibodies

Additional Information:

This procedure is primarily ordered so the laboratory can obtain an additional blood sample to internally check the validity of a previously reported result (e.g, by repeat testing, parallel dilution testing, checking for an immunoassay interference from heterophile antibodies or cross-reacting substances, etc). There is no charge to the patient when this procedure is ordered. The findings are reported by sending a staff message in the Apex medical record to the ordering clinician, or by attaching a comment to a test result in the Apex medical record, and or by email to the ordering clinician.

Chikungunya Antibody Screen

CHIKA

ORDERING

Available Stat:
No

Performing Lab:
Focus via Quest

Methodology:
Immunoassay

Additional Information:
Chikungunya virus is a mosquito-borne alphavirus associated with febrile illness in Africa, the Indian Ocean islands, India, Southeast Asia, and the Caribbean.

Symptoms include severe arthralgia, rash, and headache. U.S. cases have been associated with international travel to countries with endemic Chikungunya virus.

Detection of Chikungunya virus antibodies is a reliable indicator of Chikungunya virus infection. IgM detection suggests infection within the previous 3 months.

Reflex Testing:
If Chikungunya IgG Screen is Positive, Chikungunya IgG Titration will be performed at an additional charge (CPT code(s): 86790).

If Chikungunya IgM Screen is Positive, Chikungunya IgM Titration will be performed at an additional charge (CPT code(s): 86790).

COLLECTION

Sample Type:
Serum

Collect:
Red top or Gold top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.1 mL serum

Stability (from collection to initiation):
Room temperaqure 1 week, refrigerated 2 weeks, frozen 1 month

PROCESSING

Test Code:
CHIKA

Sendout:
Yes

Performing Lab:
Focus via Quest

Specimen Preparation:
Aliquot and freeze sample. Transport to CB frozen. Order Quest test code 70188X

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.1 mL serum

Stability (from collection to initiation):
Room temperaqure 1 week, refrigerated 2 weeks, frozen 1 month

RESULT INTERPRETATION

Additional Information:

Chikungunya virus is a mosquito-borne alphavirus associated with febrile illness in Africa, the Indian Ocean islands, India, Southeast Asia, and the Caribbean.

Symptoms include severe arthralgia, rash, and headache. U.S. cases have been associated with international travel to countries with endemic Chikungunya virus.

Detection of Chikungunya virus antibodies is a reliable indicator of Chikungunya virus infection. IgM detection suggests infection within the previous 3 months.

ADMINISTRATIVE

CPT Codes:
86790-90 x2

LOINC Codes:
56129-0, 56131-6

COMPLETE VIEW

Available Stat:
No

Test Code:
CHIKA

Performing Lab:
Focus via Quest

Sendout:
Yes

Methodology:
Immunoassay

Collect:
Red top or Gold top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.1 mL serum

Specimen Preparation:
Aliquot and freeze sample. Transport to CB frozen. Order Quest test code 70188X

Stability (from collection to initiation):
Room temperaqure 1 week, refrigerated 2 weeks, frozen 1 month

Reflex Testing:

If Chikungunya IgG Screen is Positive, Chikungunya IgG Titration will be performed at an additional charge (CPT code(s): 86790).

If Chikungunya IgM Screen is Positive, Chikungunya IgM Titration will be performed at an additional charge (CPT code(s): 86790).

Additional Information:

Chikungunya virus is a mosquito-borne alphavirus associated with febrile illness in Africa, the Indian Ocean islands, India, Southeast Asia, and the Caribbean.

Symptoms include severe arthralgia, rash, and headache. U.S. cases have been associated with international travel to countries with endemic Chikungunya virus.

Detection of Chikungunya virus antibodies is a reliable indicator of Chikungunya virus infection. IgM detection suggests infection within the previous 3 months.

CPT Codes:
86790-90 x2

LOINC Codes:
56129-0, 56131-6

Chimerism Testing - CD14/15 Cell Subset

HTNH14 (Sunquest: ILNH14)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
STR

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Synonyms:

- Post-Transplant Testing by STR - Myeloid Lineage

COLLECTION

Sample Type:
ACD anticoagulated whole blood or bone marrow

Collect:
Yellow top (ACD)
Adult: 8.5 mL size x2
Pediatric: 3 mL x1 acceptable (see minimum volume information)

Amount to Collect:
Adult: 17 mL blood or marrow
Pediatric: 8.5 mL blood or marrow (see minimum volume information)

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Preferred Volume:
Adult: 17 mL blood or marrow
Pediatric: 8.5 mL blood or marrow (see minimum volume information)

?If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Minimum Volume:
Adult: 8.5 mL blood or marrow
Pediatric: 3 mL blood or marrow

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

Remarks:
Fill ACD tubes completely. Obtain ACD tube from Specimen Receiving. If collected with other chimerism tests and blood count is low, collect 2 yellow top tubes.

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Note: Because of limited stability, samples should be collected Monday through Thursday avoiding holidays. If samples are collected Friday they must be delivered to the UCSF Clinical Laboratory by 12:00 noon.

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 48 hours. For additional information, call 476-3887.

Unacceptable Conditions:
WBC count too low (<1,000)

PROCESSING

Test Code:
HTNH14 (Sunquest: ILNH14)

Test Group:
Chimerism Testing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Preferred Volume:
Adult: 17 mL blood or marrow
Pediatric: 8.5 mL blood or marrow (see minimum volume information)

?If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Minimum Volume:
Adult: 8.5 mL blood or marrow
Pediatric: 3 mL blood or marrow

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

Unacceptable Conditions:
WBC count too low (<1,000)

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 48 hours. For additional information, call 476-3887.

ADMINISTRATIVE

CPT Codes:
81268

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTNH14 (Sunquest: ILNH14)

Test Group:
Chimerism Testing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
STR

Remarks:
Fill ACD tubes completely. Obtain ACD tube from Specimen Receiving. If collected with other chimerism tests and blood count is low, collect 2 yellow top tubes.

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Note: Because of limited stability, samples should be collected Monday through Thursday avoiding holidays. If samples are collected Friday they must be delivered to the UCSF Clinical Laboratory by 12:00 noon.

Collect:
Yellow top (ACD)
Adult: 8.5 mL size x2
Pediatric: 3 mL x1 acceptable (see minimum volume information)

Amount to Collect:
Adult: 17 mL blood or marrow
Pediatric: 8.5 mL blood or marrow (see minimum volume information)

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Sample Type:
ACD anticoagulated whole blood or bone marrow

Preferred Volume:
Adult: 17 mL blood or marrow
Pediatric: 8.5 mL blood or marrow (see minimum volume information)

?If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Minimum Volume:
Adult: 8.5 mL blood or marrow
Pediatric: 3 mL blood or marrow

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

Unacceptable Conditions:
WBC count too low (<1,000)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Synonyms:

- Post-Transplant Testing by STR - Myeloid Lineage

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 48 hours. For additional information, call 476-3887.

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

CPT Codes:
81268

Chimerism Testing - CD19 Cell Subset

HTNH19 (Sunquest: ILNH19)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
STR

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Synonyms:

- Post-Transplant Testing by STR - B Cells Subset

COLLECTION

Sample Type:
ACD anticoagulated whole blood or bone marrow

Collect:
Yellow top (ACD)
Adult 8.5 mL size x2
Pediatric 3 mL x1 acceptable (see minimum volume information)

Amount to Collect:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow (see minimum volume information)

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Preferred Volume:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Minimum Volume:
Adult 8.5 mL blood or marrow
Pediatric 3 mL blood or marrow

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

Remarks:
Fill ACD tubes completely. Obtain ACD tube from Specimen Receiving. If collected with other chimerism tests and blood count is low, collect 2 yellow top tubes.

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Note: Because of limited stability, samples should be collected Monday through Thursday avoiding holidays. If samples are collected Friday they must be delivered to the UCSF Clinical Laboratory by 12:00 noon.

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 48 hours. For additional information, call 476-3887.

Unacceptable Conditions:
WBC count too low (<1,000)

PROCESSING

Test Code:
HTNH19 (Sunquest: ILNH19)

Test Group:
Chimerism Testing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Preferred Volume:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Minimum Volume:
Adult 8.5 mL blood or marrow
Pediatric 3 mL blood or marrow

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

Unacceptable Conditions:
WBC count too low (<1,000)

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 48 hours. For additional information, call 476-3887.

ADMINISTRATIVE

CPT Codes:
81268

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTNH19 (Sunquest: ILNH19)

Test Group:
Chimerism Testing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
STR

Remarks:
Fill ACD tubes completely. Obtain ACD tube from Specimen Receiving. If collected with other chimerism tests and blood count is low, collect 2 yellow top tubes.

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Note: Because of limited stability, samples should be collected Monday through Thursday avoiding holidays. If samples are collected Friday they must be delivered to the UCSF Clinical Laboratory by 12:00 noon.

Collect:
Yellow top (ACD)
Adult 8.5 mL size x2
Pediatric 3 mL x1 acceptable (see minimum volume information)

Amount to Collect:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow (see minimum volume information)

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Sample Type:
ACD anticoagulated whole blood or bone marrow

Preferred Volume:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Minimum Volume:
Adult 8.5 mL blood or marrow
Pediatric 3 mL blood or marrow

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

Unacceptable Conditions:
WBC count too low (<1,000)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Synonyms:

- Post-Transplant Testing by STR - B Cells Subset

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 48 hours. For additional information, call 476-3887.

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

CPT Codes:
81268

Chimerism Testing - CD3 Cell Subset

HTNH3 (Sunquest: ILNH3)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
STR

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Synonyms:

- Post-Transplant Testing by STR - T Cells Subset

COLLECTION

Sample Type:
ACD anticoagulated whole blood or bone marrow

Collect:
Yellow top (ACD)
Adult 8.5 mL size x2
Pediatric 3 mL x1 acceptable (see minimum volume information)

Amount to Collect:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow (see minimum volume information)

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Preferred Volume:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Minimum Volume:
Adult 8.5 mL blood or marrow
Pediatric 3 mL blood or marrow

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

Remarks:
Fill ACD tubes completely. Obtain ACD tube from Specimen Receiving. If collected with other chimerism tests and blood count is low, collect 2 yellow top tubes.

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Note: Because of limited stability, samples should be collected Monday through Thursday avoiding holidays. If samples are collected Friday they must be delivered to the UCSF Clinical Laboratory by 12:00 noon.

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 48 hours. For additional information, call 476-3887.

Unacceptable Conditions:
WBC count too low (<1,000)

PROCESSING

Test Code:
HTNH3 (Sunquest: ILNH3)

Test Group:
Chimerism Testing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Preferred Volume:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Minimum Volume:
Adult 8.5 mL blood or marrow
Pediatric 3 mL blood or marrow

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

Unacceptable Conditions:
WBC count too low (<1,000)

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 48 hours. For additional information, call 476-3887.

ADMINISTRATIVE

CPT Codes:
81268

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTNH3 (Sunquest: ILNH3)

Test Group:
Chimerism Testing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
STR

Remarks:
Fill ACD tubes completely. Obtain ACD tube from Specimen Receiving. If collected with other chimerism tests and blood count is low, collect 2 yellow top tubes.

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Note: Because of limited stability, samples should be collected Monday through Thursday avoiding holidays. If samples are collected Friday they must be delivered to the UCSF Clinical Laboratory by 12:00 noon.

Collect:
Yellow top (ACD)
Adult 8.5 mL size x2
Pediatric 3 mL x1 acceptable (see minimum volume information)

Amount to Collect:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow (see minimum volume information)

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Sample Type:
ACD anticoagulated whole blood or bone marrow

Preferred Volume:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Minimum Volume:
Adult 8.5 mL blood or marrow
Pediatric 3 mL blood or marrow

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

Unacceptable Conditions:
WBC count too low (<1,000)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Synonyms:

- Post-Transplant Testing by STR - T Cells Subset

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 48 hours. For additional information, call 476-3887.

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

CPT Codes:
81268

Chimerism Testing - CD33 Cell Subset

HTNH33 (Sunquest: ILNH33)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
STR

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Synonyms:

- Post-Transplant Testing by STR - Myeloid Lineage

COLLECTION

Sample Type:
ACD anticoagulated whole blood or bone marrow

Collect:
Yellow top (ACD)
Adult 8.5 mL size x2
Pediatric 3 mL x1 acceptable (see minimum volume information)

Amount to Collect:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow (see minimum volume information)

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Preferred Volume:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Minimum Volume:
Adult 8.5 mL blood or marrow
Pediatric 3 mL blood or marrow

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

Remarks:
Fill ACD tubes completely. Obtain ACD tube from Specimen Receiving. If collected with other chimerism tests and blood count is low, collect 2 yellow top tubes.

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Note: Because of limited stability, samples should be collected Monday through Thursday avoiding holidays. If samples are collected Friday they must be delivered to the UCSF Clinical Laboratory by 12:00 noon.

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 48 hours. For additional information, call 476-3887.

Unacceptable Conditions:
WBC count too low (<1,000)

PROCESSING

Test Code:
HTNH33 (Sunquest: ILNH33)

Test Group:
Chimerism Testing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Preferred Volume:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Minimum Volume:
Adult 8.5 mL blood or marrow
Pediatric 3 mL blood or marrow

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

Unacceptable Conditions:
WBC count too low (<1,000)

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 48 hours. For additional information, call 476-3887.

ADMINISTRATIVE

CPT Codes:
81268

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTNH33 (Sunquest: ILNH33)

Test Group:
Chimerism Testing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
STR

Remarks:
Fill ACD tubes completely. Obtain ACD tube from Specimen Receiving. If collected with other chimerism tests and blood count is low, collect 2 yellow top tubes.

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Note: Because of limited stability, samples should be collected Monday through Thursday avoiding holidays. If samples are collected Friday they must be delivered to the UCSF Clinical Laboratory by 12:00 noon.

Collect:
Yellow top (ACD)
Adult 8.5 mL size x2
Pediatric 3 mL x1 acceptable (see minimum volume information)

Amount to Collect:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow (see minimum volume information)

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Sample Type:
ACD anticoagulated whole blood or bone marrow

Preferred Volume:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Minimum Volume:
Adult 8.5 mL blood or marrow
Pediatric 3 mL blood or marrow

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

Unacceptable Conditions:
WBC count too low (<1,000)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Synonyms:

- Post-Transplant Testing by STR - Myeloid Lineage

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 48 hours. For additional information, call 476-3887.

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

CPT Codes:
81268

Chimerism Testing - CD34 Cell Subset

HTNH34 (Sunquest: ILNH34)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
STR

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Synonyms:

- Post-Transplant Testing by STR - Early Haematopoietic Cells

COLLECTION

Sample Type:
ACD anticoagulated whole blood or bone marrow

Collect:
Yellow top (ACD)
Adult 8.5 mL size x2
Pediatric 3 mL x1 acceptable (see minimum volume information)

Amount to Collect:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow (see minimum volume information)

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Preferred Volume:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Minimum Volume:
Adult 8.5 mL blood or marrow
Pediatric 3 mL blood or marrow

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

Remarks:
Fill ACD tubes completely. Obtain ACD tube from Specimen Receiving. If collected with other chimerism tests and blood count is low, collect 2 yellow top tubes.

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Note: Because of limited stability, samples should be collected Monday through Thursday avoiding holidays. If samples are collected Friday they must be delivered to the UCSF Clinical Laboratory by 12:00 noon.

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 48 hours. For additional information, call 476-3887.

Unacceptable Conditions:
WBC count too low (<1,000)

PROCESSING

Test Code:
HTNH34 (Sunquest: ILNH34)

Test Group:
Chimerism Testing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Preferred Volume:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Minimum Volume:
Adult 8.5 mL blood or marrow
Pediatric 3 mL blood or marrow

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

Unacceptable Conditions:
WBC count too low (<1,000)

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 48 hours. For additional information, call 476-3887.

ADMINISTRATIVE

CPT Codes:
81268

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTNH34 (Sunquest: ILNH34)

Test Group:
Chimerism Testing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
STR

Remarks:
Fill ACD tubes completely. Obtain ACD tube from Specimen Receiving. If collected with other chimerism tests and blood count is low, collect 2 yellow top tubes.

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Note: Because of limited stability, samples should be collected Monday through Thursday avoiding holidays. If samples are collected Friday they must be delivered to the UCSF Clinical Laboratory by 12:00 noon.

Collect:
Yellow top (ACD)
Adult 8.5 mL size x2
Pediatric 3 mL x1 acceptable (see minimum volume information)

Amount to Collect:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow (see minimum volume information)

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Sample Type:
ACD anticoagulated whole blood or bone marrow

Preferred Volume:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Minimum Volume:
Adult 8.5 mL blood or marrow
Pediatric 3 mL blood or marrow

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

Unacceptable Conditions:
WBC count too low (<1,000)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Synonyms:

- Post-Transplant Testing by STR - Early Haematopoietic Cells

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 48 hours. For additional information, call 476-3887.

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

CPT Codes:
81268

Chimerism Testing - CD56 Cell Subset

HTNH56 (Sunquest: ILNH56)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
STR

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Synonyms:

- Post-Transplant Testing by STR - NK Cells Subset

COLLECTION

Sample Type:
ACD anticoagulated whole blood or bone marrow

Collect:
Yellow top (ACD)
Adult 8.5 mL size x2
Pediatric 3 mL x1 acceptable (see minimum volume information)

Amount to Collect:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow (see minimum volume information)

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Preferred Volume:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Minimum Volume:
Adult 8.5 mL blood or marrow
Pediatric 3 mL blood or marrow

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

Remarks:
Fill ACD tubes completely. Obtain ACD tube from Specimen Receiving. If collected with other chimerism tests and blood count is low, collect 2 yellow top tubes.

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Note: Because of limited stability, samples should be collected Monday through Thursday avoiding holidays. If samples are collected Friday they must be delivered to the UCSF Clinical Laboratory by 12:00 noon.

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 48 hours. For additional information, call 476-3887.

Unacceptable Conditions:
WBC count too low (<1,000)

PROCESSING

Test Code:
HTNH56 (Sunquest: ILNH56)

Test Group:
Chimerism Testing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Preferred Volume:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Minimum Volume:
Adult 8.5 mL blood or marrow
Pediatric 3 mL blood or marrow

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

Unacceptable Conditions:
WBC count too low (<1,000)

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 48 hours. For additional information, call 476-3887.

ADMINISTRATIVE

CPT Codes:
81268

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTNH56 (Sunquest: ILNH56)

Test Group:
Chimerism Testing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
STR

Remarks:
Fill ACD tubes completely. Obtain ACD tube from Specimen Receiving. If collected with other chimerism tests and blood count is low, collect 2 yellow top tubes.

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Note: Because of limited stability, samples should be collected Monday through Thursday avoiding holidays. If samples are collected Friday they must be delivered to the UCSF Clinical Laboratory by 12:00 noon.

Collect:
Yellow top (ACD)
Adult 8.5 mL size x2
Pediatric 3 mL x1 acceptable (see minimum volume information)

Amount to Collect:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow (see minimum volume information)

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Sample Type:
ACD anticoagulated whole blood or bone marrow

Preferred Volume:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Minimum Volume:
Adult 8.5 mL blood or marrow
Pediatric 3 mL blood or marrow

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

Unacceptable Conditions:
WBC count too low (<1,000)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Synonyms:

- Post-Transplant Testing by STR - NK Cells Subset

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 48 hours. For additional information, call 476-3887.

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

CPT Codes:
81268

Chimerism Testing - CD71 Cell Subset

HTNH71 (Sunquest: ILNH71)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
STR

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Synonyms:

- Post-Transplant Testing by STR - Early Erythroid Cells

COLLECTION

Sample Type:
ACD anticoagulated whole blood or bone marrow

Collect:
Yellow top (ACD)
Adult 8.5 mL size x2
Pediatric 3 mL x1 acceptable (see minimum volume information)

Amount to Collect:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow (see minimum volume information)

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Preferred Volume:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Minimum Volume:
Adult 8.5 mL blood or marrow
Pediatric 3 mL blood or marrow

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

Remarks:
Fill ACD tubes completely. Obtain ACD tube from Specimen Receiving. If collected with other chimerism tests and blood count is low, collect 2 yellow top tubes.

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Note: Because of limited stability, samples should be collected Monday through Thursday avoiding holidays. If samples are collected Friday they must be delivered to the UCSF Clinical Laboratory by 12:00 noon.

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 48 hours. For additional information, call 476-3887.

Unacceptable Conditions:
WBC count too low (<1,000)

PROCESSING

Test Code:
HTNH71 (Sunquest: ILNH71)

Test Group:
Chimerism Testing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Preferred Volume:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Minimum Volume:
Adult 8.5 mL blood or marrow
Pediatric 3 mL blood or marrow

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

Unacceptable Conditions:
WBC count too low (<1,000)

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 48 hours. For additional information, call 476-3887.

ADMINISTRATIVE

CPT Codes:
81268

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTNH71 (Sunquest: ILNH71)

Test Group:
Chimerism Testing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
STR

Remarks:
Fill ACD tubes completely. Obtain ACD tube from Specimen Receiving. If collected with other chimerism tests and blood count is low, collect 2 yellow top tubes.

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Note: Because of limited stability, samples should be collected Monday through Thursday avoiding holidays. If samples are collected Friday they must be delivered to the UCSF Clinical Laboratory by 12:00 noon.

Collect:
Yellow top (ACD)
Adult 8.5 mL size x2
Pediatric 3 mL x1 acceptable (see minimum volume information)

Amount to Collect:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow (see minimum volume information)

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Sample Type:
ACD anticoagulated whole blood or bone marrow

Preferred Volume:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Minimum Volume:
Adult 8.5 mL blood or marrow
Pediatric 3 mL blood or marrow

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

Unacceptable Conditions:
WBC count too low (<1,000)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Synonyms:

- Post-Transplant Testing by STR - Early Erythroid Cells

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 48 hours. For additional information, call 476-3887.

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

CPT Codes:
81268

Chimerism Testing - Granulocyte Cells Subset

HTNHGR (Sunquest: ILNHGR)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
STR

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Synonyms:

- Post-Transplant Testing by STR - Granulocyte Cells Subset

COLLECTION

Sample Type:
ACD anticoagulated whole blood or bone marrow

Collect:
Yellow top (ACD)
Adult 8.5 mL size x2
Pediatric 3 mL x1 acceptable (see minimum volume information)

Amount to Collect:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow (see minimum volume information)

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Preferred Volume:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Minimum Volume:
Adult 8.5 mL blood or marrow
Pediatric 3 mL blood or marrow

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

Remarks:
Fill ACD tubes completely. Obtain ACD tube from Specimen Receiving. If collected with other chimerism tests and blood count is low, collect 2 yellow top tubes.

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Note: Because of limited stability, samples should be collected Monday through Thursday avoiding holidays. If samples are collected Friday they must be delivered to the UCSF Clinical Laboratory by 12:00 noon.

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 48 hours. For additional information, call 476-3887.

Unacceptable Conditions:
WBC count too low (<1,000)

PROCESSING

Test Code:
HTNHGR (Sunquest: ILNHGR)

Test Group:
Chimerism Testing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Preferred Volume:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Minimum Volume:
Adult 8.5 mL blood or marrow
Pediatric 3 mL blood or marrow

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

Unacceptable Conditions:
WBC count too low (<1,000)

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 48 hours. For additional information, call 476-3887.

ADMINISTRATIVE

CPT Codes:
81268

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTNHGR (Sunquest: ILNHGR)

Test Group:
Chimerism Testing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
STR

Remarks:
Fill ACD tubes completely. Obtain ACD tube from Specimen Receiving. If collected with other chimerism tests and blood count is low, collect 2 yellow top tubes.

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Note: Because of limited stability, samples should be collected Monday through Thursday avoiding holidays. If samples are collected Friday they must be delivered to the UCSF Clinical Laboratory by 12:00 noon.

Collect:
Yellow top (ACD)
Adult 8.5 mL size x2
Pediatric 3 mL x1 acceptable (see minimum volume information)

Amount to Collect:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow (see minimum volume information)

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Sample Type:
ACD anticoagulated whole blood or bone marrow

Preferred Volume:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Minimum Volume:
Adult 8.5 mL blood or marrow
Pediatric 3 mL blood or marrow

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

Unacceptable Conditions:
WBC count too low (<1,000)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Synonyms:

- Post-Transplant Testing by STR - Granulocyte Cells Subset

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 48 hours. For additional information, call 476-3887.

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

CPT Codes:
81268

Chimerism Testing - Informatives (Recipient and Donor)

HTNH1 (Sunquest: ILNH1)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
STR

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Synonyms:

- Pre-Transplant Testing by STR

COLLECTION

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Collect:
Yellow top (ACD)
Adult 8.5 mL size x2
Pediatric 3 mL x1 acceptable (see minimum volume information)

Amount to Collect:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow (see minimum volume information)

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Remarks:
Fill ACD tubes completely. Obtain ACD tube from Specimen Receiving. If collected with other chimerism tests and blood count is low, collect 2 yellow top tubes.

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Note: Because of limited stability, samples should be collected Monday through Thursday avoiding holidays. If samples are collected Friday they must be delivered to the UCSF Clinical Laboratory by 12:00 noon.

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 48 hours. For additional information, call 476-3887.

Unacceptable Conditions:
WBC count too low (<1,000)

PROCESSING

Test Code:
HTNH1 (Sunquest: ILNH1)

Test Group:
Chimerism Testing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Unacceptable Conditions:
WBC count too low (<1,000)

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 48 hours. For additional information, call 476-3887.

ADMINISTRATIVE

CPT Codes:
81265

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTNH1 (Sunquest: ILNH1)

Test Group:
Chimerism Testing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
STR

Remarks:
Fill ACD tubes completely. Obtain ACD tube from Specimen Receiving. If collected with other chimerism tests and blood count is low, collect 2 yellow top tubes.

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Note: Because of limited stability, samples should be collected Monday through Thursday avoiding holidays. If samples are collected Friday they must be delivered to the UCSF Clinical Laboratory by 12:00 noon.

Collect:
Yellow top (ACD)
Adult 8.5 mL size x2
Pediatric 3 mL x1 acceptable (see minimum volume information)

Amount to Collect:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow (see minimum volume information)

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Unacceptable Conditions:
WBC count too low (<1,000)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Synonyms:

- Pre-Transplant Testing by STR

Stability (from collection to initiation):

If kept at ambient temperature, can be good for up to 48 hours. For additional information, call 476-3887.

Reported:

Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

CPT Codes:

81265

Chimerism Testing - Whole Blood or Bone Marrow

HTNH2 (Sunquest: ILNH2)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
STR

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Synonyms:

- Post-Transplant Testing by STR

COLLECTION

Sample Type:
ACD anticoagulated whole blood or bone marrow

Collect:
Yellow top (ACD)
Adult 8.5 mL size x2
Pediatric 3 mL x1 acceptable (see minimum volume information)

Amount to Collect:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow (see minimum volume information)

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Preferred Volume:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Minimum Volume:
Adult 8.5 mL blood or marrow
Pediatric 3 mL blood or marrow

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

Remarks:
Fill ACD tubes completely. Obtain ACD tube from Specimen Receiving. If collected with other chimerism tests and blood count is low, collect 2 yellow top tubes.

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Note: Because of limited stability, samples should be collected Monday through Thursday avoiding holidays. If samples are collected Friday they must be delivered to the UCSF Clinical Laboratory by 12:00 noon.

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 48 hours. For additional information, call 476-3887.

Unacceptable Conditions:
WBC count too low (<1,000)

PROCESSING

Test Code:
HTNH2 (Sunquest: ILNH2)

Test Group:
Chimerism Testing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Preferred Volume:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Minimum Volume:
Adult 8.5 mL blood or marrow
Pediatric 3 mL blood or marrow

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

Unacceptable Conditions:
WBC count too low (<1,000)

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 48 hours. For additional information, call 476-3887.

ADMINISTRATIVE

CPT Codes:
81267

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTNH2 (Sunquest: ILNH2)

Test Group:
Chimerism Testing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
STR

Remarks:
Fill ACD tubes completely. Obtain ACD tube from Specimen Receiving. If collected with other chimerism tests and blood count is low, collect 2 yellow top tubes.

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Note: Because of limited stability, samples should be collected Monday through Thursday avoiding holidays. If samples are collected Friday they must be delivered to the UCSF Clinical Laboratory by 12:00 noon.

Collect:
Yellow top (ACD)
Adult 8.5 mL size x2
Pediatric 3 mL x1 acceptable (see minimum volume information)

Amount to Collect:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow (see minimum volume information)

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Sample Type:
ACD anticoagulated whole blood or bone marrow

Preferred Volume:
Adult 17 mL blood or marrow
Pediatric 8.5 mL blood or marrow

If these volumes are problematic please contact ITL at 6-3887 to discuss test needs and sample requirements.

Minimum Volume:
Adult 8.5 mL blood or marrow
Pediatric 3 mL blood or marrow

Note: Assuming a normal leukocyte count the 3 mL minimum sample size is only sufficient for a single study, multiple subsets will require additional sample. Please contact ITL at 6-3887 to discuss.

Unacceptable Conditions:
WBC count too low (<1,000)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Synonyms:

- Post-Transplant Testing by STR

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 48 hours. For additional information, call 476-3887.

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

CPT Codes:
81267

Chlamydia Antibody (MIF)

CPNI, TWAR, CTRI, CPSI

ORDERING

Available Stat:
No

Performing Lab:
Focus Diagnostics via Quest

Methodology:
Micro-immunofluorescence assay (MIF)

Reported:
Test run 6x per week. Turnaround time 5-6 days.

Additional Information:
IgG, IgA and IgM antibody tests are performed for each organism requested.

The immunofluorescent antibody test is more sensitive than CF and is the best serologic test for diagnosing chlamydial infection, although seroconversion may be delayed, as with the CF test. Due to the prolonged incubation period often seen in acute disease, the usual criterion for acute infection of a 4 fold rise in titer may not be demonstrable.

In patients infected with C. pneumoniae (TWAR), 70% of whom develop IF antibody (compared with 50% for CF) a single IgM titer > 32 or an IgG titer > 512 suggests acute infection.

Because antibody persists from prior exposures, levels (even of IgM) are often unhelpful in the diagnosis of urethritis or cervicitis in adults, although very high titers suggest invasive disease, e.g., salpingitis, epidydimitis or proctitis. Transplacental passage of maternal antibody may interfere with serodiagnosis of acute infection in infants.

Synonyms:

- LGV
- Parrot fever
- Psittacosis
- congenital infection
- prenatal infection

COLLECTION

Sample Type:
Serum

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.25 mL serum

Remarks:
Request **MUST** specify the single organism sought

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen 1 month.

PROCESSING

Test Code:
CPNI (C. pneumoniae (TWAR)), CTRI (C. tranchomatis), CPSI (C. psittaci)

Test Group:
Chlamydia

Sendout:
Yes

Performing Lab:
Focus Diagnostics via Quest

Specimen Preparation:
Refrigerate sample. Enter the appropriate test code for the organism requested:

CPNI: Chlamydia pneumoniae
CTRI: Chlamydia trachomatis
CPSI: Chlamydia psittaci

Preferred Volume:
1 mL serum

Minimum Volume:
0.25 mL serum

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen 1 month.

RESULT INTERPRETATION

Units:
Titer

Reference Interval:
IgG: <1:64
IgA: <1:16
IgM: <1:10

Additional Information:
IgG, IgA and IgM antibody tests are performed for each organism requested.

The immunofluorescent antibody test is more sensitive than CF and is the best serologic test for diagnosing chlamydial infection, although seroconversion may be delayed, as with the CF test. Due to the prolonged incubation period often seen in acute disease, the usual criterion for acute infection of a 4 fold rise in titer may not be demonstrable.

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Because antibody persists from prior exposures, levels (even of IgM) are often unhelpful in the diagnosis of urethritis or cervicitis in adults, although very high titers suggest invasive disease, e.g., salpingitis, epidydimitis or proctitis. Transplacental passage of maternal antibody may interfere with serodiagnosis of acute infection in infants.

ADMINISTRATIVE

CPT Codes:
86632-90, 86631-90 x2 for each organism tested.

COMPLETE VIEW

Available Stat:
No

Test Code:
CPNI (C. pneumoniae (TWAR)), CTRI (C. tranchomatis), CPSI (C. psittaci)

Test Group:
Chlamydia

Performing Lab:
Focus Diagnostics via Quest

Sendout:
Yes

Methodology:
Micro-immunofluorescence assay (MIF)

Remarks:
Request **MUST** specify the single organism sought

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.25 mL serum

Specimen Preparation:

Refrigerate sample. Enter the appropriate test code for the organism requested:

CPNI: Chlamydia pneumoniae
CTRI: Chlamydia trachomatis
CPSI: Chlamydia psittaci

Units:

Titer

Reference Interval:

IgG: <1:64
IgA: <1:16
IgM: <1:10

Synonyms:

- LGV
- Parrot fever
- Psittacosis
- congenital infection
- prenatal infection

Stability (from collection to initiation):

Room temperature 1 week, refrigerated 2 weeks, frozen 1 month.

Reported:

Test run 6x per week. Turnaround time 5-6 days.

Additional Information:

IgG, IgA and IgM antibody tests are performed for each organism requested.

The immunofluorescent antibody test is more sensitive than CF and is the best serologic test for diagnosing chlamydial infection, although seroconversion may be delayed, as with the CF test. Due to the prolonged incubation period often seen in acute disease, the usual criterion for acute infection of a 4 fold rise in titer may not be demonstrable.

In patients infected with C. pneumoniae (TWAR), 70% of whom develop IF antibody (compared with 50% for CF) a single IgM titer > 32 or an IgG titer > 512 suggests acute infection.

Because antibody persists from prior exposures, levels (even of IgM) are often unhelpful in the diagnosis of urethritis or cervicitis in adults, although very high titers suggest invasive disease, e.g., salpingitis, epidydimitis or proctitis. Transplacental passage of maternal antibody may interfere with serodiagnosis of acute infection in infants.

CPT Codes:

86632-90, 86631-90 x2 for each organism tested.

Chlamydia Culture

P699

ORDERING

Available Stat:
No

Performing Lab:
Focus Diagnostics

Methodology:
Tissue Culture, IFA

Reported:
3-7 days.

Additional Information:
Order P704 Chlamydia trachomatis / Neisseria gonorrhea RNA for the following sample types: cervical, urethral, rectal, pharyngeal, conjuctival, vaginal and urine. Nucleic acid detection is a sensitive method for diagnosis of CT / NG infections and is the recommended method for most patients.

Culture for Chlamydia trachomatis can be ordered to assess clinical treatment failure (where DNA may persist post-treatment), cases of suspected sexual abuse, or for sample types other than cervical, urethral, rectal, pharyngeal, vaginal and urine (e.g. tissue, extra-genital infection sites).

Chlamydia trachomatis is identified through the use of monoclonal antibodies specific for the major outer membrane protein present in all 15 known serovars of C. trachomatis but not C. pneumoniae or C. psittaci. Contact Microbiology if testing for the latter two species are clinically indicated. Substances that may interfere with growth or isolation of Chlamydia include antibiotics administered to the patient prior to specimen collection.

Synonyms:

- C. pneumoniae
- C. psittaci
- C. trachomatis
- TWAR agent
- Inclusion conjunctivitis
- Trachoma
- TRIC
- congenital infection
- prenatal infection

COLLECTION

Patient Preparation:
Some spermicidal agents and feminine powder sprays interfere with Chlamydia testing and should not be used prior to specimen collection.

Sample Type:
Endocervical swab, urethral swab, conjunctival eye scraping (swab), rectal swab, lymph node aspirate/biopsy, biopsy, vaginal swab (<12 years old), nasopharyngeal swab (infants only), throat swab, and endotracheal aspirate (infants only)

Collect:
Swabs and tissue: Universal Transport Medium (UTM)
Other specimens: Sterile container

Amount to Collect:
Swab samples: One swab
Fluids: 3 mL
Tissue: 1 cu mm

Preferred Volume:
Swab samples: One swab
Fluids: 3 mL
?Tissue: 1 cu mm

Minimum Volume:
Swab samples: One swab
Fluids: 1 mL
?Tissue: 1 cu mm

Remarks:
Do not use wood swabs. Dacron or rayon on plastic or wire swabs are recommended for specimen collection. Specimen should contain columnar or cuboidal epithelial cells from the infected site.

Collection kits with Universal Transport Medium (UTM) can be obtained from Moffit-Long Laboratory or Mount Zion Laboratory. Break or bend swabs to fit inside UTM tube. Immerse biopsy in UTM tube

Unacceptable Conditions:
Collected with wooden handle swab

PROCESSING

Test Code:
P699

Test Group:
Chlamydia

Sendout:
Yes

Performing Lab:
Focus Diagnostics

Specimen Preparation:
If fluid, transfer 3 ml to UTM media or 1 part fluid to 1 part UTM media. Transport specimens in UTM to China Basin using cold packs. Freeze specimen at -70C upon receipt at China Basin, and ship frozen to reference lab. Focus test code 690.

Preferred Volume:
Swab samples: One swab
Fluids: 3 mL
?Tissue: 1 cu mm

Minimum Volume:
Swab samples: One swab
Fluids: 1 mL
?Tissue: 1 cu mm

Unacceptable Conditions:
Collected with wooden handle swab

RESULT INTERPRETATION

Reference Interval:
No Chlamydia isolated

Additional Information:
Order P704 Chlamydia trachomatis / Neisseria gonorrhea RNA for the following sample types: cervical, urethral, rectal, pharyngeal, conjuctival, vaginal and urine. Nucleic acid detection is a sensitive method for diagnosis of CT / NG infections and is the recommended method for most patients.

Culture for Chlamydia trachomatis can be ordered to assess clinical treatment failure (where DNA may persist post-treatment), cases of suspected sexual abuse, or for sample types other than cervical, urethral, rectal, pharyngeal, vaginal and urine (e.g. tissue, extra-genital infection sites).

Chlamydia trachomatis is identified through the use of monoclonal antibodies specific for the major outer membrane protein present in all 15 known serovars of C. trachomatis but not C. pneumoniae or C. psittaci. Contact Microbiology if testing for the latter two species are clinically indicated. Substances that may interfere with growth or isolation of Chlamydia include antibiotics administered to the patient prior to specimen collection.

ADMINISTRATIVE

CPT Codes:
87110-90, 87140-90

LOINC Codes:
560-3

COMPLETE VIEW

Available Stat:
No

Test Code:
P699

Test Group:
Chlamydia

Performing Lab:
Focus Diagnostics

Sendout:
Yes

Methodology:
Tissue Culture, IFA

Patient Preparation:
Some spermicidal agents and feminine powder sprays interfere with Chlamydia testing and should not be used prior to specimen collection.

Remarks:
Do not use wood swabs. Dacron or rayon on plastic or wire swabs are recommended for specimen collection. Specimen should contain columnar or cuboidal epithelial cells from the infected site.

Collection kits with Universal Transport Medium (UTM) can be obtained from Moffit-Long Laboratory or Mount Zion Laboratory. Break or bend swabs to fit inside UTM tube. Immerse biopsy in UTM tube

Collect:
Swabs and tissue: Universal Transport Medium (UTM)
Other specimens: Sterile container

Amount to Collect:
Swab samples: One swab
Fluids: 3 mL
Tissue: 1 cu mm

Sample Type:
Endocervical swab, urethral swab, conjunctival eye scraping (swab), rectal swab, lymph node aspirate/biopsy, biopsy, vaginal swab (<12 years old), nasopharyngeal swab (infants only), throat swab, and endotracheal aspirate (infants only)

Preferred Volume:
Swab samples: One swab
Fluids: 3 mL
?Tissue: 1 cu mm

Minimum Volume:
Swab samples: One swab
Fluids: 1 mL
?Tissue: 1 cu mm

Unacceptable Conditions:
Collected with wooden handle swab

Specimen Preparation:
If fluid, transfer 3 ml to UTM media or 1 part fluid to 1 part UTM media. Transport specimens in UTM to China Basin using cold packs. Freeze specimen at -70C upon receipt at China Basin, and ship frozen to reference lab. Focus test code 690.

Reference Interval:
No Chlamydia isolated

Synonyms:

- C. pneumoniae
- C. psittaci
- C. trachomatis
- TWAR agent
- Inclusion conjunctivitis
- Trachoma
- TRIC
- congenital infection
- prenatal infection

Reported:
3-7 days.

Additional Information:
Order P704 Chlamydia trachomatis / Neisseria gonorrhea RNA for the following sample types: cervical, urethral, rectal, pharyngeal, conjuctival, vaginal and urine. Nucleic acid detection is a sensitive method for diagnosis of CT / NG infections and is the recommended method for most patients.

Culture for Chlamydia trachomatis can be ordered to assess clinical treatment failure (where DNA may persist post-treatment), cases of suspected sexual abuse, or for sample types other than cervical, urethral, rectal, pharyngeal, vaginal and urine (e.g. tissue, extra-genital infection sites).

Chlamydia trachomatis is identified through the use of monoclonal antibodies specific for the major outer membrane protein present in all 15 known serovars of C. trachomatis but not C. pneumoniae or C. psittaci. Contact Microbiology if testing for the latter two species are clinically indicated. Substances that may interfere with growth or isolation of Chlamydia include antibiotics administered to the patient prior to specimen collection.

CPT Codes:
87110-90, 87140-90

LOINC Codes:
560-3

Chlamydia trachomatis / Neisseria gonorrhoeae RNA

P704

ORDERING

Ordering Recommendations:
This assay is not intended for the evaluation of suspected sexual abuse or for other medico-legal indications.

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Test performed Monday - Friday

Methodology:
Target capture, transcription mediated amplification, and dual kinetic assay technologies.

Reported:
1 - 4 days

Synonyms:

- STD, Sexually transmitted disease
- GC
- Gonorrhoeae
- N gonorrhoeae
- CT/GC RNA

COLLECTION

Sample Type:
Endocervical swab, male urethral swab, rectal swab, throat swab, vaginal swab or first-void urine, conjuctival swab

Collect:

- Swab: Gen-Probe Aptima Multitest kit (orange label, pink swab):
  - endocervical
  - male urethral
  - rectal
  - throat
  - conjuctiva
  - vaginal

- Urine: Urine cup or Hologic Urine Specimen Collection Kit (PMM # 59041)

Amount to Collect:
Swab samples: One swab
Urine: > 3 mL

Preferred Volume:
Swab samples: One swab
Urine: > 3 mL

Minimum Volume:
Swab samples: One swab
Urine: 3 mL

Remarks:
Swab collection kits are available from Material Services (Unisex swab PMM# 399818, Vaginal/Multitest swab PMM# 59046). Do not use expired swab collection kits.

See the lab manual's Microbiology Guide for additional collection instructions.

Stability (from collection to initiation):
Swabs: Room temperature or Refrigerated 2 months
Urine: Refrigerated 1 day

Unacceptable Conditions:
Other sample types, improperly collected specimens, leaky specimens with <1700 µL fluid in the transport tube, expired specimen collection kit used, cleaning swab (white shaft) submitted in the transport tube

PROCESSING

Test Code:
P704

Test Group:
STD

Performing Lab:
Microbiology

Specimen Preparation:
Urine samples:
Enter urine volume in SDES.
• If first void urine is not specified as the sample type, or if midstream urine, enter code UMSNO in SREQ.
• Place barcode label vertically at the top of the transport tube label.
• Transfer 2 mL urine to Urine Specimen Transport Tube on receipt at China Basin. The proper fill level should be noted between the black fill lines on the transport tube label.

If a call is received from a clinician or clinic because there is concern for sexual abuse, refer them to Child and Adolescent Sexual Abuse Resource Center at SFGH (415)206-8386. RNs are on call 24 hours.

If LGV PCR ordered on rectal swab, send out:
• Order Microbiology Test Not Listed in Apex (P319).
• Collect 2 swabs, one in VHM and the other in APTIMA Unisex swab collection kit.
• Send to SFDPH for testing.
• Freeze VHM at -70°C if not sent within 72 hrs.

Preferred Volume:
Swab samples: One swab
Urine: > 3 mL

Minimum Volume:
Swab samples: One swab
Urine: 3 mL

Unacceptable Conditions:
Other sample types, improperly collected specimens, leaky specimens with <1700 µL fluid in the transport tube, expired specimen collection kit used, cleaning swab (white shaft) submitted in the transport tube

Stability (from collection to initiation):
Swabs: Room temperature or Refrigerated 2 months
Urine: Refrigerated 1 day

RESULT INTERPRETATION

Reference Interval:
Chlamydia: Not detected
N. gonorrhoeae: Not detected

ADMINISTRATIVE

CPT Codes:
87491, 87591

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
This assay is not intended for the evaluation of suspected sexual abuse or for other medico-legal indications.

Test Code:
P704

Test Group:
STD

Performing Lab:
Microbiology

Performed:
Test performed Monday - Friday

Methodology:
Target capture, transcription mediated amplification, and dual kinetic assay technologies.

Remarks:

Swab collection kits are available from Material Services (Unisex swab PMM# 399818, Vaginal/Multitest swab PMM# 59046). Do not use expired swab collection kits.

See the lab manual's Microbiology Guide for additional collection instructions.

Collect:

- Swab: Gen-Probe Aptima Multitest kit (orange label, pink swab):
  - endocervical
  - male urethral
  - rectal
  - throat
  - conjuctiva
  - vaginal

- Urine: Urine cup or Hologic Urine Specimen Collection Kit (PMM # 59041)

Amount to Collect:

Swab samples: One swab
Urine: > 3 mL

Sample Type:

Endocervical swab, male urethral swab, rectal swab, throat swab, vaginal swab or first-void urine, conjuctival swab

Preferred Volume:

Swab samples: One swab
Urine: > 3 mL

Minimum Volume:

Swab samples: One swab
Urine: 3 mL

Unacceptable Conditions:

Other sample types, improperly collected specimens, leaky specimens with <1700 µL fluid in the transport tube, expired specimen collection kit used, cleaning swab (white shaft) submitted in the transport tube

Specimen Preparation:

Urine samples:
Enter urine volume in SDES.
• If first void urine is not specified as the sample type, or if midstream urine, enter code UMSNO in SREQ.
• Place barcode label vertically at the top of the transport tube label.
• Transfer 2 mL urine to Urine Specimen Transport Tube on receipt at China Basin. The proper fill level should be noted between the black fill lines on the transport tube label.

If a call is received from a clinician or clinic because there is concern for sexual abuse, refer them to Child and Adolescent Sexual Abuse Resource Center at SFGH (415)206-8386. RNs are on call 24 hours.

If LGV PCR ordered on rectal swab, send out:
• Order Microbiology Test Not Listed in Apex (P319).
• Collect 2 swabs, one in VHM and the other in APTIMA Unisex swab collection kit.
• Send to SFDPH for testing.
• Freeze VHM at -70°C if not sent within 72 hrs.

Reference Interval:

Chlamydia: Not detected
N. gonorrhoeae: Not detected

Synonyms:

- STD, Sexually transmitted disease
- GC
- Gonorrhoeae
- N gonorrhoeae
- CT/GC RNA

Stability (from collection to initiation):

Swabs: Room temperature or Refrigerated 2 months
Urine: Refrigerated 1 day

Reported:

1 - 4 days

CPT Codes:

87491, 87591

LDT or Modified FDA:

Yes

Chloride, 24 hour urine

CLU

ORDERING

Available Stat:
No

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 7 days per week from 8:00 AM to midnight only.

Methodology:
Ag/AgCl solid-state electrode

Reported:
Test run 2X daily. Turnaround time: 1 day

Additional Information:
Output varies with diet.

Iodide, bromide and thiosulfate but not salicylate, bicarbonate or nitrate cause positive interference in this chloride assay. Note, that salicylate, bicarbonate and nitrate cause a positive interference on chloride measured by the ABL blood gas analyzers.
Ha, L et al, Annals Clin Biochem, 2015, 52(2): 288-292
Wendroth, S et al, Clin Chim Acta, 2014, 431: 77-79

Synonyms:

- Cl
- Cl-
- Urine electrolytes

COLLECTION

Sample Type:
24 hour urine collection or random urine

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container, 10g Boric Acid

Amount to Collect:
Entire 24 hour urine output.

Preferred Volume:
1 mL urine

Minimum Volume:
0.2 mL urine

Remarks:
Refrigerate the collection container during the period of the collection.

Stability (from collection to initiation):
Room temperature, refrigerated or frozen at -20C, 7 days

PROCESSING

Test Code:
CLU

Test Group:
Chloride

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
1 mL urine

Minimum Volume:
0.2 mL urine

Stability (from collection to initiation):
Room temperature, refrigerated or frozen at -20C, 7 days

RESULT INTERPRETATION

Units:
mmol/D

Reference Interval:
Usually 50-250 mmol/D

Additional Information:
Output varies with diet.

Iodide, bromide and thiosulfate but not salicylate, bicarbonate or nitrate cause positive interference in this chloride assay. Note, that salicylate, bicarbonate and nitrate cause a positive interference on chloride measured by the ABL blood gas analyzers.
Ha, L et al, Annals Clin Biochem, 2015, 52(2): 288-292
Wendroth, S et al, Clin Chim Acta, 2014, 431: 77-79

ADMINISTRATIVE

CPT Codes:
82436

COMPLETE VIEW

Available Stat:
No

Test Code:
CLU

Test Group:
Chloride

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 7 days per week from 8:00 AM to midnight only.

Methodology:
Ag/AgCl solid-state electrode

Remarks:
Refrigerate the collection container during the period of the collection.

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container, 10g Boric Acid

Amount to Collect:
Entire 24 hour urine output.

Sample Type:
24 hour urine collection or random urine

Preferred Volume:
1 mL urine

Minimum Volume:
0.2 mL urine

Units:
mmol/D

Reference Interval:
Usually 50-250 mmol/D

Synonyms:

- Cl
- Cl-
- Urine electrolytes

Stability (from collection to initiation):
Room temperature, refrigerated or frozen at -20C, 7 days

Reported:
Test run 2X daily. Turnaround time: 1 day

Additional Information:

Output varies with diet.

Iodide, bromide and thiosulfate but not salicylate, bicarbonate or nitrate cause positive interference in this chloride assay. Note, that salicylate, bicarbonate and nitrate cause a positive interference on chloride measured by the ABL blood gas analyzers.

Ha, L et al, Annals Clin Biochem, 2015, 52(2): 288-292
Wendroth, S et al, Clin Chim Acta, 2014, 431: 77-79

CPT Codes:

82436

Chloride, Body Fluid

CLB

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Ag/AgCl solid-state electrode

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context.

Interpretive information on this testing can be found at https://aruplab.com/bodyfluids

Turbid samples, including watery stools, will be centrifuged and the test run on the supernatant.

Iodide, bromide and thiosulfate cause a positive interference in this chloride assay.
Salicylate and nitrate do not cause interference in this chloride assay.
Ha, L et al, Annals Clin Biochem, 2015, 52(2): 288-292
Wendroth, S et al, Clin Chim Acta, 2014, 431: 77-79

Synonyms:

- Cl
- Cl-
- Body fluid electrolytes

COLLECTION

Sample Type:
Body fluid

Collect:
Clean, empty container OR red top (no additives)
Note: Do NOT collect in red top with clot activator (silicone coated).

Amount to Collect:
5 mL fluid

Preferred Volume:
1 mL fluid

Minimum Volume:
0.2 mL fluid

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

PROCESSING

Test Code:
CLB

Test Group:
Chloride

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
1 mL fluid

Minimum Volume:
0.2 mL fluid

RESULT INTERPRETATION

Units:
mmol/L

Additional Information:
Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context.

Interpretive information on this testing can be found at https://aruplab.com/bodyfluids

Turbid samples, including watery stools, will be centrifuged and the test run on the supernatant.

Iodide, bromide and thiosulfate cause a positive interference in this chloride assay.
Salicylate and nitrate do not cause interference in this chloride assay.
Ha, L et al, Annals Clin Biochem, 2015, 52(2): 288-292
Wendroth, S et al, Clin Chim Acta, 2014, 431: 77-79

ADMINISTRATIVE

CPT Codes:
82438

LOINC Codes:
54370-2

COMPLETE VIEW

Available Stat:
Yes

Test Code:
CLB

Test Group:
Chloride

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Ag/AgCl solid-state electrode

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Collect:
Clean, empty container OR red top (no additives)
Note: Do NOT collect in red top with clot activator (silicone coated).

Amount to Collect:
5 mL fluid

Sample Type:
Body fluid

Preferred Volume:
1 mL fluid

Minimum Volume:
0.2 mL fluid

Units:
mmol/L

Synonyms:

- Cl
- Cl-
- Body fluid electrolytes

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:

Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context.

Interpretive information on this testing can be found at https://aruplab.com/bodyfluids

Turbid samples, including watery stools, will be centrifuged and the test run on the supernatant.

Iodide, bromide and thiosulfate cause a positive interference in this chloride assay.
Salicylate and nitrate do not cause interference in this chloride assay.

Ha, L et al, Annals Clin Biochem, 2015, 52(2): 288-292
Wendroth, S et al, Clin Chim Acta, 2014, 431: 77-79

CPT Codes:

82438

LOINC Codes:

54370-2

Chloride, Fecal

CHLF

ORDERING

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative Ion-Selective Electrode

Reported:
1-2 days

COLLECTION

Collect:
Liquid random stool.

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 1 week; Frozen: 1 month

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Formed or viscous stool.

PROCESSING

Test Code:
CHLF

ARUP Test Code:
0020381

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transfer 5 g aliquot of liquid random stool to an unpreserved stool transport vial (ARUP Supply #40910). (Min: 1 g) Do not add saline or water to liquefy specimen.

Unacceptable Conditions:
Formed or viscous stool.

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 1 week; Frozen: 1 month

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:
A reference interval has not been established for fecal specimens.

Interpretive Data:
This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:
82438

LOINC:

- 15158-9

COMPLETE VIEW

Available Stat:
No

Test Code:
CHLF

ARUP Test Code:
0020381

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative Ion-Selective Electrode

Collect:
Liquid random stool.

Unacceptable Conditions:
Formed or viscous stool.

Specimen Preparation:
Transfer 5 g aliquot of liquid random stool to an unpreserved stool transport vial (ARUP Supply #40910). (Min: 1 g) Do not add saline or water to liquefy specimen.

Reference Interval:
A reference interval has not been established for fecal specimens.

Interpretive Data:
This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Storage/Transport Temperature:
Refrigerated.

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 1 week; Frozen: 1 month

Reported:
1-2 days

CPT Codes:
82438

LOINC:

- 15158-9

Chloride, Plasma / Serum

CL

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Chemistry: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center (Mon-Fri 0800-1630)

Methodology:

Parnassus, Mission Bay & Mt. Zion Chemistry - Ag/AgCl solid-state electrode on Abbott Architect
Berkeley Outpatient Center - Indirect ISE on Roche cobas c311

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
The anion gap is calculated from the serum Sodium, Chloride and Total CO2 values using the equation: Na-(CL+CO2). The calculation is automatic whenever **all three** of the electrolytes are ordered together. It is not a separately orderable test. For further information, please see the anion gap lab manual page.

Iodide, bromide and thiosulfate can cause positive interference in the Abbott chloride assay.
Salicylate and nitrate do not interfere in the Abbott chloride assay.
Ha, L et al, Annals Clin Biochem, 2015, 52(2): 288-292
Wendroth, S et al, Clin Chim Acta, 2014, 431: 77-79

The chloride assay on the Roche Cobas analyzer may be susceptible to interference by perchlorate, thiosulfate, iodide, nitrate, salicylate, bicarbonate and bromide depending on concentration of the interferent and age of the chloride electrode.
Wiederkehr M, Am J Medicine 2021; 134:1170-1174
Monteyne T et al. Ann Lab Med 2022; 42:566-574

Synonyms:

- Cl
- Cl-
- Electrolytes
- Anion gap

COLLECTION

Sample Type:
Plasma or serum

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Parnassus, Mission Bay, Mt. Zion, and Berkeley Outpatient Center
Room temperature 7 days, refrigerated 7 days, frozen at -20C >1 year

PROCESSING

Test Code:
CL

Test Group:
Chloride

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Parnassus, Mission Bay, Mt. Zion, and Berkeley Outpatient Center
Room temperature 7 days, refrigerated 7 days, frozen at -20C >1 year

RESULT INTERPRETATION

Units:
mmol/L

Reference Interval:
Parnassus, Mission Bay & Mt. Zion Chemistry
Cord: 96-104 mmol/L
Newborn (0 to 30 days): 98-113 mmol/L
>30 days: 101-110 mmol/L

Berkeley Outpatient Center

Age	mmol/L
>= 19 years	98-107

UCSF Clinical Labs at Berkeley Outpatient Center verified the adult reference range (>= 19 years) stated in the Roche ISE indirect package insert by running 20 male and 20 female lab volunteers.

Additional Information:
The anion gap is calculated from the serum Sodium, Chloride and Total CO2 values using the equation: Na-(CL+CO2). The calculation is automatic whenever **all three** of the electrolytes are ordered together. It is not a separately orderable test. For further information, please see the anion gap lab manual page.

Iodide, bromide and thiosulfate can cause positive interference in the Abbott chloride assay.
Salicylate and nitrate do not interfere in the Abbott chloride assay.
Ha, L et al, Annals Clin Biochem, 2015, 52(2): 288-292
Wendroth, S et al, Clin Chim Acta, 2014, 431: 77-79

The chloride assay on the Roche Cobas analyzer may be susceptible to interference by perchlorate, thiosulfate, iodide, nitrate, salicylate, bicarbonate and bromide depending on concentration of the interferent and age of the chloride electrode.
Wiederkehr M, Am J Medicine 2021; 134:1170-1174
Monteyne T et al. Ann Lab Med 2022; 42:566-574

ADMINISTRATIVE

CPT Codes:
82435

LOINC Codes:
2075-0

COMPLETE VIEW

Available Stat:
Yes

Test Code:
CL

Test Group:
Chloride

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Chemistry: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center (Mon-Fri 0800-1630)

Methodology:

Parnassus, Mission Bay & Mt. Zion Chemistry - Ag/AgCl solid-state electrode on Abbott Architect
Berkeley Outpatient Center - Indirect ISE on Roche cobas c311

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
1 mL blood

Sample Type:
Plasma or serum

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Units:
mmol/L

Reference Interval:
Parnassus, Mission Bay & Mt. Zion Chemistry
Cord: 96-104 mmol/L
Newborn (0 to 30 days): 98-113 mmol/L
>30 days: 101-110 mmol/L

Berkeley Outpatient Center

Age	mmol/L
>= 19 years	98-107

UCSF Clinical Labs at Berkeley Outpatient Center verified the adult reference range (>= 19 years) stated in the Roche ISE indirect package insert by running 20 male and 20 female lab volunteers.

Synonyms:

- Cl
- Cl-
- Electrolytes
- Anion gap

Stability (from collection to initiation):
Parnassus, Mission Bay, Mt. Zion, and Berkeley Outpatient Center
Room temperature 7 days, refrigerated 7 days, frozen at -20C >1 year

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
The anion gap is calculated from the serum Sodium, Chloride and Total CO2 values using the equation: Na-(CL+CO2). The calculation is automatic whenever **all three** of the electrolytes are ordered together. It is not a separately orderable test. For further information, please see the anion gap lab manual page.

Iodide, bromide and thiosulfate can cause positive interference in the Abbott chloride assay.
Salicylate and nitrate do not interfere in the Abbott chloride assay.
Ha, L et al, Annals Clin Biochem, 2015, 52(2): 288-292
Wendroth, S et al, Clin Chim Acta, 2014, 431: 77-79

The chloride assay on the Roche Cobas analyzer may be susceptible to interference by perchlorate, thiosulfate, iodide, nitrate, salicylate, bicarbonate and bromide depending on concentration of the interferent and age of the chloride electrode.
Wiederkehr M, Am J Medicine 2021; 134:1170-1174
Monteyne T et al. Ann Lab Med 2022; 42:566-574

CPT Codes:
82435

LOINC Codes:
2075-0

Chloride, random urine

CLUR

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Ag/AgCl solid-state electrode

Reported:
Test run 2X daily. Turnaround time: 1 day

Additional Information:
Output varies with diet.

Iodide, bromide and thiosulfate but not salicylate, bicarbonate or nitrate cause positive interference in this chloride assay. Note, that salicylate, bicarbonate and nitrate cause a positive interference on chloride measured by the ABL blood gas analyzers.
Ha, L et al, Annals Clin Biochem, 2015, 52(2): 288-292
Wendroth, S et al, Clin Chim Acta, 2014, 431: 77-79

Synonyms:

- Cl
- Cl-
- Urine electrolytes

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
20 mL urine

Preferred Volume:
1 mL urine

Minimum Volume:
0.2 mL urine

Stability (from collection to initiation):
Room temperature, refrigerated or frozen at -20C, 7 days.

PROCESSING

Test Code:
CLUR

Test Group:
Chloride

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
1 mL urine

Minimum Volume:
0.2 mL urine

Stability (from collection to initiation):
Room temperature, refrigerated or frozen at -20C, 7 days.

RESULT INTERPRETATION

Units:
mmol/L

Additional Information:
Output varies with diet.

Iodide, bromide and thiosulfate but not salicylate, bicarbonate or nitrate cause positive interference in this chloride assay. Note, that salicylate, bicarbonate and nitrate cause a positive interference on chloride measured by the ABL blood gas analyzers.
Ha, L et al, Annals Clin Biochem, 2015, 52(2): 288-292
Wendroth, S et al, Clin Chim Acta, 2014, 431: 77-79

ADMINISTRATIVE

CPT Codes:
82436

LOINC Codes:
2078-4

COMPLETE VIEW

Available Stat:
Yes

Test Code:
CLUR

Test Group:
Chloride

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Ag/AgCl solid-state electrode

Collect:
Urine cup

Amount to Collect:
20 mL urine

Sample Type:
Random urine

Preferred Volume:
1 mL urine

Minimum Volume:
0.2 mL urine

Units:
mmol/L

Synonyms:

- Cl
- Cl-
- Urine electrolytes

Stability (from collection to initiation):
Room temperature, refrigerated or frozen at -20C, 7 days.

Reported:
Test run 2X daily. Turnaround time: 1 day

Additional Information:
Output varies with diet.

Iodide, bromide and thiosulfate but not salicylate, bicarbonate or nitrate cause positive interference in this chloride assay. Note, that salicylate, bicarbonate and nitrate cause a positive interference on chloride measured by the ABL blood gas analyzers.
Ha, L et al, Annals Clin Biochem, 2015, 52(2): 288-292
Wendroth, S et al, Clin Chim Acta, 2014, 431: 77-79

CPT Codes:
82436

LOINC Codes:
2078-4

Chloride, sweat

SWCL

ORDERING

Available Stat:
No

Performing Lab:
Mission Bay Chemistry

Performed:
Monday-Friday (day shift)

Methodology:
Coulometric Titration (Wescor ChloroChek 3400 Chloridometer)

Reported:
1-3 days

Additional Information:
Outpatient testing is done in the Gateway Medical Building, 6th Floor Pediatric Pulmonary Clinic, Station 6A. Patients should arrive prior to the scheduled time to allow for registration, and should bring a written request from the ordering physician. Requisitions may be faxed to (415) 476-4863 ahead of time. The test lasts about one hour, during which time the patient should remain near the laboratory to check upon the progress of the test.

The laboratory usually schedules one patient per day. Calls to schedule same-day testing are acceptable but depend on the lab staff availability. A scheduled appointment may be delayed if the laboratory has to provide urgent services to ICN or LDR patients prior to the time of the appointment. Such delays will be notified as soon as possible to the outpatient upon arrival or the inpatient's caregiver (physician or nurse). Sweat chlorides can be performed only between 8 a.m. to 1 p.m., Monday through Friday. When scheduling 1 p.m. appointments, please request unit to remind outpatients to be on time.

Sodium measurement on sweat is not offered.

Synonyms:

- Cl
- Sodium, sweat
- Cl-
- cystic fibrosis
- CF

COLLECTION

Patient Preparation:
Patient is well hydrated the day before and day of testing and dressed warmly at appointment.

Sample Type:
Sweat

Amount to Collect:
See preferred volume

Preferred Volume:
At least 15 µL sweat, collected by Mission Bay lab personnel.

Remarks:
By appointment only: call UCSF Mission Bay Chemistry Lab at 415-476-0183 from 0800-1530 hours, Monday-Friday.

PROCESSING

Test Code:
SWCL

Test Group:
Chloride

Performing Lab:
Mission Bay Chemistry

Preferred Volume:
At least 15 µL sweat, collected by Mission Bay lab personnel.

RESULT INTERPRETATION

Units:
mmol/L

Reference Interval:

For all populations:

CF unlikely: < 30 mmol/L
Intermediate: 30-59 mmol/L
Indicative of CF: >= 60 mmol/L

Reference ranges adopted from: Farrell PM et al. Diagnosis of Cystic Fibrosis: Consensus Guidelines from the Cystic Fibrosis Foundation. The Journal of Pediatrics, volume 181, supplement, February 2017, Pages S4-S15. This reference range is a change from previous guidelines in which the reference limit for CF being unlikely was set at < 40 mmol/L for individuals more than 6 months of age.

Additional Information:

Outpatient testing is done in the Gateway Medical Building, 6th Floor Pediatric Pulmonary Clinic, Station 6A. Patients should arrive prior to the scheduled time to allow for registration, and should bring a written request from the ordering physician. Requisitions may be faxed to (415) 476-4863 ahead of time. The test lasts about one hour, during which time the patient should remain near the laboratory to check upon the progress of the test.

The laboratory usually schedules one patient per day. Calls to schedule same-day testing are acceptable but depend on the lab staff availability. A scheduled appointment may be delayed if the laboratory has to provide urgent services to ICN or LDR patients prior to the time of the appointment. Such delays will be notified as soon as possible to the outpatient upon arrival or the inpatient's caregiver (physician or nurse). Sweat chlorides can be performed only between 8 a.m. to 1 p.m., Monday through Friday. When scheduling 1 p.m. appointments, please request unit to remind outpatients to be on time.

Sodium measurement on sweat is not offered.

ADMINISTRATIVE

CPT Codes:
89230, 82438

LOINC Codes:
2077-6

COMPLETE VIEW

Available Stat:
No

Test Code:
SWCL

Test Group:
Chloride

Performing Lab:
Mission Bay Chemistry

Performed:
Monday-Friday (day shift)

Methodology:
Coulometric Titration (Wescor ChloroChek 3400 Chloridometer)

Patient Preparation:
Patient is well hydrated the day before and day of testing and dressed warmly at appointment.

Remarks:
By appointment only: call UCSF Mission Bay Chemistry Lab at 415-476-0183 from 0800-1530 hours, Monday-Friday.

Amount to Collect:
See preferred volume

Sample Type:
Sweat

Preferred Volume:
At least 15 µL sweat, collected by Mission Bay lab personnel.

Units:
mmol/L

Reference Interval:

For all populations:

CF unlikely: < 30 mmol/L
Intermediate: 30-59 mmol/L
Indicative of CF: >= 60 mmol/L

Reference ranges adopted from: Farrell PM et al. Diagnosis of Cystic Fibrosis: Consensus Guidelines from the Cystic Fibrosis Foundation. The Journal of Pediatrics, volume 181, supplement, February 2017, Pages S4-S15. This reference range is a change from previous guidelines in which the reference limit for CF being unlikely was set at < 40 mmol/L for individuals more than 6 months of age.

Synonyms:

- Cl
- Sodium, sweat
- Cl-
- cystic fibrosis
- CF

Reported:

1-3 days

Additional Information:

Outpatient testing is done in the Gateway Medical Building, 6th Floor Pediatric Pulmonary Clinic, Station 6A. Patients should arrive prior to the scheduled time to allow for registration, and should bring a written request from the ordering physician. Requisitions may be faxed to (415) 476-4863 ahead of time. The test lasts about one hour, during which time the patient should remain near the laboratory to check upon the progress of the test.

The laboratory usually schedules one patient per day. Calls to schedule same-day testing are acceptable but depend on the lab staff availability. A scheduled appointment may be delayed if the laboratory has to provide urgent services to ICN or LDR patients prior to the time of the appointment. Such delays will be notified as soon as possible to the outpatient upon arrival or the inpatient's caregiver (physician or nurse). Sweat chlorides can be performed only between 8 a.m. to 1 p.m., Monday through Friday. When scheduling 1 p.m. appointments, please request unit to remind outpatients to be on time.

Sodium measurement on sweat is not offered.

CPT Codes:

89230, 82438

LOINC Codes:

2077-6

Chloride, Whole Blood

CLWB

ORDERING

Ordering Recommendations:
Follow the link for information about Blood Gas Panels that contain this test.

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay and Mt Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Potentiometry, Radiometer ABL 90 FLEX Plus

Reported:
STAT: 15 mins
Routine: 30 mins

Additional Information:
Iodide, bromide, thiosulfate, salicylate and nitrate cause a positive interference on chloride measured by ABL blood gas analyzers.

Ha, L et al, Annals Clin Biochem, 2015, 52(2): 288-292
Wendroth, S et al, Clin Chim Acta, 2014, 431: 77-79
ABL90 Flex Plus Instructions for Use Manual, Radiometer.

Synonyms:

- Cl
- Cl-
- Electrolytes
- ARTBGL
- VENBGL
- CVBGL
- MVBGL
- CAPBG
- MVBGCX
- CIRBGA
- CIRBGV
- Blood gas
- ABG

COLLECTION

Sample Type:
Heparinized whole blood

Collect:
Plastic blood gas syringe containing 100U of dry heparin or capillary tube with 70 IU/ml dry electrolyte-balanced heparin

Amount to Collect:
3 mL blood

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood

Remarks:

Arterial puncture:

Due to the risk of arterial damage and subsequent distal ischemia, prior to puncturing an artery the RN assesses the collateral circulation. If the radial artery is to be punctured, then the pulse of the ulnar artery is assessed. If the dorsalis pedis artery is to be accessed then the posterial tibial pulse is assessed and likewise if the posterial tibial approach is used the dorsalis pedis pulse is assessed. The modified Allens's test may be used to assess collateral circulation of the ulnar artery before a radial artery puncture, but it does not always ensure adequate flow. A Doppler ultrasound flow indicator may be used to verify collateral circulation. If the collateral circulation is poor and the RN cannot palpate a pulse then the physician should be notified before proceeding. If for any reason the circulation is compromised to the extremity being assessed for arterial puncture then the physician should be notified prior to proceeding.

1. Palpate the radial artery and identify the site where the pulse is the strongest. Avoid areas with overlying veins to prevent venous admixture.
2. Prepare the patient's skin with an alcohol or 2% chlorhexidine wipe/swab.
3. Place two or three fingers along the course of the artery both to locate its position and direction, and to stabilize it.
4. Penetrate the skin smoothly holding the needle at 30-60 degree angle with the needle bevel up and pointed proximally. The angle of the butterfly" IV catheter should not exceed 45° for pediatric patients.
5. Re-establish the position and direction of the artery by palpation.
6. Gently and slowly advance the needle or butterfly", aiming directly for the area of maximum pulsation.
7. When the arterial lumen has been entered, less resistance is felt and blood appears in the syringe above the needle hub.
8. Obtain required amount of arterial blood for test(s).
9. If blood is not obtained on first attempt, withdraw the needle to just below the skin surface and advance needle at same angle but at 1 mm to either side of previous attempt.
10. Place the 2x2 gauze over the site of the puncture then withdraw the needle from the artery. Press firmly at the site for at least five minutes, or until the bleeding stops. Apply bandage or pressure dressing.
11. Expel any air bubble in the syringe with air filter cap placed on specimen syringe.
12. Label sample with patient's name, ID number and DOB.

Venous samples:

1. Avoid excessive venous stasis from prolonged tourniquet application or clenching of the fist prior to sample collection.
2. For central line draws make sure to waste a full red top tube then draw via the blood gas syringe as noted above.
3. Fill syringe completely, remove needle (in peripheral draws), cap sample, expel all bubbles (while holding syringe upright) until blood hits the top of cap.
4. Label sample with patient's name, ID number and DOB.

Capillary Samples:

1. The following are recommended sampling sites: earlobe, fingertip, big toe, heel. The heel and big toe are more suitable for use on neonates and infants.
2. Warm the area or puncture site for 5 to 10 minutes prior to actual sampling. This accelerates flow for blood to be representative of general status of patient.
3. Make a puncture using a lancet or similar device. Do not squeeze the area to avoid tissue juice from mixing into blood sample.
4. Wipe off the first drop of blood. Take the sample from the center of the second drop of blood and hold the capillary at a slightly downward angle for an uninterrupted blood flow. Avoid getting air bubbles in the specimen.
5. Refrain from squeezing or milking the puncture site as this may result in faulty measurements or cause hemolysis of blood sample and cause elevated K+ readings.
6. Apply accompanying caps to both ends of the capillary tube and mix the sample with the heparin immediately after collection to prevent blood from clotting. The manufacturer recommends the use of a mixing wire and magnet for capillary samples.
7. Label sample with patient's name, ID and DOB.

Deliver samples immediately to lab for testing. Samples delivered to the lab >30 minutes after collection may yield erroneous results.

Unacceptable Conditions:

Samples with needle attached, containing large bubbles, unlabeled, mislabeled, clotted or of insufficient volume for testing.

PROCESSING

Test Code:

CLWB

Test Group:

Chloride

Performing Lab:

Parnassus, Mission Bay and Mt Zion Chemistry

Preferred Volume:

3 mL blood

Minimum Volume:

1 mL blood

Unacceptable Conditions:

Samples with needle attached, containing large bubbles, unlabeled, mislabeled, clotted or of insufficient volume for testing.

RESULT INTERPRETATION

Units:
mmol/L

Reference Interval:
99-108 mmol/L

Based on the venous whole blood reference range of Ress KL et al (101-110 mmo/L), Pathology 2018 volume 50, supplement page S94 with adjustments for bias between the ABL 90 Flex Plus and the ABL 800 series blood gas analyzer.

Additional Information:
Iodide, bromide, thiosulfate, salicylate and nitrate cause a positive interference on chloride measured by ABL blood gas analyzers.

Ha, L et al, Annals Clin Biochem, 2015, 52(2): 288-292
Wendroth, S et al, Clin Chim Acta, 2014, 431: 77-79
ABL90 Flex Plus Instructions for Use Manual, Radiometer.

COMPLETE VIEW

Available Stat:
Yes

Ordering Recommendations:
Follow the link for information about Blood Gas Panels that contain this test.

Test Code:
CLWB

Test Group:
Chloride

Performing Lab:
Parnassus, Mission Bay and Mt Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Potentiometry, Radiometer ABL 90 FLEX Plus

Remarks:

Arterial puncture:

Due to the risk of arterial damage and subsequent distal ischemia, prior to puncturing an artery the RN assesses the collateral circulation. If the radial artery is to be punctured, then the pulse of the ulnar artery is assessed. If the dorsalis pedis artery is to be accessed then the posterial tibial pulse is assessed and likewise if the posterial tibial approach is used the dorsalis pedis pulse is assessed. The modified Allens's test may be used to assess collateral circulation of the ulnar artery before a radial artery puncture, but it does not always ensure adequate flow. A Doppler ultrasound flow indicator may be used to verify collateral circulation. If the collateral circulation is poor and the RN cannot palpate a pulse then the physician should be notified before proceeding. If for any reason the circulation is compromised to the extremity being assessed for arterial puncture then the physician should be notified prior to proceeding.

1. Palpate the radial artery and identify the site where the pulse is the strongest. Avoid areas with overlying veins to prevent venous admixture.
2. Prepare the patient's skin with an alcohol or 2% chlorhexidine wipe/swab.
3. Place two or three fingers along the course of the artery both to locate its position and direction, and to stabilize it.
4. Penetrate the skin smoothly holding the needle at 30-60 degree angle with the needle bevel up and pointed proximally. The angle of the butterfly" IV catheter should not exceed 45° for pediatric patients.
5. Re-establish the position and direction of the artery by palpation.
6. Gently and slowly advance the needle or butterfly", aiming directly for the area of maximum pulsation.
7. When the arterial lumen has been entered, less resistance is felt and blood appears in the syringe above the needle hub.
8. Obtain required amount of arterial blood for test(s).
9. If blood is not obtained on first attempt, withdraw the needle to just below the skin surface and advance needle at same angle but at 1 mm to either side of previous attempt.
10. Place the 2x2 gauze over the site of the puncture then withdraw the needle from the artery. Press firmly at the site for at least five minutes, or until the bleeding stops. Apply bandage or pressure dressing.
11. Expel any air bubble in the syringe with air filter cap placed on specimen syringe.
12. Label sample with patient's name, ID number and DOB.

Venous samples:

1. Avoid excessive venous stasis from prolonged tourniquet application or clenching of the fist prior to sample collection.
2. For central line draws make sure to waste a full red top tube then draw via the blood gas syringe as noted above.
3. Fill syringe completely, remove needle (in peripheral draws), cap sample, expel all bubbles (while holding syringe upright) until blood hits the top of cap.
4. Label sample with patient's name, ID number and DOB.

Capillary Samples:

1. The following are recommended sampling sites: earlobe, fingertip, big toe, heel. The heel and big toe are more suitable for use on neonates and infants.
2. Warm the area or puncture site for 5 to 10 minutes prior to actual sampling. This accelerates flow for blood to be representative of general status of patient.
3. Make a puncture using a lancet or similar device. Do not squeeze the area to avoid tissue juice from mixing into blood sample.
4. Wipe off the first drop of blood. Take the sample from the center of the second drop of blood and hold the capillary at a slightly downward angle for an uninterrupted blood flow. Avoid getting air bubbles in the specimen.
5. Refrain from squeezing or milking the puncture site as this may result in faulty measurements or cause hemolysis of blood sample and cause elevated K+ readings.
6. Apply accompanying caps to both ends of the capillary tube and mix the sample with the heparin immediately after collection to prevent blood from clotting. The manufacturer recommends the use of a mixing wire and magnet for capillary samples.
7. Label sample with patient's name, ID and DOB.

Deliver samples immediately to lab for testing. Samples delivered to the lab >30 minutes after collection may yield erroneous results.

Collect:

Plastic blood gas syringe containing 100U of dry heparin or capillary tube with 70 IU/ml dry electrolyte-balanced heparin

Amount to Collect:

3 mL blood

Sample Type:

Heparinized whole blood

Preferred Volume:

3 mL blood

Minimum Volume:

1 mL blood

Unacceptable Conditions:

Samples with needle attached, containing large bubbles, unlabeled, mislabeled, clotted or of insufficient volume for testing.

Units:

mmol/L

Reference Interval:

99-108 mmol/L

Based on the venous whole blood reference range of Ress KL et al (101-110 mmo/L), Pathology 2018 volume 50, supplement page S94 with adjustments for bias between the ABL 90 Flex Plus and the ABL 800 series blood gas analyzer.

Synonyms:

- Cl
- Cl-
- Electrolytes
- ARTBGL
- VENBGL
- CVBGL
- MVBGL
- CAPBG
- MVBGCX
- CIRBGA
- CIRBGV
- Blood gas
- ABG

Reported:

STAT: 15 mins
Routine: 30 mins

Additional Information:

Iodide, bromide, thiosulfate, salicylate and nitrate cause a positive interference on chloride measured by ABL blood gas analyzers.

Ha, L et al, Annals Clin Biochem, 2015, 52(2): 288-292
Wendroth, S et al, Clin Chim Acta, 2014, 431: 77-79
ABL90 Flex Plus Instructions for Use Manual, Radiometer.

Cholesterol, HDL

HDL

ORDERING

Available Stat:
No

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Direct homogeneous enzymatic spectrophotometric assay

Reported:
4 hours

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by 0.0259.

The HDL result may be falsely elevated when triglyceride concentrations exceed 1000 mg/dL. The HDL result may be falsely low when conjugated bilirubin concentrations exceed 33 mg/dL.

Monoclonal proteins have been reported to cause falsely low HDL results in a variety of direct HDL methods.

According to the Abbott Architect package insert, using three homogenous HDL assays, Camps, et al. have reported artificially low HDL results in patients with liver cirrhosis. Published studies are not available that define the severity of liver disease necessary to affect lipoprotein and HDL metabolism, or establish other possible patterns of interference with HDL results. When an HDL result is diagnostically critical with concomitant clinically relevant liver disease, use a recognized precipitation or ultracentrifugation HDL reference method for confirmation. Artificially decreased or increased HDL values in the presence of dyslipidemias have been reported. N-Acetyl-L-Cysteine at elevated concentrations may lead to falsely low results.

Synonyms:

- High density lipoprotien
- HDL cholesterol
- Coronary risk panel

COLLECTION

Sample Type:
Serum or plasma

Collect:
Gold top or Light Green top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 7 days, frozen at -20C 3 months

PROCESSING

Test Code:
HDL

Test Group:
Cholesterol

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 7 days, frozen at -20C 3 months

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:
Adults (>=20 years old):

Acceptable	> 39 mg/dL
Higher Risk	< 40 mg/dL
Lower Risk	> 59 mg/dL

Children and Adolescents (<20 years old):

Acceptable	> 45 mg/dL
Higher Risk	< 40 mg/dL
Lower Risk	40-45 mg/dL

Adults: Risk classifications based on combination of NCEP-ATPIII guidelines JAMA, 2001:2486-2497 and Knosian B et al., Ann Intern Med. 1994;121:641-647

Pediatrics: Risk classifications based on The NHLBI Expert Panel on Integrated Guidelines for Cardiovascular Health and Risk Reduction in Children and Adolescents: Pediatrics 2011; 128: S213.

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by 0.0259.

The HDL result may be falsely elevated when triglyceride concentrations exceed 1000 mg/dL. The HDL result may be falsely low when conjugated bilirubin concentrations exceed 33 mg/dL.

Monoclonal proteins have been reported to cause falsely low HDL results in a variety of direct HDL methods.

According to the Abbott Architect package insert, using three homogenous HDL assays, Camps, et al. have reported artificially low HDL results in patients with liver cirrhosis. Published studies are not available that define the severity of liver disease necessary to affect lipoprotein and HDL metabolism, or establish other possible patterns of interference with HDL results. When an HDL result is diagnostically critical with concomitant clinically relevant liver disease, use a recognized precipitation or ultracentrifugation HDL reference method for confirmation. Artificially decreased or increased HDL values in the presence of dyslipidemias have been reported. N-Acetyl-L-Cysteine at elevated concentrations may lead to falsely low results.

ADMINISTRATIVE

CPT Codes:
83718

LOINC Codes:
2085-9

COMPLETE VIEW

Available Stat:
No

Test Code:
HDL

Test Group:
Cholesterol

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Direct homogeneous enzymatic spectrophotometric assay

Collect:
Gold top or Light Green top

Amount to Collect:
1 mL blood

Sample Type:
Serum or plasma

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Units:
mg/dL

Reference Interval:
Adults (>=20 years old):

Acceptable	> 39 mg/dL
Higher Risk	< 40 mg/dL
Lower Risk	> 59 mg/dL

Children and Adolescents (<20 years old):

Acceptable	> 45 mg/dL
Higher Risk	< 40 mg/dL
Lower Risk	40-45 mg/dL

Adults: Risk classifications based on combination of NCEP-ATPIII guidelines JAMA, 2001:2486-2497 and Knosian B et al., Ann Intern Med. 1994;121:641-647

Pediatrics: Risk classifications based on The NHLBI Expert Panel on Integrated Guidelines for Cardiovascular Health and Risk Reduction in Children and Adolescents: Pediatrics 2011; 128: S213.

Synonyms:

- High density lipoprotien
- HDL cholesterol
- Coronary risk panel

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 7 days, frozen at -20C 3 months

Reported:
4 hours

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by 0.0259.

The HDL result may be falsely elevated when triglyceride concentrations exceed 1000 mg/dL. The HDL result may be falsely low when conjugated bilirubin concentrations exceed 33 mg/dL.

Monoclonal proteins have been reported to cause falsely low HDL results in a variety of direct HDL methods.

According to the Abbott Architect package insert, using three homogenous HDL assays, Camps, et al. have reported artificially low HDL results in patients with liver cirrhosis. Published studies are not available that define the severity of liver disease necessary to affect lipoprotein and HDL metabolism, or establish other possible patterns of interference with HDL results. When an HDL result is diagnostically critical with concomitant clinically relevant liver disease, use a recognized precipitation or ultracentrifugation HDL reference method for confirmation. Artificially decreased or increased HDL values in the presence of dyslipidemias have been reported. N-Acetyl-L-Cysteine at elevated concentrations may lead to falsely low results.

CPT Codes:
83718

LOINC Codes:
2085-9

Cholesterol, Pleural fluid

CHOLPF

ORDERING

Available Stat:
No

Performing Lab:
Parnassus and Mission Bay Chemistry

Performed:
24 hours per day 7 days per week

Methodology:
Enzymatic (cholesterol esterase & cholesterol oxidase)

Reported:
4 hours

COLLECTION

Sample Type:
Pleural fluid

Collect:
Red top or clean container

Amount to Collect:
3.0 mL

Preferred Volume:
1.0 mL

Minimum Volume:
0.3 mL

Stability (from collection to initiation):
Room temperature 24 hours, refrigerated 1 week, frozen at -20°C 3 months

PROCESSING

Test Code:
CHOLPF

Test Group:
Cholesterol

Performing Lab:
Parnassus and Mission Bay Chemistry

Specimen Preparation:
Centrifuge to remove cellular material

Preferred Volume:
1.0 mL

Minimum Volume:
0.3 mL

Stability (from collection to initiation):
Room temperature 24 hours, refrigerated 1 week, frozen at -20°C 3 months

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:
Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context.

Interpretive Data:
To convert mg/dL to mmol/L (SI units) multiply by 0.0113.

Interpretive information on this testing can be found at https://aruplab.com/bodyfluids

ADMINISTRATIVE

CPT Codes:
84311

LOINC Codes:
12183-0

COMPLETE VIEW

Available Stat:
No

Test Code:
CHOLPF

Test Group:
Cholesterol

Performing Lab:
Parnassus and Mission Bay Chemistry

Performed:
24 hours per day 7 days per week

Methodology:
Enzymatic (cholesterol esterase & cholesterol oxidase)

Collect:
Red top or clean container

Amount to Collect:
3.0 mL

Sample Type:
Pleural fluid

Preferred Volume:
1.0 mL

Minimum Volume:
0.3 mL

Specimen Preparation:
Centrifuge to remove cellular material

Units:
mg/dL

Reference Interval:
Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context.

Interpretive Data:
To convert mg/dL to mmol/L (SI units) multiply by 0.0113.

Interpretive information on this testing can be found at https://aruplab.com/bodyfluids

Stability (from collection to initiation):
Room temperature 24 hours, refrigerated 1 week, frozen at -20°C 3 months

Reported:
4 hours

CPT Codes:
84311

LOINC Codes:
12183-0

Cholesterol, Total

CHOL

ORDERING

Available Stat:
No

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Enzymatic (cholesterol esterase & cholesterol oxidase)

Reported:
4 hours

Synonyms:

- Coronary risk panel

COLLECTION

Sample Type:
Serum or plasma

Collect:
Gold top or Light Green top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Stability (from collection to initiation):
Room Temperature: 7 days
Refrigerated (2-8C): 7 days
Frozen (-20C): 3 months

PROCESSING

Test Code:
CHOL

Test Group:
Cholesterol

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Stability (from collection to initiation):
Room Temperature: 7 days
Refrigerated (2-8C): 7 days
Frozen (-20C): 3 months

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:

Adults (>=20 years old):

	mg/dL
Desirable	<200
Borderline	200-239
High	>239

Children and Adolescents (<20 years old):

	mg/dL
Acceptable	<170
Borderline	170-199
High	>199

Adults: Risk classifications based on combination of NCEP-ATPIII guidelines JAMA, 2001:2486-2497 and Knosian B et al., Ann Intern Med. 1994;121:641-647

Pediatrics: Risk classifications based on The NHLBI Expert Panel on Integrated Guidelines for Cardiovascular Health and Risk Reduction in Children and Adolescents: Pediatrics 2011; 128: S213.

ADMINISTRATIVE

CPT Codes:
82465

LOINC Codes:
2093-3

COMPLETE VIEW

Available Stat:
No

Test Code:
CHOL

Test Group:
Cholesterol

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Enzymatic (cholesterol esterase & cholesterol oxidase)

Collect:
Gold top or Light Green top

Amount to Collect:
1 mL blood

Sample Type:
Serum or plasma

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Units:
mg/dL

Reference Interval:

Adults (>=20 years old):

	mg/dL
Desirable	<200
Borderline	200-239
High	>239

Children and Adolescents (<20 years old):

	mg/dL
Acceptable	<170
Borderline	170-199
High	>199

Adults: Risk classifications based on combination of NCEP-ATPIII guidelines JAMA, 2001:2486-2497 and Knosian B et al., Ann Intern Med. 1994;121:641-647

Pediatrics: Risk classifications based on The NHLBI Expert Panel on Integrated Guidelines for Cardiovascular Health and Risk Reduction in Children and Adolescents: Pediatrics 2011; 128: S213.

Synonyms:

- Coronary risk panel

Stability (from collection to initiation):

Room Temperature: 7 days
Refrigerated (2-8C): 7 days
Frozen (-20C): 3 months

Reported:

4 hours

CPT Codes:

82465

LOINC Codes:

2093-3

Cholesterol, VLDL

ORDERING

Available Stat:
No

Additional Information:
The calculated result for VLDL is not reported by the laboratory but can be estimated by dividing the triglyceride value by 5 (triglyceride/5; also see the calculation for LDL Cholesterol). When triglycerides exceed 400 mg/dL, this calculation may overestimate the VLDL and should not be used. Precise measurement may require ultracentrifugation if the triglyceride level exceeds 400 mg/dL.

Synonyms:

- very low density lipoprotein
- VLDL cholesterol

PROCESSING

Test Group:
Cholesterol

RESULT INTERPRETATION

Additional Information:
The calculated result for VLDL is not reported by the laboratory but can be estimated by dividing the triglyceride value by 5 (triglyceride/5; also see the calculation for LDL Cholesterol). When triglycerides exceed 400 mg/dL, this calculation may overestimate the VLDL and should not be used. Precise measurement may require ultracentrifugation if the triglyceride level exceeds 400 mg/dL.

COMPLETE VIEW

Available Stat:
No

Test Group:
Cholesterol

Synonyms:

- very low density lipoprotein
- VLDL cholesterol

Additional Information:
The calculated result for VLDL is not reported by the laboratory but can be estimated by dividing the triglyceride value by 5 (triglyceride/5; also see the calculation for LDL Cholesterol). When triglycerides exceed 400 mg/dL, this calculation may overestimate the VLDL and should not be used. Precise measurement may require ultracentrifugation if the triglyceride level exceeds 400 mg/dL.

Cholinesterase, RBC and Plasma

CPR

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Enzymatic, colorimetric

Reported:
Test run Monday-Friday. Turnaround time: 1-4 days.

Additional Information:
Decreased in organophosphate poisoning. Hemolysis can lead to apparent increases in plasma cholinesterase activity, and could mask an enzyme deficiency.

Synonyms:

- Acetylcholinesterase
- organophosphate
- poisoning

COLLECTION

Sample Type:
EDTA whole blood **AND** EDTA Plasma

Collect:
Lavender top x2

Amount to Collect:
6 mL blood

Preferred Volume:
3 mL blood
3 mL plasma

Minimum Volume:
2 mL blood
2 mL plasma

Remarks:
Transport immediately to laboratory

Unacceptable Conditions:
Hemolyzed or lipemic sample(s)

Rejection Criteria:
Sample received either frozen or at room temperature. Failure to provide both plasma and whole blood sample.

PROCESSING

Test Code:
CPR

Test Group:
Cholinesterase

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Centrifuge one tube within one hour of collection and pour off separated plasma into a plastic tube. Avoid hemolysis. Do not send packed cells. Send whole blood and plasma samples refrigerated. Order Quest test # 338 and if patient is Brown & Toland, order LabCorp test # 214007

Preferred Volume:
3 mL blood
3 mL plasma

Minimum Volume:
2 mL blood
2 mL plasma

Unacceptable Conditions:
Hemolyzed or lipemic sample(s)

Rejection Criteria:
Sample received either frozen or at room temperature. Failure to provide both plasma and whole blood sample.

RESULT INTERPRETATION

Units:
IU/L

Reference Interval:
RBC Cholinesterase: 9572-15031 IU/L

Plasma cholinesterase:
Male: 3334-7031 IU/L
Female: 2504-6297 IU/L

Additional Information:
Decreased in organophosphate poisoning. Hemolysis can lead to apparent increases in plasma cholinesterase activity, and could mask an enzyme deficiency.

ADMINISTRATIVE

CPT Codes:
82482-90, 82480-90

LOINC Codes:
2099-0

COMPLETE VIEW

Available Stat:
No

Test Code:
CPR

Test Group:
Cholinesterase

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Enzymatic, colorimetric

Remarks:
Transport immediately to laboratory

Collect:
Lavender top x2

Amount to Collect:
6 mL blood

Sample Type:
EDTA whole blood **AND** EDTA Plasma

Preferred Volume:
3 mL blood
3 mL plasma

Minimum Volume:
2 mL blood
2 mL plasma

Rejection Criteria:
Sample received either frozen or at room temperature. Failure to provide both plasma and whole blood sample.

Unacceptable Conditions:
Hemolyzed or lipemic sample(s)

Specimen Preparation:
Centrifuge one tube within one hour of collection and pour off separated plasma into a plastic tube. Avoid hemolysis. Do not send packed cells. Send whole blood and plasma samples refrigerated. Order Quest test # 338 and if patient is Brown & Toland, order LabCorp test # 214007

Units:
IU/L

Reference Interval:

RBC Cholinesterase: 9572-15031 IU/L

Plasma cholinesterase:
Male: 3334-7031 IU/L
Female: 2504-6297 IU/L

Synonyms:

- Acetylcholinesterase
- organophosphate
- poisoning

Reported:

Test run Monday-Friday. Turnaround time: 1-4 days.

Additional Information:

Decreased in organophosphate poisoning. Hemolysis can lead to apparent increases in plasma cholinesterase activity, and could mask an enzyme deficiency.

CPT Codes:

82482-90, 82480-90

LOINC Codes:

2099-0

Chromium, 24 hour urine

MOLT

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Atomic Absorption

Reported:
Test run Monday, Wednesday, Friday. Turnaround time: 2-5 days.

Additional Information:
To convert µg/L to nmol/L (SI units) multiply by 19.2.

Synonyms:

- Cr

COLLECTION

Sample Type:
24 hour urine collection.

Collect:
Acid Wash Container Required

Amount to Collect:
Entire 24 hour urine output.

Preferred Volume:
10 mL urine

Minimum Volume:
5 mL urine

PROCESSING

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Test Group:
Chromium

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Follow the detailed processing instructions for Trace Metal Analysis. Refrigerate aliquot. For 24 hour urine order Quest # 10944X.

Preferred Volume:
10 mL urine

Minimum Volume:
5 mL urine

RESULT INTERPRETATION

Units:
µg/L (mcg/L)

Reference Interval:
<= 2 µg/L

Additional Information:
To convert µg/L to nmol/L (SI units) multiply by 19.2.

ADMINISTRATIVE

CPT Codes:
82495-90

COMPLETE VIEW

Available Stat:
No

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Test Group:
Chromium

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Atomic Absorption

Collect:
Acid Wash Container Required

Amount to Collect:
Entire 24 hour urine output.

Sample Type:
24 hour urine collection.

Preferred Volume:
10 mL urine

Minimum Volume:
5 mL urine

Specimen Preparation:
Follow the detailed processing instructions for Trace Metal Analysis. Refrigerate aliquot. For 24 hour urine order Quest # 10944X.

Units:
µg/L (mcg/L)

Reference Interval:
<= 2 µg/L

Synonyms:

- Cr

Reported:
Test run Monday, Wednesday, Friday. Turnaround time: 2-5 days.

Additional Information:
To convert µg/L to nmol/L (SI units) multiply by 19.2.

CPT Codes:
82495-90

Chromium, plasma

CHRO

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Atomic Absorption Spectrometry with Zeeman Background Correction

Reported:
Run 2x per week. Turnaround 4-6 days

Synonyms:

- Cr

COLLECTION

Patient Preparation:
Patient should refrain from taking vitamins, mineral or herbal supplements at least one week prior to speciman collection.

Sample Type:
EDTA Plasma

Collect:
Navy blue top (EDTA) tube

Amount to Collect:
5 mL blood

Preferred Volume:
2 mL plasma

Minimum Volume:
1 mL plasma

Stability (from collection to initiation):
Room temperature 1 day, refrigerated 1 week, frozen at -20C 2 weeks.

PROCESSING

Test Code:
CHRO

Test Group:
Chromium

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Centrifuge and pour off plasma into a trace metal free container. Transport to China Basin sendouts refrigerated. Order Quest #95019P. For B&T patients order LabCorp test #071522

Preferred Volume:
2 mL plasma

Minimum Volume:
1 mL plasma

Stability (from collection to initiation):
Room temperature 1 day, refrigerated 1 week, frozen at -20C 2 weeks.

RESULT INTERPRETATION

Units:
µg/L (mcg/L)

Reference Interval:
<= 3.5 µg/L

ADMINISTRATIVE

CPT Codes:
82495-90

LOINC Codes:
5622-6

COMPLETE VIEW

Available Stat:
No

Test Code:
CHRO

Test Group:
Chromium

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Atomic Absorption Spectrometry with Zeeman Background Correction

Patient Preparation:
Patient should refrain from taking vitamins, mineral or herbal supplements at least one week prior to speciman collection.

Collect:
Navy blue top (EDTA) tube

Amount to Collect:
5 mL blood

Sample Type:
EDTA Plasma

Preferred Volume:
2 mL plasma

Minimum Volume:
1 mL plasma

Specimen Preparation:
Centrifuge and pour off plasma into a trace metal free container. Transport to China Basin sendouts refrigerated. Order Quest #95019P. For B&T patients order LabCorp test #071522

Units:
µg/L (mcg/L)

Reference Interval:
<= 3.5 µg/L

Synonyms:

- Cr

Stability (from collection to initiation):
Room temperature 1 day, refrigerated 1 week, frozen at -20C 2 weeks.

Reported:
Run 2x per week. Turnaround 4-6 days

CPT Codes:
82495-90

LOINC Codes:
5622-6

Chromium, random urine

CHROR

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Atomic Absorption

Reported:
Performed once per week, Turnaround 7-14 days.

Synonyms:

- Cr

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
5 mL urine

Preferred Volume:
5 mL urine

Minimum Volume:
0.5 mL urine

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 2 weeks.

PROCESSING

Test Code:
CHROR

Test Group:
Chromium

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot into an acid-washed container. Refrigerate urine aliquot at 4C. Order Quest test # 11278x

Preferred Volume:
5 mL urine

Minimum Volume:
0.5 mL urine

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 2 weeks.

RESULT INTERPRETATION

Units:
ng/mL

Reference Interval:
Chromium: <2.0 ng/mL
Chromium:Creatinine ratio: <5

ADMINISTRATIVE

CPT Codes:
82495-90, 82570-90

LOINC Codes:
5623-4

COMPLETE VIEW

Available Stat:
No

Test Code:
CHROR

Test Group:
Chromium

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Atomic Absorption

Collect:
Urine cup

Amount to Collect:
5 mL urine

Sample Type:
Random urine

Preferred Volume:
5 mL urine

Minimum Volume:
0.5 mL urine

Specimen Preparation:
Aliquot into an acid-washed container. Refrigerate urine aliquot at 4C. Order Quest test # 11278x

Units:
ng/mL

Reference Interval:
Chromium: <2.0 ng/mL
Chromium:Creatinine ratio: <5

Synonyms:

- Cr

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 2 weeks.

Reported:
Performed once per week, Turnaround 7-14 days.

CPT Codes:
82495-90, 82570-90

LOINC Codes:
5623-4

Chromogranin A, Serum

CGA

ORDERING

Ordering Recommendations:
Aids in monitoring but is not recommended for diagnosis of carcinoid tumors. May be useful in monitoring nonsecretory sympathetic and parasympathetic neuroendocrine tumors.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Immunofluorescence

Reported:
1-4 days

Synonyms:

- CgA
- Chromogranin

COLLECTION

Collect:
Serum separator tube or plain red.

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
After separation from cells: Room Temperature: 48 hours; Refrigerated: 3 days; Frozen: 3 months

Storage/Transport Temperature:
Frozen

Unacceptable Conditions:
Plasma

PROCESSING

Test Code:
CGA

ARUP Test Code:
3002867

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Allow serum specimen to clot completely at room temperature. Transfer 1 mL serum to an ARUP standard transport tube. (Min: 0.5 mL)

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Plasma

Stability (from collection to initiation):
After separation from cells: Room Temperature: 48 hours; Refrigerated: 3 days; Frozen: 3 months

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Reference Interval:
0-187 ng/mL

Interpretive Data:
This test is performed using the BRAHMS CGA II Kryptor kit. Results obtained with different methods or kits cannot be used interchangeably. Results cannot be interpreted as absolute evidence of the presence or absence of malignant disease and should be evaluated in combination with clinical symptoms, diagnostic evidence, and/or other laboratory parameters. The change ofCgA concentration over time provides diagnostic information whether a tumor progression has occurred.

An increase of CgA serum concentrations of more than 50% to avalue of greater than 100 ng/ml between consecutive monitoring visits defines a positive test result, representing a higher probability that a tumor progression has occurred.

A change of CgA serum concentrations of equal or less than 50% increase between monitoring visits or to a value of 100 ng/ml or less defines a negative test result, representing a lower probability that a tumor progression has occurred. Nontumor related elevations of Chromogranin A can be observed in gastrointestinal, cardiovascular, and renal disorders, cancers other than neuroendocrine tumors, as well as with proton pump inhibitor (PPI) therapy. It is recommended to stop PPI treatment for at least 14 days prior to testing.

ADMINISTRATIVE

CPT Codes:
86316

LOINC:

- 9811-1

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Aids in monitoring but is not recommended for diagnosis of carcinoid tumors. May be useful in monitoring nonsecretory sympathetic and parasympathetic neuroendocrine tumors.

Test Code:
CGA

ARUP Test Code:
3002867

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Immunofluorescence

Collect:
Serum separator tube or plain red.

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Plasma

Specimen Preparation:
Allow serum specimen to clot completely at room temperature. Transfer 1 mL serum to an ARUP standard transport tube. (Min: 0.5 mL)

Reference Interval:
0-187 ng/mL

Interpretive Data:

This test is performed using the BRAHMS CGA II Kryptor kit. Results obtained with different methods or kits cannot be used interchangeably. Results cannot be interpreted as absolute evidence of the presence or absence of malignant disease and should be evaluated in combination with clinical symptoms, diagnostic evidence, and/or other laboratory parameters. The change ofCgA concentration over time provides diagnostic information whether a tumor progression has occurred.

An increase of CgA serum concentrations of more than 50% to avalue of greater than 100 ng/ml between consecutive monitoring visits defines a positive test result, representing a higher probability that a tumor progression has occurred.

A change of CgA serum concentrations of equal or less than 50% increase between monitoring visits or to a value of 100 ng/ml or less defines a negative test result, representing a lower probability that a tumor progression has occurred. Nontumor related elevations of Chromogranin A can be observed in gastrointestinal, cardiovascular, and renal disorders, cancers other than neuroendocrine tumors, as well as with proton pump inhibitor (PPI) therapy. It is recommended to stop PPI treatment for at least 14 days prior to testing.

Synonyms:

- CgA
- Chromogranin

Storage/Transport Temperature:

Frozen

Stability (from collection to initiation):

After separation from cells: Room Temperature: 48 hours; Refrigerated: 3 days; Frozen: 3 months

Reported:

1-4 days

CPT Codes:

86316

LOINC:

- 9811-1

Chromosome Analysis, Amniotic Fluid

CYAF

ORDERING

Available Stat:
No

Performing Lab:
Cytogenetics

Performed:
Mon-Fri, 9am-5pm

Methodology:
Giemsa banding and brightfield microscopy

Reported:
7-14 days

Reflex Testing:
If an abnormality is detected the Cytogenetics Director will determine the appropriate additional studies (e.g. C-banding, NOR) to be performed to characterize the abnormality.

If additional metaphases are required for final interpretation additional counts will be performed and billed for.

Additional testing may be omitted if specifically requested when the sample is submitted for cytogenetic analysis.

Synonyms:

- Cytogenetic analysis
- Prenatal Cytogenetics
- Amniotic Fluid
- Karyotype
- Karyotyping

COLLECTION

Sample Type:
Amniotic Fluid

Collect:
Sterile container

Amount to Collect:
See Preferred Volume

Preferred Volume:
30 mL

Minimum Volume:
10 mL

Remarks:
Keep samples at Room temperature. DO NOT CENTRIFUGE for any reason. Send all tubes and completed paperwork asap to the Cytogenetics laboratory at China Basin.

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Keep samples at Room temperature.

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

PROCESSING

Test Code:
CYAF

Test Group:
Chromosome Analysis

Performing Lab:
Cytogenetics

Specimen Preparation:
Keep samples at Room temperature. DO NOT CENTRIFUGE for any reason. Send all tubes and completed paperwork asap to the Cytogenetics laboratory at China Basin.

Sample is to be collected in two 15 mL orange screw top polypropylene tubes. Discard first 2 mL of fluid, and then add 15-25 mL to two tubes.

Preferred Volume:
30 mL

Minimum Volume:
10 mL

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Keep samples at Room temperature.

RESULT INTERPRETATION

Reference Interval:
46,XY normal male
46,XX normal female

ADMINISTRATIVE

CPT Codes:
88235,88267,88280

COMPLETE VIEW

Available Stat:
No

Test Code:
CYAF

Test Group:
Chromosome Analysis

Performing Lab:
Cytogenetics

Performed:
Mon-Fri, 9am-5pm

Methodology:
Giemsa banding and brightfield microscopy

Remarks:
Keep samples at Room temperature. DO NOT CENTRIFUGE for any reason. Send all tubes and completed paperwork asap to the Cytogenetics laboratory at China Basin.

Collect:
Sterile container

Amount to Collect:
See Preferred Volume

Sample Type:
Amniotic Fluid

Preferred Volume:
30 mL

Minimum Volume:
10 mL

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

Specimen Preparation:
Keep samples at Room temperature. DO NOT CENTRIFUGE for any reason. Send all tubes and completed paperwork asap to the Cytogenetics laboratory at China Basin.

Sample is to be collected in two 15 mL orange screw top polypropylene tubes. Discard first 2 mL of fluid, and then add 15-25 mL to two tubes.

Reference Interval:

46,XY normal male
46,XX normal female

Synonyms:

- Cytogenetic analysis
- Prenatal Cytogenetics
- Amniotic Fluid
- Karyotype
- Karyotyping

Storage/Transport Temperature:

Keep samples at Room temperature.

Stability (from collection to initiation):

2 days

Reported:

7-14 days

Reflex Testing:

If an abnormality is detected the Cytogenetics Director will determine the appropriate additional studies (e.g. C-banding, NOR) to be performed to characterize the abnormality.

If additional metaphases are required for final interpretation additional counts will be performed and billed for.

Additional testing may be omitted if specifically requested when the sample is submitted for cytogenetic analysis.

CPT Codes:

88235,88267,88280

Chromosome Analysis, Blood, High Resolution

CYHR

ORDERING

Approval Required:
If expedited testing is needed for clinical decisions contact the Cytogenetics laboratory at x3-4844.

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Set up daily, Monday-Friday

Methodology:
Giemsa banding and brightfield microscopy

Reported:
28 days

Reflex Testing:
If an abnormality is detected the Cytogenetics Director will determine the appropriate additional studies (e.g. C-banding, NOR) to be performed to characterize the abnormality.

If additional metaphases are required for final interpretation additional counts will be performed and billed for.

Additional testing may be omitted if specifically requested when the sample is submitted for cytogenetic analysis.

Synonyms:

- Cytogenetic analysis
- CYBL
- Karyotype
- Karyotyping

COLLECTION

Sample Type:
Heparinized whole blood

Collect:
Sodium heparin dark green top

Amount to Collect:
Adult or child: 5 mL blood
Infant: 2 mL blood

Preferred Volume:
Adult or child: 5 mL blood
?Infant: 2 mL blood

Minimum Volume:
Adult or child: 2 mL blood
?Infant: 2 mL blood

Remarks:
If expedited testing is needed for clinical decisions contact the Cytogenetics laboratory.

Keep samples at Room temperature. DO NOT CENTRIFUGE for any reason.

Stability (from collection to initiation):
48 hours

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

PROCESSING

Test Code:
CYHR

Test Group:
Chromosome Analysis

Performing Lab:
Medical Genomics - Cytogenetics

Specimen Preparation:
Keep samples at Room temperature. DO NOT CENTRIFUGE for any reason. Send all tubes and completed paperwork asap to the Cytogenetics laboratory at China Basin.

Preferred Volume:
Adult or child: 5 mL blood
?Infant: 2 mL blood

Minimum Volume:
Adult or child: 2 mL blood
?Infant: 2 mL blood

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

Stability (from collection to initiation):
48 hours

RESULT INTERPRETATION

Reference Interval:
46,XY normal male
46,XX normal female

ADMINISTRATIVE

CPT Codes:
88230, 88262, 88289

LDT or Modified FDA:
Yes

LOINC Codes:
48818-9

COMPLETE VIEW

Approval Required:
If expedited testing is needed for clinical decisions contact the Cytogenetics laboratory at x3-4844.

Available Stat:
No

Test Code:
CYHR

Test Group:
Chromosome Analysis

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Set up daily, Monday-Friday

Methodology:
Giemsa banding and brightfield microscopy

Remarks:
If expedited testing is needed for clinical decisions contact the Cytogenetics laboratory.

Keep samples at Room temperature. DO NOT CENTRIFUGE for any reason.

Collect:
Sodium heparin dark green top

Amount to Collect:
Adult or child: 5 mL blood
Infant: 2 mL blood

Sample Type:
Heparinized whole blood

Preferred Volume:
Adult or child: 5 mL blood
?Infant: 2 mL blood

Minimum Volume:
Adult or child: 2 mL blood
?Infant: 2 mL blood

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

Specimen Preparation:

Keep samples at Room temperature. DO NOT CENTRIFUGE for any reason. Send all tubes and completed paperwork asap to the Cytogenetics laboratory at China Basin.

Reference Interval:

46,XY normal male
46,XX normal female

Synonyms:

- Cytogenetic analysis
- CYBL
- Karyotype
- Karyotyping

Stability (from collection to initiation):

48 hours

Reported:

28 days

Reflex Testing:

If an abnormality is detected the Cytogenetics Director will determine the appropriate additional studies (e.g. C-banding, NOR) to be performed to characterize the abnormality.

If additional metaphases are required for final interpretation additional counts will be performed and billed for.

Additional testing may be omitted if specifically requested when the sample is submitted for cytogenetic analysis.

CPT Codes:

88230, 88262, 88289

LDT or Modified FDA:

Yes

LOINC Codes:

48818-9

Chromosome Analysis, Chorionic Villi

CYCV

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Set up daily, Monday-Friday

Methodology:
Giemsa banding and brightfield microscopy

Reported:
7-14 days

Additional Information:
Minimum volume for an optimal result is greater than or equal to 5 mg. Samples less than 5 mg may result in inconclusive results and a repeat sample may be requested.

Reflex Testing:
If an abnormality is detected the Cytogenetics Director will determine the appropriate additional studies (e.g. C-banding, NOR) to be performed to characterize the abnormality.

If additional metaphases are required for final interpretation additional counts will be performed and billed for.

Additional testing may be omitted if specifically requested when the sample is submitted for cytogenetic analysis.

Synonyms:

- Cytogenetic analysis
- Prenatal Cytogenetics
- Chorionic villi
- CVS
- Karyotype
- Karyotyping

COLLECTION

Sample Type:
CVS

Collect:
15 mL centrifuge tube with transport media (RPMI, FBS, L-Glutamine, Sodium Heparin and PenStrep). Available from Cytogenetics.

Amount to Collect:
25 mg chorionic villi

Preferred Volume:
25 mg chorionic villi

Minimum Volume:
5 mg chorionic villi

Remarks:
Collect 25 mg and distribute into two 15 mL orange screw top polypropylene tubes that are filled with transport media. Discard and remove visible maternal deciduas prior to collecting in transport tubes.

Keep samples at Room temperature. DO NOT CENTRIFUGE for any reason.

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

PROCESSING

Test Code:
CYCV

Test Group:
Chromosome Analysis

Performing Lab:
Medical Genomics - Cytogenetics

Specimen Preparation:
Keep samples at Room temperature. DO NOT CENTRIFUGE for any reason. Send all tubes and completed paperwork asap to the Cytogenetics laboratory at China Basin.

Preferred Volume:
25 mg chorionic villi

Minimum Volume:
5 mg chorionic villi

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

RESULT INTERPRETATION

Reference Interval:
46,XY normal male
46,XX normal female

Additional Information:
Minimum volume for an optimal result is greater than or equal to 5 mg. Samples less than 5 mg may result in inconclusive results and a repeat sample may be requested.

ADMINISTRATIVE

CPT Codes:
88235, 88267, 88280

LDT or Modified FDA:
Yes

LOINC Codes:
48818-9

COMPLETE VIEW

Available Stat:
No

Test Code:
CYCV

Test Group:
Chromosome Analysis

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Set up daily, Monday-Friday

Methodology:
Giemsa banding and brightfield microscopy

Remarks:
Collect 25 mg and distribute into two 15 mL orange screw top polypropylene tubes that are filled with transport media. Discard and remove visible maternal deciduas prior to collecting in transport tubes.

Keep samples at Room temperature. DO NOT CENTRIFUGE for any reason.

Collect:
15 mL centrifuge tube with transport media (RPMI, FBS, L-Glutamine, Sodium Heparin and PenStrep). Available from Cytogenetics.

Amount to Collect:
25 mg chorionic villi

Sample Type:
CVS

Preferred Volume:
25 mg chorionic villi

Minimum Volume:
5 mg chorionic villi

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

Specimen Preparation:
Keep samples at Room temperature. DO NOT CENTRIFUGE for any reason. Send all tubes and completed paperwork asap to the Cytogenetics laboratory at China Basin.

Reference Interval:

46,XY normal male
46,XX normal female

Synonyms:

- Cytogenetic analysis
- Prenatal Cytogenetics
- Chorionic villi
- CVS
- Karyotype
- Karyotyping

Reported:

7-14 days

Reflex Testing:

If an abnormality is detected the Cytogenetics Director will determine the appropriate additional studies (e.g. C-banding, NOR) to be performed to characterize the abnormality.

If additional metaphases are required for final interpretation additional counts will be performed and billed for.

Additional testing may be omitted if specifically requested when the sample is submitted for cytogenetic analysis.

Additional Information:

Minimum volume for an optimal result is greater than or equal to 5 mg. Samples less than 5 mg may result in inconclusive results and a repeat sample may be requested.

CPT Codes:

88235, 88267, 88280

LDT or Modified FDA:

Yes

LOINC Codes:

48818-9

Chromosome Analysis, Tissue (Reactivated)

CYTIS

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Set up daily, Monday-Friday

Methodology:
Giemsa banding and brightfield microscopy

Reported:
42 days

Reflex Testing:
If an abnormality is detected the Director will determine the appropriate additional studies to be performed to characterize the abnormality.

Additional testing may be omitted if specifically requested when the sample is submitted for cytogenetic analysis.

Synonyms:

- Cytogenetic analysis
- Karyotype
- Karyotyping
- Tissue cytogenetics
- products of conception
- POC

COLLECTION

Sample Type:
Unfixed Tissue (including POC)

Collect:
15 mL centrifuge tube with transport media (RPMI, FBS, L-Glutamine, Sodium Heparin and PenStrep). Available from Cytogenetics, 415-353-4844.

Amount to Collect:
30 mg tissue

Preferred Volume:
30 mg tissue

Minimum Volume:
5 mg tissue

Remarks:
Submit sample in a sterile screw-top container filled with Tissue culture transport media. If Cytogenetics tisue transport media is not available RPMI, Hanks or sterile saline is aceptable.

Stability (from collection to initiation):
Room temperature 1 day, refrigerated 1 day, frozen unacceptable.

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples; samples in formalin.

PROCESSING

Test Code:
CYTIS

Test Group:
Chromosome Analysis

Performing Lab:
Medical Genomics - Cytogenetics

Specimen Preparation:
Maintain sample at room temperature. Transport to CB Cytogenetics within 24 hours.

Preferred Volume:
30 mg tissue

Minimum Volume:
5 mg tissue

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples; samples in formalin.

Stability (from collection to initiation):
Room temperature 1 day, refrigerated 1 day, frozen unacceptable.

RESULT INTERPRETATION

Reference Interval:
46,XY normal male
46,XX normal female

ADMINISTRATIVE

CPT Codes:
88262, 88233

LDT or Modified FDA:
Yes

LOINC Codes:
48818-9

COMPLETE VIEW

Available Stat:
No

Test Code:
CYTIS

Test Group:
Chromosome Analysis

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Set up daily, Monday-Friday

Methodology:
Giemsa banding and brightfield microscopy

Remarks:
Submit sample in a sterile screw-top container filled with Tissue culture transport media. If Cytogenetics tisue transport media is not available RPMI, Hanks or sterile saline is aceptable.

Collect:
15 mL centrifuge tube with transport media (RPMI, FBS, L-Glutamine, Sodium Heparin and PenStrep). Available from Cytogenetics, 415-353-4844.

Amount to Collect:
30 mg tissue

Sample Type:
Unfixed Tissue (including POC)

Preferred Volume:
30 mg tissue

Minimum Volume:
5 mg tissue

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples; samples in formalin.

Specimen Preparation:
Maintain sample at room temperature. Transport to CB Cytogenetics within 24 hours.

Reference Interval:
46,XY normal male
46,XX normal female

Synonyms:

- Cytogenetic analysis
- Karyotype
- Karyotyping
- Tissue cytogenetics
- products of conception
- POC

Stability (from collection to initiation):
Room temperature 1 day, refrigerated 1 day, frozen unacceptable.

Reported:
42 days

Reflex Testing:
If an abnormality is detected the Director will determine the appropriate additional studies to be performed to characterize the abnormality.

Additional testing may be omitted if specifically requested when the sample is submitted for cytogenetic analysis.

CPT Codes:
88262, 88233

LDT or Modified FDA:
Yes

LOINC Codes:
48818-9

Chronic Lymphocytic Leukemia FISH Panel

CYCLL, BCYCLL

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Monday - Friday day shift only

Methodology:
Fluorescence in situ Hybridization (FISH)

Reported:
1-2 weeks

Additional Information:
Includes FISH probes for the following markers: Del11q, Trisomy 12, Del13q and Del17p, Translocation (11;14)

Synonyms:

- CLL Fish Panel
- Del11q
- Trisomy 12
- Del13q
- Del17p
- CYCLL
- BCYCLL
- TR1114

COLLECTION

Sample Type:
Heparinized whole blood, bone marrow aspirate or bone marrow core biopsy

Collect:
Dark green top

Amount to Collect:
Heparinized whoie blood: 2 mL
Heparinized bone marrow aspirate: 2 mL
Bone marrow core biopsy: 2 cm

Preferred Volume:
Heparinized whoie blood: 2 mL
Heparinized bone marrow aspirate: 2 mL
?Bone marrow core biopsy: 2 cm

Minimum Volume:
Heparinized whoie blood: 1 mL
Heparinized bone marrow aspirate: 1 mL
?Bone marrow core biopsy: 1 cm

Remarks:
MIx blood or marrow samples well to prevent clotting.

Stability (from collection to initiation):
2 days

PROCESSING

Test Code:
BCYCLL: Blood
CYCLL: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Specimen Preparation:
Store at room temperature, do not centrifuge. Send to Cytogenetics asap.

Preferred Volume:
Heparinized whoie blood: 2 mL
Heparinized bone marrow aspirate: 2 mL
?Bone marrow core biopsy: 2 cm

Minimum Volume:
Heparinized whoie blood: 1 mL
Heparinized bone marrow aspirate: 1 mL
?Bone marrow core biopsy: 1 cm

Stability (from collection to initiation):
2 days

RESULT INTERPRETATION

Additional Information:
Includes FISH probes for the following markers: Del11q, Trisomy 12, Del13q and Del17p, Translocation (11;14)

ADMINISTRATIVE

CPT Codes:
88271 x9, 88275 x5

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BCYCLL: Blood
CYCLL: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Monday - Friday day shift only

Methodology:
Fluorescence in situ Hybridization (FISH)

Remarks:
MIx blood or marrow samples well to prevent clotting.

Collect:
Dark green top

Amount to Collect:
Heparinized whoie blood: 2 mL
Heparinized bone marrow aspirate: 2 mL
Bone marrow core biopsy: 2 cm

Sample Type:
Heparinized whole blood, bone marrow aspirate or bone marrow core biopsy

Preferred Volume:
Heparinized whoie blood: 2 mL
Heparinized bone marrow aspirate: 2 mL
?Bone marrow core biopsy: 2 cm

Minimum Volume:
Heparinized whoie blood: 1 mL
Heparinized bone marrow aspirate: 1 mL
?Bone marrow core biopsy: 1 cm

Specimen Preparation:
Store at room temperature, do not centrifuge. Send to Cytogenetics asap.

Synonyms:

- CLL Fish Panel
- Del11q
- Trisomy 12
- Del13q
- Del17p
- CYCLL
- BCYCLL
- TR1114

Stability (from collection to initiation):
2 days

Reported:
1-2 weeks

Additional Information:
Includes FISH probes for the following markers: Del11q, Trisomy 12, Del13q and Del17p, Translocation (11;14)

CPT Codes:
88271 x9, 88275 x5

LDT or Modified FDA:
Yes

Chronic Lymphocytic Leukemia, IgVH Mutation Status

IGVHM

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
PCR, gene sequencing

Reported:
Test performed once per week. Turnaround time 3-10 days.

Additional Information:
Provides prognostic information for patients who have B-cell chronic lymphocytic leukemia. Patients with mutated IgH variable gene region required minimal or no chemotherapy and had prolonged survival. Patients with unmutated IgH variable gene region responded poorly to continuous multi-regimen chemotherapy and shorter survival. The delineation of mutation status is based on the degree of homology to the germline sequence. A 97% homology cut-off was found to provide a good discrimination.

Synonyms:

- B cell heavy chain mutation
- Ig heavy chain mutation

COLLECTION

Sample Type:
Whole blood, bone marrow

Collect:
Blood: Lavender top preferred, Dark green top or Yellow (ACD) top acceptable
Bone marrow: Lavender top preferred, Dark green top acceptable

Preferred Volume:
Blood: 5 mL
Bone marrow: 3 mL

Minimum Volume:
Blood: 4 mL
Bone marrow: 3 mL

Remarks:
Due to limited sample stability, collect samples Monday-Thursday only and avoiding holidays.

Stability (from collection to initiation):
Refrigerated 3 days

Unacceptable Conditions:
Clotted sample

Rejection Criteria:
Clotted or frozen sample

PROCESSING

Test Code:
IGVHM

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Do NOT centrifuge samples. Sore and ship refrigerated.Order Quest test # 15480X

Preferred Volume:
Blood: 5 mL
Bone marrow: 3 mL

Minimum Volume:
Blood: 4 mL
Bone marrow: 3 mL

Unacceptable Conditions:
Clotted sample

Rejection Criteria:
Clotted or frozen sample

Stability (from collection to initiation):
Refrigerated 3 days

RESULT INTERPRETATION

Additional Information:
Provides prognostic information for patients who have B-cell chronic lymphocytic leukemia. Patients with mutated IgH variable gene region required minimal or no chemotherapy and had prolonged survival. Patients with unmutated IgH variable gene region responded poorly to continuous multi-regimen chemotherapy and shorter survival. The delineation of mutation status is based on the degree of homology to the germline sequence. A 97% homology cut-off was found to provide a good discrimination.

ADMINISTRATIVE

CPT Codes:
83891-90, 83894-90, 83900-90, 83901-90 x4, 83902-90, 83904-90, 83909-90, 83912-90

COMPLETE VIEW

Available Stat:
No

Test Code:
IGVHM

Performing Lab:
Quest

Sendout:
Yes

Methodology:
PCR, gene sequencing

Remarks:
Due to limited sample stability, collect samples Monday-Thursday only and avoiding holidays.

Collect:
Blood: Lavender top preferred, Dark green top or Yellow (ACD) top acceptable
Bone marrow: Lavender top preferred, Dark green top acceptable

Sample Type:
Whole blood, bone marrow

Preferred Volume:
Blood: 5 mL
Bone marrow: 3 mL

Minimum Volume:
Blood: 4 mL
Bone marrow: 3 mL

Rejection Criteria:
Clotted or frozen sample

Unacceptable Conditions:
Clotted sample

Specimen Preparation:
Do NOT centrifuge samples. Sore and ship refrigerated.Order Quest test # 15480X

Synonyms:

- B cell heavy chain mutation
- Ig heavy chain mutation

Stability (from collection to initiation):
Refrigerated 3 days

Reported:
Test performed once per week. Turnaround time 3-10 days.

Additional Information:
Provides prognostic information for patients who have B-cell chronic lymphocytic leukemia. Patients with mutated IgH variable gene region required minimal or no chemotherapy and had prolonged survival. Patients with unmutated IgH variable gene region responded poorly to continuous multi-regimen chemotherapy and shorter survival. The delineation of mutation status is based on the degree of homology to the germline sequence. A 97% homology cut-off was found to provide a good discrimination.

CPT Codes:

83891-90, 83894-90, 83900-90, 83901-90 x4, 83902-90, 83904-90, 83909-90, 83912-90

Citrate, 24 hour urine

CITU

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Spectrophotometric, enzymatic

Reported:
Test run Tuesday-Saturday. Turnaround time: 2-5 days

Synonyms:

- Citric acid

COLLECTION

Sample Type:
24 hour urine collection

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container, 10g Boric Acid

Amount to Collect:
Entire 24 hour urine output

Preferred Volume:
10 mL urine

Minimum Volume:
2 mL urine

Remarks:
Refrigerate container before and after collection.

Instruct patient to NOT include first morning specimen at the beginning of the collection (i.e. DISCARD), and to begin to collect all subsequent voiding until the same time the next morning, INCLUDING the first morning specimen at the end of the 24 hour. collection. Submit specimen to Laboratory for processing.

Unacceptable Conditions:
Container not refrigerated during collection

PROCESSING

Test Code:
CITU

Test Group:
Citrate

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Record total volume collected on request. Mix collection well, aliquot 10 mL and refrigerate. Order Quest #3095N.

Preferred Volume:
10 mL urine

Minimum Volume:
2 mL urine

Unacceptable Conditions:
Container not refrigerated during collection

RESULT INTERPRETATION

Units:
mg/24 h

Reference Interval:
100-1300 mg/d

ADMINISTRATIVE

CPT Codes:
82507-90, 82570-90

LOINC Codes:
6687-8

COMPLETE VIEW

Available Stat:
No

Test Code:
CITU

Test Group:
Citrate

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Spectrophotometric, enzymatic

Remarks:
Refrigerate container before and after collection.

Instruct patient to NOT include first morning specimen at the beginning of the collection (i.e. DISCARD), and to begin to collect all subsequent voiding until the same time the next morning, INCLUDING the first morning specimen at the end of the 24 hour. collection. Submit specimen to Laboratory for processing.

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container, 10g Boric Acid

Amount to Collect:
Entire 24 hour urine output

Sample Type:
24 hour urine collection

Preferred Volume:
10 mL urine

Minimum Volume:
2 mL urine

Unacceptable Conditions:
Container not refrigerated during collection

Specimen Preparation:
Record total volume collected on request. Mix collection well, aliquot 10 mL and refrigerate. Order Quest #3095N.

Units:
mg/24 h

Reference Interval:
100-1300 mg/d

Synonyms:

- Citric acid

Reported:
Test run Tuesday-Saturday. Turnaround time: 2-5 days

CPT Codes:
82507-90, 82570-90

LOINC Codes:
6687-8

Citrate, random urine

CITUR

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Spectrophotometry, enzymatic

Synonyms:

- citric acid urine

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
See preferred volume

Preferred Volume:
10 mL urine

Minimum Volume:
2 mL urine

PROCESSING

Test Code:
CITUR

Test Group:
Citrate

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate. Order Quest test #11004X

Preferred Volume:
10 mL urine

Minimum Volume:
2 mL urine

RESULT INTERPRETATION

Units:
mg/g creatinine

Reference Interval:
Pediatric:

< 1 month	NOT ESTABLISHED
1-11 months	235 - 4069 mg/g creatinine
1 - 9 years	11 - 1136 mg/g creatinine
10 - 17 years	55 - 845 mg/g creatinine

>= 18 year olds:

Females	125-900 mg/g creatinine
Males	65-650 mg/g creatinine

ADMINISTRATIVE

CPT Codes:
82507-90, 82570-90

LOINC Codes:
13722-4

COMPLETE VIEW

Available Stat:
No

Test Code:
CITUR

Test Group:
Citrate

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Spectrophotometry, enzymatic

Collect:
Urine cup

Amount to Collect:
See preferred volume

Sample Type:
Random urine

Preferred Volume:
10 mL urine

Minimum Volume:
2 mL urine

Specimen Preparation:
Refrigerate. Order Quest test #11004X

Units:
mg/g creatinine

Reference Interval:
Pediatric:

< 1 month	NOT ESTABLISHED
1-11 months	235 - 4069 mg/g creatinine
1 - 9 years	11 - 1136 mg/g creatinine
10 - 17 years	55 - 845 mg/g creatinine

>= 18 year olds:

Females	125-900 mg/g creatinine
Males	65-650 mg/g creatinine

Synonyms:

- citric acid urine

CPT Codes:
82507-90, 82570-90

LOINC Codes:
13722-4

Citrate, serum

MOLT

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Spectrophotometric, enzymatic

Reported:
Test performed Tuesday-Saturday. Turnaround time: 2-4 days.

Synonyms:

- Citric acid

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Remarks:
Deliver immediately to Specimen Receiving.

Unacceptable Conditions:
Delivered to lab > 30 min after collection

PROCESSING

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Test Group:
Citrate

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Centrifuge and refrigerate serum.

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Unacceptable Conditions:
Delivered to lab > 30 min after collection

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:
1.7-3.0 mg/dL (85-156 µmol/L)

COMPLETE VIEW

Available Stat:
No

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Test Group:
Citrate

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Spectrophotometric, enzymatic

Remarks:
Deliver immediately to Specimen Receiving.

Collect:
Gold top

Amount to Collect:
4 mL blood

Sample Type:
Serum

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Unacceptable Conditions:
Delivered to lab > 30 min after collection

Specimen Preparation:
Centrifuge and refrigerate serum.

Units:
mg/dL

Reference Interval:
1.7-3.0 mg/dL (85-156 µmol/L)

Synonyms:

- Citric acid

Reported:
Test performed Tuesday-Saturday. Turnaround time: 2-4 days.

Citrated Platelet Count

PLTCIT

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay, Mount Zion

Performed:
24 hours per day, 7 days per week

Methodology:
Flow cytometry

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
CBC, CBCD, Blood Smear Morphology, and RETIC may not be added to this test.

If adding on COAG tests, please refer to stability for individual test.

This test may be ordered when platelets show clumping in EDTA anticoagulant, or clumping is suspected. Platelet clumping is not always corrected with Sodium Citrate anticoagulant and should not be routinely ordered if no clumping issues are present.

COLLECTION

Sample Type:
Citrated whole blood

Collect:
Blue (2.7 mL) or Lt. Blue (1.8mL) top filled to full extent or vacuum

Amount to Collect:
Blue top: 2.7mL blood
Lt. Blue top: 1.8 mL blood

Rejection Criteria:
Short draws and clotted samples are unacceptable and will be rejected.

PROCESSING

Test Code:
PLTCIT

Performing Lab:
Parnassus, Mission Bay, Mount Zion

Rejection Criteria:
Short draws and clotted samples are unacceptable and will be rejected.

RESULT INTERPRETATION

Units:
x10e9/L

Reference Interval:
140-450 x10e9/L

Critical Values:
<= 10 x10e9/L: Always called
<= 25 x10e9/L: Called if new finding within previous 24 hours.

Additional Information:
CBC, CBCD, Blood Smear Morphology, and RETIC may not be added to this test.

If adding on COAG tests, please refer to stability for individual test.

This test may be ordered when platelets show clumping in EDTA anticoagulant, or clumping is suspected. Platelet clumping is not always corrected with Sodium Citrate anticoagulant and should not be routinely ordered if no clumping issues are present.

Interpretive Data:
Due to the dilution factor of the liquid anticoagulant, platelet counts obtained in Sodium Citrate may be different from platelet counts obtained in EDTA anticoagulant. Platelet clumping is not always corrected with Sodium Citrate. Clinical correlation is recommended.

COMPLETE VIEW

Available Stat:
Yes

Test Code:
PLTCIT

Performing Lab:
Parnassus, Mission Bay, Mount Zion

Performed:
24 hours per day, 7 days per week

Methodology:
Flow cytometry

Collect:
Blue (2.7 mL) or Lt. Blue (1.8mL) top filled to full extent or vacuum

Amount to Collect:
Blue top: 2.7mL blood
Lt. Blue top: 1.8 mL blood

Sample Type:
Citrated whole blood

Rejection Criteria:
Short draws and clotted samples are unacceptable and will be rejected.

Units:
x10e9/L

Reference Interval:
140-450 x10e9/L

Critical Values:
<= 10 x10e9/L: Always called
<= 25 x10e9/L: Called if new finding within previous 24 hours.

Interpretive Data:
Due to the dilution factor of the liquid anticoagulant, platelet counts obtained in Sodium Citrate may be different from platelet counts obtained in EDTA anticoagulant. Platelet clumping is not always corrected with Sodium Citrate. Clinical correlation is recommended.

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
CBC, CBCD, Blood Smear Morphology, and RETIC may not be added to this test.

If adding on COAG tests, please refer to stability for individual test.

This test may be ordered when platelets show clumping in EDTA anticoagulant, or clumping is suspected. Platelet clumping is not always corrected with Sodium Citrate anticoagulant and should not be routinely ordered if no clumping issues are present.

cKIT

ORDERING

Available Stat:
No

Performing Lab:
Clinical Cancer Genomics Lab (CCGL)

Methodology:
PCR, sequencing

Reported:
2 weeks

Additional Information:
In this assay, DNA is chosen as a starting material for detection of c-kit mutations. Because this assay relies on sequencing methodology, it should be performed on diagnostic specimens in which percent involvement is high, so optimally at diagnosis. (Sequencing assay methodology requires ~20% involvement for mutation detection). This assay is not appropriate for detection of minimal residual disease.

Synonyms:

- c-KIT
- Mast/stem cell growth factor receptor
- SCFR
- proto-oncogene c-Kit
- tyrosine-protein kinase
- CD117

COLLECTION

Sample Type:
EDTA whole blood or bone marrow aspirate Note: If blood or marrow aspirate is not available formalin fixed paraffin embedded tissue can be submitted

Collect:
Lavendar top

Amount to Collect:
EDTA whole blood 5 mL
Bone marrow aspirate in EDTA 3 mL

Preferred Volume:
EDTA whole blood 5 mL
Bone marrow aspirate in EDTA 3 mL

Minimum Volume:
EDTA whole blood 1 mL
Bone marrow aspirate in EDTA 1 mL

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks

PROCESSING

Test Group:
AML molecular markers

Sendout:
Yes

Performing Lab:
Clinical Cancer Genomics Lab (CCGL)

Specimen Preparation:
Do not freeze whole blood. Ship sample to CCGL at Mt Zion as soon as possible.

Preferred Volume:
EDTA whole blood 5 mL
Bone marrow aspirate in EDTA 3 mL

Minimum Volume:
EDTA whole blood 1 mL
Bone marrow aspirate in EDTA 1 mL

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks

RESULT INTERPRETATION

Reference Interval:
Negative for mutations of exons tested.

Additional Information:
In this assay, DNA is chosen as a starting material for detection of c-kit mutations. Because this assay relies on sequencing methodology, it should be performed on diagnostic specimens in which percent involvement is high, so optimally at diagnosis. (Sequencing assay methodology requires ~20% involvement for mutation detection). This assay is not appropriate for detection of minimal residual disease.

ADMINISTRATIVE

CPT Codes:
83891, 83892, 83898, 83904, 83909, 83912

COMPLETE VIEW

Available Stat:
No

Test Group:
AML molecular markers

Performing Lab:
Clinical Cancer Genomics Lab (CCGL)

Sendout:
Yes

Methodology:
PCR, sequencing

Collect:
Lavendar top

Amount to Collect:
EDTA whole blood 5 mL
Bone marrow aspirate in EDTA 3 mL

Sample Type:
EDTA whole blood or bone marrow aspirate Note: If blood or marrow aspirate is not available formalin fixed paraffin embedded tissue can be submitted

Preferred Volume:
EDTA whole blood 5 mL
Bone marrow aspirate in EDTA 3 mL

Minimum Volume:
EDTA whole blood 1 mL
Bone marrow aspirate in EDTA 1 mL

Specimen Preparation:
Do not freeze whole blood. Ship sample to CCGL at Mt Zion as soon as possible.

Reference Interval:
Negative for mutations of exons tested.

Synonyms:

- c-KIT
- Mast/stem cell growth factor receptor
- SCFR
- proto-oncogene c-Kit
- tyrosine-protein kinase
- CD117

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks

Reported:
2 weeks

Additional Information:
In this assay, DNA is chosen as a starting material for detection of c-kit mutations. Because this assay relies on sequencing methodology, it should be performed on diagnostic specimens in which percent involvement is high, so optimally at diagnosis. (Sequencing assay methodology requires ~20% involvement for mutation detection). This assay is not appropriate for detection of minimal residual disease.

CPT Codes:
83891, 83892, 83898, 83904, 83909, 83912

Clomipramine

CLMP

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Liquid Chromatography Tandem Mass Spectrometry

Reported:
Test run Wednesday. Turnaround time: 3-8 days.

Additional Information:
Includes desmethyl metabolite.

Neuroleptic drugs cause increased N-Desmethyl Clomipramine.

There is great variability of N-Desmethyl Clomipramine to Clomipramine ratio of approximately 2-6:1. The reference ranges are a consensus of several publications. The distribution of individual patient concentrations is not normal. The most common side effects are dry mouth, somnolence, and tremor.

Synonyms:

- Anafranil

COLLECTION

Sample Type:
Serum

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
6 mL blood

Preferred Volume:
3 mL serum

Minimum Volume:
1.5 mL serum

Remarks:
Do NOT use serum separator tube.Optimum time to sample is 12-14 hours after oral dose.

Stability (from collection to initiation):
Room temperature 1 hour, refrigerated 5 days, frozen at -20C 1 month.

Unacceptable Conditions:
Sample collected in Gold top

PROCESSING

Test Code:
CLMP

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Separate and refrigerate serum as soon as possible.

Preferred Volume:
3 mL serum

Minimum Volume:
1.5 mL serum

Unacceptable Conditions:
Sample collected in Gold top

Stability (from collection to initiation):
Room temperature 1 hour, refrigerated 5 days, frozen at -20C 1 month.

RESULT INTERPRETATION

Units:
µg/L (mcg/L)

Reference Interval:
Clomipramine: 50-250 µg/L
DM-clomipramine: 150-350 µg/L
Total: 200-600 µg/L

Critical Values:
Quest Priority-1: >= 600 µg/L

Additional Information:
Includes desmethyl metabolite.

Neuroleptic drugs cause increased N-Desmethyl Clomipramine.

There is great variability of N-Desmethyl Clomipramine to Clomipramine ratio of approximately 2-6:1. The reference ranges are a consensus of several publications. The distribution of individual patient concentrations is not normal. The most common side effects are dry mouth, somnolence, and tremor.

ADMINISTRATIVE

CPT Codes:
80299

LOINC Codes:
3491-8

COMPLETE VIEW

Available Stat:
No

Test Code:
CLMP

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Liquid Chromatography Tandem Mass Spectrometry

Remarks:
Do NOT use serum separator tube.Optimum time to sample is 12-14 hours after oral dose.

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
6 mL blood

Sample Type:
Serum

Preferred Volume:
3 mL serum

Minimum Volume:
1.5 mL serum

Unacceptable Conditions:
Sample collected in Gold top

Specimen Preparation:
Separate and refrigerate serum as soon as possible.

Units:
µg/L (mcg/L)

Reference Interval:
Clomipramine: 50-250 µg/L
DM-clomipramine: 150-350 µg/L
Total: 200-600 µg/L

Critical Values:
Quest Priority-1: >= 600 µg/L

Synonyms:

- Anafranil

Stability (from collection to initiation):
Room temperature 1 hour, refrigerated 5 days, frozen at -20C 1 month.

Reported:
Test run Wednesday. Turnaround time: 3-8 days.

Additional Information:
Includes desmethyl metabolite.

Neuroleptic drugs cause increased N-Desmethyl Clomipramine.

There is great variability of N-Desmethyl Clomipramine to Clomipramine ratio of approximately 2-6:1. The reference ranges are a consensus of several publications. The distribution of individual patient concentrations is not normal. The most common side effects are dry mouth, somnolence, and tremor.

CPT Codes:
80299

LOINC Codes:
3491-8

Clonazepam

CLON

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
LC/MS

Reported:
Test run 4x per week. Turnaround time: 3-5 days.

Synonyms:

- Klonopin

COLLECTION

Sample Type:
Serum

Collect:
Red top

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Remarks:
Do NOT use serum separator tube.

Unacceptable Conditions:
Sample collected in Gold top

PROCESSING

Test Code:
CLON

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze at -20C.

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Unacceptable Conditions:
Sample collected in Gold top

RESULT INTERPRETATION

Units:
µg/L (mcg/L)

Reference Interval:
Therapeutic: 30-60 µg/L
Potentially toxic: > 70 µg/L.

ADMINISTRATIVE

CPT Codes:
80346-90

LOINC Codes:
3494-2

COMPLETE VIEW

Available Stat:
No

Test Code:
CLON

Performing Lab:
Quest

Sendout:
Yes

Methodology:
LC/MS

Remarks:
Do NOT use serum separator tube.

Collect:
Red top

Amount to Collect:
4 mL blood

Sample Type:
Serum

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Unacceptable Conditions:
Sample collected in Gold top

Specimen Preparation:
Freeze at -20C.

Units:
µg/L (mcg/L)

Reference Interval:
Therapeutic: 30-60 µg/L
Potentially toxic: > 70 µg/L.

Synonyms:

- Klonopin

Reported:
Test run 4x per week. Turnaround time: 3-5 days.

CPT Codes:
80346-90

LOINC Codes:
3494-2

ClonoSEQ (Formerly 'ClonoSight')

MOLT

ORDERING

Approval Required:
Yes, for inpatient orders.

Available Stat:
No

Performing Lab:
Adaptive Biotechnologies

Methodology:
PCR and next-generation sequencing

Reported:
7 days for fresh specimens; 14 days for archived specimens

Additional Information:
The previous lab (Sequenta; South San Francisco) that performed the ClonoSight test was purchased by Adaptive Biotechnologies (Seattle) in May of 2015 and is no longer accepting samples. The ClonoSight test has been replaced by the ClonoSeq assay, which is the name of a similar test that Adaptive Biotechnologies offers. These assays have been shown to be highly concordant.

All samples for clonoSEQ testing should be sent to Adaptive Biotechnologies in Seattle, WA.

For patients who were originally evaluated (had malignant clones identified) using Sequenta's ClonoSight assay, additional steps may be required prior to continuing with MRD testing on the Adaptive Biotechnologies clonoSEQ assay. It is imperative that the sendout lab be notified if a patient falls into this category so that they can work with Adaptive to transition the patient's testing to clonoSEQ.

Synonyms:

- Molecular Minimal residual disease testing
- MRD
- ClonoSight
- LymphoSight

COLLECTION

Sample Type:
EDTA anticoagulated blood or bone marrow

Collect:
Lavender top

Amount to Collect:
Blood: 10 mL
Bone marrow: 3 mL

Preferred Volume:
Blood: 10 mL
Bone marrow: 3 mL

Minimum Volume:
Blood: 10 mL
Bone marrow: 3 mL

Remarks:
All samples for clonoSEQ testing should be sent to Adaptive Biotechnologies in Seattle, WA.

Due to limited samle stability, collect samples Monday-Friday only and send via FedEx overnight, avoiding holidays. Samples are accepted by Adaptive Biotechnologies Monday through Saturday from 8AM to 5PM PT.

See Adaptive Biotechnologies website for additional specimen requirements.

Stability (from collection to initiation):
4 days at room temperature
7 days at 4C

PROCESSING

Test Code:
MOLT

Sendout:
Yes

Performing Lab:
Adaptive Biotechnologies

Specimen Preparation:
Keep samples at room temperature. Forward to CB at room temperature.

Preferred Volume:
Blood: 10 mL
Bone marrow: 3 mL

Minimum Volume:
Blood: 10 mL
Bone marrow: 3 mL

Stability (from collection to initiation):
4 days at room temperature
7 days at 4C

RESULT INTERPRETATION

Additional Information:
The previous lab (Sequenta; South San Francisco) that performed the ClonoSight test was purchased by Adaptive Biotechnologies (Seattle) in May of 2015 and is no longer accepting samples. The ClonoSight test has been replaced by the ClonoSeq assay, which is the name of a similar test that Adaptive Biotechnologies offers. These assays have been shown to be highly concordant.

All samples for clonoSEQ testing should be sent to Adaptive Biotechnologies in Seattle, WA.

For patients who were originally evaluated (had malignant clones identified) using Sequenta's ClonoSight assay, additional steps may be required prior to continuing with MRD testing on the Adaptive Biotechnologies clonoSEQ assay. It is imperative that the sendout lab be notified if a patient falls into this category so that they can work with Adaptive to transition the patient's testing to clonoSEQ.

COMPLETE VIEW

Approval Required:
Yes, for inpatient orders.

Available Stat:
No

Test Code:
MOLT

Performing Lab:
Adaptive Biotechnologies

Sendout:
Yes

Methodology:
PCR and next-generation sequencing

Remarks:
All samples for clonoSEQ testing should be sent to Adaptive Biotechnologies in Seattle, WA.

Due to limited samle stability, collect samples Monday-Friday only and send via FedEx overnight, avoiding holidays. Samples are accepted by Adaptive Biotechnologies Monday through Saturday from 8AM to 5PM PT.

See Adaptive Biotechnologies website for additional specimen requirements.

Collect:
Lavender top

Amount to Collect:
Blood: 10 mL
Bone marrow: 3 mL

Sample Type:
EDTA anticoagulated blood or bone marrow

Preferred Volume:
Blood: 10 mL
Bone marrow: 3 mL

Minimum Volume:
Blood: 10 mL
Bone marrow: 3 mL

Specimen Preparation:
Keep samples at room temperature. Forward to CB at room temperature.

Synonyms:

- Molecular Minimal residual disease testing
- MRD
- ClonoSight
- LymphoSight

Stability (from collection to initiation):

4 days at room temperature
7 days at 4C

Reported:

7 days for fresh specimens; 14 days for archived specimens

Additional Information:

The previous lab (Sequenta; South San Francisco) that performed the ClonoSight test was purchased by Adaptive Biotechnologies (Seattle) in May of 2015 and is no longer accepting samples. The ClonoSight test has been replaced by the ClonoSeq assay, which is the name of a similar test that Adaptive Biotechnologies offers. These assays have been shown to be highly concordant.

All samples for clonoSEQ testing should be sent to Adaptive Biotechnologies in Seattle, WA.

For patients who were originally evaluated (had malignant clones identified) using Sequenta's ClonoSight assay, additional steps may be required prior to continuing with MRD testing on the Adaptive Biotechnologies clonoSEQ assay. It is imperative that the sendout lab be notified if a patient falls into this category so that they can work with Adaptive to transition the patient's testing to clonoSEQ.

Clorazepate

NORDP

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
HPLC

Reported:
7-10 days

Additional Information:
Oxazepam (Serax(R)), an antianxiety agent, is an active but less potent metabolite of diazepam, nordiazepam, and chlordiazepoxide. Clorazepate is a benzodiazepine used to treat anxiety. It has CNS depressant effects. The primary metabolite, nordiazepam is measured by this assay.

Synonyms:

- Tranzene
- Desmethyldiazepam
- Nordiazepam
- Tranxene

COLLECTION

Sample Type:
Serum

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
5 mL blood

Preferred Volume:
2.5 ml serum

Minimum Volume:
1 mL serum

Remarks:
Do NOT use serum separator tube.

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 1 week, frozen at -20C 1 month

Unacceptable Conditions:
Sample collected in Gold top.

PROCESSING

Test Code:
NORDP

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze at -20C. Test code NORDP orders both Clorazepate (Quest # 5274X) and Oxazepam (Quest # 808X) as a package.

Preferred Volume:
2.5 ml serum

Minimum Volume:
1 mL serum

Unacceptable Conditions:
Sample collected in Gold top.

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 1 week, frozen at -20C 1 month

RESULT INTERPRETATION

Units:
µg/mL (mcg/mL)

Reference Interval:
0.1-2.0 ug/mL

Additional Information:
Oxazepam (Serax(R)), an antianxiety agent, is an active but less potent metabolite of diazepam, nordiazepam, and chlordiazepoxide. Clorazepate is a benzodiazepine used to treat anxiety. It has CNS depressant effects. The primary metabolite, nordiazepam is measured by this assay.

ADMINISTRATIVE

CPT Codes:
80154-90 x2

COMPLETE VIEW

Available Stat:
No

Test Code:
NORDP

Performing Lab:
Quest

Sendout:
Yes

Methodology:
HPLC

Remarks:
Do NOT use serum separator tube.

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
5 mL blood

Sample Type:
Serum

Preferred Volume:
2.5 ml serum

Minimum Volume:
1 mL serum

Unacceptable Conditions:
Sample collected in Gold top.

Specimen Preparation:
Freeze at -20C. Test code NORDP orders both Clorazepate (Quest # 5274X) and Oxazepam (Quest # 808X) as a package.

Units:
µg/mL (mcg/mL)

Reference Interval:
0.1-2.0 ug/mL

Synonyms:

- Tranzene
- Desmethyldiazepam
- Nordiazepam
- Tranxene

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 1 week, frozen at -20C 1 month

Reported:
7-10 days

Additional Information:
Oxazepam (Serax(R)), an antianxiety agent, is an active but less potent metabolite of diazepam, nordiazepam, and chlordiazepoxide. Clorazepate is a benzodiazepine used to treat anxiety. It has CNS depressant effects. The primary metabolite, nordiazepam is measured by this assay.

CPT Codes:
80154-90 x2

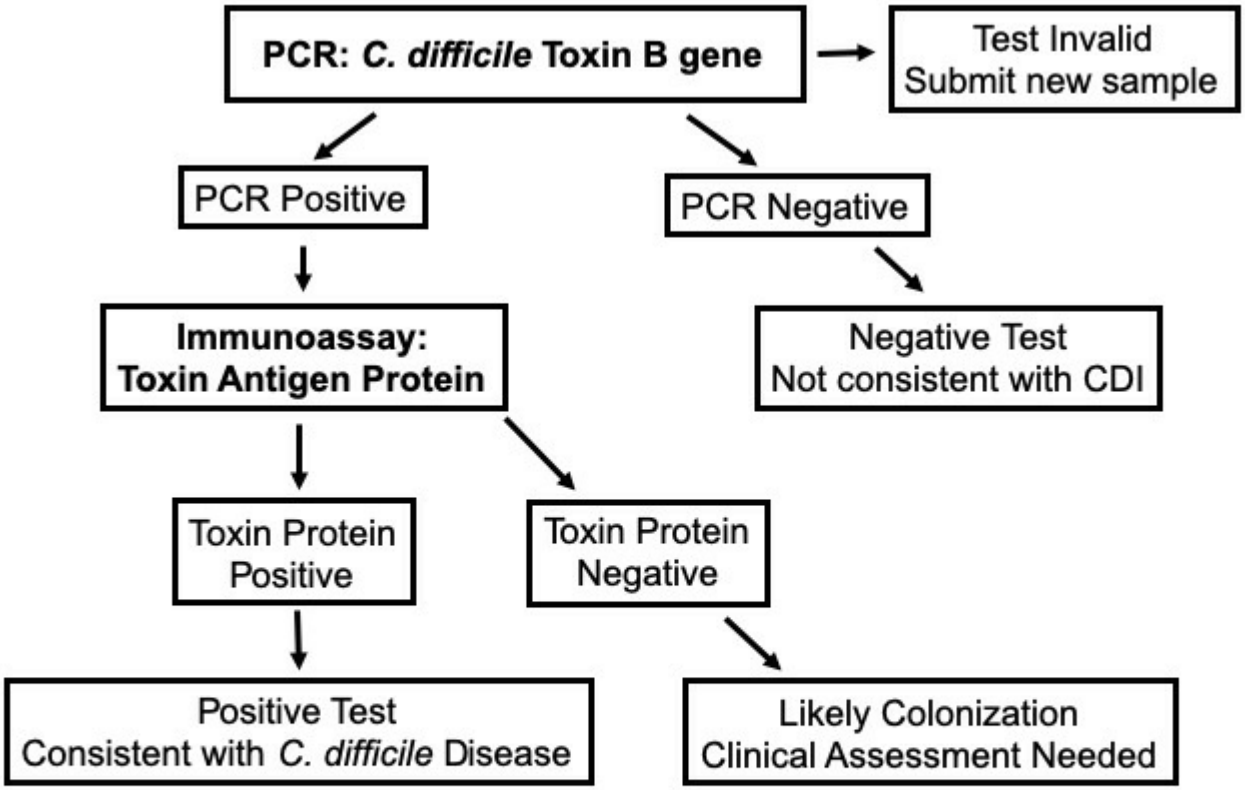
Clostridium difficile

P328

ORDERING

Ordering Recommendations:

Testing algorithm:



Approval Required:

Repeat testing within 7 days is discouraged since infection status rarely changes in this time frame. Enter the reason for testing in the comment field on the order entry screen in APeX.

Contact Pediatric Infectious Disease to obtain approval to do testing on patient's < 1 year old. Testing for NAP1 epidemic strain of C. difficile is available with Infectious Disease approval.

Available Stat:

No

Performing Lab:

Microbiology

Performed:

Daily, all shifts

Methodology:

PCR, rapid membrane EIA

Reported:

Same or next day

Additional Information:

Asymptomatic carriage is common, so only symptomatic patients should be tested. Submit stools from patients with diarrhea ONLY (>= 3 unformed stools in <= 24 hours, stool must conform to shape of container). Patients with ileus will also be tested - note this in Apex. Most patients with clinical C. difficile associated diarrhea have had prior antimicrobial therapy.

Repeat testing within 7 days is not recommended since infection status rarely changes in this time frame. Enter the reason for testing in the comment field on the order entry screen.

Due to high rates of colonization in children, C. difficile testing will not be performed on children < 12 months old unless prior approval is obtained from pediatric infectious disease service.
Patients may be colonized with toxigenic C. difficile without having clinical disease. Recent studies indicate that patients who carry C. difficile with toxin gene (identified via PCR), but without detectable toxin protein production (detected by immunoassay) are most likely colonized and may not need treatment directed at the C. difficile (Polage 2015).
Enteric contact isolation will still be necessary for patient with diarrhea who are colonized with toxigenic C. difficile since there can be transmission to other patients.Continue isolation until the patient has formed stool for at least 48 hours, is bathed, and is moved to clean linens in a clean room.

Patients with ileus will also be tested - note this in Apex. If C. difficile is clinically suspected in a patient with ileus, a rectal swab may be submitted. The swab should be visibly soiled with stool and submitted in a clean container.

Testing for the NAP1 epidemic strain of C. difficile is available with Infectious Disease approval.

Reflex Testing:

Immunoassay for toxin antigen protein will be performed, and billed separately, when the PCR for toxin is positive.

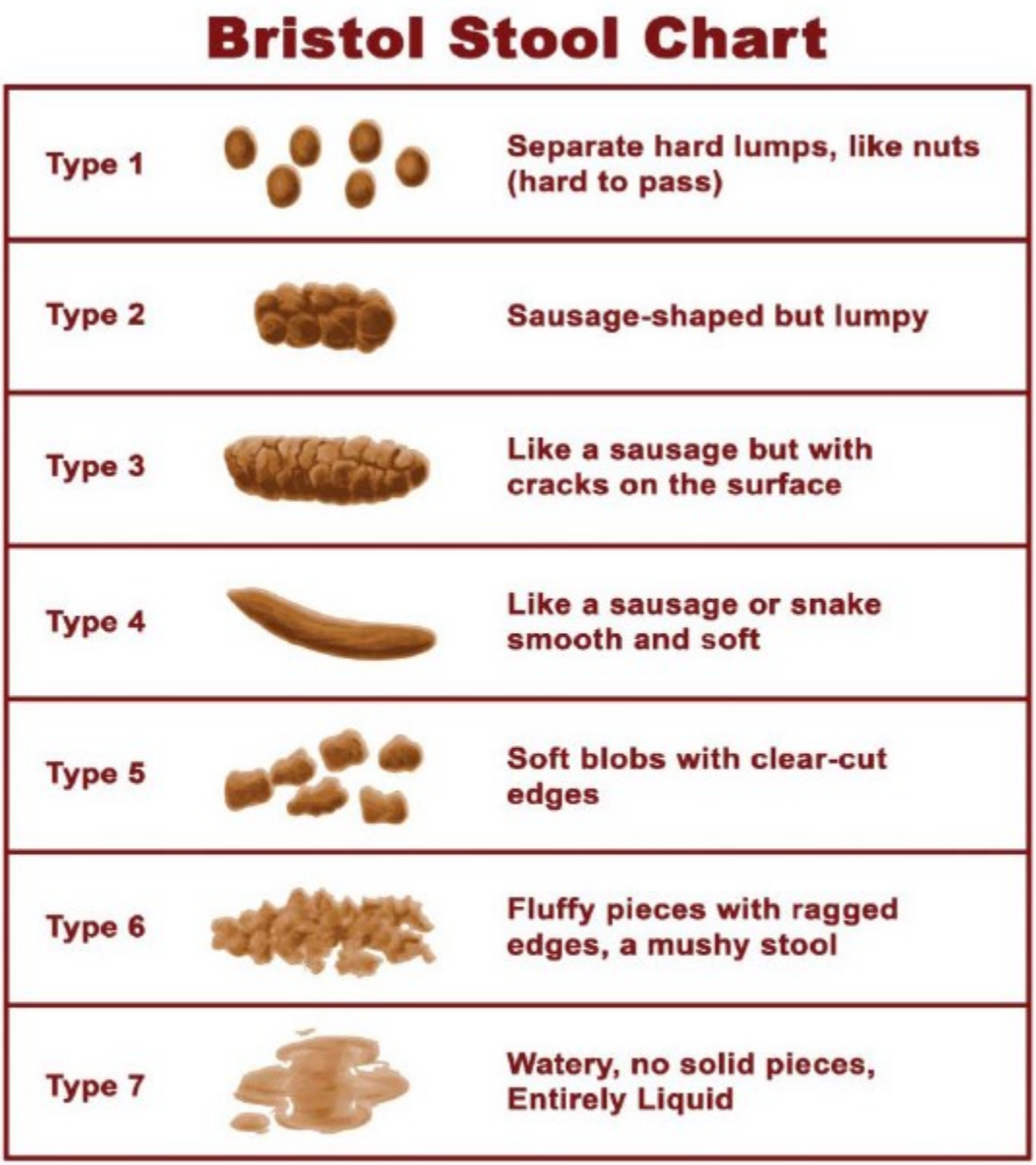
Synonyms:

- Clostridium difficile Ag
- Enterocolitis
- Pseudomembranous enterocolitis
- Clostridium difficile toxin
- enterotoxin
- CDI
- C.diff

COLLECTION

Sample Type:

Bristol Stool Chart types 6 and 7 are acceptable.
Patients with ileus may submit a visibly soiled rectal swab in a clean container.



Type 6 & 7 are considered "loose" and/or "watery" and are suitable *C. difficile* specimens.

Collect:

Sterile container

Amount to Collect:

2 ml stool

Preferred Volume:

2 mL stool

Minimum Volume:

1 mL stool

Remarks:

Potentially interfering substances include Vagisil cream and zinc oxide paste.

If C. difficile is clinically suspected in a patient with ileus, a rectal swab may be submitted. The swab should be visibly soiled with stool and submitted in a clean container.

Stability (from collection to initiation):

Room temperature 24 hours, refrigerated 3 days

Unacceptable Conditions:
Bristol Stool Chart types 1 - 5.
More than 1 sample in 7 days.
Samples on patients < 1 year old.

PROCESSING

Test Code:
P328

Test Group:
Clostridium difficile

Performing Lab:
Microbiology

Specimen Preparation:
Repeat testing within 7 days will be accepted if provider has entered a reason for testing in the comment field on the order entry screen in APeX. This will display on the requisition.

Samples from children < 1 year old: TND as CONSUL and add code CDPED C. difficile testing not performed on children < 12 month old unless prior approval obtained from Pediatric ID Service.

Preferred Volume:
2 mL stool

Minimum Volume:
1 mL stool

Unacceptable Conditions:
Bristol Stool Chart types 1 - 5.
More than 1 sample in 7 days.
Samples on patients < 1 year old.

Stability (from collection to initiation):
Room temperature 24 hours, refrigerated 3 days

RESULT INTERPRETATION

Reference Interval:
Negative for C. difficile

Critical Values:
First sample positive for C. difficile toxin on an inpatient or patient currently in ED

Additional Information:
Asymptomatic carriage is common, so only symptomatic patients should be tested. Submit stools from patients with diarrhea ONLY (>= 3 unformed stools in <= 24 hours, stool must conform to shape of container). Patients with ileus will also be tested - note this in Apex. Most patients with clinical C. difficile associated diarrhea have had prior antimicrobial therapy.

Repeat testing within 7 days is not recommended since infection status rarely changes in this time frame. Enter the reason for testing in the comment field on the order entry screen.

Due to high rates of colonization in children, C. difficile testing will not be performed on children < 12 months old unless prior approval is obtained from pediatric infectious disease service.
Patients may be colonized with toxigenic C. difficile without having clinical disease. Recent studies indicate that patients who carry C. difficile with toxin gene (identified via PCR), but without detectable toxin protein production (detected by immunoassay) are most likely colonized and may not need treatment directed at the C. difficile (Polage 2015).
Enteric contact isolation will still be necessary for patient with diarrhea who are colonized with toxigenic C. difficile since there can be transmission to other patients.Continue isolation until the patient has formed stool for at least 48 hours, is bathed, and is moved to clean linens in a clean room.

Patients with ileus will also be tested - note this in Apex. If C. difficile is clinically suspected in a patient with ileus, a rectal swab may be submitted. The swab should be visibly soiled with stool and submitted in a clean container.

Testing for the NAP1 epidemic strain of C. difficile is available with Infectious Disease approval.

ADMINISTRATIVE

CPT Codes:
Rapid membrane EIA: 87324, 87449PCR: 87493

LOINC Codes:
31308-0

COMPLETE VIEW

Approval Required:

Repeat testing within 7 days is discouraged since infection status rarely changes in this time frame. Enter the reason for testing in the comment field on the order entry screen in APeX.

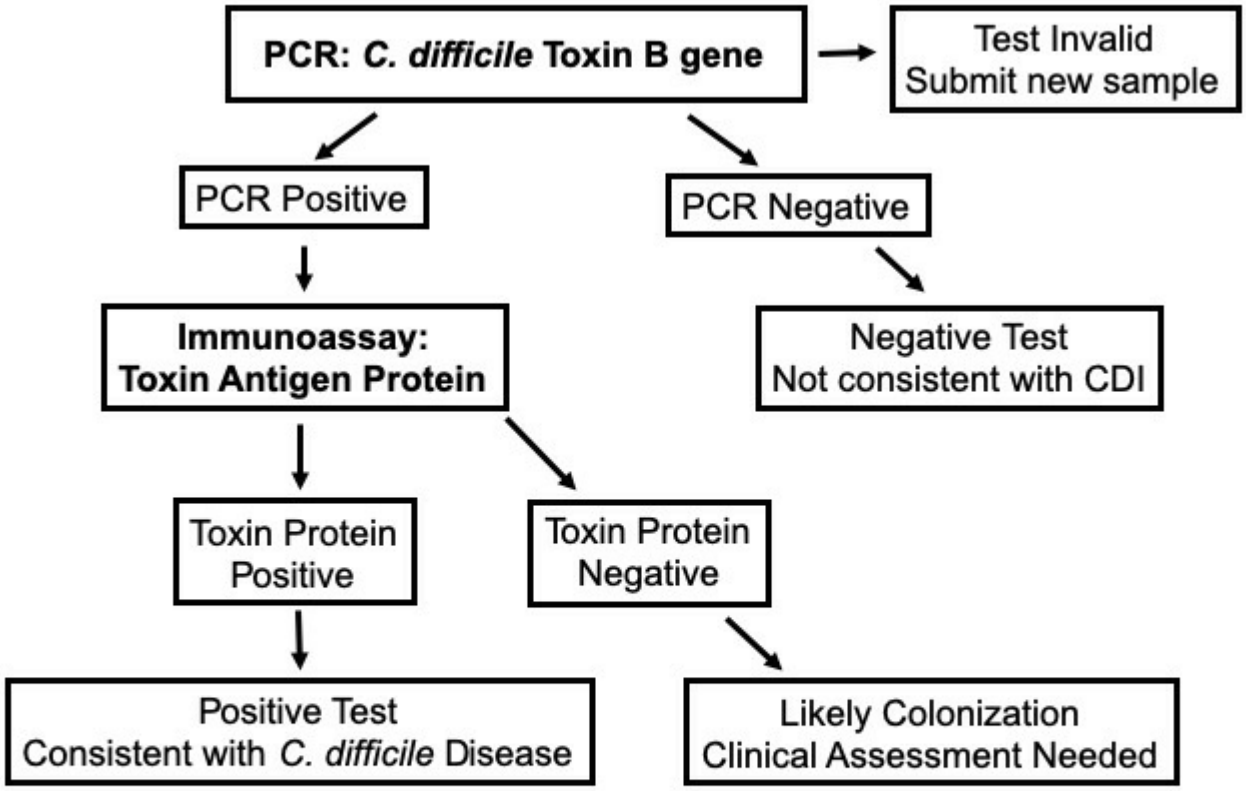
Contact Pediatric Infectious Disease to obtain approval to do testing on patient's < 1 year old. Testing for NAP1 epidemic strain of C. difficile is available with Infectious Disease approval.

Available Stat:

No

Ordering Recommendations:

Testing algorithm:



Test Code:

P328

Test Group:

Clostridium difficile

Performing Lab:

Microbiology

Performed:

Daily, all shifts

Methodology:

PCR, rapid membrane EIA

Remarks:

Potentially interfering substances include Vagisil cream and zinc oxide paste.

If C. difficile is clinically suspected in a patient with ileus, a rectal swab may be submitted. The swab should be visibly soiled with stool and submitted in a clean container.

Collect:

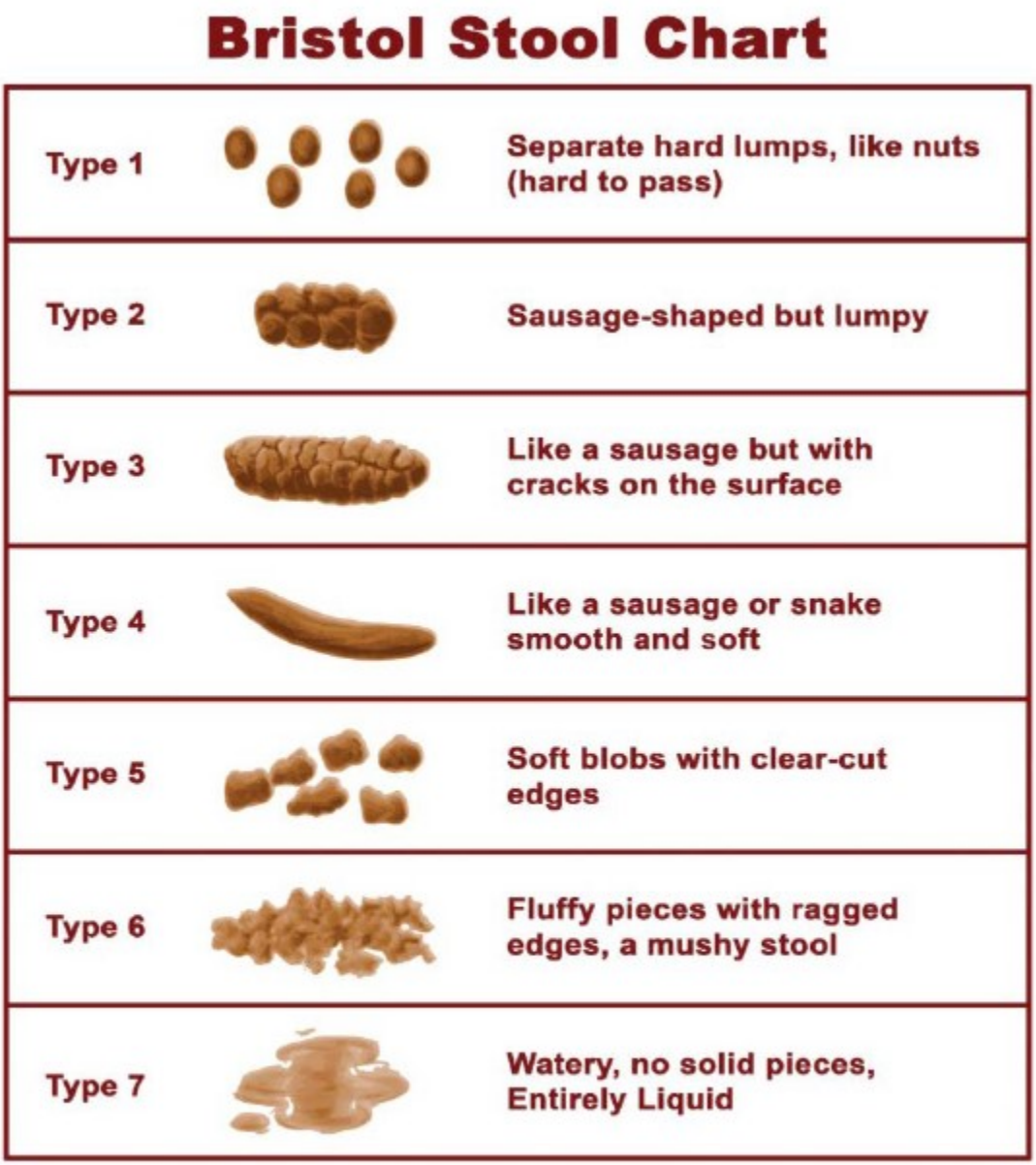
Sterile container

Amount to Collect:

2 ml stool

Sample Type:

Bristol Stool Chart types 6 and 7 are acceptable.
Patients with ileus may submit a visibly soiled rectal swab in a clean container.



Type 6 & 7 are considered "loose" and/or "watery" and are suitable *C. difficile* specimens.

Preferred Volume:

2 mL stool

Minimum Volume:

1 mL stool

Unacceptable Conditions:

Bristol Stool Chart types 1 - 5.
More than 1 sample in 7 days.
Samples on patients < 1 year old.

Specimen Preparation:

Repeat testing within 7 days will be accepted if provider has entered a reason for testing in the comment field on the order entry screen in APeX. This will display on the requisition.

Samples from children < 1 year old: TND as CONSUL and add code CDPED C. difficile testing not performed on children < 12 month old unless prior approval obtained from Pediatric ID Service.

Reference Interval:

Negative for C. difficile

Critical Values:

First sample positive for C. difficile toxin on an inpatient or patient currently in ED

Synonyms:

- Clostridium difficile Ag
- Enterocolitis
- Pseudomembranous enterocolitis
- Clostridium difficile toxin
- enterotoxin
- CDI
- C.diff

Stability (from collection to initiation):
Room temperature 24 hours, refrigerated 3 days

Reported:
Same or next day

Reflex Testing:
Immunoassay for toxin antigen protein will be performed, and billed separately, when the PCR for toxin is positive.

Additional Information:
Asymptomatic carriage is common, so only symptomatic patients should be tested. Submit stools from patients with diarrhea ONLY (>= 3 unformed stools in <= 24 hours, stool must conform to shape of container). Patients with ileus will also be tested - note this in Apex. Most patients with clinical C. difficile associated diarrhea have had prior antimicrobial therapy.

Repeat testing within 7 days is not recommended since infection status rarely changes in this time frame. Enter the reason for testing in the comment field on the order entry screen.

Due to high rates of colonization in children, C. difficile testing will not be performed on children < 12 months old unless prior approval is obtained from pediatric infectious disease service.
Patients may be colonized with toxigenic C. difficile without having clinical disease. Recent studies indicate that patients who carry C. difficile with toxin gene (identified via PCR), but without detectable toxin protein production (detected by immunoassay) are most likely colonized and may not need treatment directed at the C. difficile (Polage 2015).
Enteric contact isolation will still be necessary for patient with diarrhea who are colonized with toxigenic C. difficile since there can be transmission to other patients.Continue isolation until the patient has formed stool for at least 48 hours, is bathed, and is moved to clean linens in a clean room.

Patients with ileus will also be tested - note this in Apex. If C. difficile is clinically suspected in a patient with ileus, a rectal swab may be submitted. The swab should be visibly soiled with stool and submitted in a clean container.

Testing for the NAP1 epidemic strain of C. difficile is available with Infectious Disease approval.

CPT Codes:
Rapid membrane EIA: 87324, 87449PCR: 87493

LOINC Codes:
31308-0

Clozapine

CLOZ

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
LC/MS/MS

Reported:
3-5 days

Synonyms:

- Norclozapine

COLLECTION

Sample Type:
Serum or plasma

Collect:
Red top, Lavender top, Dark green top

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL Serum or plasma

Minimum Volume:
1 mL Serum or plasma

Remarks:
Do not use tubes containing barrier gel

Stability (from collection to initiation):
Room temperature 1 day, refrigerated 5 days, frozen 1 month

Unacceptable Conditions:
Submitted in Gold top or Light green top

PROCESSING

Test Code:
CLOZ

Sendout:
Yes

Performing Lab:
Quest

Preferred Volume:
2 mL Serum or plasma

Minimum Volume:
1 mL Serum or plasma

Unacceptable Conditions:
Submitted in Gold top or Light green top

Stability (from collection to initiation):
Room temperature 1 day, refrigerated 5 days, frozen 1 month

RESULT INTERPRETATION

Units:
µg/mL (mcg/mL)

Reference Interval:
Norclozapine: 25 - 400 µg/mL

ADMINISTRATIVE

CPT Codes:
80159

COMPLETE VIEW

Available Stat:
No

Test Code:
CLOZ

Performing Lab:
Quest

Sendout:
Yes

Methodology:
LC/MS/MS

Remarks:
Do not use tubes containing barrier gel

Collect:
Red top, Lavender top, Dark green top

Amount to Collect:
4 mL blood

Sample Type:
Serum or plasma

Preferred Volume:
2 mL Serum or plasma

Minimum Volume:
1 mL Serum or plasma

Unacceptable Conditions:
Submitted in Gold top or Light green top

Units:
µg/mL (mcg/mL)

Reference Interval:
Norclozapine: 25 - 400 µg/mL

Synonyms:

- Norclozapine

Stability (from collection to initiation):
Room temperature 1 day, refrigerated 5 days, frozen 1 month

Reported:
3-5 days

CPT Codes:
80159

CMV DNA QUALITATIVE PCR, AMNIOTIC FLUID

CMVAF

ORDERING

Ordering Recommendations:
Detect cytomegalovirus but does not quantify viral load. Potentially useful for specimen types other than blood. Cytomegalovirus by Quantitative PCR on plasma is the preferred test for most clinical indications.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Qualitative Polymerase Chain Reaction

Reported:
1-3 days

Synonyms:

- CMV
- CMV by PCR
- CMV PCR bone marrow
- CMV PCR whole blood
- CMV qualitative
- herpes
- HHV-5
- Human herpesvirus 5

COLLECTION

Sample Type:
Amniotic fluid

Collect:
Sterile container

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Stability (from collection to initiation):
Central Processing, please send/transport ALL amniotic fluid tubes (including tubes with sendout labels) at ROOM TEMPERATURE to China Basin Cytogenetics Lab immediately upon receiving. China Basin Processing will give Cytogenetics lab all tubes and Cytogenetics lab will bring all send out tests back to Sendout lab. Sendout department will then send the tubes out at frozen temperature.

Storage/Transport Temperature:
From Central processing to China Basin Central processing : Room Temperature
(send ALL amniotic fluid tubes (including tubes with sendout labels) at ROOM TEMPERATURE to China Basin Cytogenetics Lab immediately upon receiving)
From China Basin Central Processing to Cytogenetics: Room Temperature
From China Basin Central Processing to Send Out institution: Frozen

Unacceptable Conditions:
Heparinized specimens

PROCESSING

Test Code:
CMVAF

ARUP Test Code:
0060040

Sendout:
Yes

Performing Lab:
ARUP

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Unacceptable Conditions:
Heparinized specimens

Stability (from collection to initiation):
Central Processing, please send/transport ALL amniotic fluid tubes (including tubes with sendout labels) at ROOM TEMPERATURE to China Basin Cytogenetics Lab immediately upon receiving. China Basin Processing will give Cytogenetics lab all tubes and Cytogenetics lab will bring all send out tests back to Sendout lab. Sendout department will then send the tubes out at frozen temperature.

Storage/Transport Temperature:
From Central processing to China Basin Central processing : Room Temperature
(send ALL amniotic fluid tubes (including tubes with sendout labels) at ROOM TEMPERATURE to China Basin Cytogenetics Lab immediately upon receiving)
From China Basin Central Processing to Cytogenetics: Room Temperature
From China Basin Central Processing to Send Out institution: Frozen

RESULT INTERPRETATION

Interpretive Data:
This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:
87496

LOINC:

- 31208-2
- 5000-5

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Detect cytomegalovirus but does not quantify viral load. Potentially useful for specimen types other than blood. Cytomegalovirus by Quantitative PCR on plasma is the preferred test for most clinical indications.

Test Code:
CMVAF

ARUP Test Code:
0060040

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Qualitative Polymerase Chain Reaction

Collect:
Sterile container

Sample Type:
Amniotic fluid

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Unacceptable Conditions:
Heparinized specimens

Interpretive Data:
This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Synonyms:

- CMV
- CMV by PCR
- CMV PCR bone marrow
- CMV PCR whole blood
- CMV qualitative
- herpes
- HHV-5
- Human herpesvirus 5

Storage/Transport Temperature:

From Central processing to China Basin Central processing : Room Temperature
(send ALL amniotic fluid tubes (including tubes with sendout labels) at ROOM TEMPERATURE to China Basin Cytogenetics Lab immediately upon receiving)
From China Basin Central Processing to Cytogenetics: Room Temperature
From China Basin Central Processing to Send Out institution: Frozen

Stability (from collection to initiation):

Central Processing, please send/transport ALL amniotic fluid tubes (including tubes with sendout labels) at ROOM TEMPERATURE to China Basin Cytogenetics Lab immediately upon receiving. China Basin Processing will give Cytogenetics lab all tubes and Cytogenetics lab will bring all send out tests back to Sendout lab. Sendout department will then send the tubes out at frozen temperature.

Reported:

1-3 days

CPT Codes:

87496

LOINC:

- 31208-2
- 5000-5

Cobalt, blood

COBL

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Inductively-Coupled Plasma/Mass Spectrometry

Reported:
3-4 days

Additional Information:
Cobalt is part of our diet. Approximately 85% of absorbed cobalt is excreted in the urine and the remainder eliminated in stool. Toxicity may occur in select industrial environments. Cobalt is not mined in the United States so primary supplies are imported.

COLLECTION

Patient Preparation:
Patient should refrain from taking mineral supplements, vitamin B-12 or vitamin B complex three days prior to specimen collection

Sample Type:
EDTA whole blood

Collect:
Navy blue top (EDTA) tube

Amount to Collect:
4 mL blood

Preferred Volume:
4 mL

Minimum Volume:
2 mL

Remarks:
To avoid contamination, use powderless gloves.

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 5 days, frozen unacceptable

PROCESSING

Test Code:
COBL

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Do not aliquot specimen or freeze. Refrigerate tube and forward to CB.

Preferred Volume:
4 mL

Minimum Volume:
2 mL

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 5 days, frozen unacceptable

RESULT INTERPRETATION

Units:
µg/L (mcg/L)

Reference Interval:
<= 1.8 µg/L

Additional Information:
Cobalt is part of our diet. Approximately 85% of absorbed cobalt is excreted in the urine and the remainder eliminated in stool. Toxicity may occur in select industrial environments. Cobalt is not mined in the United States so primary supplies are imported.

ADMINISTRATIVE

CPT Codes:
83018-90

COMPLETE VIEW

Available Stat:
No

Test Code:
COBL

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Inductively-Coupled Plasma/Mass Spectrometry

Patient Preparation:
Patient should refrain from taking mineral supplements, vitamin B-12 or vitamin B complex three days prior to specimen collection

Remarks:
To avoid contamination, use powderless gloves.

Collect:
Navy blue top (EDTA) tube

Amount to Collect:
4 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
4 mL

Minimum Volume:
2 mL

Specimen Preparation:
Do not aliquot specimen or freeze. Refrigerate tube and forward to CB.

Units:
µg/L (mcg/L)

Reference Interval:
<= 1.8 µg/L

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 5 days, frozen unacceptable

Reported:
3-4 days

Additional Information:
Cobalt is part of our diet. Approximately 85% of absorbed cobalt is excreted in the urine and the remainder eliminated in stool. Toxicity may occur in select industrial environments. Cobalt is not mined in the United States so primary supplies are imported.

CPT Codes:
83018-90

Cocaine Metabolite, Urine, Quantitative

COCQNT

ORDERING

Ordering Recommendations:
Use to obtain quantitative results or to follow up a presumptive result. For general screening, the preferred test is Cocaine, Urine Screen with Reflex to Quantitation (2012231).

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Reported:
1-4 days

Synonyms:

- Benzoylecgonine
- Benzoylmethylecgonine
- Cocaine
- Crack
- Pain Management
- Pain Management, Cocaine Metabolite with Confirmation with medMATCH, Urine
- Pain Management, Cocaine Metabolite, Quantitative, with medMATCH, Urine

COLLECTION

Collect:
Random urine.

Amount to Collect:
3.5 mL

Preferred Volume:
3.5 mL

Minimum Volume:
1.5 mL

Stability (from collection to initiation):
Ambient: 1 week; Refrigerated: 1 month; Frozen: 3 years

Storage/Transport Temperature:
Room temperature.

Unacceptable Conditions:
Specimens exposed to repeated freeze/thaw cycles.

PROCESSING

Test Code:
COCQNT

ARUP Test Code:
0090359

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transfer 1 mL urine with no additives or preservatives to an ARUP standard transport tube. (Min: 0.5 mL)

Preferred Volume:
3.5 mL

Minimum Volume:
1.5 mL

Unacceptable Conditions:
Specimens exposed to repeated freeze/thaw cycles.

Stability (from collection to initiation):
Ambient: 1 week; Refrigerated: 1 month; Frozen: 3 years

Storage/Transport Temperature:
Room temperature.

RESULT INTERPRETATION

Reference Interval:
Effective August 17, 2015

Drugs Covered	Cutoff Concentrations
Benzoylecgonine	50 ng/mL

Interpretive Data:
Methodology: Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Positive cutoff: 50 ng/mL

For medical purposes only; not valid for forensic use.

The concentration value must be greater than or equal to the cutoff to be reported as positive. Interpretive questions should be directed to the laboratory.

ADMINISTRATIVE

CPT Codes:
80353 (Alt code: G0480)

LOINC:

- 3394-4

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Use to obtain quantitative results or to follow up a presumptive result. For general screening, the preferred test is Cocaine, Urine Screen with Reflex to Quantitation (2012231).

Test Code:
COCQNT

ARUP Test Code:
0090359

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Collect:
Random urine.

Amount to Collect:
3.5 mL

Preferred Volume:
3.5 mL

Minimum Volume:
1.5 mL

Unacceptable Conditions:
Specimens exposed to repeated freeze/thaw cycles.

Specimen Preparation:
Transfer 1 mL urine with no additives or preservatives to an ARUP standard transport tube. (Min: 0.5 mL)

Reference Interval:

Effective August 17, 2015

Drugs Covered	Cutoff Concentrations
Benzoylecgonine	50 ng/mL

Interpretive Data:

Methodology: Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Positive cutoff: 50 ng/mL

For medical purposes only; not valid for forensic use.

The concentration value must be greater than or equal to the cutoff to be reported as positive. Interpretive questions should be directed to the laboratory.

Synonyms:

- Benzoylecgonine
- Benzoylmethylecgonine
- Cocaine
- Crack
- Pain Management
- Pain Management, Cocaine Metabolite with Confirmation with medMATCH, Urine
- Pain Management, Cocaine Metabolite, Quantitative, with medMATCH, Urine

Storage/Transport Temperature:

Room temperature.

Stability (from collection to initiation):

Ambient: 1 week; Refrigerated: 1 month; Frozen: 3 years

Reported:

1-4 days

CPT Codes:

80353 (Alt code: G0480)

LOINC:

- 3394-4

Notes:

Compare to Pain Management, Cocaine Metabolite with Confirmation with medMATCH, Urine; Pain Management, Cocaine Metabolite, Quantitative, with medMATCH, Urine.

Cocaine Screen, Urine

COCU

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Homogeneous competitive enzyme immunoassay method using G6PDH-labeling

Reported:
Stat 2 hours, Routine 4 hours

Additional Information:
Cocaine use is measured as the benzoylecgonine metabolite. A concentration < 300 µg/L is considered negative by this test. A positive result is >= 300 µg/L and is consistent with possible presence of this metabolite. This immunoassay is only a screening test and is not definitive. Results cannot be used for medico-legal purposes.

Benzoylecgonine can be detected within 1-3 days after use and can be detected as long as 22 days after use. (From: Verstraete AG. Detection Times of Drugs of Abuse in Blood, Urine and Oral Fluid. Ther Drug Monit, 26(2) April 2004, 200-205)

False positive results may occur due to other cross reacting substances, however, positive results are NOT routinely confirmed by a second method. If confirmation of the test result is required, it is the responsibility of the physician to separately order a specific confirmatory test for the drug identified.

Samples are held for 7 days. Contact laboratory at x 31667 to request confirmatory testing. Confirmation test code: COCQNT

Click here for List of Cross Reactive Substances

Synonyms:

- benzoylecgonine

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
See preferred volume

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Stability (from collection to initiation):
Refrigerated 7 days, frozen at -20C 2 weeks

PROCESSING

Test Code:
COCU

Test Group:
Cocaine

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Stability (from collection to initiation):
Refrigerated 7 days, frozen at -20C 2 weeks

RESULT INTERPRETATION

Reference Interval:
Negative

Note: a negative result indicates that cocaine metabolite is not present, or it is present at a concentration below the cutoff concentration of 300 µg/L

Additional Information:
Cocaine use is measured as the benzoylecgonine metabolite. A concentration < 300 µg/L is considered negative by this test. A positive result is >= 300 µg/L and is consistent with possible presence of this metabolite. This immunoassay is only a screening test and is not definitive. Results cannot be used for medico-legal purposes.

Benzoylecgonine can be detected within 1-3 days after use and can be detected as long as 22 days after use. (From: Verstraete AG. Detection Times of Drugs of Abuse in Blood, Urine and Oral Fluid. Ther Drug Monit, 26(2) April 2004, 200-205)

False positive results may occur due to other cross reacting substances, however, positive results are NOT routinely confirmed by a second method. If confirmation of the test result is required, it is the responsibility of the physician to separately order a specific confirmatory test for the drug identified.

Samples are held for 7 days. Contact laboratory at x 31667 to request confirmatory testing. Confirmation test code: COCQNT

Click here for List of Cross Reactive Substances

ADMINISTRATIVE

CPT Codes:
80307

LOINC Codes:
3397-7

COMPLETE VIEW

Available Stat:
Yes

Test Code:
COCU

Test Group:
Cocaine

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Homogeneous competitive enzyme immunoassay method using G6PDH-labeling

Collect:
Urine cup

Amount to Collect:
See preferred volume

Sample Type:
Random urine

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Reference Interval:
Negative

Note: a negative result indicates that cocaine metabolite is not present, or it is present at a concentration below the cutoff concentration of 300 µg/L

Synonyms:

- benzoylecgonine

Stability (from collection to initiation):
Refrigerated 7 days, frozen at -20C 2 weeks

Reported:

Stat 2 hours, Routine 4 hours

Additional Information:

Cocaine use is measured as the benzoylecgonine metabolite. A concentration < 300 µg/L is considered negative by this test. A positive result is >= 300 µg/L and is consistent with possible presence of this metabolite. This immunoassay is only a screening test and is not definitive. Results cannot be used for medico-legal purposes.

Benzoylecgonine can be detected within 1-3 days after use and can be detected as long as 22 days after use. (From: Verstraete AG. Detection Times of Drugs of Abuse in Blood, Urine and Oral Fluid. Ther Drug Monit, 26(2) April 2004, 200-205)

False positive results may occur due to other cross reacting substances, however, positive results are NOT routinely confirmed by a second method. If confirmation of the test result is required, it is the responsibility of the physician to separately order a specific confirmatory test for the drug identified.

Samples are held for 7 days. Contact laboratory at x 31667 to request confirmatory testing. Confirmation test code: COCQNT

Click here for List of Cross Reactive Substances

CPT Codes:

80307

LOINC Codes:

3397-7

Coccidia exam

P407

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Monday-Friday, day shift

Methodology:
Kinyoun stain

Reported:
1-3 days

Additional Information:
A screen for coccidia (Isospora, Cryptosporidium, and Cyclospora) is included in the routine stool examination for parasites (see Parasites, Stool).

If exam for coccidia is specifically requrested, an acid fast smear from a concentrate is examined. There will be an additional charge for preparing a stool concentrate for staining.

Synonyms:

- Cryptosporidium
- Cyclospora
- Isospora

COLLECTION

Sample Type:
Stool

Collect:
Inpatients: Clean container
ED/Outpatients: SAF collection vial

SAF vials and instructions available from Material Services (PMM # 44366 Vials SAF Sterile Child Resistant Cap 574-05-CRC-WB). Outpatients can obtain these from the laboratories' draw stations.

Amount to Collect:
See preferred volume

Preferred Volume:
10 mL stool

Note: for SAF vial, fill to red line on container label

Minimum Volume:
5 mL stool

Note: for SAF vial, fill to red line on container label

Remarks:
SAF vials and instructions available from Material Services (PMM # 44366 Vials SAF Sterile Child Resistant Cap 574-05-CRC-WB). Outpatients can obtain these from the laboratories' draw stations.

Stability (from collection to initiation):
Unpreserved 24 hours, preserved 2 weeks

Unacceptable Conditions:
Stool in a preservative other than SAF. More than one sample received within 24 hours. Stool not mixed well in SAF, or if preservative has been poured out. SAF container filled past the red line on the container label.

PROCESSING

Test Code:
P407

Performing Lab:
Microbiology

Specimen Preparation:
Transfer unpreserved stool to SAF preservative upon receipt in lab.

Preferred Volume:
10 mL stool

Note: for SAF vial, fill to red line on container label

Minimum Volume:
5 mL stool

Note: for SAF vial, fill to red line on container label

Unacceptable Conditions:
Stool in a preservative other than SAF. More than one sample received within 24 hours. Stool not mixed well in SAF, or if preservative has been poured out. SAF container filled past the red line on the container label.

Stability (from collection to initiation):
Unpreserved 24 hours, preserved 2 weeks

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
A screen for coccidia (Isospora, Cryptosporidium, and Cyclospora) is included in the routine stool examination for parasites (see Parasites, Stool).

If exam for coccidia is specifically requrested, an acid fast smear from a concentrate is examined. There will be an additional charge for preparing a stool concentrate for staining.

ADMINISTRATIVE

CPT Codes:
87206

LOINC Codes:
40958-1

COMPLETE VIEW

Available Stat:
No

Test Code:
P407

Performing Lab:
Microbiology

Performed:
Monday-Friday, day shift

Methodology:
Kinyoun stain

Remarks:
SAF vials and instructions available from Material Services (PMM # 44366 Vials SAF Sterile Child Resistant Cap 574-05-CRC-WB). Outpatients can obtain these from the laboratories' draw stations.

Collect:
Inpatients: Clean container
ED/Outpatients: SAF collection vial

SAF vials and instructions available from Material Services (PMM # 44366 Vials SAF Sterile Child Resistant Cap 574-05-CRC-WB). Outpatients can obtain these from the laboratories' draw stations.

Amount to Collect:
See preferred volume

Sample Type:
Stool

Preferred Volume:
10 mL stool

Note: for SAF vial, fill to red line on container label

Minimum Volume:
5 mL stool

Note: for SAF vial, fill to red line on container label

Unacceptable Conditions:

Stool in a preservative other than SAF. More than one sample received within 24 hours. Stool not mixed well in SAF, or if preservative has been poured out. SAF container filled past the red line on the container label.

Specimen Preparation:

Transfer unpreserved stool to SAF preservative upon receipt in lab.

Reference Interval:

Negative

Synonyms:

- Cryptosporidium
- Cyclospora
- Isospora

Stability (from collection to initiation):

Unpreserved 24 hours, preserved 2 weeks

Reported:

1-3 days

Additional Information:

A screen for coccidia (Isospora, Cryptosporidium, and Cyclospora) is included in the routine stool examination for parasites (see Parasites, Stool).

If exam for coccidia is specifically requrested, an acid fast smear from a concentrate is examined. There will be an additional charge for preparing a stool concentrate for staining.

CPT Codes:

87206

LOINC Codes:

40958-1

Coccidioides immitis Antibody, Immunodiffusion, serum

COCC

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Tuesday, Friday (day shift)

Methodology:
Immunodiffusion

Reported:
3-5 days

Additional Information:
Immunodiffusion detects both IgM and IgG antibodies, the latter corresponding to the antibody measured in the CF test.

Synonyms:

- coccidiomycosis

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
1 mL blood

Minimum Volume:
0.5 mL serum

PROCESSING

Test Code:
COCC

Test Group:
Coccidioides immitis Antibody

Performing Lab:
Immunology

Specimen Preparation:
Freeze sample at -20C.

Minimum Volume:
0.5 mL serum

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
Immunodiffusion detects both IgM and IgG antibodies, the latter corresponding to the antibody measured in the CF test.

ADMINISTRATIVE

CPT Codes:
86635

COMPLETE VIEW

Available Stat:
No

Test Code:
COCC

Test Group:
Coccidioides immitis Antibody

Performing Lab:
Immunology

Performed:
Tuesday, Friday (day shift)

Methodology:
Immunodiffusion

Collect:
Gold top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Minimum Volume:
0.5 mL serum

Specimen Preparation:
Freeze sample at -20C.

Reference Interval:
Negative

Synonyms:

- coccidiomycosis

Reported:
3-5 days

Additional Information:
Immunodiffusion detects both IgM and IgG antibodies, the latter corresponding to the antibody measured in the CF test.

CPT Codes:
86635

Coenzyme Q10, Total

CQ10

ORDERING

Ordering Recommendations:
Monitor replacement therapy in coenzyme Q deficiencies; not useful in coenzyme Q deficiency diagnosis.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Tue, Thu, Sat

Methodology:
Quantitative High Performance Liquid Chromatography (HPLC)

Reported:
1-5 days

Additional Information:
Coenzyme Q10 (CoQ10) is a fat soluble cofacter that is essential for energy producing metabolic pathways and for the proper functioning of the mitochondrial oxidative system. With insufficient CoQ10, the electron transfer activity of the mitochondria decreases, resulting in a net failure to produce the energy necessary to run the cell. Tissues with high energy demand have even greater demands for CoQ10. For example, heart muscle, which continually exerts a pumping action for an entire lifetime, has an immense need for the cofactor. Studies demonstrate the effectiveness of supplemental coenzyme Q10 in cardiomyopathy, myocardial dysfunction, and congestive heart failure. CoQ10 is also a powerful antioxidant like vitamins E and C, and thus serves the role of neutralizing excess free radicals. It is now well established that the control of excessive free radical activity is key in preventing/delaying the progression of degenerative diseases.

Synonyms:

- Ubiquinone 10
- CoQ10

COLLECTION

Patient Preparation:
Patient should fast overnight prior to specimen collection. Patient may have water. It is not necessary to discontinue nutritional supplements prior to this test.

Sample Type:
Plasma or serum

Collect:
Plasma separator tube, green (sodium or lithium heparin), serum separator tube, or plain red.

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum/plasma

Minimum Volume:
0.3 mL serum/plasma

Stability (from collection to initiation):
After separation from cells: Ambient: Unacceptable; Refrigerated: 3 weeks; Frozen: 1 month

Storage/Transport Temperature:
Frozen.

Unacceptable Conditions:
Specimens other than heparinized plasma or serum. Hemolyzed specimens. Specimens exposed to repeated freeze/thaw cycles.

PROCESSING

Test Code:
CQ10

ARUP Test Code:
0081119

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate plasma or serum from cells within 1 hour of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.3 mL)

Preferred Volume:
1 mL serum/plasma

Minimum Volume:
0.3 mL serum/plasma

Unacceptable Conditions:
Specimens other than heparinized plasma or serum. Hemolyzed specimens. Specimens exposed to repeated freeze/thaw cycles.

Stability (from collection to initiation):
After separation from cells: Ambient: Unacceptable; Refrigerated: 3 weeks; Frozen: 1 month

Storage/Transport Temperature:
Frozen.

RESULT INTERPRETATION

Units:
mg/L

Reference Interval:
0.4-1.6 mg/L

Additional Information:
Coenzyme Q10 (CoQ10) is a fat soluble cofacter that is essential for energy producing metabolic pathways and for the proper functioning of the mitochondrial oxidative system. With insufficient CoQ10, the electron transfer activity of the mitochondria decreases, resulting in a net failure to produce the energy necessary to run the cell. Tissues with high energy demand have even greater demands for CoQ10. For example, heart muscle, which continually exerts a pumping action for an entire lifetime, has an immense need for the cofactor. Studies demonstrate the effectiveness of supplemental coenzyme Q10 in cardiomyopathy, myocardial dysfunction, and congestive heart failure. CoQ10 is also a powerful antioxidant like vitamins E and C, and thus serves the role of neutralizing excess free radicals. It is now well established that the control of excessive free radical activity is key in preventing/delaying the progression of degenerative diseases.

Interpretive Data:
This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:
82542

LOINC:

- 27923-2

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Monitor replacement therapy in coenzyme Q deficiencies; not useful in coenzyme Q deficiency diagnosis.

Test Code:
CQ10

ARUP Test Code:
0081119

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Tue, Thu, Sat

Methodology:
Quantitative High Performance Liquid Chromatography (HPLC)

Patient Preparation:
Patient should fast overnight prior to specimen collection. Patient may have water. It is not necessary to discontinue nutritional supplements prior to this test.

Collect:
Plasma separator tube, green (sodium or lithium heparin), serum separator tube, or plain red.

Amount to Collect:
2 mL blood

Sample Type:
Plasma or serum

Preferred Volume:
1 mL serum/plasma

Minimum Volume:
0.3 mL serum/plasma

Unacceptable Conditions:
Specimens other than heparinized plasma or serum. Hemolyzed specimens. Specimens exposed to repeated freeze/thaw cycles.

Specimen Preparation:
Separate plasma or serum from cells within 1 hour of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.3 mL)

Units:
mg/L

Reference Interval:
0.4-1.6 mg/L

Interpretive Data:
This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Synonyms:

- Ubiquinone 10
- CoQ10

Storage/Transport Temperature:
Frozen.

Stability (from collection to initiation):
After separation from cells: Ambient: Unacceptable; Refrigerated: 3 weeks; Frozen: 1 month

Reported:
1-5 days

Additional Information:
Coenzyme Q10 (CoQ10) is a fat soluble cofacter that is essential for energy producing metabolic pathways and for the proper functioning of the mitochondrial oxidative system. With insufficient CoQ10, the electron transfer activity of the mitochondria decreases, resulting in a net failure to produce the energy necessary to run the cell. Tissues with high energy demand have even greater demands for CoQ10. For example, heart muscle, which continually exerts a pumping action for an entire lifetime, has an immense need for the cofactor. Studies demonstrate the effectiveness of supplemental coenzyme Q10 in cardiomyopathy, myocardial dysfunction, and congestive heart failure. CoQ10 is also a powerful antioxidant like vitamins E and C, and thus serves the role of neutralizing excess free radicals. It is now well established that the control of excessive free radical activity is key in preventing/delaying the progression of degenerative diseases.

CPT Codes:
82542

LOINC:

- 27923-2

Cold Agglutinins

CAGG

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift)

Reported:
2-5 days

Additional Information:
Sample collected must be received in the hospital lab by 11am (to get onto latest 11:45am courier or they cannot be processed). DO NOT collect on weekends or UC observed holidays

COLLECTION

Sample Type:
EDTA or citrated plasma

Collect:
Lavender top (6 mL) OR 2 Blue tops filled to full extent of vacuum

Amount to Collect:
6 mL blood

Preferred Volume:
6 mL blood

Minimum Volume:
3 mL blood

Remarks:
Once collected, please keep all samples warm by wrapping with a heel warmer and deliver to the laboratory as soon as possible.

If collecting in citrate tube (blue top), check the expiration date on the label of the vacutainer before drawing the patient.

Sample collected must be received in the hospital lab by 11am (to get onto latest 11:45am courier or they cannot be processed). DO NOT collect on weekends or UC observed holidays.

Unacceptable Conditions:
Room temperature or colder sample received. Samples collected in outdated blue top vacutainer.

PROCESSING

Test Code:
CAGG

Performing Lab:
Immunology

Specimen Preparation:
Do NOT centrifuge, keep warm and deliver to Immunology asap.

Samples collected must be received in the hospital lab by 11am (to get onto latest 11:45am courier) or they cannot be processed. DO NOT collect on weekends or UC observed holidays.

Preferred Volume:
6 mL blood

Minimum Volume:
3 mL blood

Unacceptable Conditions:
Room temperature or colder sample received. Samples collected in outdated blue top vacutainer.

RESULT INTERPRETATION

Units:
titer

Reference Interval:
Negative titer < 20

Additional Information:
Sample collected must be received in the hospital lab by 11am (to get onto latest 11:45am courier or they cannot be processed). DO NOT collect on weekends or UC observed holidays

ADMINISTRATIVE

CPT Codes:
86157

LDT or Modified FDA:
Yes

LOINC Codes:
14658-9

COMPLETE VIEW

Available Stat:
No

Test Code:
CAGG

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift)

Remarks:
Once collected, please keep all samples warm by wrapping with a heel warmer and deliver to the laboratory as soon as possible.

If collecting in citrate tube (blue top), check the expiration date on the label of the vacutainer before drawing the patient.

Sample collected must be received in the hospital lab by 11am (to get onto latest 11:45am courier or they cannot be processed). DO NOT collect on weekends or UC observed holidays.

Collect:
Lavender top (6 mL) OR 2 Blue tops filled to full extent of vacuum

Amount to Collect:
6 mL blood

Sample Type:
EDTA or citrated plasma

Preferred Volume:
6 mL blood

Minimum Volume:
3 mL blood

Unacceptable Conditions:
Room temperature or colder sample received. Samples collected in outdated blue top vacutainer.

Specimen Preparation:
Do NOT centrifuge, keep warm and deliver to Immunology asap.

Samples collected must be received in the hospital lab by 11am (to get onto latest 11:45am courier) or they cannot be processed. DO NOT collect on weekends or UC observed holidays.

Units:
titer

Reference Interval:
Negative titer < 20

Reported:
2-5 days

Additional Information:
Sample collected must be received in the hospital lab by 11am (to get onto latest 11:45am courier or they cannot be processed). DO NOT collect on weekends or UC observed holidays

CPT Codes:
86157

LDT or Modified FDA:
Yes

LOINC Codes:
14658-9

Colorado Tick Fever Antibodies (IgG & IgM)

MOLT

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
IFA

Reported:
Set up 5x per week. Turnaround 5-7 days

COLLECTION

Sample Type:
Serum

Collect:
Red top (Gold top acceptable)

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.25 mL serum

Stability (from collection to initiation):
Room temperature 5 days, refrigerated 2 weeks, frozen at -20C 1 month.

PROCESSING

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate sample. Order Quest # 2799F

Preferred Volume:
1 mL serum

Minimum Volume:
0.25 mL serum

Stability (from collection to initiation):
Room temperature 5 days, refrigerated 2 weeks, frozen at -20C 1 month.

RESULT INTERPRETATION

Units:
titer

Reference Interval:
Negative IgG: < 16 titer
Negative IgM: < 20 titer

ADMINISTRATIVE

CPT Codes:
86790-90 x2

COMPLETE VIEW

Available Stat:
No

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Performing Lab:
Quest

Sendout:
Yes

Methodology:
IFA

Collect:
Red top (Gold top acceptable)

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.25 mL serum

Specimen Preparation:
Refrigerate sample. Order Quest # 2799F

Units:
titer

Reference Interval:
Negative IgG: < 16 titer
Negative IgM: < 20 titer

Stability (from collection to initiation):
Room temperature 5 days, refrigerated 2 weeks, frozen at -20C 1 month.

Reported:
Set up 5x per week. Turnaround 5-7 days

CPT Codes:
86790-90 x2

Complement C3 Nephritic Factor

C3NEP

ORDERING

Available Stat:
No

Performing Lab:
National Jewish Health

Methodology:
Immunofixation Electrophoresis

Reported:
14 days

COLLECTION

Sample Type:
Serum

Collect:
Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.25 mL serum

Stability (from collection to initiation):
Frozen at -70°C: 1 year

Storage/Transport Temperature:
Frozen

PROCESSING

Test Code:
C3NEP

Sendout:
Yes

Performing Lab:
National Jewish Health

Specimen Preparation:
Allow blood to clot at room temp or 37°C for 20 to 60 minutes. Centrifuge to thoroughly remove cells and immediately transfer cell-free serum to a fresh tube and freeze the cell-free serum on dry ice or at -70°C.

Preferred Volume:
1 mL serum

Minimum Volume:
0.25 mL serum

Stability (from collection to initiation):
Frozen at -70°C: 1 year

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Units:
Ratio

Reference Interval:
Normal - Ratio is 0 - 0.26

Equivocal - Ratio is 0.27 - 0.33

Positive - Ratio is > 0.3

ADMINISTRATIVE

CPT Codes:
86161

COMPLETE VIEW

Available Stat:
No

Test Code:
C3NEP

Performing Lab:
National Jewish Health

Sendout:
Yes

Methodology:
Immunofixation Electrophoresis

Collect:
Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.25 mL serum

Specimen Preparation:
Allow blood to clot at room temp or 37°C for 20 to 60 minutes. Centrifuge to thoroughly remove cells and immediately transfer cell-free serum to a fresh tube and freeze the cell-free serum on dry ice or at -70°C.

Units:
Ratio

Reference Interval:
Normal - Ratio is 0 - 0.26

Equivocal - Ratio is 0.27 - 0.33

Positive - Ratio is > 0.3

Storage/Transport Temperature:
Frozen

Stability (from collection to initiation):
Frozen at -70°C: 1 year

Reported:
14 days

CPT Codes:
86161

Complement C3, serum

C3

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift)

Methodology:
Rate nephelometry

Reported:
1-3 days

Synonyms:

- B1C
- Beta 1C
- Beta complement
- complement, beta

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Lipemic samples

PROCESSING

Test Code:
C3

Test Group:
C3

Performing Lab:
Immunology

Specimen Preparation:
Refrigerate

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Lipemic samples

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:
71-159 mg/dL

ADMINISTRATIVE

CPT Codes:
86160

LOINC Codes:
4485-9

COMPLETE VIEW

Available Stat:
No

Test Code:
C3

Test Group:
C3

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift)

Methodology:
Rate nephelometry

Collect:
Gold top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Lipemic samples

Specimen Preparation:
Refrigerate

Units:
mg/dL

Reference Interval:
71-159 mg/dL

Synonyms:

- B1C
- Beta 1C
- Beta complement
- complement, beta

Reported:
1-3 days

CPT Codes:
86160

LOINC Codes:
4485-9

Complement C4, serum

C4

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift)

Methodology:
Rate nephelometry

Reported:
1-3 days

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Lipemic samples

PROCESSING

Test Code:
C4

Performing Lab:
Immunology

Specimen Preparation:
Refrigerate serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Lipemic samples

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:
13-30 mg/dL

ADMINISTRATIVE

CPT Codes:
86160

LOINC Codes:
4498-2

COMPLETE VIEW

Available Stat:
No

Test Code:
C4

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift)

Methodology:
Rate nephelometry

Collect:
Gold top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Lipemic samples

Specimen Preparation:
Refrigerate serum

Units:
mg/dL

Reference Interval:
13-30 mg/dL

Reported:
1-3 days

CPT Codes:
86160

LOINC Codes:
4498-2

Complement Component 2

C2

ORDERING

Ordering Recommendations:
Follow-up test for complement activity screening when CH50 is low or absent and AH50 is normal and high suspicion remains for complement deficiency.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Mon, Thu

Methodology:
Quantitative Radial Immunodiffusion

Reported:
5-10 days

Synonyms:

- C2
- C2 Antigen
- C2 Level
- Classical Pathway - Complement
- complement classical pathway
- Second componenet of complement

COLLECTION

Collect:
Serum separator tube.

Stability (from collection to initiation):
After separation from cells: Ambient: 2 hours; Refrigerated: Unacceptable; Frozen: 2 weeks

Storage/Transport Temperature:
CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

Unacceptable Conditions:
Non-frozen specimens. Specimens exposed to repeated freeze/thaw cycles. Specimens left to clot at refrigerated temperature.

PROCESSING

Test Code:
C2

ARUP Test Code:
0050148

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Allow specimen to clot for one hour at room temperature. Separate serum from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP Standard Transport Tube and freeze immediately. (Min: 0.3 mL)

Unacceptable Conditions:
Non-frozen specimens. Specimens exposed to repeated freeze/thaw cycles. Specimens left to clot at refrigerated temperature.

Stability (from collection to initiation):
After separation from cells: Ambient: 2 hours; Refrigerated: Unacceptable; Frozen: 2 weeks

Storage/Transport Temperature:
CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

RESULT INTERPRETATION

Reference Interval:
Effective May 21, 2018
1.6-4.0 mg/dL

Interpretive Data:
Decreased C2 levels may be associated with increased susceptibility to infection (especially pneumococcal infections), systemic lupus erythematosus-like disease, rashes, arthritis, nephritis, and with C1-Esterase deficiency. Increased C2 levels are associated with the acute phase response.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:
86160

LOINC:

- 4484-2

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Follow-up test for complement activity screening when CH50 is low or absent and AH50 is normal and high suspicion remains for complement deficiency.

Test Code:
C2

ARUP Test Code:
0050148

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Mon, Thu

Methodology:
Quantitative Radial Immunodiffusion

Collect:
Serum separator tube.

Unacceptable Conditions:
Non-frozen specimens. Specimens exposed to repeated freeze/thaw cycles. Specimens left to clot at refrigerated temperature.

Specimen Preparation:
Allow specimen to clot for one hour at room temperature. Separate serum from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP Standard Transport Tube and freeze immediately. (Min: 0.3 mL)

Reference Interval:
Effective May 21, 2018
1.6-4.0 mg/dL

Interpretive Data:
Decreased C2 levels may be associated with increased susceptibility to infection (especially pneumococcal infections), systemic lupus erythematosus-like disease, rashes, arthritis, nephritis, and with C1-Esterase deficiency. Increased C2 levels are associated with the acute phase response.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Synonyms:

- C2
- C2 Antigen
- C2 Level
- Classical Pathway - Complement
- complement classical pathway
- Second componenet of complement

Storage/Transport Temperature:
CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

Stability (from collection to initiation):
After separation from cells: Ambient: 2 hours; Refrigerated: Unacceptable; Frozen: 2 weeks

Reported:
5-10 days

CPT Codes:
86160

LOINC:

- 4484-2

Complement Factor B

FACTB

ORDERING

Available Stat:
No

Performing Lab:
National Jewish Health

Performed:
Once per month

Methodology:
Radial Immunodiffusion (RID)

Reported:
Up to 4 weeks

COLLECTION

Sample Type:
Blood

Collect:
Lavender top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL

Minimum Volume:
0.25 mL

Stability (from collection to initiation):
Frozen at -70°C: 1 year

Storage/Transport Temperature:
Frozen

PROCESSING

Test Code:
FACTB

Sendout:
Yes

Performing Lab:
National Jewish Health

Specimen Preparation:
Centrifuge at room temp within one half hour of collection; preferably immediately after venipuncture. Transfer the cell-free plasma to a clean tube and immediately freeze the cell-free plasma on dry ice or at -70°C.

Preferred Volume:
1 mL

Minimum Volume:
0.25 mL

Stability (from collection to initiation):
Frozen at -70°C: 1 year

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Reference Interval:
Male: 127.6-278.5 mcg/mL
Female: 127.6-278.5 mcg/mL

ADMINISTRATIVE

CPT Codes:
86160

COMPLETE VIEW

Available Stat:
No

Test Code:
FACTB

Performing Lab:
National Jewish Health

Sendout:
Yes

Performed:
Once per month

Methodology:
Radial Immunodiffusion (RID)

Collect:
Lavender top

Amount to Collect:
2 mL blood

Sample Type:
Blood

Preferred Volume:
1 mL

Minimum Volume:
0.25 mL

Specimen Preparation:
Centrifuge at room temp within one half hour of collection; preferably immediately after venipuncture. Transfer the cell-free plasma to a clean tube and immediately freeze the cell-free plasma on dry ice or at -70°C.

Reference Interval:
Male: 127.6-278.5 mcg/mL
Female: 127.6-278.5 mcg/mL

Storage/Transport Temperature:
Frozen

Stability (from collection to initiation):
Frozen at -70°C: 1 year

Reported:
Up to 4 weeks

CPT Codes:
86160

Complement Factor H

FACTH

ORDERING

Available Stat:
No

Performing Lab:
National Jewish Health

Methodology:
Radial Immunodiffusion (RID)

Reported:
Up to 4 weeks

COLLECTION

Sample Type:
Plasma

Collect:
Lavender top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL plasma

Minimum Volume:
0.25 mL plasma

Stability (from collection to initiation):
Frozen at -70°C: 1 year

Storage/Transport Temperature:
Frozen

PROCESSING

Test Code:
FACTH

Sendout:
Yes

Performing Lab:
National Jewish Health

Specimen Preparation:
Centrifuge at room temp within one half hour of collection; preferably immediately after venipuncture. Transfer the cell-free plasma to a clean tube and immediately freeze the cell-free plasma on dry ice or at -70°C.

Preferred Volume:
1 mL plasma

Minimum Volume:
0.25 mL plasma

Stability (from collection to initiation):
Frozen at -70°C: 1 year

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Units:
µg/mL

Reference Interval:
Human Male: 160-412 µg/mL
Human Female: 160-412 µg/mL

ADMINISTRATIVE

CPT Codes:
86160

COMPLETE VIEW

Available Stat:
No

Test Code:
FACTH

Performing Lab:
National Jewish Health

Sendout:
Yes

Methodology:
Radial Immunodiffusion (RID)

Collect:
Lavender top

Amount to Collect:
2 mL blood

Sample Type:
Plasma

Preferred Volume:
1 mL plasma

Minimum Volume:
0.25 mL plasma

Specimen Preparation:
Centrifuge at room temp within one half hour of collection; preferably immediately after venipuncture. Transfer the cell-free plasma to a clean tube and immediately freeze the cell-free plasma on dry ice or at -70°C.

Units:
µg/mL

Reference Interval:
Human Male: 160-412 µg/mL
Human Female: 160-412 µg/mL

Storage/Transport Temperature:
Frozen

Stability (from collection to initiation):
Frozen at -70°C: 1 year

Reported:
Up to 4 weeks

CPT Codes:
86160

Complement Factor I

FACTI

ORDERING

Available Stat:
No

Performing Lab:
National Jewish Health

Methodology:
Radial Immunodiffusion (RID)

Reported:
Up to 4 weeks

COLLECTION

Sample Type:
Plasma

Collect:
Lavender top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL plasma

Minimum Volume:
0.25 mL plasma

Stability (from collection to initiation):
Frozen at -70°C: 1 year

Storage/Transport Temperature:
Frozen

PROCESSING

Test Code:
FACTI

Sendout:
Yes

Performing Lab:
National Jewish Health

Specimen Preparation:
Centrifuge at room temp within one half hour of collection; preferably immediately after venipuncture. Transfer the cell-free plasma to a clean tube and immediately freeze the cell-free plasma on dry ice or at -70°C.

Preferred Volume:
1 mL plasma

Minimum Volume:
0.25 mL plasma

Stability (from collection to initiation):
Frozen at -70°C: 1 year

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Units:
µg/mL

Reference Interval:
Human Male: 29.3-58.5 µg/mL
Human Female: 29.3-58.5 µg/mL

ADMINISTRATIVE

CPT Codes:
86160

COMPLETE VIEW

Available Stat:
No

Test Code:
FACTI

Performing Lab:
National Jewish Health

Sendout:
Yes

Methodology:
Radial Immunodiffusion (RID)

Collect:
Lavender top

Amount to Collect:
2 mL blood

Sample Type:
Plasma

Preferred Volume:
1 mL plasma

Minimum Volume:
0.25 mL plasma

Specimen Preparation:
Centrifuge at room temp within one half hour of collection; preferably immediately after venipuncture. Transfer the cell-free plasma to a clean tube and immediately freeze the cell-free plasma on dry ice or at -70°C.

Units:
µg/mL

Reference Interval:
Human Male: 29.3-58.5 µg/mL
Human Female: 29.3-58.5 µg/mL

Storage/Transport Temperature:
Frozen

Stability (from collection to initiation):
Frozen at -70°C: 1 year

Reported:
Up to 4 weeks

CPT Codes:
86160

Complement, Total, serum

CH50

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Wednesday (day shift)

Methodology:
Turbidimetry

Reported:
1-7 days

Synonyms:

- CH50
- Complement, total hemolytic
- Total hemolytic complement

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
3 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.5 mL serum

Remarks:
Deliver immediately to lab. Test requires a freshly drawn specimen or serum which has been separated and frozen at -70C within 1/2 hour of collection. Collect a separate tube for this test as the specimen cannot be shared for other tests.

Storage/Transport Temperature:
-70C

Unacceptable Conditions:
Specimen: Microbially contaminated, highly hemolyzed, highly lipemic and samples containing particulate matter.

PROCESSING

Test Code:
CH50

Test Group:
Complement, Total

Performing Lab:
Immunology

Specimen Preparation:
Blood should be allowed to clot and the serum separated as soon as possible to prevent hemolysis. Serum should be separated and stored frozen at -70C within 1/2 hour of collection.

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Specimen: Microbially contaminated, highly hemolyzed, highly lipemic and samples containing particulate matter.

Storage/Transport Temperature:
-70C

RESULT INTERPRETATION

Units:
U/mL

Reference Interval:
41.7 - 95.1 U/mL

ADMINISTRATIVE

CPT Codes:
86162

LOINC Codes:
4532-8

COMPLETE VIEW

Available Stat:
No

Test Code:
CH50

Test Group:
Complement, Total

Performing Lab:
Immunology

Performed:
Wednesday (day shift)

Methodology:
Turbidimetry

Remarks:
Deliver immediately to lab. Test requires a freshly drawn specimen or serum which has been separated and frozen at -70C within 1/2 hour of collection. Collect a separate tube for this test as the specimen cannot be shared for other tests.

Collect:
Gold top

Amount to Collect:
3 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Specimen: Microbially contaminated, highly hemolyzed, highly lipemic and samples containing particulate matter.

Specimen Preparation:
Blood should be allowed to clot and the serum separated as soon as possible to prevent hemolysis. Serum should be separated and stored frozen at -70C within 1/2 hour of collection.

Units:
U/mL

Reference Interval:
41.7 - 95.1 U/mL

Synonyms:

- CH50
- Complement, total hemolytic
- Total hemolytic complement

Storage/Transport Temperature:
-70C

Reported:
1-7 days

CPT Codes:
86162

LOINC Codes:
4532-8

Complete Blood Count

CBC

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center
San Mateo Cancer Center

Performed:
Parnassus, Mission Bay and Mt Zion:Test available 24 hours per day 7 days per week
Berkeley Outpatient Center and San Mateo Cancer Center:Test available Monday to Friday 0900-1600

Reported:
STAT 1 hour. Routine 4 hours

Additional Information:
CBC includes: Hematocrit*, Hemoglobin*, WBC Count*, RBC Count*, RBC Indices, Platelet Count*

*Each of these components may be ordered separately

Platelet counts from 11-25 $x10^9$/L are phoned only if no previous panic value in the last 24 hours. Platelet counts <= 10 $x10^9$/L are always called.

WBC criticals are not called if a prior panic was reported in the preceding 24 hours.

Reflex Testing:
If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

Synonyms:

- blood count
- CBC
- RBC
- Red cell count
- Hemoglobin
- Hematocrit
- Red Cell Indices

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top

Amount to Collect:
3 mL blood

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood (or 250 µL in a microtube)

Rejection Criteria:
Clotted specimens

PROCESSING

Test Code:
CBC

Test Group:
CBC

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center
San Mateo Cancer Center

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood (or 250 µL in a microtube)

Rejection Criteria:
Clotted specimens

RESULT INTERPRETATION

Reference Interval:
See individual component entries for normal value information.

Critical Values:
Hemoglobin: <= 7.0 g/dL
Platelets: <= 25 $x10^9$/L*
WBC: <=1.5 or >= 100 $x10^9$/L*

* See Additional Information

Additional Information:
CBC includes: Hematocrit*, Hemoglobin*, WBC Count*, RBC Count*, RBC Indices, Platelet Count*

*Each of these components may be ordered separately

Platelet counts from 11-25 $x10^9$/L are phoned only if no previous panic value in the last 24 hours. Platelet counts <= 10 $x10^9$/L are always called.

WBC criticals are not called if a prior panic was reported in the preceding 24 hours.

ADMINISTRATIVE

CPT Codes:
85025

LOINC Codes:
58410-2

COMPLETE VIEW

Available Stat:
Yes

Test Code:
CBC

Test Group:
CBC

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center
San Mateo Cancer Center

Performed:
Parnassus, Mission Bay and Mt Zion:Test available 24 hours per day 7 days per week
Berkeley Outpatient Center and San Mateo Cancer Center:Test available Monday to Friday 0900-1600

Collect:
Lavender top

Amount to Collect:
3 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood (or 250 µL in a microtube)

Rejection Criteria:
Clotted specimens

Reference Interval:
See individual component entries for normal value information.

Critical Values:

Hemoglobin: <= 7.0 g/dL
Platelets: <= 25 $x10^9$/L*
WBC: <=1.5 or >= 100 $x10^9$/L*

* See Additional Information

Synonyms:

- blood count
- CBC
- RBC
- Red cell count
- Hemoglobin
- Hematocrit
- Red Cell Indices

Reported:

STAT 1 hour. Routine 4 hours

Reflex Testing:

If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

Additional Information:

CBC includes: Hematocrit*, Hemoglobin*, WBC Count*, RBC Count*, RBC Indices, Platelet Count*

*Each of these components may be ordered separately

Platelet counts from 11-25 $x10^9$/L are phoned only if no previous panic value in the last 24 hours. Platelet counts <= 10 $x10^9$/L are always called.

WBC criticals are not called if a prior panic was reported in the preceding 24 hours.

CPT Codes:

85025

LOINC Codes:

58410-2

Complete Blood Count with Differential

CBCD

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Hematology: 24-hours per day, 7-days per week
Berkeley Outpatient Center: Test available Mon-Fri (0800-1630)

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
CBCD includes: Hematocrit*, Hemoglobin*, WBC Count*, RBC Count*, RBC Indices, Platelet Count*, Leukocyte Differential

*Each of these components may be ordered separately

Platelet counts from 11-25 $x10^9$/L are phoned only if no previous panic value in the last 24 hours. Platelet counts = 10 $x10^9$/L are always called.

WBC and **Neutrophil** panics are not called if a prior panic was reported in the preceding 24 hours.

Reflex Testing:
If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

Synonyms:

- Eosinophil
- Basophil
- Neutrophil
- Granulocyte
- Monocyte
- Lymphocyte
- blood count
- CBCD
- total eosinophil count
- RBC
- Red cell count
- Hemoglobin
- Hematocrit
- Red Cell Indices

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top

Amount to Collect:
3 mL blood

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood (or 250 µL in a microtube)

Rejection Criteria:
Clotted specimens

PROCESSING

Test Code:
CBCD

Test Group:
CBC

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood (or 250 µL in a microtube)

Rejection Criteria:
Clotted specimens

RESULT INTERPRETATION

Reference Interval:
See individual component entries for normal value information.

Critical Values:
Hemoglobin: <= 7.0 g/dL
Neutrophils: <= 1.0 $x10^9$/L*
Platelets: <= 25 $x10^9$/L*
WBC: <= 1.5 or >= 100 $x10^9$/L*

* See Additional Information

Additional Information:
CBCD includes: Hematocrit*, Hemoglobin*, WBC Count*, RBC Count*, RBC Indices, Platelet Count*, Leukocyte Differential

*Each of these components may be ordered separately

Platelet counts from 11-25 $x10^9$/L are phoned only if no previous panic value in the last 24 hours. Platelet counts = 10 $x10^9$/L are always called.

WBC and **Neutrophil** panics are not called if a prior panic was reported in the preceding 24 hours.

ADMINISTRATIVE

CPT Codes:
85025

LOINC Codes:
4544-3

COMPLETE VIEW

Available Stat:
Yes

Test Code:
CBCD

Test Group:
CBC

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Hematology: 24-hours per day, 7-days per week
Berkeley Outpatient Center: Test available Mon-Fri (0800-1630)

Collect:
Lavender top

Amount to Collect:
3 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood (or 250 µL in a microtube)

Rejection Criteria:
Clotted specimens

Reference Interval:

See individual component entries for normal value information.

Critical Values:

Hemoglobin: <= 7.0 g/dL
Neutrophils: <= 1.0 $x10^9$/L*
Platelets: <= 25 $x10^9$/L*
WBC: <= 1.5 or >= 100 $x10^9$/L*

* See Additional Information

Synonyms:

- Eosinophil
- Basophil
- Neutrophil
- Granulocyte
- Monocyte
- Lymphocyte
- blood count
- CBCD
- total eosinophil count
- RBC
- Red cell count
- Hemoglobin
- Hematocrit
- Red Cell Indices

Reported:

STAT 1 hour, Routine 4 hours

Reflex Testing:

If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

Additional Information:

CBCD includes: Hematocrit*, Hemoglobin*, WBC Count*, RBC Count*, RBC Indices, Platelet Count*, Leukocyte Differential

*Each of these components may be ordered separately

Platelet counts from 11-25 $x10^9$/L are phoned only if no previous panic value in the last 24 hours. Platelet counts = 10 $x10^9$/L are always called.

WBC and **Neutrophil** panics are not called if a prior panic was reported in the preceding 24 hours.

CPT Codes:

85025

LOINC Codes:

4544-3

Complete Blood Count with Total Granulocyte Count (SMCC ONLY)

CBCD

ORDERING

Available Stat:
Yes

Performing Lab:
Testing only available for San Mateo Cancer Center clinic patients.

Performed:
0900 to 1600, Monday to Friday

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
CBCD includes: Hematocrit*, Hemoglobin*, WBC Count*, RBC Count*, RBC Indices Platelet Count*, Leukocyte Differential

*Each of these components may be ordered separately

If resulting directly from Outpatient Clinic by RN, critical results will be appended with the English text code, PVNC. This translates to “Panic value not called per policy."
Example: HGB 7.0-PVNC

If resulting from the Clinical Laboratory or CLS, panic values will be called to the nursing staff at the specific Outpatient Clinic with standard read back confirmation and documentation, and the English text code RPTC “Reported with read back confirmation" will be appended along with a free text containing: who was called, what phone number was called, and date and time it the call was made.

Example: HGB 7.0-RPTC-;to Dr.Kogan at 4153531747 at 1044 on 2/2/20

Reflex Testing:
If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

Synonyms:

- Neutrophil
- Granulocyte
- Blood count
- RBC
- Red cell count
- Hemoglobin
- Hematocrit
- Red Cell Indices

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top

Amount to Collect:
3 mL blood

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood (or 250 µL in a microtube)

Rejection Criteria:
Clotted specimens

PROCESSING

Test Code:
CBCD

Test Group:
CBC

Performing Lab:
Testing only available for San Mateo Cancer Center clinic patients.

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood (or 250 µL in a microtube)

Rejection Criteria:
Clotted specimens

RESULT INTERPRETATION

Reference Interval:
See individual component entries for normal value information.

Critical Values:
Hemoglobin: <= 7.0 g/dL
Hematocrit: < 25 or > 65 % (only if HGB not reported)
Neutrophils: <= 1.0 x109/L*
Platelets: <= 25 x109/L*
WBC: <= 1.5 or >= 100 x109/L*

* See Additional Information

Additional Information:
CBCD includes: Hematocrit*, Hemoglobin*, WBC Count*, RBC Count*, RBC Indices Platelet Count*, Leukocyte Differential

*Each of these components may be ordered separately

If resulting directly from Outpatient Clinic by RN, critical results will be appended with the English text code, PVNC. This translates to “Panic value not called per policy."
Example: HGB 7.0-PVNC

If resulting from the Clinical Laboratory or CLS, panic values will be called to the nursing staff at the specific Outpatient Clinic with standard read back confirmation and documentation, and the English text code RPTC “Reported with read back confirmation" will be appended along with a free text containing: who was called, what phone number was called, and date and time it the call was made.

Example: HGB 7.0-RPTC-;to Dr.Kogan at 4153531747 at 1044 on 2/2/20

ADMINISTRATIVE

CPT Codes:
85025

LOINC Codes:
4544-3

COMPLETE VIEW

Available Stat:
Yes

Test Code:
CBCD

Test Group:
CBC

Performing Lab:
Testing only available for San Mateo Cancer Center clinic patients.

Performed:
0900 to 1600, Monday to Friday

Collect:
Lavender top

Amount to Collect:
3 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood (or 250 µL in a microtube)

Rejection Criteria:
Clotted specimens

Reference Interval:

See individual component entries for normal value information.

Critical Values:

Hemoglobin: <= 7.0 g/dL
Hematocrit: < 25 or > 65 % (only if HGB not reported)
Neutrophils: <= 1.0 x109/L*
Platelets: <= 25 x109/L*
WBC: <= 1.5 or >= 100 x109/L*

* See Additional Information

Synonyms:

- Neutrophil
- Granulocyte
- Blood count
- RBC
- Red cell count
- Hemoglobin
- Hematocrit
- Red Cell Indices

Reported:

STAT 1 hour, Routine 4 hours

Reflex Testing:

If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

Additional Information:

CBCD includes: Hematocrit*, Hemoglobin*, WBC Count*, RBC Count*, RBC Indices Platelet Count*, Leukocyte Differential

*Each of these components may be ordered separately

If resulting directly from Outpatient Clinic by RN, critical results will be appended with the English text code, PVNC. This translates to “Panic value not called per policy."
Example: HGB 7.0-PVNC

If resulting from the Clinical Laboratory or CLS, panic values will be called to the nursing staff at the specific Outpatient Clinic with standard read back confirmation and documentation, and the English text code RPTC “Reported with read back confirmation" will be appended along with a free text containing: who was called, what phone number was called, and date and time it the call was made.

Example: HGB 7.0-RPTC-;to Dr.Kogan at 4153531747 at 1044 on 2/2/20

CPT Codes:

85025

LOINC Codes:

4544-3

Comprehensive Drug Screen (general toxicology, not available stat)

ABUSU

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
LC/MS/MS

Reported:
2-5 days.

Additional Information:
Toxicology screens are used to identify substances affecting a patient and to guide the clinician to predict future toxic effects, to confirm the differential diagnosis or to guide therapy. Accurate diagnosis of clinical intoxication secondary to illicit drug use based on clinical history and physical examination may be difficult without laboratory confirmation. This testing is also necessary when multiple drug ingestion is involved, as the effects of one drug may mask the clinical signs and symptoms of the effects of other drugs.

Click Here for list of Compounds covered in screen

Synonyms:

- Comprehensive urine drug screen

COLLECTION

Sample Type:
Random urine (not orderable for other samples)

Collect:
Urine cup

Amount to Collect:
20 mL

Preferred Volume:
5 mL urine

Minimum Volume:
1 mL urine

Stability (from collection to initiation):
Room temperature 5 days, refrigerated 1 week, frozen 1 month

PROCESSING

Test Code:
ABUSU

Test Group:
Drug screening

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot and freeze urine. Transport to CB frozen. Order Quest code 91359.

Preferred Volume:
5 mL urine

Minimum Volume:
1 mL urine

Stability (from collection to initiation):
Room temperature 5 days, refrigerated 1 week, frozen 1 month

RESULT INTERPRETATION

Reference Interval:
No compounds detected

Additional Information:

Toxicology screens are used to identify substances affecting a patient and to guide the clinician to predict future toxic effects, to confirm the differential diagnosis or to guide therapy. Accurate diagnosis of clinical intoxication secondary to illicit drug use based on clinical history and physical examination may be difficult without laboratory confirmation. This testing is also necessary when multiple drug ingestion is involved, as the effects of one drug may mask the clinical signs and symptoms of the effects of other drugs.

Click Here for list of Compounds covered in screen

ADMINISTRATIVE

CPT Codes:
80307

LOINC Codes:
51782-1

COMPLETE VIEW

Available Stat:
No

Test Code:
ABUSU

Test Group:
Drug screening

Performing Lab:
Quest

Sendout:
Yes

Methodology:
LC/MS/MS

Collect:
Urine cup

Amount to Collect:
20 mL

Sample Type:
Random urine (not orderable for other samples)

Preferred Volume:
5 mL urine

Minimum Volume:
1 mL urine

Specimen Preparation:
Aliquot and freeze urine. Transport to CB frozen. Order Quest code 91359.

Reference Interval:
No compounds detected

Synonyms:

- Comprehensive urine drug screen

Stability (from collection to initiation):
Room temperature 5 days, refrigerated 1 week, frozen 1 month

Reported:
2-5 days.

Additional Information:

Toxicology screens are used to identify substances affecting a patient and to guide the clinician to predict future toxic effects, to confirm the differential diagnosis or to guide therapy. Accurate diagnosis of clinical intoxication secondary to illicit drug use based on clinical history and physical examination may be difficult without laboratory confirmation. This testing is also necessary when multiple drug ingestion is involved, as the effects of one drug may mask the clinical signs and symptoms of the effects of other drugs.

Click Here for list of Compounds covered in screen

CPT Codes:
80307

LOINC Codes:
51782-1

Comprehensive Metabolic Panel, Fasting

FCMP

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Chemistry: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center (Mon-Fri 0800-1630)

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
Includes sodium, potassium, chloride, total carbon dioxide, BUN, creatinine, fasting glucose, total calcium, albumin, total bilirubin, alkaline phosphatase, total protein, ALT, AST. Individual tests may be ordered separately.

Synonyms:

- Chem 18
- Chem 20
- CMP

COLLECTION

Sample Type:
Plasma or serum

Collect:
Light Green top preferred, Gold top acceptable

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL plasma or serum

Minimum Volume:
0.5 mL plasma or serum

PROCESSING

Test Code:
FCMP

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Preferred Volume:
2 mL plasma or serum

Minimum Volume:
0.5 mL plasma or serum

RESULT INTERPRETATION

Units:
Various (see normal ranges)

Reference Interval:
See individual test entries

Critical Values:

Sodium	< 125 or > 155 mmol/L
Potassium	< 3.0 or > 6.0 mmol/L
CO2, Total	< 15 or > 40 mmol/L
Glucose, neonate	< 30 or > 170 mg/dL
Glucose, children & adults	< 50 or > 500 mg/dL
Calcium, Total	< 6.5 or > 13.5 mg/dL
Bilirubin, Total (Day 0)	> 6 mg/dL
Bilirubin, Total (Day 1)	> 9 mg/dL
Bilirubin, Total (Day 2)	> 12 mg/dL
Bilirubin, Total (Day 3)	> 15 mg/dL
Bilirubin, Total (Day 4)	> 18 mg/dL
Bilirubin, Total (Days 5-30)	> 21 mg/dL

Additional Information:

Includes sodium, potassium, chloride, total carbon dioxide, BUN, creatinine, fasting glucose, total calcium, albumin, total bilirubin, alkaline phosphatase, total protein, ALT, AST. Individual tests may be ordered separately.

ADMINISTRATIVE

CPT Codes:

80053

LOINC Codes:

24323-8

COMPLETE VIEW

Available Stat:

Yes

Test Code:

FCMP

Performing Lab:

Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:

Parnassus, Mission Bay & Mt. Zion Chemistry: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center (Mon-Fri 0800-1630)

Collect:

Light Green top preferred, Gold top acceptable

Amount to Collect:

4 mL blood

Sample Type:

Plasma or serum

Preferred Volume:

2 mL plasma or serum

Minimum Volume:

0.5 mL plasma or serum

Units:

Various (see normal ranges)

Reference Interval:

See individual test entries

Critical Values:

Sodium	< 125 or > 155 mmol/L
Potassium	< 3.0 or > 6.0 mmol/L
CO2, Total	< 15 or > 40 mmol/L
Glucose, neonate	< 30 or > 170 mg/dL
Glucose, children & adults	< 50 or > 500 mg/dL
Calcium, Total	< 6.5 or > 13.5 mg/dL
Bilirubin, Total (Day 0)	> 6 mg/dL
Bilirubin, Total (Day 1)	> 9 mg/dL
Bilirubin, Total (Day 2)	> 12 mg/dL
Bilirubin, Total (Day 3)	> 15 mg/dL
Bilirubin, Total (Day 4)	> 18 mg/dL
Bilirubin, Total (Days 5-30)	> 21 mg/dL

Synonyms:

- Chem 18
- Chem 20
- CMP

Reported:

STAT 1 hour, Routine 4 hours

Additional Information:

Includes sodium, potassium, chloride, total carbon dioxide, BUN, creatinine, fasting glucose, total calcium, albumin, total bilirubin, alkaline phosphatase, total protein, ALT, AST. Individual tests may be ordered separately.

CPT Codes:

80053

LOINC Codes:

24323-8

Comprehensive Metabolic Panel, Random

NCMP

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Chemistry: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center (Mon-Fri 0800-1630)

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
Includes sodium, potassium, chloride, total carbon dioxide, BUN, creatinine, glucose, total calcium, albumin, total bilirubin, alkaline phosphatase, total protein, ALT, AST. Individual tests may be ordered separately.

Synonyms:

- Chem 18
- Chem 20
- CMP

COLLECTION

Sample Type:
Plasma or serum

Collect:
Light Green top preferred, Gold top acceptable

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL plasma or serum

Minimum Volume:
0.5 mL plasma or serum

PROCESSING

Test Code:
NCMP

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Preferred Volume:
2 mL plasma or serum

Minimum Volume:
0.5 mL plasma or serum

RESULT INTERPRETATION

Units:
Various (see normal ranges)

Reference Interval:
See individual test entries

Critical Values:

Sodium	< 125 or > 155 mmol/L
Potassium	< 3.0 or > 6.0 mmol/L
CO2, Total	< 15 or > 40 mmol/L
Glucose, neonate	< 30 or > 170 mg/dL
Glucose, children & adults	< 50 or > 500 mg/dL
Calcium, Total	< 6.5 or > 13.5 mg/dL
Bilirubin, Total (Day 0)	> 6 mg/dL
Bilirubin, Total (Day 1)	> 9 mg/dL
Bilirubin, Total (Day 2)	> 12 mg/dL
Bilirubin, Total (Day 3)	> 15 mg/dL
Bilirubin, Total (Day 4)	> 18 mg/dL
Bilirubin, Total (Days 5-30)	> 21 mg/dL

Additional Information:

Includes sodium, potassium, chloride, total carbon dioxide, BUN, creatinine, glucose, total calcium, albumin, total bilirubin, alkaline phosphatase, total protein, ALT, AST. Individual tests may be ordered separately.

ADMINISTRATIVE

CPT Codes:

80053

LOINC Codes:

24323-8

COMPLETE VIEW

Available Stat:

Yes

Test Code:

NCMP

Performing Lab:

Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:

Parnassus, Mission Bay & Mt. Zion Chemistry: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center (Mon-Fri 0800-1630)

Collect:

Light Green top preferred, Gold top acceptable

Amount to Collect:

4 mL blood

Sample Type:

Plasma or serum

Preferred Volume:

2 mL plasma or serum

Minimum Volume:

0.5 mL plasma or serum

Units:

Various (see normal ranges)

Reference Interval:

See individual test entries

Critical Values:

Sodium	< 125 or > 155 mmol/L
Potassium	< 3.0 or > 6.0 mmol/L
CO2, Total	< 15 or > 40 mmol/L
Glucose, neonate	< 30 or > 170 mg/dL
Glucose, children & adults	< 50 or > 500 mg/dL
Calcium, Total	< 6.5 or > 13.5 mg/dL
Bilirubin, Total (Day 0)	> 6 mg/dL
Bilirubin, Total (Day 1)	> 9 mg/dL
Bilirubin, Total (Day 2)	> 12 mg/dL
Bilirubin, Total (Day 3)	> 15 mg/dL
Bilirubin, Total (Day 4)	> 18 mg/dL
Bilirubin, Total (Days 5-30)	> 21 mg/dL

Synonyms:

- Chem 18
- Chem 20
- CMP

Reported:

STAT 1 hour, Routine 4 hours

Additional Information:

Includes sodium, potassium, chloride, total carbon dioxide, BUN, creatinine, glucose, total calcium, albumin, total bilirubin, alkaline phosphatase, total protein, ALT, AST. Individual tests may be ordered separately.

CPT Codes:

80053

LOINC Codes:

24323-8

Comprehensive Systemic Sclerosis Panel

CSSP

ORDERING

Ordering Recommendations:
Comprehensive evaluation for systemic sclerosis (SSc) when suspicion for SSc is high and patient presents with features of overlap syndrome. For patients with distinct features of SSc, order Criteria Systemic Sclerosis Panel (3000479).

Available Stat:
No

Performing Lab:
ARUP

Performed:
Thu

Methodology:
Qualitative Immunoblot/Semi-Quantitative Indirect Fluorescent Antibody/Semi-Quantitative Multiplex Bead Assay/Semi-Quantitative Enzyme-Linked Immunosorbent Assay

Reported:
1-8 days

COLLECTION

Sample Type:
Serum (Gold or Red-top)

Collect:
Serum Separator Tube (SST).

Amount to Collect:
6 mL blood

Preferred Volume:
3 mL serum

Minimum Volume:
1.5 mL serum

Stability (from collection to initiation):
Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month

Storage/Transport Temperature:
Refrigerated. Also acceptable: Room temperature or frozen.

Unacceptable Conditions:
Hemolyzed, hyperlipemic, icteric, heat-treated or contaminated specimens

PROCESSING

Test Code:
CSSP

ARUP Test Code:
3000480

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate from cells ASAP or within 2 hours of collection. Transfer 3 mL serum to an ARUP Standard Transport Tube. (Min: 1.5 mL)

Preferred Volume:
3 mL serum

Minimum Volume:
1.5 mL serum

Unacceptable Conditions:
Hemolyzed, hyperlipemic, icteric, heat-treated or contaminated specimens

Stability (from collection to initiation):
Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month

Storage/Transport Temperature:
Refrigerated. Also acceptable: Room temperature or frozen.

RESULT INTERPRETATION

Reference Interval:

Components	Reference Interval
Smith/RNP (ENA) Ab, IgG	19 Units or less
Scleroderma (Scl-70) (ENA) Antibody, IgG	40 AU/mL or less
RNA Polymerase III Antibody, IgG	19 Units or less
PM/Scl 100 Antibody, IgG	Negative
Fibrillarin (U3 RNP) Ab, IgG	Negative
Antinuclear Antibody (ANA), HEp-2, IgG	Less than 1:80

Interpretive Data:

Refer to report.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Component	Interpretation
Scleroderma (Scl-70) (ENA) Antibody, IgG	29 AU/mL or less Negative 30-40 AU/mL Equivocal 41 AU/mL or greater Positive
Smith/RNP (ENA) Antibody, IgG	19 Units or less Negative 20-39 Units Weak Positive 40-80 Units Moderate Positive 81 Units or greater Strong Positive
RNA Polymerase III Antibody, IgG	19 Units or less Negative 20-39 Units Weak Positive 40-80 Units Moderate Positive 81 Units or greater Strong Positive

ADMINISTRATIVE

CPT Codes:

86039; 86235 x4; 83516

LOINC:

- 47322-3
- 49963-2
- 49311-4
- 81732-0
- 79182-2
- 33983-8
- 21424-7

COMPLETE VIEW

Available Stat:

No

Ordering Recommendations:

Comprehensive evaluation for systemic sclerosis (SSc) when suspicion for SSc is high and patient presents with features of overlap syndrome. For patients with distinct features of SSc, order Criteria Systemic Sclerosis Panel (3000479).

Test Code:

CSSP

ARUP Test Code:

3000480

Performing Lab:

ARUP

Sendout:

Yes

Performed:

Thu

Methodology:
Qualitative Immunoblot/Semi-Quantitative Indirect Fluorescent Antibody/Semi-Quantitative Multiplex Bead Assay/Semi-Quantitative Enzyme-Linked Immunosorbent Assay

Collect:
Serum Separator Tube (SST).

Amount to Collect:
6 mL blood

Sample Type:
Serum (Gold or Red-top)

Preferred Volume:
3 mL serum

Minimum Volume:
1.5 mL serum

Unacceptable Conditions:
Hemolyzed, hyperlipemic, icteric, heat-treated or contaminated specimens

Specimen Preparation:
Separate from cells ASAP or within 2 hours of collection. Transfer 3 mL serum to an ARUP Standard Transport Tube. (Min: 1.5 mL)

Reference Interval:

Components	Reference Interval
Smith/RNP (ENA) Ab, IgG	19 Units or less
Scleroderma (Scl-70) (ENA) Antibody, IgG	40 AU/mL or less
RNA Polymerase III Antibody, IgG	19 Units or less
PM/Scl 100 Antibody, IgG	Negative
Fibrillarin (U3 RNP) Ab, IgG	Negative
Antinuclear Antibody (ANA), HEp-2, IgG	Less than 1:80

Interpretive Data:
Refer to report.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Component	Interpretation
Scleroderma (Scl-70) (ENA) Antibody, IgG	29 AU/mL or less Negative 30-40 AU/mL Equivocal 41 AU/mL or greater Positive
Smith/RNP (ENA) Antibody, IgG	19 Units or less Negative 20-39 Units Weak Positive 40-80 Units Moderate Positive 81 Units or greater Strong Positive
RNA Polymerase III Antibody, IgG	19 Units or less Negative 20-39 Units Weak Positive 40-80 Units Moderate Positive 81 Units or greater Strong Positive

Storage/Transport Temperature:
Refrigerated. Also acceptable: Room temperature or frozen.

Stability (from collection to initiation):
Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month

Reported:
1-8 days

CPT Codes:
86039; 86235 x4; 83516

LOINC:

- 47322-3
- 49963-2
- 49311-4
- 81732-0
- 79182-2
- 33983-8
- 21424-7

Notes:

Panel includes: Antinuclear Antibody (ANA) with HEp-2 Substrate, IgG by IFA, Scleroderma (Scl-70) (ENA) Antibody, IgG, RNA Polymerase III Antibody, IgG, Smith/RNP (ENA) Antibody, IgG, Fibrillarin (U3 RNP) Antibody, IgG, PM/Scl-100 Antibody, IgG by Immunoblot.

Coombs, Direct, Polyspecific

DCT

ORDERING

Available Stat:
No

Performing Lab:
Parnassus & Mission Bay Blood Banks

Performed:
Test available 24 hours per day 7 days per week

Reported:
4 hours

Additional Information:
If the polyspecific test is positive, a monospecific assay will automatically be initiated at an additional charge to further evaluate the problem, except in neonates, in whom it may be assumed a positive test represents IgG coating of RBCs.

Reflex Testing:
If positive, specific testing to determine if the reactivity is due to Complement or IgG is automatically performed.

Synonyms:

- DAT
- Direct antiglobulin test
- direct coombs
- cord blood tests

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top (6 mL size preferred)

Amount to Collect:
6 mL blood

Preferred Volume:
6 mL blood

Minimum Volume:
3 mL blood

Unacceptable Conditions:
Unsigned, mislabeled, unlabeled or hemolyzed sample.

PROCESSING

Test Code:
DCT

Test Group:
Coombs

Performing Lab:
Parnassus & Mission Bay Blood Banks

Preferred Volume:
6 mL blood

Minimum Volume:
3 mL blood

Unacceptable Conditions:
Unsigned, mislabeled, unlabeled or hemolyzed sample.

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
If the polyspecific test is positive, a monospecific assay will automatically be initiated at an additional charge to further evaluate the problem, except in neonates, in whom it may be assumed a positive test represents IgG coating of RBCs.

ADMINISTRATIVE

CPT Codes:
86880

LOINC Codes:
51871-2

COMPLETE VIEW

Available Stat:
No

Test Code:
DCT

Test Group:
Coombs

Performing Lab:
Parnassus & Mission Bay Blood Banks

Performed:
Test available 24 hours per day 7 days per week

Collect:
Lavender top (6 mL size preferred)

Amount to Collect:
6 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
6 mL blood

Minimum Volume:
3 mL blood

Unacceptable Conditions:
Unsigned, mislabeled, unlabeled or hemolyzed sample.

Reference Interval:
Negative

Synonyms:

- DAT
- Direct antiglobulin test
- direct coombs
- cord blood tests

Reported:
4 hours

Reflex Testing:
If positive, specific testing to determine if the reactivity is due to Complement or IgG is automatically performed.

Additional Information:
If the polyspecific test is positive, a monospecific assay will automatically be initiated at an additional charge to further evaluate the problem, except in neonates, in whom it may be assumed a positive test represents IgG coating of RBCs.

CPT Codes:
86880

LOINC Codes:
51871-2

Coombs, Indirect

ICT

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay and Mt. Zion Blood Banks

Performed:
Test available 24 hours per day 7 days per week

Reported:
STAT 1 hour, ASAP 2 hours, Routine 4 hours

Reflex Testing:
If the test if positive, Antibody Identification will automatically be initiated at an additional charge to determine whether the result is due to an auto- or alloantibody.

Synonyms:

- Indirect coombs
- cord blood tests

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top (6 mL size preferred)

Amount to Collect:
6 mL blood

Preferred Volume:
6 mL blood

Minimum Volume:
3 mL blood

Remarks:
Use BLOOD BANK requisition.

Unacceptable Conditions:
Unsigned, mislabeled or unlabeled sample

PROCESSING

Test Code:
ICT

Test Group:
Coombs

Performing Lab:
Parnassus, Mission Bay and Mt. Zion Blood Banks

Preferred Volume:
6 mL blood

Minimum Volume:
3 mL blood

Unacceptable Conditions:
Unsigned, mislabeled or unlabeled sample

RESULT INTERPRETATION

Reference Interval:
Negative

ADMINISTRATIVE

CPT Codes:
86885

LOINC Codes:
1008-2

COMPLETE VIEW

Available Stat:
Yes

Test Code:
ICT

Test Group:
Coombs

Performing Lab:
Parnassus, Mission Bay and Mt. Zion Blood Banks

Performed:
Test available 24 hours per day 7 days per week

Remarks:
Use BLOOD BANK requisition.

Collect:
Lavender top (6 mL size preferred)

Amount to Collect:
6 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
6 mL blood

Minimum Volume:
3 mL blood

Unacceptable Conditions:
Unsigned, mislabeled or unlabeled sample

Reference Interval:
Negative

Synonyms:

- Indirect coombs
- cord blood tests

Reported:
STAT 1 hour, ASAP 2 hours, Routine 4 hours

Reflex Testing:
If the test if positive, Antibody Identification will automatically be initiated at an additional charge to determine whether the result is due to an auto- or alloantibody.

CPT Codes:
86885

LOINC Codes:
1008-2

Cooximetry, Whole Blood

CPCOOX

ORDERING

Ordering Recommendations:
Follow the link for information about Blood Gas Panels that contain this test.

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay and Mt Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Co-oximetry
Spectrophotometry using 256 wavelengths
Radiometer ABL 90 FLEX Plus

Reported:
10 minutes

Additional Information:
This test includes the following results: Hemoglobin (CAHB), Oxyhemoglobin (O2HB), Carboxyhemoglobin (COHB), Methemoglobin (MEHB), and Arterial O2 content (O2HX).

Heparin syringes and caps to replace the needles during transport to the laboratory are available from Material Services.

Synonyms:

- Hemoximetry
- Methemoglobinemia
- Oxyhemoglobin
- Carboxyhemoglobin
- Deoxyhemoglobin
- ABGCOX
- VBGCOX
- MVBGCX
- CVBGCX
- Blood gas
- ABG

COLLECTION

Sample Type:
Heparinized whole blood (Blood gas syringe or capillary tube)

Collect:
Plastic syringe containing 100 U of dry heparin or Capillary Tube with 70 IU/ml dry electrolyte-balanced heparin

Amount to Collect:
1 mL blood

Preferred Volume:
1 mL blood

Minimum Volume:
0.5 mL blood

Remarks:

Deliver samples immediately to lab for testing. Samples delivered to the lab > 30 minutes after collection may yield erroneous results.

Capillary Samples:

1. The following are recommended sampling sites: earlobe, fingertip, big toe, heel. The heel and big toe are more suitable for use on neonates and infants.
2. Warm the area or puncture site for 5 to 10 minutes prior to actual sampling. This accelerates flow for blood to be representative of general status of patient.
3. Make a puncture using a lancet or similar device. Do not squeeze the area to avoid tissue juice from mixing into blood sample.
4. Wipe off the first drop of blood. Take the sample from the center of the second drop of blood and hold the capillary at a slightly downward angle for an uninterrupted blood flow. Avoid getting air bubbles in the specimen.
5. Refrain from squeezing or milking the puncture site as this may result in faulty measurements or cause hemolysis of blood sample and cause elevated K+ readings.
6. Apply accompanying caps to both ends of the capillary tube and mix the sample with the heparin immediately after collection to prevent blood from clotting. The manufacturer recommends the use of a mixing wire and magnet for capillary samples.
7. Label sample with patient's name, ID and DOB.

Arterial puncture:

Due to the risk of arterial damage and subsequent distal ischemia, prior to puncturing an artery the RN assesses the collateral circulation. If the radial artery is to be punctured, then the pulse of the ulnar artery is assessed. If the dorsalis pedis artery is to be accessed then the posterial tibial pulse is assessed and likewise if the posterial tibial approach is used the dorsalis pedis pulse is assessed. The modified Allens's test may be used to assess collateral circulation of the ulnar artery before a radial artery puncture, but it does not always ensure adequate flow. A Doppler ultrasound flow indicator may be used to verify collateral circulation. If the collateral circulation is poor and the RN cannot palpate a pulse then the physician should be notified before proceeding. If for any reason the circulation is compromised to the extremity being assessed for arterial puncture then the physician should be notified prior to proceeding.

1. Palpate the radial artery and identify the site where the pulse is the strongest. Avoid areas with overlying veins to prevent venous admixture.
2. Prepare the patient's skin with an alcohol or 2% chlorhexidine wipe/swab.
3. Place two or three fingers along the course of the artery both to locate its position and direction, and to stabilize it.
4. Penetrate the skin smoothly holding the needle at 30-60 degree angle with the needle bevel up and pointed proximally. The angle of the butterfly" IV catheter should not exceed 45° for pediatric patients.
5. Re-establish the position and direction of the artery by palpation.
6. Gently and slowly advance the needle or butterfly", aiming directly for the area of maximum pulsation.
7. When the arterial lumen has been entered, less resistance is felt and blood appears in the syringe above the needle hub.
8. Obtain required amount of arterial blood for test(s).
9. If blood is not obtained on first attempt, withdraw the needle to just below the skin surface and advance needle at same angle but at 1 mm to either side of previous attempt.
10. Place the 2x2 gauze over the site of the puncture then withdraw the needle from the artery. Press firmly at the site for at least five minutes, or until the bleeding stops. Apply bandage or pressure dressing.
11. Expel any air bubble in the syringe with air filter cap placed on specimen syringe.
12. Label sample with patient's name, ID number and DOB.

Venous samples:

1. Avoid excessive venous stasis from prolonged tourniquet application or clenching of the fist prior to sample collection.
2. For central line draws make sure to waste a full red top tube then draw via the blood gas syringe as noted above.
3. Fill syringe completely, remove needle (in peripheral draws), cap sample, expel all bubbles (while holding syringe upright) until blood hits the top of cap.
4. Label sample with patient's name, ID number and DOB.

Stability (from collection to initiation):

Oxygen content/oxyhemoglobin, 30 min
Carboxyhemoglobin: refrigerated, 3 days (stability information adopted from Mayo)
Hemoglobin: refrigerated, 3 days (stability information adopted from Mayo)
Methemoglobin: refrigerated, 3 days (stability information adopted from Mayo)
Specimens more than 30 minutes old should not be rejected.

Unacceptable Conditions:

Samples with needle attached, containing large bubbles, unlabeled, mislabeled, clotted or of insufficient volume for testing.

PROCESSING

Test Code:

CPCOOX (Cooximetry)

Blood Gas with Cooximetry:
ABGCOX (Blood Gas and Cooximetry from Arterial source)
VBGCOX (Blood Gas and Cooximetry from Venous source)
MVBGCX (Blood Gas and Cooximetry from Mixed Venous source)
CVBGX (Blood Gas and Cooximetry from Central Venous source)

Performing Lab:
Parnassus, Mission Bay and Mt Zion Chemistry

Preferred Volume:
1 mL blood

Minimum Volume:
0.5 mL blood

Unacceptable Conditions:
Samples with needle attached, containing large bubbles, unlabeled, mislabeled, clotted or of insufficient volume for testing.

Stability (from collection to initiation):
Oxygen content/oxyhemoglobin, 30 min
Carboxyhemoglobin: refrigerated, 3 days (stability information adopted from Mayo)
Hemoglobin: refrigerated, 3 days (stability information adopted from Mayo)
Methemoglobin: refrigerated, 3 days (stability information adopted from Mayo)
Specimens more than 30 minutes old should not be rejected.

RESULT INTERPRETATION

Units:
%

Reference Interval:

	Arterial	Venous
Hemoglobin	see Hemoglobin entry	see Hemoglobin entry
Oxyhemoglobin	93 - 100%	Not applicable
Carboxyhemoglobin (non-smokers)	0.5 - 1.5%	0.0 - 1.5%
Methemoglobin	0.0 - 1.5%	0.0 - 1.5%
Arterial O2 content	Male: 18.8 - 22.2 vol% Female: 15.9 - 19.9 vol%	Not applicable

Hemoglobin reference range adopted from the central UCSF hematology laboratory. Arterial oxyhemoglobin, carboxyhemoglobin and methemoglobin reference ranges adopted from the UCSF reference range previously used with the ABL 835 blood gas analyzers. Arterial oxygen content reference range adopted from the UCSF reference range previously used with the ABL 835 blood gas analyzers and adjusted based on recommendations from the instrument manufacturer (Radiometer Acute Care Testing Handbook, 2014).

Venous carboxyhemoglobin and methemoglobin reference ranges adopted from ZSFG Clinical Laboratories and verified by running 25 male and 25 female normal volunteers from UCSF Clinical Laboratories.

Note: it is not recommended to use venous blood for assessing oxygenation status.

Critical Values:
Carboxyhemoglobin: >= 5%
Methemoglobin: >= 2%

Additional Information:
This test includes the following results: Hemoglobin (CAHB), Oxyhemoglobin (O2HB), Carboxyhemoglobin (COHB), Methemoglobin (MEHB), and Arterial O2 content (O2HX).

Heparin syringes and caps to replace the needles during transport to the laboratory are available from Material Services.

ADMINISTRATIVE

LOINC Codes:
11559-2

COMPLETE VIEW

Available Stat:
Yes

Ordering Recommendations:
Follow the link for information about Blood Gas Panels that contain this test.

Test Code:
CPCOOX (Cooximetry)

Blood Gas with Cooximetry:
ABGCOX (Blood Gas and Cooximetry from Arterial source)
VBGCOX (Blood Gas and Cooximetry from Venous source)
MVBGCX (Blood Gas and Cooximetry from Mixed Venous source)
CVBGX (Blood Gas and Cooximetry from Central Venous source)

Performing Lab:
Parnassus, Mission Bay and Mt Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Co-oximetry
Spectrophotometry using 256 wavelengths
Radiometer ABL 90 FLEX Plus

Remarks:
Deliver samples immediately to lab for testing. Samples delivered to the lab > 30 minutes after collection may yield erroneous results.

Capillary Samples:
1. The following are recommended sampling sites: earlobe, fingertip, big toe, heel. The heel and big toe are more suitable for use on neonates and infants.
2. Warm the area or puncture site for 5 to 10 minutes prior to actual sampling. This accelerates flow for blood to be representative of general status of patient.
3. Make a puncture using a lancet or similar device. Do not squeeze the area to avoid tissue juice from mixing into blood sample.
4. Wipe off the first drop of blood. Take the sample from the center of the second drop of blood and hold the capillary at a slightly downward angle for an uninterrupted blood flow. Avoid getting air bubbles in the specimen.
5. Refrain from squeezing or milking the puncture site as this may result in faulty measurements or cause hemolysis of blood sample and cause elevated K+ readings.
6. Apply accompanying caps to both ends of the capillary tube and mix the sample with the heparin immediately after collection to prevent blood from clotting. The manufacturer recommends the use of a mixing wire and magnet for capillary samples.
7. Label sample with patient's name, ID and DOB.

Arterial puncture:
Due to the risk of arterial damage and subsequent distal ischemia, prior to puncturing an artery the RN assesses the collateral circulation. If the radial artery is to be punctured, then the pulse of the ulnar artery is assessed. If the dorsalis pedis artery is to be accessed then the posterial tibial pulse is assessed and likewise if the posterial tibial approach is used the dorsalis pedis pulse is assessed. The modified Allens's test may be used to assess collateral circulation of the ulnar artery before a radial artery puncture, but it does not always ensure adequate flow. A Doppler ultrasound flow indicator may be used to verify collateral circulation. If the collateral circulation is poor and the RN cannot palpate a pulse then the physician should be notified before proceeding. If for any reason the circulation is compromised to the extremity being assessed for arterial puncture then the physician should be notified prior to proceeding.

1. Palpate the radial artery and identify the site where the pulse is the strongest. Avoid areas with overlying veins to prevent venous admixture.
2. Prepare the patient's skin with an alcohol or 2% chlorhexidine wipe/swab.
3. Place two or three fingers along the course of the artery both to locate its position and direction, and to stabilize it.
4. Penetrate the skin smoothly holding the needle at 30-60 degree angle with the needle bevel up and pointed proximally. The angle of the butterfly" IV catheter should not exceed 45° for pediatric patients.
5. Re-establish the position and direction of the artery by palpation.
6. Gently and slowly advance the needle or butterfly", aiming directly for the area of maximum pulsation.
7. When the arterial lumen has been entered, less resistance is felt and blood appears in the syringe above the needle hub.
8. Obtain required amount of arterial blood for test(s).
9. If blood is not obtained on first attempt, withdraw the needle to just below the skin surface and advance needle at same angle but at 1 mm to either side of previous attempt.
10. Place the 2x2 gauze over the site of the puncture then withdraw the needle from the artery. Press firmly at the site for at least five minutes, or until the bleeding stops. Apply bandage or pressure dressing.
11. Expel any air bubble in the syringe with air filter cap placed on specimen syringe.
12. Label sample with patient's name, ID number and DOB.

Venous samples:
1. Avoid excessive venous stasis from prolonged tourniquet application or clenching of the fist prior to sample collection.
2. For central line draws make sure to waste a full red top tube then draw via the blood gas syringe as noted above.
3. Fill syringe completely, remove needle (in peripheral draws), cap sample, expel all bubbles (while holding syringe upright) until blood hits the top of cap.
4. Label sample with patient's name, ID number and DOB.

Collect:
Plastic syringe containing 100 U of dry heparin or Capillary Tube with 70 IU/ml dry electrolyte-balanced heparin

Amount to Collect:
1 mL blood

Sample Type:
Heparinized whole blood (Blood gas syringe or capillary tube)

Preferred Volume:
1 mL blood

Minimum Volume:
0.5 mL blood

Unacceptable Conditions:
Samples with needle attached, containing large bubbles, unlabeled, mislabeled, clotted or of insufficient volume for testing.

Units:
%

Reference Interval:

	Arterial	Venous
Hemoglobin	see Hemoglobin entry	see Hemoglobin entry
Oxyhemoglobin	93 - 100%	Not applicable
Carboxyhemoglobin (non-smokers)	0.5 - 1.5%	0.0 - 1.5%
Methemoglobin	0.0 - 1.5%	0.0 - 1.5%
Arterial O2 content	Male: 18.8 - 22.2 vol% Female: 15.9 - 19.9 vol%	Not applicable

Hemoglobin reference range adopted from the central UCSF hematology laboratory. Arterial oxyhemoglobin, carboxyhemoglobin and methemoglobin reference ranges adopted from the UCSF reference range previously used with the ABL 835 blood gas analyzers. Arterial oxygen content reference range adopted from the UCSF reference range previously used with the ABL 835 blood gas analyzers and adjusted based on recommendations from the instrument manufacturer (Radiometer Acute Care Testing Handbook, 2014).

Venous carboxyhemoglobin and methemoglobin reference ranges adopted from ZSFG Clinical Laboratories and verified by running 25 male and 25 female normal volunteers from UCSF Clinical Laboratories.

Note: it is not recommended to use venous blood for assessing oxygenation status.

Critical Values:
Carboxyhemoglobin: >= 5%
Methemoglobin: >= 2%

Synonyms:

- Hemoximetry
- Methemoglobinemia
- Oxyhemoglobin
- Carboxyhemoglobin
- Deoxyhemoglobin
- ABGCOX
- VBGCOX
- MVBGCX
- CVBGCX
- Blood gas
- ABG

Stability (from collection to initiation):
Oxygen content/oxyhemoglobin, 30 min
Carboxyhemoglobin: refrigerated, 3 days (stability information adopted from Mayo)
Hemoglobin: refrigerated, 3 days (stability information adopted from Mayo)
Methemoglobin: refrigerated, 3 days (stability information adopted from Mayo)
Specimens more than 30 minutes old should not be rejected.

Reported:
10 minutes

Additional Information:
This test includes the following results: Hemoglobin (CAHB), Oxyhemoglobin (O2HB), Carboxyhemoglobin (COHB), Methemoglobin (MEHB), and Arterial O2 content (O2HX).

Heparin syringes and caps to replace the needles during transport to the laboratory are available from Material Services.

LOINC Codes:
11559-2

COPEPTIN proAVP

CPAVP

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Performed:
Monday-Saturday

Methodology:
Immunofluorescent Assay (IFA)

Reported:
1-3 days

Synonyms:

- COPEPTIN

COLLECTION

Patient Preparation:
For water-deprived testing, have the patient fast and thirst for at least 8 hours (no liquids, including water, are allowed)

Sample Type:
Plasma

Collect:
Lavendar-top tube

Amount to Collect:
2 mL blood

Preferred Volume:
0.5 mL plasma

Minimum Volume:
0.3 mL plasma

Stability (from collection to initiation):
Refrigerated (preferred) 7 days
Frozen 30 days
Ambient 7 days

Storage/Transport Temperature:
Refrigerated

Unacceptable Conditions:
Gross hemolysis

PROCESSING

Test Code:
CPAVP

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Centrifuge and aliquot plasma into plastic vial. Do not submit in original tube.

Preferred Volume:
0.5 mL plasma

Minimum Volume:
0.3 mL plasma

Unacceptable Conditions:
Gross hemolysis

Stability (from collection to initiation):
Refrigerated (preferred) 7 days
Frozen 30 days
Ambient 7 days

Storage/Transport Temperature:
Refrigerated

RESULT INTERPRETATION

Units:
pmol/L

Reference Interval:
Non-water deprived, non-fasting adults*: <13.1 pmol/L

Water deprived, fasting adults**: <15.2 pmol/L

Non-water deprived, non-fasting pediatric patients***: <14.5 pmol/L

Interpretive Data:
While secreted in equimolar concentrations in conjunction with arginine vasopressin (AVP), measured plasma concentrations of copeptin do not correlate strongly with AVP concentrations due to in vivo and in vitro differences in stability. Copeptin is a more stable surrogate biomarker of AVP release. The clinical utility of copeptin of differentiating polyuria and water balance disorders has been demonstrated in a number of studies, when used in conjunction with osmolality and hydration status.

In a prospective clinical study, an algorithm was established based on patients with polyuria-polydipsia syndrome (n=55). A nonwater-deprived baseline copeptin concentration of 21.4 pmol/L or greater was found to be consistent with the presence of nephrogenic diabetes insipidus (DI). In a described algorithm,(1) patients with a copeptin concentrations of under 21.4 pmol/L and a copeptin cut-off of 4.9 pmol/L after fluid deprivation, was used to distinguish between complete or partial DI (<4.9 pmol/L) and primary polydipsia (> or =4.9 pmol/L).

Central DI may also be differentiated from nephrogenic DI by measuring copeptin during a stimulus for AVP release such as a water deprivation test. Copeptin concentrations obtained in the process of a water deprivation test can be difficult to interpret because of variation in water deprivation protocols. Patients with psychogenic polydipsia will either have a normal response to water deprivation or, in long-standing cases, show a pattern suggestive of mild nephrogenic DI. Expert consultation is recommended in these circumstances.

Although the water-deprivation test is considered the reference standard for the evaluation of DI, measurement of saline stimulated copeptin was shown to be more accurate than the water-deprivation test.(2) In this indirect water deprivation test with a cutoff of 4.9 pmol/L or less indicated central DI while a concentration greater than 4.9 pmol/L indicated primary polydipsia.

An elevated plasma copeptin AVP concentration in a hyponatremic patient may be indicative of the syndrome of inappropriate antidiuretic hormone secretion (SIADH). However, copeptin determination alone is not typically sufficient to distinguish SIADH from other hyponatremic disorders.(3)

Elevations of plasma copeptin in patients with symptoms of heart failure may be prognostic of short- and long-term mortality. In patients with heart failure (HF) following a myocardial infarction (MI), elevations in copeptin are associated with severity of HF and poorer prognosis.(4) In a cohort of patients with class III or IV HF, copeptin concentrations of 40 pmol/L or greater significantly increased the risk of death or need for cardiac transplantation. The combination of elevated copeptin and hyponatremia was an even stronger predictor of heart failure, independent of B-type natriuretic peptide (BNP) and cardiac troponin (cTn) concentrations.(5)

ADMINISTRATIVE

CPT Codes:
84588

LOINC Codes:
78987-5

COMPLETE VIEW

Available Stat:
No

Test Code:
CPAVP

Performing Lab:
Mayo

Sendout:
Yes

Performed:
Monday-Saturday

Methodology:
Immunofluorescent Assay (IFA)

Patient Preparation:
For water-deprived testing, have the patient fast and thirst for at least 8 hours (no liquids, including water, are allowed)

Collect:
Lavendar-top tube

Amount to Collect:
2 mL blood

Sample Type:
Plasma

Preferred Volume:
0.5 mL plasma

Minimum Volume:
0.3 mL plasma

Unacceptable Conditions:
Gross hemolysis

Specimen Preparation:
Centrifuge and aliquot plasma into plastic vial. Do not submit in original tube.

Units:
pmol/L

Reference Interval:
Non-water deprived, non-fasting adults*: <13.1 pmol/L

Water deprived, fasting adults**: <15.2 pmol/L

Non-water deprived, non-fasting pediatric patients***: <14.5 pmol/L

Interpretive Data:
While secreted in equimolar concentrations in conjunction with arginine vasopressin (AVP), measured plasma concentrations of copeptin do not correlate strongly with AVP concentrations due to in vivo and in vitro differences in stability. Copeptin is a more stable surrogate biomarker of AVP release. The clinical utility of copeptin of differentiating polyuria and water balance disorders has been demonstrated in a number of studies, when used in conjunction with osmolality and hydration status.

In a prospective clinical study, an algorithm was established based on patients with polyuria-polydipsia syndrome (n=55). A nonwater-deprived baseline copeptin concentration of 21.4 pmol/L or greater was found to be consistent with the presence of nephrogenic diabetes insipidus (DI). In a described algorithm,(1) patients with a copeptin concentrations of under 21.4 pmol/L and a copeptin cut-off of 4.9 pmol/L after fluid deprivation, was used to distinguish between complete or partial DI (<4.9 pmol/L) and primary polydipsia (> or =4.9 pmol/L).

Central DI may also be differentiated from nephrogenic DI by measuring copeptin during a stimulus for AVP release such as a water deprivation test. Copeptin concentrations obtained in the process of a water deprivation test can be difficult to interpret because of variation in water deprivation protocols. Patients with psychogenic polydipsia will either have a normal response to water deprivation or, in long-standing cases, show a pattern suggestive of mild nephrogenic DI. Expert consultation is recommended in these circumstances.

Although the water-deprivation test is considered the reference standard for the evaluation of DI, measurement of saline stimulated copeptin was shown to be more accurate than the water-deprivation test.(2) In this indirect water deprivation test with a cutoff of 4.9 pmol/L or less indicated central DI while a concentration greater than 4.9 pmol/L indicated primary polydipsia.

An elevated plasma copeptin AVP concentration in a hyponatremic patient may be indicative of the syndrome of inappropriate antidiuretic hormone secretion (SIADH). However, copeptin determination alone is not typically sufficient to distinguish SIADH from other hyponatremic disorders.(3)

Elevations of plasma copeptin in patients with symptoms of heart failure may be prognostic of short- and long-term mortality. In patients with heart failure (HF) following a myocardial infarction (MI), elevations in copeptin are associated with severity of HF and poorer prognosis.(4) In a cohort of patients with class III or IV HF, copeptin concentrations of 40 pmol/L or greater significantly increased the risk of death or need for cardiac transplantation. The combination of elevated copeptin and hyponatremia was an even stronger predictor of heart failure, independent of B-type natriuretic peptide (BNP) and cardiac troponin (cTn) concentrations.(5)

Synonyms:

- COPEPTIN

Storage/Transport Temperature:
Refrigerated

Stability (from collection to initiation):
Refrigerated (preferred) 7 days
Frozen 30 days
Ambient 7 days

Reported:
1-3 days

CPT Codes:
84588

LOINC Codes:
78987-5

Copper, 24 hour urine

COPU

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
ICP/MS

Reported:
Test run Tuesday-Saturday. Turnaround time: 2-5 days.

Additional Information:
To convert µg/L to µmol/L (SI units), multiply by 0.0157.

Levels are high in most symptomatic patients but false-positive results can occur in obstructive liver disease.

Copper is an essential element that is a cofactor of many enzymes. Copper metabolism is disturbed in Wilson's disease, Menkes disease, primary biliary cirrhosis, and Indian childhood cirrhosis. Urinary copper concentrations are also useful to monitor patients on chelation therapy.

Synonyms:

- Cu
- Wilson's disease
- Menke's disease

COLLECTION

Sample Type:
24 hour urine collection

Collect:
Acid Wash Container Required

Amount to Collect:
Entire 24 hour urine output

Preferred Volume:
7 mL urine

Minimum Volume:
3 mL urine

Stability (from collection to initiation):
Room temperature 5 days, refrigerated 2 weeks, frozen at -20C 1 month.

Rejection Criteria:
Hemolysis or fecal contamination.

PROCESSING

Test Code:
COPU

Test Group:
Copper

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Follow the detailed processing instructions for Trace Metal Analysis.

Record total volume of urine received and write on request. Be sure the urine is mixed well before transferring to the shipping container. To avoid contamination, carefully pour the designated amount of urine directly from the collection container into the acid wash shipping container.

Prepare two (2) aliquots, save (1) for storage, discard after 1 week. Refrigerate aliquots.

For 24 hour urine Order Quest # 365. For random urine order Quest # 86579N

Preferred Volume:
7 mL urine

Minimum Volume:
3 mL urine

Rejection Criteria:
Hemolysis or fecal contamination.

Stability (from collection to initiation):
Room temperature 5 days, refrigerated 2 weeks, frozen at -20C 1 month.

RESULT INTERPRETATION

Units:
µg/24 hours

Reference Interval:
15-60 µg/24 hours

Additional Information:
To convert µg/L to µmol/L (SI units), multiply by 0.0157.

Levels are high in most symptomatic patients but false-positive results can occur in obstructive liver disease.

Copper is an essential element that is a cofactor of many enzymes. Copper metabolism is disturbed in Wilson's disease, Menkes disease, primary biliary cirrhosis, and Indian childhood cirrhosis. Urinary copper concentrations are also useful to monitor patients on chelation therapy.

ADMINISTRATIVE

CPT Codes:
82525-90

LOINC Codes:
5633-3

COMPLETE VIEW

Available Stat:
No

Test Code:
COPU

Test Group:
Copper

Performing Lab:
Quest

Sendout:
Yes

Methodology:
ICP/MS

Collect:
Acid Wash Container Required

Amount to Collect:
Entire 24 hour urine output

Sample Type:
24 hour urine collection

Preferred Volume:
7 mL urine

Minimum Volume:
3 mL urine

Rejection Criteria:
Hemolysis or fecal contamination.

Specimen Preparation:

Follow the detailed processing instructions for Trace Metal Analysis.

Record total volume of urine received and write on request. Be sure the urine is mixed well before transferring to the shipping container. To avoid contamination, carefully pour the designated amount of urine directly from the collection container into the acid wash shipping container.

Prepare two (2) aliquots, save (1) for storage, discard after 1 week. Refrigerate aliquots.

For 24 hour urine Order Quest # 365. For random urine order Quest # 86579N

Units:

µg/24 hours

Reference Interval:

15-60 µg/24 hours

Synonyms:

- Cu
- Wilson's disease
- Menke's disease

Stability (from collection to initiation):

Room temperature 5 days, refrigerated 2 weeks, frozen at -20C 1 month.

Reported:

Test run Tuesday-Saturday. Turnaround time: 2-5 days.

Additional Information:

To convert µg/L to µmol/L (SI units), multiply by 0.0157.

Levels are high in most symptomatic patients but false-positive results can occur in obstructive liver disease.

Copper is an essential element that is a cofactor of many enzymes. Copper metabolism is disturbed in Wilson's disease, Menkes disease, primary biliary cirrhosis, and Indian childhood cirrhosis. Urinary copper concentrations are also useful to monitor patients on chelation therapy.

CPT Codes:

82525-90

LOINC Codes:

5633-3

Copper, random urine

COPUR

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Inductively Coupled Plasma Mass Spectrometry

Reported:
Set up 5x per week. Turnaround 4-8 days.

Additional Information:
Copper is an essential element that is a cofactor of many enzymes. Copper metabolism is disturbed in Wilson's disease, Menkes disease, primary biliary cirrhosis, and Indian childhood cirrhosis. Urinary copper concentrations are also useful to monitor patients on chealation therapy.

Synonyms:

- Cu
- Wilson's disease
- Menke's disease

COLLECTION

Patient Preparation:
Patient should refrain from taking vitamins, mineral or herbal supplements at least one week prior to specimen collection.

Sample Type:
Second void (preferred) or random urine

Collect:
Urine cup

Amount to Collect:
20 mL

Preferred Volume:
7 mL urine

Minimum Volume:
3 mL urine

Stability (from collection to initiation):
Room temperature 5 days, refrigerated 5 days, frozen at -20C 2 weeks.

PROCESSING

Test Code:
COPUR

Test Group:
Copper

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze aliquot at -20C. Order Quest # 86579N

Preferred Volume:
7 mL urine

Minimum Volume:
3 mL urine

Stability (from collection to initiation):
Room temperature 5 days, refrigerated 5 days, frozen at -20C 2 weeks.

RESULT INTERPRETATION

Units:
µg/g Creatinine (mcg/g Creatinine)

Reference Interval:
Normals based on second void AM urine:
Males: 6.4-14.3 µg/g creatinine
Females: 6.7-18.6 µg/g creatinine

Additional Information:
Copper is an essential element that is a cofactor of many enzymes. Copper metabolism is disturbed in Wilson's disease, Menkes disease, primary biliary cirrhosis, and Indian childhood cirrhosis. Urinary copper concentrations are also useful to monitor patients on chealation therapy.

ADMINISTRATIVE

CPT Codes:
82525-90, 82570-90

LOINC Codes:
13829-7

COMPLETE VIEW

Available Stat:
No

Test Code:
COPUR

Test Group:
Copper

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Inductively Coupled Plasma Mass Spectrometry

Patient Preparation:
Patient should refrain from taking vitamins, mineral or herbal supplements at least one week prior to specimen collection.

Collect:
Urine cup

Amount to Collect:
20 mL

Sample Type:
Second void (preferred) or random urine

Preferred Volume:
7 mL urine

Minimum Volume:
3 mL urine

Specimen Preparation:
Freeze aliquot at -20C. Order Quest # 86579N

Units:
µg/g Creatinine (mcg/g Creatinine)

Reference Interval:
Normals based on second void AM urine:
Males: 6.4-14.3 µg/g creatinine
Females: 6.7-18.6 µg/g creatinine

Synonyms:

- Cu
- Wilson's disease
- Menke's disease

Stability (from collection to initiation):
Room temperature 5 days, refrigerated 5 days, frozen at -20C 2 weeks.

Reported:
Set up 5x per week. Turnaround 4-8 days.

Additional Information:
Copper is an essential element that is a cofactor of many enzymes. Copper metabolism is disturbed in Wilson's disease, Menkes disease, primary biliary cirrhosis, and Indian childhood cirrhosis. Urinary copper concentrations are also useful to monitor patients on chealation therapy.

CPT Codes:
82525-90, 82570-90

LOINC Codes:
13829-7

Copper, serum/plasma

COP

ORDERING

Available Stat:
No

Performing Lab:
Quest

Performed:
Sun, Wed, Fri

Methodology:
Inductively-Coupled Plasma/Mass Spectrometry (ICP/MS) or Atomic Spectroscopy (AS)

Reported:
1 - 4 days

Additional Information:
Copper - Copper is an essential element that is a cofactor of many enzymes. Copper metabolism is disturbed in Wilson's disease, Menkes disease, primary biliary cirrhosis, and Indian childhood cirrhosis. Copper concentrations increase in acute phase reactions and during the third trimester of pregnancy. Copper concentrations are decreased with nephrosis, malabsorption, and malnutrition. Copper concentrations are also useful to monitor patients, especially preterm newborns, on nutritional supplementation. Results of copper are often interpreted together with ceruloplasmin.

Synonyms:

- Cu
- Wilson's disease
- Menke's disease

COLLECTION

Patient Preparation:
The patient should refrain from taking vitamins or mineral supplements for at least one week prior to specimen collection.

Sample Type:
Plasma or serum

Collect:
EDTA (royal blue-top) tube or heparin (royal blue-top) tube OR No additive (royal blue-top) tube

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL serum/plasma

Minimum Volume:
0.7 mL serum/plasma

Stability (from collection to initiation):
Room temperature: 5 days
Refrigerated: 10 days
Frozen: 30 days

Storage/Transport Temperature:
Frozen

Unacceptable Conditions:
Hemolysis • Serum or plasma not separated from cells • Samples submitted in non-trace metal or non-acid washed containers

PROCESSING

Test Code:
COP

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Separate serum or plasma from cells within two hours. Transfer separated plasma/serum to a plastic acid-washed or metal-free vial.

Preferred Volume:
2 mL serum/plasma

Minimum Volume:
0.7 mL serum/plasma

Unacceptable Conditions:
Hemolysis • Serum or plasma not separated from cells • Samples submitted in non-trace metal or non-acid washed containers

Stability (from collection to initiation):
Room temperature: 5 days
Refrigerated: 10 days
Frozen: 30 days

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Units:
µg/dL (mcg/dL)

Reference Interval:
=5 Months: 38-104 mcg/dL
6-11 Months: 24-152 mcg/dL
12 Months-23 Months: 76-193 mcg/dL
1-3 Years: 87-187 mcg/dL
4-5 Years: 56-191 mcg/dL
6-9 Years: 117-181 mcg/dL
10-13 Years: 87-182 mcg/dL
14-17 Years: 75-187 mcg/dL
=18 Years: 70-175 mcg/dL

Additional Information:
Copper - Copper is an essential element that is a cofactor of many enzymes. Copper metabolism is disturbed in Wilson's disease, Menkes disease, primary biliary cirrhosis, and Indian childhood cirrhosis. Copper concentrations increase in acute phase reactions and during the third trimester of pregnancy. Copper concentrations are decreased with nephrosis, malabsorption, and malnutrition. Copper concentrations are also useful to monitor patients, especially preterm newborns, on nutritional supplementation. Results of copper are often interpreted together with ceruloplasmin.

ADMINISTRATIVE

CPT Codes:
82525

LOINC Codes:
5631-7

COMPLETE VIEW

Available Stat:
No

Test Code:
COP

Performing Lab:
Quest

Sendout:
Yes

Performed:
Sun, Wed, Fri

Methodology:
Inductively-Coupled Plasma/Mass Spectrometry (ICP/MS) or Atomic Spectroscopy (AS)

Patient Preparation:
The patient should refrain from taking vitamins or mineral supplements for at least one week prior to specimen collection.

Collect:
EDTA (royal blue-top) tube or heparin (royal blue-top) tube OR No additive (royal blue-top) tube

Amount to Collect:
4 mL blood

Sample Type:
Plasma or serum

Preferred Volume:
2 mL serum/plasma

Minimum Volume:
0.7 mL serum/plasma

Unacceptable Conditions:
Hemolysis • Serum or plasma not separated from cells • Samples submitted in non-trace metal or non-acid washed containers

Specimen Preparation:
Separate serum or plasma from cells within two hours. Transfer separated plasma/serum to a plastic acid-washed or metal-free vial.

Units:
µg/dL (mcg/dL)

Reference Interval:
=5 Months: 38-104 mcg/dL
6-11 Months: 24-152 mcg/dL
12 Months-23 Months: 76-193 mcg/dL
1-3 Years: 87-187 mcg/dL
4-5 Years: 56-191 mcg/dL
6-9 Years: 117-181 mcg/dL
10-13 Years: 87-182 mcg/dL
14-17 Years: 75-187 mcg/dL
=18 Years: 70-175 mcg/dL

Synonyms:

- Cu
- Wilson's disease
- Menke's disease

Storage/Transport Temperature:
Frozen

Stability (from collection to initiation):
Room temperature: 5 days
Refrigerated: 10 days
Frozen: 30 days

Reported:
1 - 4 days

Additional Information:
Copper - Copper is an essential element that is a cofactor of many enzymes. Copper metabolism is disturbed in Wilson's disease, Menkes disease, primary biliary cirrhosis, and Indian childhood cirrhosis. Copper concentrations increase in acute phase reactions and during the third trimester of pregnancy. Copper concentrations are decreased with nephrosis, malabsorption, and malnutrition. Copper concentrations are also useful to monitor patients, especially preterm newborns, on nutritional supplementation. Results of copper are often interpreted together with ceruloplasmin.

CPT Codes:
82525

LOINC Codes:
5631-7

Copper, tissue

COPT

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
ICP/MS

Reported:
2 weeks

Additional Information:
In Wilson's disease levels are usually 200-3000 µg/g, and carriers may have levels up to 150 µg/g, but false-positive results can occur in obstructive liver disease.

Synonyms:

- Cu
- Wilson's disease
- Menke's disease

COLLECTION

Sample Type:
Unfixed Liver tissue Paraffin block is also acceptable if not more than 1 or 2 cuts have been made to it for slides. Paraffin blocks will be returned in 2 weeks unless a request for an earlier return is made.

Collect:
Trace metal-free vial (blue label)

Amount to Collect:
4 mL

Preferred Volume:
0.5 x 5 mm

Minimum Volume:
0.5 x 2.0 mm

Remarks:
Obtain trace metal-free vial (blue label) supplied by vendor and available from Specimen Receiving. Parrafin block is also acceptable if not more than 1 or 2 cuts have been made to it for slides. Paraffin blocks will be returned in 2 weeks unless a request for an earlier return is made.

PROCESSING

Test Code:
COPT

Test Group:
Copper

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Follow the detailed processing instructions for Trace Metal Analysis. Refrigerate. Order MAYO# 8687. Place packaged specimen in refrigerator bin for MCS pickup.

Preferred Volume:
0.5 x 5 mm

Minimum Volume:
0.5 x 2.0 mm

RESULT INTERPRETATION

Units:
µg/g dry weight of liver

Reference Interval:
10-35 µg/g dry weight of liver

Additional Information:
In Wilson's disease levels are usually 200-3000 µg/g, and carriers may have levels up to 150 µg/g, but false-positive results can occur in obstructive liver disease.

ADMINISTRATIVE

CPT Codes:
82525-90

LOINC Codes:
8198-4

COMPLETE VIEW

Available Stat:
No

Test Code:
COPT

Test Group:
Copper

Performing Lab:
Mayo

Sendout:
Yes

Methodology:
ICP/MS

Remarks:
Obtain trace metal-free vial (blue label) supplied by vendor and available from Specimen Receiving. Parrafin block is also acceptable if not more than 1 or 2 cuts have been made to it for slides. Paraffin blocks will be returned in 2 weeks unless a request for an earlier return is made.

Collect:
Trace metal-free vial (blue label)

Amount to Collect:
4 mL

Sample Type:
Unfixed Liver tissue Paraffin block is also acceptable if not more than 1 or 2 cuts have been made to it for slides. Paraffin blocks will be returned in 2 weeks unless a request for an earlier return is made.

Preferred Volume:
0.5 x 5 mm

Minimum Volume:
0.5 x 2.0 mm

Specimen Preparation:
Follow the detailed processing instructions for Trace Metal Analysis. Refrigerate. Order MAYO# 8687. Place packaged specimen in refrigerator bin for MCS pickup.

Units:
µg/g dry weight of liver

Reference Interval:
10-35 µg/g dry weight of liver

Synonyms:

- Cu
- Wilson's disease
- Menke's disease

Reported:
2 weeks

Additional Information:
In Wilson's disease levels are usually 200-3000 µg/g, and carriers may have levels up to 150 µg/g, but false-positive results can occur in obstructive liver disease.

CPT Codes:
82525-90

LOINC Codes:
8198-4

Cortisol Urine Free by LC-MS/MS

FCU

ORDERING

Ordering Recommendations:
Rule-out Cushing syndrome.

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Reported:
1-5 days

Synonyms:

- Cortisol, Free, LC/MS/MS, Second Void Urine
- Urinary Free Cortisol

COLLECTION

Sample Type:
Urine container (random or 24-hour)

Collect:
24-hour or random urine. Refrigerate 24-hour specimen during collection.

Preferred Volume:
4 mL

Minimum Volume:
1 mL

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 2 weeks; Frozen: 6 months

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Room temperature specimens. Acidified specimens or specimens with preservatives.

PROCESSING

Test Code:
FCU

ARUP Test Code:
0097222

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transport one 4 mL aliquot of urine. (Min: 1 mL) Record total volume and collection time interval on transport tube and test request form.

Preferred Volume:
4 mL

Minimum Volume:
1 mL

Unacceptable Conditions:
Room temperature specimens. Acidified specimens or specimens with preservatives.

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 2 weeks; Frozen: 6 months

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:

Components	Reference Interval
Creatinine, Urine - per 24h	

Age	Male (mg/d)	Female (mg/d)
3-8 years	140-700	140-700
9-12 years	300-1300	300-1300
13-17 years	500-2300	400-1600
18-50 years	1000-2500	700-1600
51-80 years	800-2100	500-1400
81 years and older	600-2000	400-1300

Cortisol, Urine Free - ratio to CRT

Age	Male (ug/g CRT)	Female (ug/g CRT)
Prepubertal	Less than 25	Less than 25
18 years and older	Less than 32	Less than 24
Pregnancy	Not Applicable	Less than 59

Cortisol, Urine Free - per 24h

Age	Male (ug/24 h)	Female (ug/24 h)
3-8 years	Less than or equal to 18	Less than or equal to 18
9-12 years	Less than or equal to 37	Less than or equal to 37
13-17 years	Less than or equal to 56	Less than or equal to 56
18 years and older	Less than or equal to 60	Less than or equal to 45

Interpretive Data:

Per 24h calculations are provided to aid interpretation for collections with a duration of 24 hours and an average daily urine volume. For specimens with notable deviations in collection time or volume, ratios of analytes to a corresponding urine creatinine concentration may assist in result interpretation.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:

82530

LOINC:

- 2161-8
- 32009-3
- 34909-2
- 2147-7
- 19153-6
- 48767-8
- 2162-6
- 30211-7

COMPLETE VIEW

Ordering Recommendations:

Rule-out Cushing syndrome.

Test Code:

FCU

ARUP Test Code:

0097222

Performing Lab:

ARUP

Sendout:

Yes

Performed:
Sun-Sat

Methodology:
Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Collect:
24-hour or random urine. Refrigerate 24-hour specimen during collection.

Sample Type:
Urine container (random or 24-hour)

Preferred Volume:
4 mL

Minimum Volume:
1 mL

Unacceptable Conditions:
Room temperature specimens. Acidified specimens or specimens with preservatives.

Specimen Preparation:
Transport one 4 mL aliquot of urine. (Min: 1 mL) Record total volume and collection time interval on transport tube and test request form.

Reference Interval:

Components	Reference Interval
Creatinine, Urine - per 24h	

Age	Male (mg/d)	Female (mg/d)
3-8 years	140-700	140-700
9-12 years	300-1300	300-1300
13-17 years	500-2300	400-1600
18-50 years	1000-2500	700-1600
51-80 years	800-2100	500-1400
81 years and older	600-2000	400-1300

Cortisol, Urine Free - ratio to CRT

Age	Male (ug/g CRT)	Female (ug/g CRT)
Prepubertal	Less than 25	Less than 25
18 years and older	Less than 32	Less than 24
Pregnancy	Not Applicable	Less than 59

Cortisol, Urine Free - per 24h

Age	Male (ug/24 h)	Female (ug/24 h)
3-8 years	Less than or equal to 18	Less than or equal to 18
9-12 years	Less than or equal to 37	Less than or equal to 37
13-17 years	Less than or equal to 56	Less than or equal to 56
18 years and older	Less than or equal to 60	Less than or equal to 45

Interpretive Data:
Per 24h calculations are provided to aid interpretation for collections with a duration of 24 hours and an average daily urine volume. For specimens with notable deviations in collection time or volume, ratios of analytes to a corresponding urine creatinine concentration may assist in result interpretation.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Synonyms:

- Cortisol, Free, LC/MS/MS, Second Void Urine
- Urinary Free Cortisol

Storage/Transport Temperature:
Refrigerated.

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 2 weeks; Frozen: 6 months

Reported:
1-5 days

CPT Codes:
82530

LOINC:

- 2161-8
- 32009-3
- 34909-2
- 2147-7
- 19153-6
- 48767-8
- 2162-6
- 30211-7

Notes:
Reference intervals based on literature from Taylor R.L. et al., Validation of a High-Throughput Liquid Chromatography-Tandem Mass Spectrometry Method for Urine Cortisol and Cortisone. Clinical Chemistry 2002; 48:1511-1519.

Cortisol, free, serum

CRTFS

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
LC/MS/MS

Reported:
3-5 days

Additional Information:
Free cortisol is useful in the detection of patients with Cushing's syndrome for whom free cortisol concentrations are elevated.

Synonyms:

- Compound F
- 11-hydroxycorticosteroids
- 11-hydroxycorticoids
- 11-OH steroids
- 11-OH corticosteroids
- Cosyntropin provocative testing
- Unconjugated cortisol
- Cortisol, unconjugated
- Unconjugated F
- Unconjucated hydroxycorticoids

COLLECTION

Sample Type:
Serum or EDTA plasma

Collect:
Red top or Lavender top

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL serum or plasma

Minimum Volume:
0.7 mL serum or plasma

Stability (from collection to initiation):
Room temperature 4 hours, refrigerated 1 week, frozen 2 years

PROCESSING

Test Code:
CRTFS

Test Group:
Cortisol

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot and freeze. Transport to CB frozen. Order Quest test code 21469P.

Preferred Volume:
2 mL serum or plasma

Minimum Volume:
0.7 mL serum or plasma

Stability (from collection to initiation):
Room temperature 4 hours, refrigerated 1 week, frozen 2 years

RESULT INTERPRETATION

Units:
µg/dL

Reference Interval:
Adult:
8:00 A.M.-10:00 A.M.: 0.07-0.93 µg/dL
4:00 P.M.-6:00 P.M.: 0.04-0.45 µg/dL
10:00 P.M.-11:00 P.M.: 0.04-0.35 µg/dL

Additional Information:
Free cortisol is useful in the detection of patients with Cushing's syndrome for whom free cortisol concentrations are elevated.

ADMINISTRATIVE

CPT Codes:
82530-90

COMPLETE VIEW

Available Stat:
No

Test Code:
CRTFS

Test Group:
Cortisol

Performing Lab:
Quest

Sendout:
Yes

Methodology:
LC/MS/MS

Collect:
Red top or Lavender top

Amount to Collect:
4 mL blood

Sample Type:
Serum or EDTA plasma

Preferred Volume:
2 mL serum or plasma

Minimum Volume:
0.7 mL serum or plasma

Specimen Preparation:
Aliquot and freeze. Transport to CB frozen. Order Quest test code 21469P.

Units:
µg/dL

Reference Interval:
Adult:
8:00 A.M.-10:00 A.M.: 0.07-0.93 µg/dL
4:00 P.M.-6:00 P.M.: 0.04-0.45 µg/dL
10:00 P.M.-11:00 P.M.: 0.04-0.35 µg/dL

Synonyms:

- Compound F
- 11-hydroxycorticosteroids
- 11-hydroxycorticoids
- 11-OH steroids
- 11-OH corticosteroids
- Cosyntropin provocative testing
- Unconjugated cortisol
- Cortisol, unconjugated
- Unconjugated F
- Unconjucated hydroxycorticoids

Stability (from collection to initiation):
Room temperature 4 hours, refrigerated 1 week, frozen 2 years

Reported:
3-5 days

Additional Information:

Free cortisol is useful in the detection of patients with Cushing's syndrome for whom free cortisol concentrations are elevated.

CPT Codes:

82530-90

Cortisol, saliva

CRTSV

ORDERING

Available Stat:
No

Performing Lab:
Quest

Performed:
Sun-Tue, Thu-Fri

Methodology:
LC/MS/MS

Reported:
2-6 days

Synonyms:

- Compound F
- 11-hydroxycorticosteroids
- 11-hydroxycorticoids
- 11-OH steroids
- 11-OH corticosteroids
- Cosyntropin provocative testing

COLLECTION

Patient Preparation:
1. Saliva should be collected at the time(s) prescribed by your doctor.
2. No food or fluids for 30 minutes prior to collection.
3. Do not use any creams, lotions, or steroid inhalers immediately prior to collection.
4. Avoid any activity that can cause your gums to bleed, including brushing and flossing your teeth. Consult with your doctor if this is a chronic problem.
5. Do not use this kit on children under 3 years of age or any patient with increased risk of swallowing or choking

Sample Type:
Saliva

Collect:
Salivette collection tube with blue-screw-cap. SUPER SAL or SUPER SAL2 Universal Saliva Kit.

Amount to Collect:
0.5 mL

Preferred Volume:
0.5 mL

Minimum Volume:
0.2 mL

Remarks:
SALIVA COLLECTION SHOULD BE DONE AT THE EARLIEST 60 MIN AFTER BRUSHING TEETH, A MEAL (LIQUID/SOLID FOOD INTAKE) OR ORAL INTAKE OF MEDICATION AND 10 MIN AFTER RINSING THE MOUTH WITH WATER IN ORDER TO AVOID CONTAMINATION OF THE SALIVA BY INTERFERING SUBSTANCES.

REMOVE THE SWAB FROM THE SALIVETTE

PLACE THE SWAB IN THE MOUTH, E.G. IN YOUR CHEEK, WHERE IT SHOULD REMAIN FOR 2 MIN WITHOUT CHEWING. IF AN EXTREMELY SMALL AMOUNT OF SALIVA IS PRODUCED, LEAVE THE SWAB IN THE MOUNT FOR LONGER

RETURN THE SWAB WITH THE ABSORBED SALIVA TO THE SALIVETTE

REPLACE THE STOPPER

REFRIGERATE THE SALIVETTE IMMEDIATLY

Stability (from collection to initiation):
Room temperature: 7 days
Refrigerated: 21 days
Frozen: 180 days

Storage/Transport Temperature:
Frozen

Unacceptable Conditions:
Hemolysis, White-top Salivette collection devices

PROCESSING

Test Code:
CRTSV

Test Group:
Cortisol

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze sample and send frozen to CB. order Quest test code 19897X

Preferred Volume:
0.5 mL

Minimum Volume:
0.2 mL

Unacceptable Conditions:
Hemolysis, White-top Salivette collection devices

Stability (from collection to initiation):
Room temperature: 7 days
Refrigerated: 21 days
Frozen: 180 days

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Units:
µg/dL (mcg/dL)

Reference Interval:
8-10 AM: 0.04-0.56 µg/dL
4-6 PM: <= 0.15 µg/dL
10-11 PM: <= 0.09 µg/dL

ADMINISTRATIVE

CPT Codes:
82530-90

LOINC Codes:
2142-8

COMPLETE VIEW

Available Stat:
No

Test Code:
CRTSV

Test Group:
Cortisol

Performing Lab:
Quest

Sendout:
Yes

Performed:
Sun-Tue, Thu-Fri

Methodology:
LC/MS/MS

Patient Preparation:

1. Saliva should be collected at the time(s) prescribed by your doctor.
2. No food or fluids for 30 minutes prior to collection.
3. Do not use any creams, lotions, or steroid inhalers immediately prior to collection.
4. Avoid any activity that can cause your gums to bleed, including brushing and flossing your teeth. Consult with your doctor if this is a chronic problem.
5. Do not use this kit on children under 3 years of age or any patient with increased risk of swallowing or choking

Remarks:

SALIVA COLLECTION SHOULD BE DONE AT THE EARLIEST 60 MIN AFTER BRUSHING TEETH, A MEAL (LIQUID/SOLID FOOD INTAKE) OR ORAL INTAKE OF MEDICATION AND 10 MIN AFTER RINSING THE MOUTH WITH WATER IN ORDER TO AVOID CONTAMINATION OF THE SALIVA BY INTERFERING SUBSTANCES.

REMOVE THE SWAB FROM THE SALIVETTE

PLACE THE SWAB IN THE MOUTH, E.G. IN YOUR CHEEK, WHERE IT SHOULD REMAIN FOR 2 MIN WITHOUT CHEWING. IF AN EXTREMELY SMALL AMOUNT OF SALIVA IS PRODUCED, LEAVE THE SWAB IN THE MOUNT FOR LONGER

RETURN THE SWAB WITH THE ABSORBED SALIVA TO THE SALIVETTE

REPLACE THE STOPPER

REFRIGERATE THE SALIVETTE IMMEDIATLY

Collect:

Salivette collection tube with blue-screw-cap. SUPER SAL or SUPER SAL2 Universal Saliva Kit.

Amount to Collect:

0.5 mL

Sample Type:

Saliva

Preferred Volume:

0.5 mL

Minimum Volume:

0.2 mL

Unacceptable Conditions:

Hemolysis, White-top Salivette collection devices

Specimen Preparation:

Freeze sample and send frozen to CB. order Quest test code 19897X

Units:

µg/dL (mcg/dL)

Reference Interval:

8-10 AM: 0.04-0.56 µg/dL
4-6 PM: <= 0.15 µg/dL
10-11 PM: <= 0.09 µg/dL

Synonyms:

- Compound F
- 11-hydroxycorticosteroids
- 11-hydroxycorticoids
- 11-OH steroids
- 11-OH corticosteroids
- Cosyntropin provocative testing

Storage/Transport Temperature:

Frozen

Stability (from collection to initiation):

Room temperature: 7 days
Refrigerated: 21 days
Frozen: 180 days

Reported:

2-6 days

CPT Codes:

82530-90

LOINC Codes:

2142-8

Cortisol, serum

CORT

ORDERING

Available Stat:
No

Performing Lab:
China Basin Chemistry

Performed:
Test available on day shift, 7 days per week.

Methodology:
Chemiluminescent Microparticle Immunoassay (Abbott Architect i1000)

Reported:
1-3 days

Additional Information:

The Architect cortisol assay is highly specific for cortisol and correlates well with mass spectrometry methods (Dodd AJ et al. Annals of Clinical Biochemistry 2014).

The specificity of the ARCHITECT Cortisol assay was determined by studying the cross-reactivity of compounds whose chemical structure or concurrent usage may potentially interfere with the ARCHITECT Cortisol assay. Specificity of the assay was determined by spiking each compound into human serum specimens with cortisol levels of 11.4 and 12.0 µg/dL. Cross reactivity results with other steroids are listed below.

Compound	Conc (ug/dL)	% Cross-Reactivity
Aldosterone	1000	0.0
Beclomethasone	1000	0.0
Budesonide	1000	0.0
Canrenone	1000	0.1
Corticosterone	1000	0.9
Cortisol 21-glucuronide	1000	0.2
Cortisone	1000	2.7
B-Cortol	1000	0.0
B-Cortolone	1000	0.0
11-Deoxycorticosterone	100	0.0
11-Deoxycortisol	100	1.9
Dexamethasone	1000	0.0
DHEA	1000	0.0
DHEA-S	1000	0.0
B-Estradiol	1000	0.0
Estriol	1000	0.0
Estrone	1000	0.0
Fludrocortisone	100	36.6
Fluticasone Propionate	1000	0.0
6B-Hydroxycortisol	1000	0.2
17a-Hydroxypregnenolone	1000	0.1
11B-Hydroxyprogesterone	1000	0.2
17-Hydroxyprogesterone	1000	0.6
Medroxyprogesterone Acetate	1000	0.0
6-Methylprednisolone	1000	0.1
Mometasone	1000	0.0
Prednisolone	100	12.3
Prednisone	1000	0.0
Pregnanetriol	1000	0.0
Pregnenolone	1000	0.0
Progesterone	1000	0.0
B-Sitosterol	1000	0.0
Spironolactone	1000	0.0
Testosterone	1000	0.0

Synonyms:

- Compound F
- 11-hydroxycorticosteroids
- 11-hydroxycorticoids
- 11-OH steroids
- 11-OH corticosteroids
- Cosyntropin provocative testing

COLLECTION

Sample Type:

Serum

Collect:
Preferred: Gold top or Red top; Acceptable: Green Top (Sodium/Lithium Heparin)

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Remarks:
A morning sample is usually recommended.

Unacceptable Conditions:
Samples will not be rejected based on time of collection.

PROCESSING

Test Code:
CORT

Test Group:
Cortisol

Performing Lab:
China Basin Chemistry

Specimen Preparation:
Refrigerate

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Unacceptable Conditions:
Samples will not be rejected based on time of collection.

RESULT INTERPRETATION

Units:
µg/dL

Reference Interval:
Adult Reference Range (ug/dL)
AM (before 10am): 4 - 19
PM (after 5pm): 3 - 17

Reference range adopted from vendor performed studies and verified by running lab personnel.

Pediatric Reference Range (ug/dL)
2 - 14 days: 0.5 - 12
15 days - < 1 year: 0.5 - 17
1 year - < 9 years: 2 - 11
9 - < 14 years: 2 - 13
14 - < 17 years: 3 - 16
17 years - < 19 years: 4 - 18

Pediatric reference ranges adopted from CALIPER Pediatric Reference Interval study performed on random samples using the Abbott Architect i2000 assay. Morning samples gave results approximately 10% higher than afternoon samples.

Bailey et al. Clinical Chemistry 59:9 1393-1405 (2013)

Additional Information:

The Architect cortisol assay is highly specific for cortisol and correlates well with mass spectrometry methods (Dodd AJ et al. Annals of Clinical Biochemistry 2014).

The specificity of the ARCHITECT Cortisol assay was determined by studying the cross-reactivity of compounds whose chemical structure or concurrent usage may potentially interfere with the ARCHITECT Cortisol assay. Specificity of the assay was determined by spiking each compound into human serum specimens with cortisol levels of 11.4 and 12.0 µg/dL. Cross reactivity results with other steroids are listed below.

Compound	Conc (ug/dL)	% Cross-Reactivity
Aldosterone	1000	0.0
Beclomethasone	1000	0.0
Budesonide	1000	0.0
Canrenone	1000	0.1
Corticosterone	1000	0.9
Cortisol 21-glucuronide	1000	0.2
Cortisone	1000	2.7
B-Cortol	1000	0.0
B-Cortolone	1000	0.0
11-Deoxycorticosterone	100	0.0
11-Deoxycortisol	100	1.9
Dexamethasone	1000	0.0
DHEA	1000	0.0
DHEA-S	1000	0.0
B-Estradiol	1000	0.0
Estriol	1000	0.0
Estrone	1000	0.0
Fludrocortisone	100	36.6
Fluticasone Propionate	1000	0.0
6B-Hydroxycortisol	1000	0.2
17a-Hydroxypregnenolone	1000	0.1
11B-Hydroxyprogesterone	1000	0.2
17-Hydroxyprogesterone	1000	0.6
Medroxyprogesterone Acetate	1000	0.0
6-Methylprednisolone	1000	0.1
Mometasone	1000	0.0
Prednisolone	100	12.3
Prednisone	1000	0.0
Pregnanetriol	1000	0.0
Pregnenolone	1000	0.0
Progesterone	1000	0.0
B-Sitosterol	1000	0.0
Spironolactone	1000	0.0
Testosterone	1000	0.0

ADMINISTRATIVE

CPT Codes:

82533

LOINC Codes:

2143-6

COMPLETE VIEW

Available Stat:

No

Test Code:
CORT

Test Group:
Cortisol

Performing Lab:
China Basin Chemistry

Performed:
Test available on day shift, 7 days per week.

Methodology:
Chemiluminescent Microparticle Immunoassay (Abbott Architect i1000)

Remarks:
A morning sample is usually recommended.

Collect:
Preferred: Gold top or Red top; Acceptable: Green Top (Sodium/Lithium Heparin)

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Unacceptable Conditions:
Samples will not be rejected based on time of collection.

Specimen Preparation:
Refrigerate

Units:
µg/dL

Reference Interval:
Adult Reference Range (ug/dL)
AM (before 10am): 4 - 19
PM (after 5pm): 3 - 17

Reference range adopted from vendor performed studies and verified by running lab personnel.

Pediatric Reference Range (ug/dL)
2 - 14 days: 0.5 - 12
15 days - < 1 year: 0.5 - 17
1 year - < 9 years: 2 - 11
9 - < 14 years: 2 - 13
14 - < 17 years: 3 - 16
17 years - < 19 years: 4 - 18

Pediatric reference ranges adopted from CALIPER Pediatric Reference Interval study performed on random samples using the Abbott Architect i2000 assay. Morning samples gave results approximately 10% higher than afternoon samples.

Bailey et al. Clinical Chemistry 59:9 1393-1405 (2013)

Synonyms:

- Compound F
- 11-hydroxycorticosteroids
- 11-hydroxycorticoids
- 11-OH steroids
- 11-OH corticosteroids
- Cosyntropin provocative testing

Reported:
1-3 days

Additional Information:

The Architect cortisol assay is highly specific for cortisol and correlates well with mass spectrometry methods (Dodd AJ et al. Annals of Clinical Biochemistry 2014).

The specificity of the ARCHITECT Cortisol assay was determined by studying the cross-reactivity of compounds whose chemical structure or concurrent usage may potentially interfere with the ARCHITECT Cortisol assay. Specificity of the assay was determined by spiking each compound into human serum specimens with cortisol levels of 11.4 and 12.0 µg/dL. Cross reactivity results with other steroids are listed below.

Compound	Conc (ug/dL)	% Cross-Reactivity
Aldosterone	1000	0.0
Beclomethasone	1000	0.0
Budesonide	1000	0.0
Canrenone	1000	0.1
Corticosterone	1000	0.9
Cortisol 21-glucuronide	1000	0.2
Cortisone	1000	2.7
B-Cortol	1000	0.0
B-Cortolone	1000	0.0
11-Deoxycorticosterone	100	0.0
11-Deoxycortisol	100	1.9
Dexamethasone	1000	0.0
DHEA	1000	0.0
DHEA-S	1000	0.0
B-Estradiol	1000	0.0
Estriol	1000	0.0
Estrone	1000	0.0
Fludrocortisone	100	36.6
Fluticasone Propionate	1000	0.0
6B-Hydroxycortisol	1000	0.2
17a-Hydroxypregnenolone	1000	0.1
11B-Hydroxyprogesterone	1000	0.2
17-Hydroxyprogesterone	1000	0.6
Medroxyprogesterone Acetate	1000	0.0
6-Methylprednisolone	1000	0.1
Mometasone	1000	0.0
Prednisolone	100	12.3
Prednisone	1000	0.0
Pregnanetriol	1000	0.0
Pregnenolone	1000	0.0
Progesterone	1000	0.0
B-Sitosterol	1000	0.0
Spironolactone	1000	0.0
Testosterone	1000	0.0

CPT Codes:

82533

LOINC Codes:

2143-6

Cortisol/Cortisone Urine Free by LC-MS/MS

FCCU

ORDERING

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Reported:
1-5 days

COLLECTION

Sample Type:
Urine

Collect:
24-hour or random urine. Refrigerate 24-hour specimen during collection.

Preferred Volume:
> 4 mL

Minimum Volume:
1 mL

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 1 week; Frozen: 1 month

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Room temperature specimens. Acidified specimens or specimens with preservatives.

PROCESSING

Test Code:
FCCU

ARUP Test Code:
0092100

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transport one 4 mL aliquot of urine. (Min: 1 mL) Record total volume and collection time interval on transport tube and test request form.

Preferred Volume:
> 4 mL

Minimum Volume:
1 mL

Unacceptable Conditions:
Room temperature specimens. Acidified specimens or specimens with preservatives.

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 1 week; Frozen: 1 month

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:

<table>
<tr><th>Components</th><th>Reference Interval</th></tr>
<tr><td>Creatinine, Urine - per 24h</td><td>
<table>
<tr><th>Age</th><th>Male (mg/d)</th><th>Female (mg/d)</th></tr>
<tr><td>3-8 years</td><td>140-700</td><td>140-700</td></tr>
<tr><td>9-12 years</td><td>300-1300</td><td>300-1300</td></tr>
<tr><td>13-17 years</td><td>500-2300</td><td>400-1600</td></tr>
<tr><td>18-50 years</td><td>1000-2500</td><td>700-1600</td></tr>
<tr><td>51-80 years</td><td>800-2100</td><td>500-1400</td></tr>
<tr><td>81 years and older</td><td>600-2000</td><td>400-1300</td></tr>
</table>
</td></tr>
<tr><td>Cortisol/Cortisone Ratio</td><td>18 years and older: 0.15-0.50</td></tr>
<tr><td>Cortisol, Urine Free - ratio to CRT</td><td>
<table>
<tr><th>Age</th><th>Male (ug/g CRT)</th><th>Female (ug/g CRT)</th></tr>
<tr><td>Prepubertal</td><td>Less than 25</td><td>Less than 25</td></tr>
<tr><td>18 years and older</td><td>Less than 32</td><td>Less than 24</td></tr>
<tr><td>Pregnancy</td><td>Not Applicable</td><td>Less than 59</td></tr>
</table>
</td></tr>
<tr><td>Cortisol, Urine Free - per 24h</td><td>
<table>
<tr><th>Age</th><th>Male (ug/24 h)</th><th>Female (ug/24 h)</th></tr>
<tr><td>3-8 years</td><td>Less than or equal to 18</td><td>Less than or equal to 18</td></tr>
<tr><td>9-12 years</td><td>Less than or equal to 37</td><td>Less than or equal to 37</td></tr>
<tr><td>13-17 years</td><td>Less than or equal to 56</td><td>Less than or equal to 56</td></tr>
<tr><td>18 years and older</td><td>Less than or equal to 60</td><td>Less than or equal to 45</td></tr>
</table>
</td></tr>
</table>

Interpretive Data:

Per 24h calculations are provided to aid interpretation for collections with a duration of 24 hours and an average daily urine volume. For specimens with notable deviations in collection time or volume, ratios of analytes to a corresponding urine creatinine concentration may assist in result interpretation.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:

82530; 83789

LOINC:

- 30072-3
- 2161-8
- 34909-2
- 2147-7
- 2162-6
- 19153-6
- 48767-8
- 14044-2
- 32009-3
- 30211-7
- 30511-0
- 49029-2

COMPLETE VIEW

Available Stat:

No

Test Code:

FCCU

ARUP Test Code:

0092100

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Collect:
24-hour or random urine. Refrigerate 24-hour specimen during collection.

Sample Type:
Urine

Preferred Volume:
> 4 mL

Minimum Volume:
1 mL

Unacceptable Conditions:
Room temperature specimens. Acidified specimens or specimens with preservatives.

Specimen Preparation:
Transport one 4 mL aliquot of urine. (Min: 1 mL) Record total volume and collection time interval on transport tube and test request form.

Reference Interval:

Components	Reference Interval
Creatinine, Urine - per 24h	

Age	Male (mg/d)	Female (mg/d)
3-8 years	140-700	140-700
9-12 years	300-1300	300-1300
13-17 years	500-2300	400-1600
18-50 years	1000-2500	700-1600
51-80 years	800-2100	500-1400
81 years and older	600-2000	400-1300

Components	Reference Interval
Cortisol/Cortisone Ratio	18 years and older: 0.15-0.50
Cortisol, Urine Free - ratio to CRT	

Age	Male (ug/g CRT)	Female (ug/g CRT)
Prepubertal	Less than 25	Less than 25
18 years and older	Less than 32	Less than 24
Pregnancy	Not Applicable	Less than 59

Cortisol, Urine Free - per 24h

Age	Male (ug/24 h)	Female (ug/24 h)
3-8 years	Less than or equal to 18	Less than or equal to 18
9-12 years	Less than or equal to 37	Less than or equal to 37
13-17 years	Less than or equal to 56	Less than or equal to 56
18 years and older	Less than or equal to 60	Less than or equal to 45

Interpretive Data:
Per 24h calculations are provided to aid interpretation for collections with a duration of 24 hours and an average daily urine volume. For specimens with notable deviations in collection time or volume, ratios of analytes to a corresponding urine creatinine concentration may assist in result interpretation.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Storage/Transport Temperature:
Refrigerated.

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 1 week; Frozen: 1 month

Reported:
1-5 days

CPT Codes:
82530; 83789

LOINC:

- 30072-3
- 2161-8
- 34909-2
- 2147-7
- 2162-6
- 19153-6
- 48767-8
- 14044-2
- 32009-3
- 30211-7
- 30511-0
- 49029-2

Notes:
Reference intervals for children are based on literature from Taylor R.L. et al., Validation of a High-Throughput Liquid Chromatography-Tandem Mass Spectrometry Method for Urine Cortisol and Cortisone. Clinical Chemistry 2002; 48:1511-19.

*The ratio of the concentrations of cortisol to cortisone will not be evaluated if the cortisol concentration is less than 5 µg/L.

Cortisone, 24 Hour Urine

CRTN

ORDERING

Available Stat:
No

Performing Lab:
Quest

Performed:
Mon-Fri

Methodology:
LC/MS/MS

Reported:
2-6 days

Additional Information:
Measurement of both Free Cortisol and Cortisone are useful in diagnosing patients with low-renin hypertension caused by apparent mineralocorticoid excess. This may be due to either an inherited defect in 11HSDB2 enzyme or an acquired inhibitor of the enzyme by such compounds as glycyrrhizic acid, a component of natural licorice.

COLLECTION

Patient Preparation:
Collect urine with 10 grams of boric acid or keep urine refrigerated during collection if preservative is not used. Record 24-hour urine volume on test requisition and urine vial. Reference ranges do not apply to random urine samples.

Sample Type:
Urine

Collect:
24-hour Urine container

Amount to Collect:
10 mL

Preferred Volume:
10 mL

Minimum Volume:
2.1 mL

Stability (from collection to initiation):
Room temperature: 4 hours
Refrigerated: 72 hours
Frozen: 1 year

Storage/Transport Temperature:
Frozen

PROCESSING

Test Code:
CRTN

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot and freeze. Note total volume on aliquot. Order Quest test code 41889N.

Preferred Volume:
10 mL

Minimum Volume:
2.1 mL

Stability (from collection to initiation):
Room temperature: 4 hours
Refrigerated: 72 hours
Frozen: 1 year

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Units:
µg/24 h

Reference Interval:
Adults: 23-195 µg/24 h

Additional Information:
Measurement of both Free Cortisol and Cortisone are useful in diagnosing patients with low-renin hypertension caused by apparent mineralocorticoid excess. This may be due to either an inherited defect in 11HSDB2 enzyme or an acquired inhibitor of the enzyme by such compounds as glycyrrhizic acid, a component of natural licorice.

ADMINISTRATIVE

CPT Codes:
83789

LOINC Codes:
14044-2

COMPLETE VIEW

Available Stat:
No

Test Code:
CRTN

Performing Lab:
Quest

Sendout:
Yes

Performed:
Mon-Fri

Methodology:
LC/MS/MS

Patient Preparation:
Collect urine with 10 grams of boric acid or keep urine refrigerated during collection if preservative is not used. Record 24-hour urine volume on test requisition and urine vial. Reference ranges do not apply to random urine samples.

Collect:
24-hour Urine container

Amount to Collect:
10 mL

Sample Type:
Urine

Preferred Volume:
10 mL

Minimum Volume:
2.1 mL

Specimen Preparation:
Aliquot and freeze. Note total volume on aliquot. Order Quest test code 41889N.

Units:
µg/24 h

Reference Interval:
Adults: 23-195 µg/24 h

Storage/Transport Temperature:
Frozen

Stability (from collection to initiation):
Room temperature: 4 hours
Refrigerated: 72 hours
Frozen: 1 year

Reported:
2-6 days

Additional Information:
Measurement of both Free Cortisol and Cortisone are useful in diagnosing patients with low-renin hypertension caused by apparent mineralocorticoid excess. This may be due to either an inherited defect in 11HSDB2 enzyme or an acquired inhibitor of the enzyme by such compounds as glycyrrhizic acid, a component of natural licorice.

CPT Codes:
83789

LOINC Codes:
14044-2

Coumadin

MOLT

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
HPLC

Reported:
Test run Monday, Wednesday, Friday. Result available: 4 to 6 days

Additional Information:
Standard method for monitoring therapeutic coumadin is the Prothrombin Time.

Synonyms:

- warfarin

COLLECTION

Sample Type:
Citrated plasma

Collect:
Blue top filled to full extent of vacuum x2

Amount to Collect:
5.4 mL blood

Preferred Volume:
3 mL plasma

Minimum Volume:
1.2 mL plasma

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

Stability (from collection to initiation):
Refrigerated 2 weeks, frozen at -20C 18 months

Unacceptable Conditions:
Room temp sample. Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected.

PROCESSING

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate or freeze sample at -20C. Order Quest Nichols test # 936N.

Preferred Volume:
3 mL plasma

Minimum Volume:
1.2 mL plasma

Unacceptable Conditions:
Room temp sample. Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected.

Stability (from collection to initiation):
Refrigerated 2 weeks, frozen at -20C 18 months

RESULT INTERPRETATION

Units:
µg/mL (mcg/mL)

Reference Interval:
1.0-10.0 ug/mL

Toxic: > 10.0 ug/mL

Additional Information:
Standard method for monitoring therapeutic coumadin is the Prothrombin Time.

ADMINISTRATIVE

CPT Codes:
80299-90

COMPLETE VIEW

Available Stat:
No

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Performing Lab:
Quest

Sendout:
Yes

Methodology:
HPLC

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

Collect:
Blue top filled to full extent of vacuum x2

Amount to Collect:
5.4 mL blood

Sample Type:
Citrated plasma

Preferred Volume:
3 mL plasma

Minimum Volume:
1.2 mL plasma

Unacceptable Conditions:
Room temp sample. Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected.

Specimen Preparation:
Refrigerate or freeze sample at -20C. Order Quest Nichols test # 936N.

Units:
µg/mL (mcg/mL)

Reference Interval:
1.0-10.0 ug/mL

Toxic: > 10.0 ug/mL

Synonyms:

- warfarin

Stability (from collection to initiation):
Refrigerated 2 weeks, frozen at -20C 18 months

Reported:
Test run Monday, Wednesday, Friday. Result available: 4 to 6 days

Additional Information:
Standard method for monitoring therapeutic coumadin is the Prothrombin Time.

CPT Codes:
80299-90

COVID-19 RNA, RT-PCR/Nucleic Acid Amplification

COV19

ORDERING

Ordering Recommendations:

Hospital Epidemiology and Infection Prevention: https://infectioncontrol.ucsfmedicalcenter.org/ucsf-health-covid-19-resources

Available Stat:

No

Performing Lab:

Microbiology, Immunology, Mission Bay, Parnassus, and Mount Zion

Performed:

Daily

Methodology:

rRT-PCR

Reported:

Inpatients/ED and high risk outpatients: < 24 hrs
Low-risk outpatients and outreach: < 72 hrs

Non-traditional sample types require pre-approval and may have extended turnaround times (see collection tab)

Please DO NOT call the laboratory for results. UCSF results will be released to APeX as soon as they are available. For outside clients, please contact your internal Clinical Laboratory, as results will be faxed directly to them.

Additional Information:

Negative results do not preclude respiratory virus infection and should not be used as the sole basis for diagnosis, treatment or other management decisions.

Fact Sheet For Patients

Fact Sheet For Providers

Please DO NOT call the laboratory for results. UCSF results will be released to APeX as soon as they are available. For outside clients, please contact your internal Clinical Laboratory, as results will be faxed directly to them.

Please see 'Collection' tab for acceptable swab and media types.

Additional general information on COVID-19 laboratory testing can be found on our COVID-19 web page.

Synonyms:

- SARS-CoV-2019
- nCoV-2019
- coronavirus
- COVID
- P371

COLLECTION

Sample Type:

- Combined Oropharyngeal/Nasopharyngeal or Oropharyngeal/Mid-turbinate nasal Swab in Transport Media, preferred
- Single Oropharyngeal or nasopharyngeal Swab in Transport Media, acceptable
- Self Collected Bilateral Anterior Nares Swab in Transport Media, accaptable (Collection must be directly observed by a healthcare provider in a clinical environment or performed by the patient unobserved after instructions are provided. Accurate results are dependent on correct sample collection, and providers should use medical judgement to determine the appropriate sampling method for their patients)
- BAL, Endotracheal Aspirate
    - Note: These samples require special processing and may have extended turnaround time; Stat processing is not possible for these sample types
- Other sample types require pre-approval and may have extended turnaround times

Collect:

- Combined Oropharyngeal/Nasopharyngeal or Oropharyngeal/Mid-turbinate nasal Swab in Transport Media, preferred
- Single Oropharyngeal or nasopharyngeal Swab in Transport Media, acceptable
- Self Collected Bilateral Anterior Nares Swab in Transport Media, accaptable (Collection must be directly observed by a healthcare provider in a clinical environment or performed by the patient unobserved after instructions are provided. Accurate results are dependent on correct sample collection, and providers should use medical judgement to determine the appropriate sampling method for their patients)
- Other samples: sterile container

If ordering a concurrent Respiratory Viral Panel, collect only one swab for both Respiratory Viral Panel and COVID-19 PCR orders. Nasopharyngeal swab will provide optimal sensitivity.

Remarks:

Collection Instructions

Note:
Flocked tip swabs are preferred, however, non-flocked tip synthetic swabs (Dacron, Rayon) are acceptable.

Swabs with cotton tips or wood shafts are NOT acceptable.

Acceptable media types include Universal Transport Medium (UTM), Viral Transport Medium (VTM), normal saline, Starswab media, Eswab, and DNA/RNA shield.

PBS is NOT acceptable.

Stability (from collection to initiation):

Refrigerated: 72 hours
Frozen (-70C): 1 month

Storage/Transport Temperature:

Refrigerated

Unacceptable Conditions:

BAL and Endotracheal aspirate samples should NOT be submitted in UTM.

PROCESSING

Test Code:

COV19

Sendout:

If in-house capacity is exceeded, testing may be sent out to an external reference laboratory.

Performing Lab:

Microbiology, Immunology, Mission Bay, Parnassus, and Mount Zion

Unacceptable Conditions:

BAL and Endotracheal aspirate samples should NOT be submitted in UTM.

Stability (from collection to initiation):

Refrigerated: 72 hours
Frozen (-70C): 1 month

Storage/Transport Temperature:

Refrigerated

RESULT INTERPRETATION

Reference Interval:

Not detected

Additional Information:

Negative results do not preclude respiratory virus infection and should not be used as the sole basis for diagnosis, treatment or other management decisions.

Fact Sheet For Patients

Fact Sheet For Providers

Please DO NOT call the laboratory for results. UCSF results will be released to APeX as soon as they are available. For outside clients, please contact your internal Clinical Laboratory, as results will be faxed directly to them.

Please see 'Collection' tab for acceptable swab and media types.

Additional general information on COVID-19 laboratory testing can be found on our COVID-19 web page.

ADMINISTRATIVE

CPT Codes:
87635

LDT or Modified FDA:
Yes (LDT)

LOINC Codes:
94310-0

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Hospital Epidemiology and Infection Prevention: https://infectioncontrol.ucsfmedicalcenter.org/ucsf-health-covid-19-resources

Test Code:
COV19

Performing Lab:
Microbiology, Immunology, Mission Bay, Parnassus, and Mount Zion

Sendout:
If in-house capacity is exceeded, testing may be sent out to an external reference laboratory.

Performed:
Daily

Methodology:
rRT-PCR

Remarks:
Collection Instructions

Note:
Flocked tip swabs are preferred, however, non-flocked tip synthetic swabs (Dacron, Rayon) are acceptable.

Swabs with cotton tips or wood shafts are NOT acceptable.

Acceptable media types include Universal Transport Medium (UTM), Viral Transport Medium (VTM), normal saline, Starswab media, Eswab, and DNA/RNA shield.

PBS is NOT acceptable.

Collect:

- Combined Oropharyngeal/Nasopharyngeal or Oropharyngeal/Mid-turbinate nasal Swab in Transport Media, preferred
- Single Oropharyngeal or nasopharyngeal Swab in Transport Media, acceptable
- Self Collected Bilateral Anterior Nares Swab in Transport Media, accaptable (Collection must be directly observed by a healthcare provider in a clinical environment or performed by the patient unobserved after instructions are provided. Accurate results are dependent on correct sample collection, and providers should use medical judgement to determine the appropriate sampling method for their patients)
- Other samples: sterile container

If ordering a concurrent Respiratory Viral Panel, collect only one swab for both Respiratory Viral Panel and COVID-19 PCR orders. Nasopharyngeal swab will provide optimal sensitivity.

Sample Type:

- Combined Oropharyngeal/Nasopharyngeal or Oropharyngeal/Mid-turbinate nasal Swab in Transport Media, preferred
- Single Oropharyngeal or nasopharyngeal Swab in Transport Media, acceptable
- Self Collected Bilateral Anterior Nares Swab in Transport Media, accaptable (Collection must be directly observed by a healthcare provider in a clinical environment or performed by the patient unobserved after instructions are provided. Accurate results are dependent on correct sample collection, and providers should use medical judgement to determine the appropriate sampling method for their patients)
- BAL, Endotracheal Aspirate
  - Note: These samples require special processing and may have extended turnaround time; Stat processing is not possible for these sample types
- Other sample types require pre-approval and may have extended turnaround times

Unacceptable Conditions:
BAL and Endotracheal aspirate samples should NOT be submitted in UTM.

Reference Interval:
Not detected

Synonyms:

- SARS-CoV-2019
- nCoV-2019
- coronavirus
- COVID
- P371

Storage/Transport Temperature:
Refrigerated

Stability (from collection to initiation):
Refrigerated: 72 hours
Frozen (-70C): 1 month

Reported:
Inpatients/ED and high risk outpatients: < 24 hrs
Low-risk outpatients and outreach: < 72 hrs

Non-traditional sample types require pre-approval and may have extended turnaround times (see collection tab)

Please DO NOT call the laboratory for results. UCSF results will be released to APeX as soon as they are available. For outside clients, please contact your internal Clinical Laboratory, as results will be faxed directly to them.

Additional Information:
Negative results do not preclude respiratory virus infection and should not be used as the sole basis for diagnosis, treatment or other management decisions.

Fact Sheet For Patients

Fact Sheet For Providers

Please DO NOT call the laboratory for results. UCSF results will be released to APeX as soon as they are available. For outside clients, please contact your internal Clinical Laboratory, as results will be faxed directly to them.

Please see 'Collection' tab for acceptable swab and media types.

Additional general information on COVID-19 laboratory testing can be found on our COVID-19 web page.

CPT Codes:
87635

LDT or Modified FDA:
Yes (LDT)

LOINC Codes:
94310-0

Coxiella burnetii Antibodies, IgG & IgM

QFEV

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
IFA

Reported:
Test run Tuesday and Friday. Turnaround time: 3-6 days.

Additional Information:
This test includes both IgM and IgG antibodies to both phase I and II antigens and offers greater sensitivity than the formerly used CF test; the phase II IgG antibody corresponds most closely to the antibody detected in the latter.

The ratio of phase II to phase I antibodies is commonly > 1 in acute infection, is usually =1 in granulomatous hepatitis, and if < 1 suggests chronic infection such as endocarditis. Submit paired sera, one collected within 1 wk of onset of illness and another 2-3 weeks later; occasional patients will not show a rise in IgG phase II titer rise for 4-6 weeks, especially if antibiotic therapy has been given. IgM antibodies develop earlier and last a few weeks to a few months, whereas IgG antibodies may last for life. Although a single IgM titer of > 256 is highly suggestive of acute infection, diagnosis is most reliable when based on a titer increase of at least 4-fold. Testing a single serum is sufficient for periodic monitoring of employees by Employee Health.

Reflex Testing:
If screen is positive the titers will be performed at an additional charge.

Synonyms:

- Q fever antibodies

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

PROCESSING

Test Code:
QFEV

Test Group:
Q fever

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate serum. Order Quest # 4085N.

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

RESULT INTERPRETATION

Units:
Titer

Reference Interval:
Negative titer < 16

Additional Information:
This test includes both IgM and IgG antibodies to both phase I and II antigens and offers greater sensitivity than the formerly used CF test; the phase II IgG antibody corresponds most closely to the antibody detected in the latter.

The ratio of phase II to phase I antibodies is commonly > 1 in acute infection, is usually =1 in granulomatous hepatitis, and if < 1 suggests chronic infection such as endocarditis. Submit paired sera, one collected within 1 wk of onset of illness and another 2-3 weeks later; occasional patients will not show a rise in IgG phase II titer rise for 4-6 weeks, especially if antibiotic therapy has been given. IgM antibodies develop earlier and last a few weeks to a few months, whereas IgG antibodies may last for life. Although a single IgM titer of > 256 is highly suggestive of acute infection, diagnosis is most reliable when based on a titer increase of at least 4-fold. Testing a single serum is sufficient for periodic monitoring of employees by Employee Health.

ADMINISTRATIVE

CPT Codes:
86638-90 x 4

LOINC Codes:
22211-7

COMPLETE VIEW

Available Stat:
No

Test Code:
QFEV

Test Group:
Q fever

Performing Lab:
Quest

Sendout:
Yes

Methodology:
IFA

Collect:
Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Specimen Preparation:
Refrigerate serum. Order Quest # 4085N.

Units:
Titer

Reference Interval:
Negative titer < 16

Synonyms:

- Q fever antibodies

Reported:
Test run Tuesday and Friday. Turnaround time: 3-6 days.

Reflex Testing:
If screen is positive the titers will be performed at an additional charge.

Additional Information:

This test includes both IgM and IgG antibodies to both phase I and II antigens and offers greater sensitivity than the formerly used CF test; the phase II IgG antibody corresponds most closely to the antibody detected in the latter.

The ratio of phase II to phase I antibodies is commonly > 1 in acute infection, is usually =1 in granulomatous hepatitis, and if < 1 suggests chronic infection such as endocarditis. Submit paired sera, one collected within 1 wk of onset of illness and another 2-3 weeks later; occasional patients will not show a rise in IgG phase II titer rise for 4-6 weeks, especially if antibiotic therapy has been given. IgM antibodies develop earlier and last a few weeks to a few months, whereas IgG antibodies may last for life. Although a single IgM titer of > 256 is highly suggestive of acute infection, diagnosis is most reliable when based on a titer increase of at least 4-fold. Testing a single serum is sufficient for periodic monitoring of employees by Employee Health.

CPT Codes:

86638-90 x 4

LOINC Codes:

22211-7

C-Reactive protein, Highly Sensitive, Serum / Plasma

CRPH

ORDERING

Available Stat:
No

Performing Lab:
Chemistry - Parnassus and Mission Bay

Performed:
24 hours per day 7 days per week

Methodology:
Turbidimetric/Immunoturbidimetric

Reported:
4 hours

Additional Information:
This CRP assay is a high sensitivity method that can be used for assessment of cardiovascular risk as well as for assessment of inflammation associated with other clinical conditions. When testing for clinical purposes other than CV risk assessment, a reference range cutoff of 5 mg/L for adults is recommended

Tertile risk is based on recommendations from the Centers for Disease Control and Prevention and the American Heart Association in Pearson TA, et al. Markers of inflammation and cardiovascular disease. Application to clinical and public health practice. Circulation 107:499-511, 2003.

This assay is alleged to predict an increased risk of cardiovascular and cerebrovascular events in patients with elevated CRP levels relative to "baseline" CRP in patients without these diseases.

Relative risk is approximately 2-4 fold in men and 2-7 fold in women; the level of risk correlates with the degree of CRP elevation. Relative risk of cardiovascular events predicted by CRP determination is independent of serum cholesterol/HDL levels. Patients with elevated total cholesterol/HDL ratios plus higher serum CRP are at further increased risk of cardiovascular events compared to patients with either risk factor alone. Hence these two assays should be used together to determine overall cardiovascular risk.

Risk of ischemic stroke is believed to be best predicted by CRP testing alone.

"Normal" baseline CRP levels are directly related to age, with values of approximately 0.4 mg/L considered normal for ages 20-50 years, while 1.3 mg/L for ages 50-80. Use of this test to predict cardiovascular/stroke risk must be done in context with other clinical parameters.

The absolute relative risk as a function of CRP levels has not been extensively validated. Treatment of patients with elevated CRP levels, using statins and prophylactic ASA, has been shown to reduce cardiovascular risk.

Underlying tumor or inflammatory illness, including drug reactions or infections, may cause CRP elevation unrelated to the risk of cardiovascular disease; specimens should be obtained at least two weeks after the resolution of any acute inflammatory condition.

Synonyms:

- CRPhs
- cardiac CRP
- cardio CRP
- hsCRP

COLLECTION

Sample Type:
Serum or plasma

Collect:
Light green top preferred, gold top acceptable

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

PROCESSING

Test Code:
CRPH

Performing Lab:
Chemistry - Parnassus and Mission Bay

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

RESULT INTERPRETATION

Units:
mg/L

Reference Interval:

Tertile	CRP mg/L	Cardiovascular Risk
1	< 1.0	Low
2	1.0-3.0	Moderate
3	> 3.0	High

Additional Information:
This CRP assay is a high sensitivity method that can be used for assessment of cardiovascular risk as well as for assessment of inflammation associated with other clinical conditions. When testing for clinical purposes other than CV risk assessment, a reference range cutoff of 5 mg/L for adults is recommended

Tertile risk is based on recommendations from the Centers for Disease Control and Prevention and the American Heart Association in Pearson TA, et al. Markers of inflammation and cardiovascular disease. Application to clinical and public health practice. Circulation 107:499-511, 2003.

This assay is alleged to predict an increased risk of cardiovascular and cerebrovascular events in patients with elevated CRP levels relative to "baseline" CRP in patients without these diseases.

Relative risk is approximately 2-4 fold in men and 2-7 fold in women; the level of risk correlates with the degree of CRP elevation. Relative risk of cardiovascular events predicted by CRP determination is independent of serum cholesterol/HDL levels. Patients with elevated total cholesterol/HDL ratios plus higher serum CRP are at further increased risk of cardiovascular events compared to patients with either risk factor alone. Hence these two assays should be used together to determine overall cardiovascular risk.

Risk of ischemic stroke is believed to be best predicted by CRP testing alone.

"Normal" baseline CRP levels are directly related to age, with values of approximately 0.4 mg/L considered normal for ages 20-50 years, while 1.3 mg/L for ages 50-80. Use of this test to predict cardiovascular/stroke risk must be done in context with other clinical parameters.

The absolute relative risk as a function of CRP levels has not been extensively validated. Treatment of patients with elevated CRP levels, using statins and prophylactic ASA, has been shown to reduce cardiovascular risk.

Underlying tumor or inflammatory illness, including drug reactions or infections, may cause CRP elevation unrelated to the risk of cardiovascular disease; specimens should be obtained at least two weeks after the resolution of any acute inflammatory condition.

ADMINISTRATIVE

CPT Codes:
86141

LOINC Codes:
1988-5

COMPLETE VIEW

Available Stat:
No

Test Code:
CRPH

Performing Lab:
Chemistry - Parnassus and Mission Bay

Performed:
24 hours per day 7 days per week

Methodology:
Turbidimetric/Immunoturbidimetric

Collect:
Light green top preferred, gold top acceptable

Amount to Collect:
1 mL blood

Sample Type:
Serum or plasma

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Units:
mg/L

Reference Interval:

Tertile	CRP mg/L	Cardiovascular Risk
1	< 1.0	Low
2	1.0-3.0	Moderate
3	> 3.0	High

Synonyms:

- CRPhs
- cardiac CRP
- cardio CRP
- hsCRP

Reported:
4 hours

Additional Information:
This CRP assay is a high sensitivity method that can be used for assessment of cardiovascular risk as well as for assessment of inflammation associated with other clinical conditions. When testing for clinical purposes other than CV risk assessment, a reference range cutoff of 5 mg/L for adults is recommended

Tertile risk is based on recommendations from the Centers for Disease Control and Prevention and the American Heart Association in Pearson TA, et al. Markers of inflammation and cardiovascular disease. Application to clinical and public health practice. Circulation 107:499-511, 2003.

This assay is alleged to predict an increased risk of cardiovascular and cerebrovascular events in patients with elevated CRP levels relative to "baseline" CRP in patients without these diseases.

Relative risk is approximately 2-4 fold in men and 2-7 fold in women; the level of risk correlates with the degree of CRP elevation. Relative risk of cardiovascular events predicted by CRP determination is independent of serum cholesterol/HDL levels. Patients with elevated total cholesterol/HDL ratios plus higher serum CRP are at further increased risk of cardiovascular events compared to patients with either risk factor alone. Hence these two assays should be used together to determine overall cardiovascular risk.

Risk of ischemic stroke is believed to be best predicted by CRP testing alone.

"Normal" baseline CRP levels are directly related to age, with values of approximately 0.4 mg/L considered normal for ages 20-50 years, while 1.3 mg/L for ages 50-80. Use of this test to predict cardiovascular/stroke risk must be done in context with other clinical parameters.

The absolute relative risk as a function of CRP levels has not been extensively validated. Treatment of patients with elevated CRP levels, using statins and prophylactic ASA, has been shown to reduce cardiovascular risk.

Underlying tumor or inflammatory illness, including drug reactions or infections, may cause CRP elevation unrelated to the risk of cardiovascular disease; specimens should be obtained at least two weeks after the resolution of any acute inflammatory condition.

CPT Codes:
86141

LOINC Codes:
1988-5

C-Reactive Protein, Serum / Plasma

CRP

ORDERING

Available Stat:
Yes

Performing Lab:
Chemistry - Parnassus and Mission Bay

Performed:
24 hours per day 7 days per week

Methodology:
Turbidimetric/Immunoturbidimetric

Reported:
4 hours

Additional Information:
This CRP assay is a high sensitivity method that can be used for assessment of cardiovascular risk as well as for assessment of inflammation associated with other clinical conditions.

Tertile	CRP mg/L	Cardiovascular Risk
1	< 1.0	Low
2	1.0 - 3.0	Moderate
3	> 3.0	High

Patients with persistently unexplained CRP levels above 10 mg/L should be evaluated for noncardiovascular etiologies.

Synonyms:

- CRP

COLLECTION

Sample Type:
Serum or plasma

Collect:
Light green top preferred, gold top acceptable

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

PROCESSING

Test Code:
CRP

Performing Lab:
Chemistry - Parnassus and Mission Bay

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

RESULT INTERPRETATION

Units:
mg/L

Reference Interval:

Age	mg/L
0 to 14 days	0.3-6.1
15 days to <15 years	0.1-1.0
15 to <18 years	0.1-1.7
>=18 years	<=5

Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, https://caliper.research.sickkids.ca/#/

UCSF Clinical Labs verified the adult reference range stated in the Abbott Vario CRP package insert (August 2015) by running 20 male and 20 female lab volunteers.

Additional Information:

This CRP assay is a high sensitivity method that can be used for assessment of cardiovascular risk as well as for assessment of inflammation associated with other clinical conditions.

Tertile	CRP mg/L	Cardiovascular Risk
1	< 1.0	Low
2	1.0 - 3.0	Moderate
3	> 3.0	High

Patients with persistently unexplained CRP levels above 10 mg/L should be evaluated for noncardiovascular etiologies.

ADMINISTRATIVE

CPT Codes:
86140

LOINC Codes:
1988-5

COMPLETE VIEW

Available Stat:
Yes

Test Code:
CRP

Performing Lab:
Chemistry - Parnassus and Mission Bay

Performed:
24 hours per day 7 days per week

Methodology:
Turbidimetric/Immunoturbidimetric

Collect:
Light green top preferred, gold top acceptable

Amount to Collect:
1 mL blood

Sample Type:
Serum or plasma

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Units:
mg/L

Reference Interval:

Age	mg/L
0 to 14 days	0.3-6.1
15 days to <15 years	0.1-1.0
15 to <18 years	0.1-1.7
>=18 years	<=5

Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, https://caliper.research.sickkids.ca/#/

UCSF Clinical Labs verified the adult reference range stated in the Abbott Vario CRP package insert (August 2015) by running 20 male and 20 female lab volunteers.

Synonyms:

- CRP

Reported:

4 hours

Additional Information:

This CRP assay is a high sensitivity method that can be used for assessment of cardiovascular risk as well as for assessment of inflammation associated with other clinical conditions.

Tertile	CRP mg/L	Cardiovascular Risk
1	< 1.0	Low
2	1.0 - 3.0	Moderate
3	> 3.0	High

Patients with persistently unexplained CRP levels above 10 mg/L should be evaluated for noncardiovascular etiologies.

CPT Codes:

86140

LOINC Codes:

1988-5

Creatine Disorders Panel, Serum or Plasma

CDPSP

ORDERING

Ordering Recommendations:
Initial test to diagnose or rule out creatine deficiency syndromes following clinical presentation. Order Creatine Disorders Panel, Urine (2002333), simultaneously for proper result interpretation.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Mon, Thu

Methodology:
Liquid Chromatography-Tandem Mass Spectrometry

Reported:
2-9 days

Synonyms:

- GAA & Creatine
- AGAT
- Creatine, Plasma
- Creatinine, plasma
- GAA + Creatine
- GAMT
- Guanidinoacetic Acid and Creatine
- Guanidinoacetic Acid + Creatine
- Guanidinoacetic acid, plasma
- GAA & Creatine

COLLECTION

Collect:
Green (sodium or lithium heparin), lavender (K2EDTA), plain red, or serum separator tube (SST).

Remarks:
Clinical information is needed for appropriate interpretation. Additional required information includes age, gender, diet (e.g., TPN therapy), drug therapy, and family history. Biochemical Genetics Patient History Form is available on the ARUP Web site at http://www.aruplab.com/patienthistory or by contacting ARUP Client Services.

Stability (from collection to initiation):
Ambient: 6 hours; Refrigerated: 1 week; Frozen: 6 months (Three freeze/thaw cycles are acceptable.)

Storage/Transport Temperature:
Frozen.

PROCESSING

Test Code:
CDPSP

ARUP Test Code:
2002328

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate from cells within 6 hours of collection. Transfer 1 mL serum or plasma to an ARUP standard transport tube and freeze immediately. (Min: 0.2 mL)

Stability (from collection to initiation):
Ambient: 6 hours; Refrigerated: 1 week; Frozen: 6 months (Three freeze/thaw cycles are acceptable.)

Storage/Transport Temperature:
Frozen.

RESULT INTERPRETATION

Reference Interval:
Refer to Report

ADMINISTRATIVE

CPT Codes:
82540; 82542

LOINC:

- 33244-5
- 15045-8

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Initial test to diagnose or rule out creatine deficiency syndromes following clinical presentation. Order Creatine Disorders Panel, Urine (2002333), simultaneously for proper result interpretation.

Test Code:
CDPSP

ARUP Test Code:
2002328

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Mon, Thu

Methodology:
Liquid Chromatography-Tandem Mass Spectrometry

Remarks:
Clinical information is needed for appropriate interpretation. Additional required information includes age, gender, diet (e.g., TPN therapy), drug therapy, and family history. Biochemical Genetics Patient History Form is available on the ARUP Web site at http://www.aruplab.com/patienthistory or by contacting ARUP Client Services.

Collect:
Green (sodium or lithium heparin), lavender (K2EDTA), plain red, or serum separator tube (SST).

Specimen Preparation:
Separate from cells within 6 hours of collection. Transfer 1 mL serum or plasma to an ARUP standard transport tube and freeze immediately. (Min: 0.2 mL)

Reference Interval:
Refer to Report

Synonyms:

- GAA & Creatine
- AGAT
- Creatine, Plasma
- Creatinine, plasma
- GAA + Creatine
- GAMT
- Guanidinoacetic Acid and Creatine
- Guanidinoacetic Acid + Creatine
- Guanidinoacetic acid, plasma
- GAA & Creatine

Storage/Transport Temperature:
Frozen.

Stability (from collection to initiation):
Ambient: 6 hours; Refrigerated: 1 week; Frozen: 6 months (Three freeze/thaw cycles are acceptable.)

Reported:
2-9 days

CPT Codes:
82540; 82542

LOINC:

- 33244-5
- 15045-8

Creatine Disorders Panel, Urine

CDPU

ORDERING

Ordering Recommendations:
Initial test to diagnose or rule out creatine deficiency syndromes following clinical presentation. Order Creatine Disorders Panel, Serum or Plasma (2002328), simultaneously for proper result interpretation.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Mon, Thu

Methodology:
Liquid Chromatography-Tandem Mass Spectrometry

Reported:
2-9 days

Synonyms:

- GAA & Creatine
- Guanidnoacetic Acid & Creatine
- AGAT
- GAA + Creatine
- GAMT
- Guanidinoacetic Acid + Creatine
- Guanidnoacetic Acid & Creatine
- GAA & Creatine

COLLECTION

Collect:
Random urine.

Remarks:
Clinical information is needed for appropriate interpretation. Additional required information includes age, gender, diet (e.g., TPN therapy), drug therapy, and family history. Biochemical Genetics Patient History Form is available on the ARUP Web site at http://www.aruplab.com/patienthistory or by contacting ARUP Client Services.

Stability (from collection to initiation):
Ambient: 6 hours; Refrigerated: 24 hours; Frozen: 6 months (Three freeze/thaw cycles are acceptable.)

Storage/Transport Temperature:
Frozen.

PROCESSING

Test Code:
CDPU

ARUP Test Code:
2002333

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transfer 2 mL urine to an ARUP standard transport tube and freeze immediately. (Min: 0.5 mL)

Stability (from collection to initiation):
Ambient: 6 hours; Refrigerated: 24 hours; Frozen: 6 months (Three freeze/thaw cycles are acceptable.)

Storage/Transport Temperature:
Frozen.

RESULT INTERPRETATION

Reference Interval:
Refer to report

ADMINISTRATIVE

CPT Codes:
82540; 82570; 82542

LOINC:

- 15046-6
- 34155-2
- 34275-8
- 14683-7

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Initial test to diagnose or rule out creatine deficiency syndromes following clinical presentation. Order Creatine Disorders Panel, Serum or Plasma (2002328), simultaneously for proper result interpretation.

Test Code:
CDPU

ARUP Test Code:
2002333

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Mon, Thu

Methodology:
Liquid Chromatography-Tandem Mass Spectrometry

Remarks:
Clinical information is needed for appropriate interpretation. Additional required information includes age, gender, diet (e.g., TPN therapy), drug therapy, and family history. Biochemical Genetics Patient History Form is available on the ARUP Web site at http://www.aruplab.com/patienthistory or by contacting ARUP Client Services.

Collect:
Random urine.

Specimen Preparation:
Transfer 2 mL urine to an ARUP standard transport tube and freeze immediately. (Min: 0.5 mL)

Reference Interval:
Refer to report

Synonyms:

- GAA & Creatine
- Guanidnoacetic Acid & Creatine
- AGAT
- GAA + Creatine
- GAMT
- Guanidinoacetic Acid + Creatine
- Guanidnoacetic Acid & Creatine
- GAA & Creatine

Storage/Transport Temperature:
Frozen.

Stability (from collection to initiation):
Ambient: 6 hours; Refrigerated: 24 hours; Frozen: 6 months (Three freeze/thaw cycles are acceptable.)

Reported:
2-9 days

CPT Codes:
82540; 82570; 82542

LOINC:

- 15046-6
- 34155-2
- 34275-8
- 14683-7

Creatine kinase - MB fraction

MBMU

ORDERING

Ordering Recommendations:
This test has been virtually replaced clinically with the Troponin I test and should not be ordered except in unusual circumstances.

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Chemiluminescent microparticle immunoassay (CMIA)

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
Order CK, Total separately, if desired.

Synonyms:

- Creatine kinase muscle/brain
- Creatine kinase cardiac specific
- CKi
- CK isoenzymes
- MB
- Creatine phosphokinase
- CKMB
- CK-MB
- CK MB

COLLECTION

Sample Type:
Plasma, Serum

Collect:
Light Green top, Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.5 mL serum or plasma

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 72 hours, frozen -20C 1 month

PROCESSING

Test Code:
MBMU

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.5 mL serum or plasma

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 72 hours, frozen -20C 1 month

RESULT INTERPRETATION

Units:
µg/L

Reference Interval:
0.6 - 6.3 µg/L

Additional Information:
Order CK, Total separately, if desired.

ADMINISTRATIVE

CPT Codes:
82553

LOINC Codes:
13969-1

COMPLETE VIEW

Available Stat:
Yes

Ordering Recommendations:
This test has been virtually replaced clinically with the Troponin I test and should not be ordered except in unusual circumstances.

Test Code:
MBMU

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Chemiluminescent microparticle immunoassay (CMIA)

Collect:
Light Green top, Gold top

Amount to Collect:
2 mL blood

Sample Type:
Plasma, Serum

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.5 mL serum or plasma

Units:
µg/L

Reference Interval:
0.6 - 6.3 µg/L

Synonyms:

- Creatine kinase muscle/brain
- Creatine kinase cardiac specific
- CKi
- CK isoenzymes
- MB
- Creatine phosphokinase
- CKMB
- CK-MB
- CK MB

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 72 hours, frozen -20C 1 month

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
Order CK, Total separately, if desired.

CPT Codes:
82553

LOINC Codes:
13969-1

Creatine kinase, Total, Plasma / Serum

CK

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
NAC (*N*-acetyl-*L*-cysteine)

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
Levels are increased by IM injection or exercise. Hemolysis may artifactually increase the result.

Synonyms:

- CPK
- CK
- Creatine phosphokinase

COLLECTION

Sample Type:
Plasma or serum

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 7 days

PROCESSING

Test Code:
CK

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 7 days

RESULT INTERPRETATION

Units:
U/L

Reference Interval:

Age	Male (U/L)	Female (U/L)
0 to 4 years	41-277	34-204
5 to 9 years	54-269	44-189
10 to 14 years	38-255	28-170
>=15 years	50-388	37-241

Additional Information:
Levels are increased by IM injection or exercise. Hemolysis may artifactually increase the result.

ADMINISTRATIVE

CPT Codes:
82550

LOINC Codes:
2157-6

COMPLETE VIEW

Available Stat:
Yes

Test Code:
CK

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
NAC (*N*-acetyl-*L*-cysteine)

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
1 mL blood

Sample Type:
Plasma or serum

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Units:
U/L

Reference Interval:

Age	Male (U/L)	Female (U/L)
0 to 4 years	41-277	34-204
5 to 9 years	54-269	44-189
10 to 14 years	38-255	28-170
>=15 years	50-388	37-241

Synonyms:

- CPK
- CK
- Creatine phosphokinase

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 7 days

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
Levels are increased by IM injection or exercise. Hemolysis may artifactually increase the result.

CPT Codes:
82550

LOINC Codes:
2157-6

Creatinine Clearance

CRCL

ORDERING

Available Stat:
No

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 7 days per week from 8:00 AM to midnight only.

Methodology:
Enzymatic assay on Abbott Architect c8000. Calibration traceable to National Institute of Standards and Technology (NIST) Standard Reference Material (SRM) 967. (Isotope dilution mass spec (IDMS) standardization).

Reported:
4 hours

Additional Information:
Note: Clearances are often inaccurate because of incomplete urine collection. A 4- or 6-hour collection is likely to be more complete than the classic 24 hour test, but extrapolation of results from shortened collections may not be accurate.

GFR can also be estimated from serum creatinine measurements without the need for urine creatinine measurements. See the laboratory manual entry on serum creatinine for details on estimating GFR from serum creatinine results.

COLLECTION

Sample Type:
24 hour urine collection or timed urine **AND** serum

Collect:
Urine
Preferred: Plain Container
Acceptable: Amber Container, Acid Wash Container, 30mL 6N HCL, 10g Boric Acid

Serum/Plasma
Preferred: Light Green Top
Acceptable: Gold Top

Amount to Collect:
Entire 24 hour urine output and 2 mL blood (Gold top)

Preferred Volume:
Urine: Complete collection
Serum: 1 mL serum

Minimum Volume:
Urine: Complete collection
Serum: 0.2 mL serum

Remarks:
Submit serum (Gold top) drawn within 24 hours of urine collection-preferably within the interval of collection.

Give the weight in kg and height in cm of the patient if a corrected clearance is needed.

Refrigerate the collection container during the collection period.

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 6 days, frozen at -20C 6 months

Unacceptable Conditions:
Container not refrigerated during collection

PROCESSING

Test Code:
CRCL

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
Urine: Complete collection
Serum: 1 mL serum

Minimum Volume:
Urine: Complete collection
Serum: 0.2 mL serum

Unacceptable Conditions:
Container not refrigerated during collection

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 6 days, frozen at -20C 6 months

RESULT INTERPRETATION

Units:
mL/min/1.73 m^2

Reference Interval:

Age	Male and Female
0-7 days	17-60 mL/min/1.73 m^2
8-30 days	26-68 mL/min/1.73 m^2
1-2 months	30-86 mL/min/1.73 m^2
3-5 months	39-114 mL/min/1.73 m^2
6-11 months	49-157 mL/min/1.73 m^2
12-23 months	62-191 mL/min/1.73 m^2
2-12 years	89-165 mL/min/1.73 m^2

Age	Male	Female
13-18 years	88-146 mL/min/1.73 m^2	81-134 mL/min/1.73 m^2
>18 years	60-150 mL/min/1.73 m^2	60-150 mL/min/1.73 m^2

Pediatric reference ranges from Holliday, Malcolm A; Barratt, T. Martin and Vernier, Robert L. Pediatric Nephrology, 2nd edition Williams & Wilkins and Edelmann, Chester M. Jr. Pediatric Kidney Disease vol 1, Little Brown & Company, Boston MA. Adult reference ranges adopted from Junge et al, Clinica Chimica Acta, 2004, 344:137-148.

Additional Information:
Note: Clearances are often inaccurate because of incomplete urine collection. A 4- or 6-hour collection is likely to be more complete than the classic 24 hour test, but extrapolation of results from shortened collections may not be accurate.

GFR can also be estimated from serum creatinine measurements without the need for urine creatinine measurements. See the laboratory manual entry on serum creatinine for details on estimating GFR from serum creatinine results.

ADMINISTRATIVE

CPT Codes:
82575

LOINC Codes:
2164-2

COMPLETE VIEW

Available Stat:
No

Test Code:
CRCL

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 7 days per week from 8:00 AM to midnight only.

Methodology:
Enzymatic assay on Abbott Architect c8000. Calibration traceable to National Institute of Standards and Technology (NIST) Standard Reference Material (SRM) 967. (Isotope dilution mass spec (IDMS) standardization).

Remarks:
Submit serum (Gold top) drawn within 24 hours of urine collection-preferably within the interval of collection.

Give the weight in kg and height in cm of the patient if a corrected clearance is needed.

Refrigerate the collection container during the collection period.

Collect:
Urine
Preferred: Plain Container
Acceptable: Amber Container, Acid Wash Container, 30mL 6N HCL, 10g Boric Acid

Serum/Plasma
Preferred: Light Green Top
Acceptable: Gold Top

Amount to Collect:
Entire 24 hour urine output and 2 mL blood (Gold top)

Sample Type:
24 hour urine collection or timed urine **AND** serum

Preferred Volume:
Urine: Complete collection
Serum: 1 mL serum

Minimum Volume:
Urine: Complete collection
Serum: 0.2 mL serum

Unacceptable Conditions:
Container not refrigerated during collection

Units:
mL/min/1.73 m^2

Reference Interval:

Age	Male and Female
0-7 days	17-60 mL/min/1.73 m^2
8-30 days	26-68 mL/min/1.73 m^2
1-2 months	30-86 mL/min/1.73 m^2
3-5 months	39-114 mL/min/1.73 m^2
6-11 months	49-157 mL/min/1.73 m^2
12-23 months	62-191 mL/min/1.73 m^2
2-12 years	89-165 mL/min/1.73 m^2

Age	Male	Female
13-18 years	88-146 mL/min/1.73 m^2	81-134 mL/min/1.73 m^2
>18 years	60-150 mL/min/1.73 m^2	60-150 mL/min/1.73 m^2

Pediatric reference ranges from Holliday, Malcolm A; Barratt, T. Martin and Vernier, Robert L. Pediatric Nephrology, 2nd edition Williams & Wilkins and Edelmann, Chester M. Jr. Pediatric Kidney Disease vol 1, Little Brown & Company, Boston MA. Adult reference ranges adopted from Junge et al, Clinica Chimica Acta, 2004, 344:137-148.

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 6 days, frozen at -20C 6 months

Reported:
4 hours

Additional Information:
Note: Clearances are often inaccurate because of incomplete urine collection. A 4- or 6-hour collection is likely to be more complete than the classic 24 hour test, but extrapolation of results from shortened collections may not be accurate.

GFR can also be estimated from serum creatinine measurements without the need for urine creatinine measurements. See the laboratory manual entry on serum creatinine for details on estimating GFR from serum creatinine results.

CPT Codes:
82575

LOINC Codes:
2164-2

Creatinine, 24 hour (or timed) urine

CRU

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay, and Mt. Zion Chemistry

Performed:
Test available 7 days per week from 8:00 AM to midnight only.

Methodology:
Enzymatic assay on Abbott Architect c8000. Calibration traceable to National Institute of Standards and Technology (NIST) Standard Reference Material (SRM) 967. (Isotope dilution mass spec (IDMS) standardization).

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
To convert mg/kg/d to µmol/kg/d (SI units) multiply by 8.84. Output varies with the diet and weight.

Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

COLLECTION

Sample Type:
Timed urine collection

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container, 30mL 6N HCL, 10g Boric Acid

Amount to Collect:
Entire urine output during collection period

Preferred Volume:
1 mL urine

Minimum Volume:
0.2 mL urine

Remarks:
Include the patient's weight in kg on the request slip.

Note that the minimum acceptable time period for a 'timed' collection is 6 hours.

Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 6 days, frozen at -20C 6 months

PROCESSING

Test Code:
CRU

Test Group:
Creatinine

Performing Lab:
Parnassus, Mission Bay, and Mt. Zion Chemistry

Preferred Volume:
1 mL urine

Minimum Volume:
0.2 mL urine

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 6 days, frozen at -20C 6 months

RESULT INTERPRETATION

Units:
mg/kg/D

Reference Interval:
Age (years):

< 1	8-20 mg/kg/D
1-11	8-22 mg/kg/D
12-15	8-30 mg/kg/D
Male 16-89 years	11-28 mg/kg/D
Female 16-89 years	10-25 mg/kg/D
> 90 years	> 9 mg/kg/D

Pediatric and >90 years reference ranges adopted from Tietz Fundamentals of Clinical Chemistry, 5th Edition. Adult reference ranges for ages 16-89 adopted from Junge et al, Clinica Chimica Acta, 2004, 344:137-148

Additional Information:
To convert mg/kg/d to µmol/kg/d (SI units) multiply by 8.84. Output varies with the diet and weight.

Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

ADMINISTRATIVE

CPT Codes:
82570

COMPLETE VIEW

Available Stat:
Yes

Test Code:
CRU

Test Group:
Creatinine

Performing Lab:
Parnassus, Mission Bay, and Mt. Zion Chemistry

Performed:
Test available 7 days per week from 8:00 AM to midnight only.

Methodology:
Enzymatic assay on Abbott Architect c8000. Calibration traceable to National Institute of Standards and Technology (NIST) Standard Reference Material (SRM) 967. (Isotope dilution mass spec (IDMS) standardization).

Remarks:
Include the patient's weight in kg on the request slip.

Note that the minimum acceptable time period for a 'timed' collection is 6 hours.

Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container, 30mL 6N HCL, 10g Boric Acid

Amount to Collect:
Entire urine output during collection period

Sample Type:
Timed urine collection

Preferred Volume:
1 mL urine

Minimum Volume:
0.2 mL urine

Units:
mg/kg/D

Reference Interval:

Age (years):

< 1	8-20 mg/kg/D
1-11	8-22 mg/kg/D
12-15	8-30 mg/kg/D
Male 16-89 years	11-28 mg/kg/D
Female 16-89 years	10-25 mg/kg/D
> 90 years	> 9 mg/kg/D

Pediatric and >90 years reference ranges adopted from Tietz Fundamentals of Clinical Chemistry, 5th Edition. Adult reference ranges for ages 16-89 adopted from Junge et al, Clinica Chimica Acta, 2004, 344:137-148

Stability (from collection to initiation):

Room temperature 2 days, refrigerated 6 days, frozen at -20C 6 months

Reported:

STAT 1 hour, Routine 4 hours

Additional Information:

To convert mg/kg/d to µmol/kg/d (SI units) multiply by 8.84. Output varies with the diet and weight.

Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

CPT Codes:

82570

Creatinine, Body Fluid

CRB

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Enzymatic assay on Abbott Architect c8000. Calibration traceable to National Institute of Standards and Technology (NIST) Standard Reference Material (SRM) 967. (Isotope dilution mass spec (IDMS) standardization).

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context.

COLLECTION

Sample Type:
Body Fluid

Collect:
Clean, empty container OR red top (no additives)
Note: Do NOT collect in red top with clot activator (silicone coated).

Amount to Collect:
5 mL fluid

Preferred Volume:
1 mL fluid

Minimum Volume:
0.2 mL fluid

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 6 days, frozen at -20C 6 months

PROCESSING

Test Code:
CRB

Test Group:
Creatinine

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
1 mL fluid

Minimum Volume:
0.2 mL fluid

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 6 days, frozen at -20C 6 months

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:
None established. If urine leakage into a body cavity has occurred, the concentration of creatinine in the body fluid may be within the concentration range of creatinine found in urine. Random urine creatinine concentrations are typically between 80 mg/dL to 150 mg/dL and can range from approximately 20 mg/dL to 300 mg/dL (see Barr, DB et al. Environmental Health Perspectives 113:192-200, 2005).

Additional Information:
Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context.

ADMINISTRATIVE

CPT Codes:
82570

LOINC Codes:
12190-5

COMPLETE VIEW

Available Stat:
Yes

Test Code:
CRB

Test Group:
Creatinine

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Enzymatic assay on Abbott Architect c8000. Calibration traceable to National Institute of Standards and Technology (NIST) Standard Reference Material (SRM) 967. (Isotope dilution mass spec (IDMS) standardization).

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Collect:
Clean, empty container OR red top (no additives)
Note: Do NOT collect in red top with clot activator (silicone coated).

Amount to Collect:
5 mL fluid

Sample Type:
Body Fluid

Preferred Volume:
1 mL fluid

Minimum Volume:
0.2 mL fluid

Units:
mg/dL

Reference Interval:
None established. If urine leakage into a body cavity has occurred, the concentration of creatinine in the body fluid may be within the concentration range of creatinine found in urine. Random urine creatinine concentrations are typically between 80 mg/dL to 150 mg/dL and can range from approximately 20 mg/dL to 300 mg/dL (see Barr, DB et al. Environmental Health Perspectives 113:192-200, 2005).

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 6 days, frozen at -20C 6 months

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context.

CPT Codes:
82570

LOINC Codes:
12190-5

Creatinine, Plasma / Serum

CRG

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Chemistry: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center (Mon-Fri 0800-1630)

Methodology:
Parnassus, Mission Bay & Mt. Zion Chemistry: Enzymatic assay on Abbott Architect
Berkeley Outpatient Center: Enzymatic assay on Roche cobas c311

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
In patients receiving catecholamine infusions (e.g., dopamine, dobutamine, norepinephrine, or epinephrine), falsely low serum/plasma creatinine results can occur with this enzymatic creatinine assay when blood is sampled through an indwelling catheter. In these cases, accurate measurements of creatinine can be obtained by testing blood samples obtained by venipuncture instead of through an indwelling catheter (based on in-house studies and Saenger AK, Clinical Chemistry 2009, vol 55:9 1732-1736).

To convert mg/dL to µmol/L (SI units) multiply by 88.4.

Estimated GFR (eGFRcr) is reported with serum creatinine results in adults and is determined using the CKD-EPI (2021) equation without race coefficient (NKF-ASN recommendations). Creatinine results traceable to isotope dilution mass spec IDMS calibration. Note that the estimated GFR result is not reliable in certain groups including severely ill patients. Estimates of eGFR with the CKD-EPI (2021) equation like other equations may also be less accurate in specific ethnic groups (eg, Asians in the United States), pregnant women, and those with unusual muscle mass, body habitus, and weight (eg, morbid obesity, amputees). Reference: Assessment of Kidney Function. WWW.UpToDate.com

CKD-EPI (2021) equation without race coefficient:

$$eGFRcr = 142 \times [\min(sCR/kappa,1)^{alpha} \times \max(sCR/kappa, 1)^{-1.200}] \times 0.9938^{AGE} \times 1.012 \text{ [if female]}$$

Where:
- sCR is serum creatinine in mg/dL
- kappa is 0.7 for females and 0.9 for males
- alpha is -0.241 for females and -0.302 for males
- min indicates the minimum of sCR/kappa or 1, and max indicates the maximum of sCR/kappa or 1
- units are in mL/min/1.73 m^2 body surface area

An eGFRcr will be calculated and reported with each plasma/serum creatinine result.

According to the National Kidney Disease Education Program, the best equation for estimating glomerular filtration rate (GFR) from serum creatinine in children is the Bedside Isotope Dilution Mass Spectrometry (IDMS)-traceable Schwartz equation http://www.nkdep.nih.gov/lab-evaluation/gfr-calculators/children-conventional-unit.shtml

Bedside IDMS-traceable Schwartz Equation for Children

GFR (mL/min/1.73 m^2) = (0.41 x Height in cm) / Creatinine in mg/dL)

Synonyms:

- GFR
- eGFRcr
- glomerular filtration rate

COLLECTION

Sample Type:
Plasma or serum

Collect:
Preferred: Light Green Top
Acceptable: Gold Top or Red Top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Parnassus, Mission Bay, Mt. Zion, and Berkeley Outpatient Center
Room temperature 7 days, refrigerated 7 days, frozen at -20C 3 months

PROCESSING

Test Code:
CRG

Test Group:
Creatinine

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Parnassus, Mission Bay, Mt. Zion, and Berkeley Outpatient Center
Room temperature 7 days, refrigerated 7 days, frozen at -20C 3 months

RESULT INTERPRETATION

Units:
Creatinine: mg/dL
eGFRcr: mL/min/1.73 m^2 body surface area

Reference Interval:

Parnassus, Mission Bay & Mt. Zion Chemistry

Creatinine:

Age	Male (mg/dL)	Female (mg/dL)
0 to 14 days	0.32-0.92	0.32-0.92
15 days to < 2 years	0.10-0.32	0.10-0.32
2 to < 5 years	0.20-0.43	0.20-0.43
5 to < 12 years	0.31-0.61	0.31-0.61
12 to < 15 years	0.45-0.81	0.45-0.81
15 to < 19 years	0.62-1.08	0.49-0.84
>= 19 years	0.73-1.24	0.55-1.02

eGFRcr:

>= 18 years	> 59 mL/min/1.73 m^2
< 18 years	Not calculated (See Addtl. Info.)

1. Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, https://caliper.research.sickkids.ca/#/

2. UCSF Clinical Labs verified the adult reference range stated in the Abbott Creatinine, Enzymatic package insert (June 2016) by running 20 male and 20 female lab volunteers.

On September 10, 2020, the upper limit of the Abbott creatinine reference range in males was modified from 1.18 to 1.24 mg/dL to align with the reference range previously established in the UCSF Clinical Laboratories with the Beckman creatinine method.

Berkeley Outpatient Center

Creatinine:

Age	Male (mg/dL)	Female (mg/dL)
>= 19 years	0.69-1.37	0.47-1.10

eGFRcr:

Age	eGFRcr
>= 18 years	> 59 mL/min/1.73 m^2

Adult reference intervals adopted from the NHANES 2011-2012 survey that determined reference intervals in a multi-ethnic sample of males and females in the USA using an IDMS traceable creatinine assay. The reference intervals were verified by testing 20 male and 20 female normal volunteers from UCSF Clinical Laboratories. Lim E, et al, Racial/Ethnic-Specific Reference Intervals for Common Laboratory Tests: A Comparison among Asians, Blacks, Hispanics, and White. Hawaii J Med Public Health, 2015;74:302-310

Additional Information:

In patients receiving catecholamine infusions (e.g., dopamine, dobutamine, norepinephrine, or epinephrine), falsely low serum/plasma creatinine results can occur with this enzymatic creatinine assay when blood is sampled through an indwelling catheter. In these cases, accurate measurements of creatinine can be obtained by testing blood samples obtained by venipuncture instead of through an indwelling catheter (based on in-house studies and Saenger AK, Clinical Chemistry 2009, vol 55:9 1732-1736).

To convert mg/dL to µmol/L (SI units) multiply by 88.4.

Estimated GFR (eGFRcr) is reported with serum creatinine results in adults and is determined using the CKD-EPI (2021) equation without race coefficient (NKF-ASN recommendations). Creatinine results traceable to isotope dilution mass spec IDMS calibration. Note that the estimated GFR result is not reliable in certain groups including severely ill patients. Estimates of eGFR with the CKD-EPI (2021) equation like other equations may also be less accurate in specific ethnic groups (eg, Asians in the United States), pregnant women, and those with unusual muscle mass, body habitus, and weight (eg, morbid obesity, amputees). Reference: Assessment of Kidney Function. WWW.UpToDate.com

CKD-EPI (2021) equation without race coefficient:

$$eGFRcr = 142 \times [\min(sCR/kappa,1)^{alpha} \times \max(sCR/kappa, 1)^{-1.200}] \times 0.9938^{AGE} \times 1.012 \text{ [if female]}$$

Where:
- sCR is serum creatinine in mg/dL
- kappa is 0.7 for females and 0.9 for males
- alpha is -0.241 for females and -0.302 for males
- min indicates the minimum of sCR/kappa or 1, and max indicates the maximum of sCR/kappa or 1
- units are in mL/min/1.73 m^2 body surface area

An eGFRcr will be calculated and reported with each plasma/serum creatinine result.

According to the National Kidney Disease Education Program, the best equation for estimating glomerular filtration rate (GFR) from serum creatinine in children is the Bedside Isotope Dilution Mass Spectrometry (IDMS)-traceable Schwartz equation http://www.nkdep.nih.gov/lab-evaluation/gfr-calculators/children-conventional-unit.shtml

Bedside IDMS-traceable Schwartz Equation for Children

$$GFR\ (mL/min/1.73\ m^2) = (0.41 \times \text{Height in cm}) / \text{Creatinine in mg/dL})$$

ADMINISTRATIVE

CPT Codes:
82565

LOINC Codes:
2160-0

COMPLETE VIEW

Available Stat:
Yes

Test Code:
CRG

Test Group:
Creatinine

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Chemistry: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center (Mon-Fri 0800-1630)

Methodology:
Parnassus, Mission Bay & Mt. Zion Chemistry: Enzymatic assay on Abbott Architect
Berkeley Outpatient Center: Enzymatic assay on Roche cobas c311

Collect:
Preferred: Light Green Top
Acceptable: Gold Top or Red Top

Amount to Collect:
1 mL blood

Sample Type:
Plasma or serum

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Units:
Creatinine: mg/dL
eGFRcr: mL/min/1.73 m^2 body surface area

Reference Interval:
Parnassus, Mission Bay & Mt. Zion Chemistry
Creatinine:

Age	Male (mg/dL)	Female (mg/dL)
0 to 14 days	0.32-0.92	0.32-0.92
15 days to < 2 years	0.10-0.32	0.10-0.32
2 to < 5 years	0.20-0.43	0.20-0.43
5 to < 12 years	0.31-0.61	0.31-0.61
12 to < 15 years	0.45-0.81	0.45-0.81
15 to < 19 years	0.62-1.08	0.49-0.84
>= 19 years	0.73-1.24	0.55-1.02

eGFRcr:

>= 18 years	> 59 mL/min/1.73 m^2
< 18 years	Not calculated (See Addtl. Info.)

1. Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, https://caliper.research.sickkids.ca/#/

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On September 10, 2020, the upper limit of the Abbott creatinine reference range in males was modified from 1.18 to 1.24 mg/dL to align with the reference range previously established in the UCSF Clinical Laboratories with the Beckman creatinine method.

Berkeley Outpatient Center
Creatinine:

Age	Male (mg/dL)	Female (mg/dL)
>= 19 years	0.69-1.37	0.47-1.10

eGFRcr:

Age	eGFRcr
>= 18 years	> 59 mL/min/1.73 m^2

Adult reference intervals adopted from the NHANES 2011-2012 survey that determined reference intervals in a multi-ethnic sample of males and females in the USA using an IDMS traceable creatinine assay. The reference intervals were verified by testing 20 male and 20 female normal volunteers from UCSF Clinical Laboratories. Lim E, et al, Racial/Ethnic-Specific Reference Intervals for Common Laboratory Tests: A Comparison among Asians, Blacks, Hispanics, and White. Hawaii J Med Public Health, 2015;74:302-310

Synonyms:

- GFR
- eGFRcr
- glomerular filtration rate

Stability (from collection to initiation):
Parnassus, Mission Bay, Mt. Zion, and Berkeley Outpatient Center
Room temperature 7 days, refrigerated 7 days, frozen at -20C 3 months

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:

In patients receiving catecholamine infusions (e.g., dopamine, dobutamine, norepinephrine, or epinephrine), falsely low serum/plasma creatinine results can occur with this enzymatic creatinine assay when blood is sampled through an indwelling catheter. In these cases, accurate measurements of creatinine can be obtained by testing blood samples obtained by venipuncture instead of through an indwelling catheter (based on in-house studies and Saenger AK, Clinical Chemistry 2009, vol 55:9 1732-1736).

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$$eGFRcr = 142 \times [\min(sCR/kappa,1)^{alpha} \times \max(sCR/kappa, 1)^{-1.200}] \times 0.9938^{AGE} \times 1.012 \text{ [if female]}$$

Where:
- sCR is serum creatinine in mg/dL
- kappa is 0.7 for females and 0.9 for males
- alpha is -0.241 for females and -0.302 for males
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- units are in mL/min/1.73 m^2 body surface area

An eGFRcr will be calculated and reported with each plasma/serum creatinine result.

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Bedside IDMS-traceable Schwartz Equation for Children

$$GFR \text{ (mL/min/1.73 } m^2) = (0.41 \times \text{Height in cm}) / \text{Creatinine in mg/dL})$$

CPT Codes:

82565

LOINC Codes:

2160-0

Creatinine, random urine

CRUR

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Enzymatic assay on Abbott Architect c8000. Calibration traceable to National Institute of Standards and Technology (NIST) Standard Reference Material (SRM) 967. (Isotope dilution mass spec (IDMS) standardization).

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
Output varies with the diet and weight.

Random urine creatinine concentrations are typically between 80 mg/dL to 150 mg/dL and can range from approximately 20 mg/dL to 300 mg/dL (see Barr, DB et al. Environmental Health Perspectives 113:192-200, 2005).

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
20 mL urine

Preferred Volume:
1 mL urine

Minimum Volume:
0.2 mL urine

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 6 days, frozen at -20C 6 months

PROCESSING

Test Code:
CRUR

Test Group:
Creatinine

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Preferred Volume:
1 mL urine

Minimum Volume:
0.2 mL urine

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 6 days, frozen at -20C 6 months

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:
See Additional Information

Additional Information:
Output varies with the diet and weight.

Random urine creatinine concentrations are typically between 80 mg/dL to 150 mg/dL and can range from approximately 20 mg/dL to 300 mg/dL (see Barr, DB et al. Environmental Health Perspectives 113:192-200, 2005).

ADMINISTRATIVE

CPT Codes:
82570

COMPLETE VIEW

Available Stat:
Yes

Test Code:
CRUR

Test Group:
Creatinine

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Enzymatic assay on Abbott Architect c8000. Calibration traceable to National Institute of Standards and Technology (NIST) Standard Reference Material (SRM) 967. (Isotope dilution mass spec (IDMS) standardization).

Collect:
Urine cup

Amount to Collect:
20 mL urine

Sample Type:
Random urine

Preferred Volume:
1 mL urine

Minimum Volume:
0.2 mL urine

Units:
mg/dL

Reference Interval:
See Additional Information

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 6 days, frozen at -20C 6 months

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
Output varies with the diet and weight.

Random urine creatinine concentrations are typically between 80 mg/dL to 150 mg/dL and can range from approximately 20 mg/dL to 300 mg/dL (see Barr, DB et al. Environmental Health Perspectives 113:192-200, 2005).

CPT Codes:
82570

CRLF2 Xp22.33 BA FISH

BCRLF2, CRLF2

ORDERING

Available Stat:
No

Performing Lab:
Molecular Genetics - Cytogenetics

Performed:
Monday - Friday 0900-1700

Methodology:
FISH

Reported:
1-2 weeks

Synonyms:

- Xp22.33 break apart FISH, CRLF2 FISH

COLLECTION

Sample Type:
Heparinized whole blood or bone marrow, Bone marrow core biopsy

Collect:
Dark green top

Amount to Collect:
Blood: 2 mL
Bone marrow: 2 mL
Bone marrow biopsy: 2 cm

Preferred Volume:
Blood: 2 mL
Bone marrow: 2 mL
?Bone marrow biopsy: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow: 1 mL
?Bone marrow biopsy: 1 cm

Remarks:
Mix sample well with anticoagulant. keep at room temperature

Stability (from collection to initiation):
Room temperature 2 days

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

PROCESSING

Test Code:
BCRLF2: Blood
CRLF2: Bone marrow

Performing Lab:
Molecular Genetics - Cytogenetics

Specimen Preparation:
Do not centrifuge, refrigerate or freeze samples. Transport to China Basin Cytogenetics asap.

Preferred Volume:
Blood: 2 mL
Bone marrow: 2 mL
?Bone marrow biopsy: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow: 1 mL
?Bone marrow biopsy: 1 cm

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

Stability (from collection to initiation):
Room temperature 2 days

ADMINISTRATIVE

CPT Codes:
88271 x2, 88275

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BCRLF2: Blood
CRLF2: Bone marrow

Performing Lab:
Molecular Genetics - Cytogenetics

Performed:
Monday - Friday 0900-1700

Methodology:
FISH

Remarks:
Mix sample well with anticoagulant. keep at room temperature

Collect:
Dark green top

Amount to Collect:
Blood: 2 mL
Bone marrow: 2 mL
Bone marrow biopsy: 2 cm

Sample Type:
Heparinized whole blood or bone marrow, Bone marrow core biopsy

Preferred Volume:
Blood: 2 mL
Bone marrow: 2 mL
?Bone marrow biopsy: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow: 1 mL
?Bone marrow biopsy: 1 cm

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

Specimen Preparation:
Do not centrifuge, refrigerate or freeze samples. Transport to China Basin Cytogenetics asap.

Synonyms:

- Xp22.33 break apart FISH, CRLF2 FISH

Stability (from collection to initiation):
Room temperature 2 days

Reported:
1-2 weeks

CPT Codes:
88271 x2, 88275

LDT or Modified FDA:
Yes

Crossmatch

XM, XMAG, XMPW, XMPG

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay and Mt. Zion Blood Banks

Performed:
Test available 24 hours per day 7 days per week

Reported:
STAT 1 hour, ASAP 2 hours, Routine 4 hours

Additional Information:
3 mL may suffice for an infant < 4 months old if blood is not needed to cover surgical losses. This test is always ordered in conjunction with a separately charged Blood Typing and Antibody Screen, and cannot be ordered by itself. The Coombs test is employed when the antibody screen is positive; the various other modifications to the standard crossmatch are used to overcome the effects of non-specific cold-reactive antibodies.

See also HLA Crossmatch

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top (6 mL size preferred)

Amount to Collect:
6 mL blood

Preferred Volume:
< 4 mo: Full Microtainer (0.8 mL)
4 mo - 1 year: 3 mL
1 -18 years: 3-6 mL (3 mL OK for small children)
> 18 years: 6 mL

Check Specimen:
< 4 mo: Full Microtainer (0.8 mL)
> 4 mo: 3 mL

Minimum Volume:
< 4 mo: Full Microtainer (0.8 mL)
4 mo - 1 year: 1 mL
1 -18 years: 3 mL
> 18 years: 5 mL

Check Specimen:
< 4 mo: Full Microtainer (0.8 mL)
> 4 mo: 1 mL

Remarks:
Use BLOOD BANK requisition. Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Unacceptable Conditions:
Unsigned, mislabeled or unlabeled sample

PROCESSING

Test Code:
XM-Standard
XMAG-w/ Coombs
XMPW-w/ prewarming to 37C
XMPG-w/ Ployethylene Glycol (PEG)

Performing Lab:
Parnassus, Mission Bay and Mt. Zion Blood Banks

Preferred Volume:
< 4 mo: Full Microtainer (0.8 mL)
4 mo - 1 year: 3 mL
1 -18 years: 3-6 mL (3 mL OK for small children)
> 18 years: 6 mL

Check Specimen:
< 4 mo: Full Microtainer (0.8 mL)
> 4 mo: 3 mL

Minimum Volume:
< 4 mo: Full Microtainer (0.8 mL)
4 mo - 1 year: 1 mL
1 -18 years: 3 mL
> 18 years: 5 mL

Check Specimen:
< 4 mo: Full Microtainer (0.8 mL)
> 4 mo: 1 mL

Unacceptable Conditions:
Unsigned, mislabeled or unlabeled sample

RESULT INTERPRETATION

Reference Interval:
See Additional Information

Additional Information:
3 mL may suffice for an infant < 4 months old if blood is not needed to cover surgical losses. This test is always ordered in conjunction with a separately charged Blood Typing and Antibody Screen, and cannot be ordered by itself. The Coombs test is employed when the antibody screen is positive; the various other modifications to the standard crossmatch are used to overcome the effects of non-specific cold-reactive antibodies.

See also HLA Crossmatch

COMPLETE VIEW

Available Stat:
Yes

Test Code:
XM-Standard
XMAG-w/ Coombs
XMPW-w/ prewarming to 37C
XMPG-w/ Ployethylene Glycol (PEG)

Performing Lab:
Parnassus, Mission Bay and Mt. Zion Blood Banks

Performed:
Test available 24 hours per day 7 days per week

Remarks:
Use BLOOD BANK requisition. Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Collect:
Lavender top (6 mL size preferred)

Amount to Collect:
6 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
< 4 mo: Full Microtainer (0.8 mL)
4 mo - 1 year: 3 mL
1 -18 years: 3-6 mL (3 mL OK for small children)
> 18 years: 6 mL

Check Specimen:
< 4 mo: Full Microtainer (0.8 mL)
> 4 mo: 3 mL

Minimum Volume:

< 4 mo: Full Microtainer (0.8 mL)
4 mo - 1 year: 1 mL
1 -18 years: 3 mL
> 18 years: 5 mL

Check Specimen:
< 4 mo: Full Microtainer (0.8 mL)
> 4 mo: 1 mL

Unacceptable Conditions:

Unsigned, mislabeled or unlabeled sample

Reference Interval:

See Additional Information

Reported:

STAT 1 hour, ASAP 2 hours, Routine 4 hours

Additional Information:

3 mL may suffice for an infant < 4 months old if blood is not needed to cover surgical losses. This test is always ordered in conjunction with a separately charged Blood Typing and Antibody Screen, and cannot be ordered by itself. The Coombs test is employed when the antibody screen is positive; the various other modifications to the standard crossmatch are used to overcome the effects of non-specific cold-reactive antibodies.

See also HLA Crossmatch

Cryofibrinogen

CRYF

ORDERING

Available Stat:
No

Performing Lab:
Quest

Performed:
Sunday-Friday

Methodology:
Cold preceiptation

Reported:
3-5 days

COLLECTION

Patient Preparation:
A fasting sample is required

Sample Type:
Plasma

Collect:
Light-blue top

Amount to Collect:
12 mL blood

Preferred Volume:
6 mL plasma

Minimum Volume:
3 mL plasma

Remarks:
Collect blood into 3 (5 mL) (LB) or (L) tubes. Place immediately in a 37° C water bath.

Stability (from collection to initiation):
Room Temperature: 7 days
Refrigerated/Frozen: Unacceptable

Storage/Transport Temperature:
Room Temperature

PROCESSING

Test Code:
CRYF

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Centrifuge blood specimens in centrifuge carriers prewarmed to 37° C at 3000 rpm for a minimum of 10 minutes. Separate plasma from red cells, avoiding transfer of red cells, into plastic transport tubes. Order Quest test code 376.

Preferred Volume:
6 mL plasma

Minimum Volume:
3 mL plasma

Stability (from collection to initiation):
Room Temperature: 7 days
Refrigerated/Frozen: Unacceptable

Storage/Transport Temperature:
Room Temperature

RESULT INTERPRETATION

Reference Interval:
Negative

ADMINISTRATIVE

CPT Codes:
82585

LOINC Codes:
11043-7

COMPLETE VIEW

Available Stat:
No

Test Code:
CRYF

Performing Lab:
Quest

Sendout:
Yes

Performed:
Sunday-Friday

Methodology:
Cold preceiptation

Patient Preparation:
A fasting sample is required

Remarks:
Collect blood into 3 (5 mL) (LB) or (L) tubes. Place immediately in a 37° C water bath.

Collect:
Light-blue top

Amount to Collect:
12 mL blood

Sample Type:
Plasma

Preferred Volume:
6 mL plasma

Minimum Volume:
3 mL plasma

Specimen Preparation:
Centrifuge blood specimens in centrifuge carriers prewarmed to 37° C at 3000 rpm for a minimum of 10 minutes. Separate plasma from red cells, avoiding transfer of red cells, into plastic transport tubes. Order Quest test code 376.

Reference Interval:
Negative

Storage/Transport Temperature:
Room Temperature

Stability (from collection to initiation):
Room Temperature: 7 days
Refrigerated/Frozen: Unacceptable

Reported:
3-5 days

CPT Codes:
82585

LOINC Codes:
11043-7

Cryoglobulin
CRYQ

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Tuesday, Friday (day shift)

Reported:
3-5 days

Additional Information:
If immunofixation (IFE) for a cryoglobulin is requested, a quantitative cryoglobulin is run first to determine whether the quantity of cryoprecipitate is sufficient for IFE analysis. Samples are held for a minimum of 72 hours after receipt before the analysis for cryoglobulin is performed. Cryoglobulinemias are generally classified as:

Type I: Monoclonal antibodies, associated most often with myeloma or lymphoproliferative disorders, and highly correlated with the development of renal disease.

Type II: Most commonly found, these are mixtures of mono- and polyclonal antibodies, and are associated with the various connective tissue diseases and, especially, chronic infection with Hepatitis C, which should be sought in any case of cryoglobulinemia. The cryoglobulin often recognizes portions of the HCV protein envelope and the cryoprecipitates are rich in virus.

Type III: Polyclonal antibodies, associated mainly with lupus erythematosus.

Refs: Brouet J-C et al. Amer J Med 1974; 57:775. Winfield JB. Hum Pathol 1983;14:350. Johnson RJ et al. N Engl J Med 1993;328:465.

Note: This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
6 mL blood

Preferred Volume:
3 mL serum

Minimum Volume:
2 mL serum

Remarks:
Once collected, please keep all samples warm by wrapping with a heel warmer and deliver to the laboratory as soon as possible.

Unacceptable Conditions:
Room temperature or colder sample received.

PROCESSING

Test Code:
CRYQ

Performing Lab:
Immunology

Specimen Preparation:
Warm specimen for 1 hour at 37C in heating block; centrifuge immediately thereafter, and aliquot into conical centrifuge tube. Refrigerate specimen at 2-8°C.

Preferred Volume:
3 mL serum

Minimum Volume:
2 mL serum

Unacceptable Conditions:
Room temperature or colder sample received.

RESULT INTERPRETATION

Units:
g/L

Reference Interval:
< 0.12 g/L

Additional Information:
If immunofixation (IFE) for a cryoglobulin is requested, a quantitative cryoglobulin is run first to determine whether the quantity of cryoprecipitate is sufficient for IFE analysis. Samples are held for a minimum of 72 hours after receipt before the analysis for cryoglobulin is performed. Cryoglobulinemias are generally classified as:

Type I: Monoclonal antibodies, associated most often with myeloma or lymphoproliferative disorders, and highly correlated with the development of renal disease.

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Note: This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

ADMINISTRATIVE

CPT Codes:
82784

LDT or Modified FDA:
Yes

LOINC Codes:
2168-3

COMPLETE VIEW

Available Stat:
No

Test Code:
CRYQ

Performing Lab:
Immunology

Performed:
Tuesday, Friday (day shift)

Remarks:
Once collected, please keep all samples warm by wrapping with a heel warmer and deliver to the laboratory as soon as possible.

Collect:
Gold top

Amount to Collect:
6 mL blood

Sample Type:
Serum

Preferred Volume:
3 mL serum

Minimum Volume:
2 mL serum

Unacceptable Conditions:
Room temperature or colder sample received.

Specimen Preparation:

Warm specimen for 1 hour at 37C in heating block; centrifuge immediately thereafter, and aliquot into conical centrifuge tube. Refrigerate specimen at 2-8°C.

Units:

g/L

Reference Interval:

< 0.12 g/L

Reported:

3-5 days

Additional Information:

If immunofixation (IFE) for a cryoglobulin is requested, a quantitative cryoglobulin is run first to determine whether the quantity of cryoprecipitate is sufficient for IFE analysis. Samples are held for a minimum of 72 hours after receipt before the analysis for cryoglobulin is performed. Cryoglobulinemias are generally classified as:

Type I: Monoclonal antibodies, associated most often with myeloma or lymphoproliferative disorders, and highly correlated with the development of renal disease.

Type II: Most commonly found, these are mixtures of mono- and polyclonal antibodies, and are associated with the various connective tissue diseases and, especially, chronic infection with Hepatitis C, which should be sought in any case of cryoglobulinemia. The cryoglobulin often recognizes portions of the HCV protein envelope and the cryoprecipitates are rich in virus.

Type III: Polyclonal antibodies, associated mainly with lupus erythematosus.

Refs: Brouet J-C et al. Amer J Med 1974; 57:775. Winfield JB. Hum Pathol 1983;14:350. Johnson RJ et al. N Engl J Med 1993;328:465.

Note: This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

CPT Codes:

82784

LDT or Modified FDA:

Yes

LOINC Codes:

2168-3

Cryopreservation of cells

CYTOFZ

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Freezing cells at -70C

Additional Information:
The Cytogenetics Lab does not have the capability of long term cryogenics. Cells may no longer be available after 12 months of storage at -80C. Recovery rate is dependent on the age and quality of the cultures at the time of storage.

Synonyms:

- Cell freezing

COLLECTION

Sample Type:
Cultured cells from amniocentesis, chrorionic villus sampling, and solid unfixed tissue samples.

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

PROCESSING

Test Code:
CYTOFZ

Performing Lab:
Medical Genomics - Cytogenetics

Specimen Preparation:
Refer any questions to Cytogenetics. This test will only be ordered by Cytogenetics staff

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

RESULT INTERPRETATION

Additional Information:
The Cytogenetics Lab does not have the capability of long term cryogenics. Cells may no longer be available after 12 months of storage at -80C. Recovery rate is dependent on the age and quality of the cultures at the time of storage.

ADMINISTRATIVE

CPT Codes:
88240

COMPLETE VIEW

Available Stat:
No

Test Code:
CYTOFZ

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Freezing cells at -70C

Sample Type:
Cultured cells from amniocentesis, chrorionic villus sampling, and solid unfixed tissue samples.

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

Specimen Preparation:
Refer any questions to Cytogenetics. This test will only be ordered by Cytogenetics staff

Synonyms:

- Cell freezing

Additional Information:

The Cytogenetics Lab does not have the capability of long term cryogenics. Cells may no longer be available after 12 months of storage at -80C. Recovery rate is dependent on the age and quality of the cultures at the time of storage.

CPT Codes:

88240

Cryptococcal antigen

P253

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
CSF: Daily, day and evening shifts until 9 PM
Serum: Once daily on day shift

Methodology:
Lateral flow assay

Reported:
1 day

Additional Information:
Call Microbiology (x3-1268) for assistance with interpretation.

Order Bacterial Culture, CSF in conjunction with initial CSF cryptococcal antigen test.

Serum specimens are repeated at 7-day intervals and CSF at 2-day intervals, whether previously positive or negative.

Reflex Testing:
Positive results are titered at a separate charge (B254).

Synonyms:

- CRAG
- Cryptococcus latex agglutination

COLLECTION

Sample Type:
Serum, CSF

Collect:
Gold top, CSF tube or sterile collection tube

Amount to Collect:
2 mL blood or 1 mL CSF

Preferred Volume:
1 mL serum or CSF

Stability (from collection to initiation):
Refrigerated 3 days, frozen 2 weeks

Unacceptable Conditions:
More than one serum in one week or more than one CSF in 48 hours.

PROCESSING

Test Code:
P253

Test Group:
Cryptococcus neoformans

Performing Lab:
Microbiology

Preferred Volume:
1 mL serum or CSF

Unacceptable Conditions:
More than one serum in one week or more than one CSF in 48 hours.

Stability (from collection to initiation):
Refrigerated 3 days, frozen 2 weeks

RESULT INTERPRETATION

Reference Interval:
Negative

Critical Values:
Positive results from CSF.

Additional Information:
Call Microbiology (x3-1268) for assistance with interpretation.

Order Bacterial Culture, CSF in conjunction with initial CSF cryptococcal antigen test.

Serum specimens are repeated at 7-day intervals and CSF at 2-day intervals, whether previously positive or negative.

ADMINISTRATIVE

CPT Codes:
87899

LOINC Codes:
38390-1

COMPLETE VIEW

Available Stat:
No

Test Code:
P253

Test Group:
Cryptococcus neoformans

Performing Lab:
Microbiology

Performed:
CSF: Daily, day and evening shifts until 9 PM
Serum: Once daily on day shift

Methodology:
Lateral flow assay

Collect:
Gold top, CSF tube or sterile collection tube

Amount to Collect:
2 mL blood or 1 mL CSF

Sample Type:
Serum, CSF

Preferred Volume:
1 mL serum or CSF

Unacceptable Conditions:
More than one serum in one week or more than one CSF in 48 hours.

Reference Interval:
Negative

Critical Values:
Positive results from CSF.

Synonyms:

- CRAG
- Cryptococcus latex agglutination

Stability (from collection to initiation):
Refrigerated 3 days, frozen 2 weeks

Reported:
1 day

Reflex Testing:
Positive results are titered at a separate charge (B254).

Additional Information:
Call Microbiology (x3-1268) for assistance with interpretation.

Order Bacterial Culture, CSF in conjunction with initial CSF cryptococcal antigen test.

Serum specimens are repeated at 7-day intervals and CSF at 2-day intervals, whether previously positive or negative.

CPT Codes:
87899

LOINC Codes:
38390-1

Crystals, duodenal fluid or bile

CBD

ORDERING

Available Stat:
No

Performing Lab:
Parnassus & Mission Bay Hematology

Performed:
Test run 0800-2400 daily

Reported:
4 hours

Reflex Testing:
If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

COLLECTION

Sample Type:
Duodenal Fluid or Bile

Collect:
Plain tube, no additive

Amount to Collect:
See preferred volume

Preferred Volume:
1 mL fluid

Remarks:
Deliver to laboratory immediately. Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

PROCESSING

Test Code:
CBD

Test Group:
Crystals

Performing Lab:
Parnassus & Mission Bay Hematology

Preferred Volume:
1 mL fluid

RESULT INTERPRETATION

Reference Interval:
None

ADMINISTRATIVE

CPT Codes:
89060

LOINC Codes:
5780-2

COMPLETE VIEW

Available Stat:
No

Test Code:
CBD

Test Group:
Crystals

Performing Lab:
Parnassus & Mission Bay Hematology

Performed:
Test run 0800-2400 daily

Remarks:
Deliver to laboratory immediately. Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Collect:
Plain tube, no additive

Amount to Collect:
See preferred volume

Sample Type:
Duodenal Fluid or Bile

Preferred Volume:
1 mL fluid

Reference Interval:
None

Reported:
4 hours

Reflex Testing:
If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

CPT Codes:
89060

LOINC Codes:
5780-2

Crystals, synovial fluid

CJF

ORDERING

Available Stat:
No

Performing Lab:
Parnassus & Mission Bay Hematology

Performed:
Test run 0800-2400 daily

Methodology:
Compensated Polarized Light Microscopy

Reported:
4 hours

Additional Information:
There is a > 95% chance of detecting intraleukocytic urate crystals in an acutely gouty joint (and in approx. 75% of asymptomatic patients); the few negative fluids are usually positive on repeat aspiration a few hours later. False positive results can occur due to the similar needle- or rod-like shape and birefringence seen occasionally w/ cholesterol crystals or w/ crystalline preparations of corticosteroids such as betamethasone and triamcinolone. Cartilage fragments and calcium oxalate crytals can also be birefringent, but are usually distinguishable from urates by careful attention to morphologic details. Generally more rectangular birefringent pyrophosphate crystals are seen in other arthritides.

Lithium heparin (light green top) may cause false positive crystal formation.

Based on a small in-house study the effect of storage on joint crystals was examined. Calcium pyrophosphate dehydrate (CPPD) crystals dissolve after several hours. Refrigeration did not prevent CPPD crystals from dissolution. However, Monosodium Urate (MSU) crystals did not decrease in numbers significantly over the first few days, but decrease over a period of weeks. Refrigeration appeared to slow the dissolution of MSU crystals.

Samples for Particle Disease - Particle disease is a byproduct of the increasing use of prosthesis for joint replacement in patients with chronic arthritis. Looking at joint fluid for particles is not ideal for diagnosis of particle disease", but is the simplest means of obtaining a sample (much easier than biopsy of tissue around the prosthetic joint).

Synonyms:

- Gout
- Uric acid
- Pseudogout
- Calcium pyrophosphate dehydrogenase
- CPPD
- joint fluid

COLLECTION

Sample Type:
Synovial fluid

Collect:
Lavender or Dark Green top

Amount to Collect:
See preferred volume

Preferred Volume:
1 ml fluid

Remarks:
Specimen label must contain the date and time the sample was collected and the legible name of the person who collected the sample.

Bring samples asap to laboratory for testing.

Stability (from collection to initiation):
4 hours at room temperature

Unacceptable Conditions:
Samples in syringes with needle still attached.

Samples received four (4) or more hours after collection are accepted but results modified as follows: Sample stability period exceeded or collection time unknown. Calcium pyrophosphate dehydrate (CPPD) crystals dissolve with time, therefore false negatives can occur. Uric acid crystals are stable for several weeks. See Lab Manual for Moffitt-Long and Mt. Zion for more information".

PROCESSING

Test Code:
CJF

Performing Lab:
Parnassus & Mission Bay Hematology

Specimen Preparation:
Deliver sample to Hematology immediately after sample is received and entered in Sunquest.

Preferred Volume:
1 ml fluid

Unacceptable Conditions:
Samples in syringes with needle still attached.

Samples received four (4) or more hours after collection are accepted but results modified as follows: Sample stability period exceeded or collection time unknown. Calcium pyrophosphate dehydrate (CPPD) crystals dissolve with time, therefore false negatives can occur. Uric acid crystals are stable for several weeks. See Lab Manual for Moffitt-Long and Mt. Zion for more information".

Stability (from collection to initiation):
4 hours at room temperature

RESULT INTERPRETATION

Reference Interval:
None

Additional Information:
There is a > 95% chance of detecting intraleukocytic urate crystals in an acutely gouty joint (and in approx. 75% of asymptomatic patients); the few negative fluids are usually positive on repeat aspiration a few hours later. False positive results can occur due to the similar needle- or rod-like shape and birefringence seen occasionally w/ cholesterol crystals or w/ crystalline preparations of corticosteroids such as betamethasone and triamcinolone. Cartilage fragments and calcium oxalate crytals can also be birefringent, but are usually distinguishable from urates by careful attention to morphologic details. Generally more rectangular birefringent pyrophosphate crystals are seen in other arthritides.

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ADMINISTRATIVE

CPT Codes:
89060

LOINC Codes:
5781-0

COMPLETE VIEW

Available Stat:
No

Test Code:
CJF

Performing Lab:
Parnassus & Mission Bay Hematology

Performed:
Test run 0800-2400 daily

Methodology:
Compensated Polarized Light Microscopy

Remarks:
Specimen label must contain the date and time the sample was collected and the legible name of the person who collected the sample.

Bring samples asap to laboratory for testing.

Collect:
Lavender or Dark Green top

Amount to Collect:
See preferred volume

Sample Type:
Synovial fluid

Preferred Volume:
1 ml fluid

Unacceptable Conditions:
Samples in syringes with needle still attached.

Samples received four (4) or more hours after collection are accepted but results modified as follows: Sample stability period exceeded or collection time unknown. Calcium pyrophosphate dehydrate (CPPD) crystals dissolve with time, therefore false negatives can occur. Uric acid crystals are stable for several weeks. See Lab Manual for Moffitt-Long and Mt. Zion for more information".

Specimen Preparation:
Deliver sample to Hematology immediately after sample is received and entered in Sunquest.

Reference Interval:
None

Synonyms:

- Gout
- Uric acid
- Pseudogout
- Calcium pyrophosphate dehydrogenase
- CPPD
- joint fluid

Stability (from collection to initiation):
4 hours at room temperature

Reported:
4 hours

Additional Information:
There is a > 95% chance of detecting intraleukocytic urate crystals in an acutely gouty joint (and in approx. 75% of asymptomatic patients); the few negative fluids are usually positive on repeat aspiration a few hours later. False positive results can occur due to the similar needle- or rod-like shape and birefringence seen occasionally w/ cholesterol crystals or w/ crystalline preparations of corticosteroids such as betamethasone and triamcinolone. Cartilage fragments and calcium oxalate crytals can also be birefringent, but are usually distinguishable from urates by careful attention to morphologic details. Generally more rectangular birefringent pyrophosphate crystals are seen in other arthritides.

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Samples for Particle Disease - Particle disease is a byproduct of the increasing use of prosthesis for joint replacement in patients with chronic arthritis. Looking at joint fluid for particles is not ideal for diagnosis of particle disease", but is the simplest means of obtaining a sample (much easier than biopsy of tissue around the prosthetic joint).

CPT Codes:
89060

LOINC Codes:
5781-0

CSF Fungal Culture for Coccidiodes

P256N

ORDERING

Ordering Recommendations:

For diagnosis of yeast and Cryptococcal meningitis, recommended tests are: CSF bacterial culture (yeast, including Cryptococcus neoformans grow well on routine bacterial culture) CSF and serum Cryptococcal Antigen (CrAg)

Sensitivity of CSF Culture for Coccidiodes immitis is limited. Serum and / or CSF serology for Coccidioides (Coccidioides immitis Antibody, Immunodiffusion) are more sensitive than culture and are the recommended first-line diagnostic tests.

The yield of CSF cultures for other dimorphic fungi and invasive molds, including Aspergillus, Blastomyces, Histoplasma and the Zygomycetes (Mucor and Rhizopus) is extremely low. Tissue biopsy, if possible, is the recommended specimen for fungal diagnosis by culture.

Available Stat:

No

Performing Lab:

Microbiology

Performed:

Set up daily, day and evening shifts

Methodology:

Culture

Reported:

Up to 30 days

Additional Information:

Differentiation of Candida dublinensis from the biochemically and clinically similar species Candida albicans is performed on request only.

Synonyms:

- C. immitis
- San Joaquin valley Fever

COLLECTION

Sample Type:

CSF

Collect:

CSF tube or sterile collection tube

Amount to Collect:

5-10 mL CSF

Preferred Volume:

5-10 mL CSF

Minimum Volume:

5 mL CSF

Stability (from collection to initiation):

Refrigerated 24 hours

PROCESSING

Test Code:

P256N

Test Group:

Fungal

Performing Lab:

Microbiology

Preferred Volume:

5-10 mL CSF

Minimum Volume:

5 mL CSF

Stability (from collection to initiation):

Refrigerated 24 hours

RESULT INTERPRETATION

Reference Interval:
No Coccidiodes isolated

Critical Values:
Positive culture

Additional Information:
Differentiation of Candida dublinensis from the biochemically and clinically similar species Candida albicans is performed on request only.

ADMINISTRATIVE

CPT Codes:
87102

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
For diagnosis of yeast and Cryptococcal meningitis, recommended tests are: CSF bacterial culture (yeast, including Cryptococcus neoformans grow well on routine bacterial culture) CSF and serum Cryptococcal Antigen (CrAg)

Sensitivity of CSF Culture for Coccidiodes immitis is limited. Serum and / or CSF serology for Coccidioides (Coccidioides immitis Antibody, Immunodiffusion) are more sensitive than culture and are the recommended first-line diagnostic tests.

The yield of CSF cultures for other dimorphic fungi and invasive molds, including Aspergillus, Blastomyces, Histoplasma and the Zygomycetes (Mucor and Rhizopus) is extremely low. Tissue biopsy, if possible, is the recommended specimen for fungal diagnosis by culture.

Test Code:
P256N

Test Group:
Fungal

Performing Lab:
Microbiology

Performed:
Set up daily, day and evening shifts

Methodology:
Culture

Collect:
CSF tube or sterile collection tube

Amount to Collect:
5-10 mL CSF

Sample Type:
CSF

Preferred Volume:
5-10 mL CSF

Minimum Volume:
5 mL CSF

Reference Interval:
No Coccidiodes isolated

Critical Values:
Positive culture

Synonyms:

- C. immitis
- San Joaquin valley Fever

Stability (from collection to initiation):
Refrigerated 24 hours

Reported:
Up to 30 days

Additional Information:
Differentiation of Candida dublinensis from the biochemically and clinically similar species Candida albicans is performed on request only.

CPT Codes:
87102

C-telopeptide

CTX

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Electrochemiluminescent Immunoassay

Reported:
5-7 days

Synonyms:

- CTx
- Collagen Type I
- Bone markers
- osteoporosis

COLLECTION

Patient Preparation:
Fasting morning collection 8-10 am. (Diurnal variations cause elevated levels at night.) Minimum of 12 hours fasting is required.

Sample Type:
Serum

Collect:
Red top, (Gold top acceptable)

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature 16 hours, refrigerated 3 days, frozen 3 months.

PROCESSING

Test Code:
CTX

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Centrifuge and separate the serum from the cells. Freeze as soon as possible.

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature 16 hours, refrigerated 3 days, frozen 3 months.

RESULT INTERPRETATION

Units:
pg/mL

Reference Interval:

Pediatric:

Age	Males	Females
5-9 years	574-1849 pg/mL	574-1849 pg/mL
10-13 years	519-2415 pg/mL	519-2415 pg/mL
14-17 years	435-2924 pg/mL	242-1291 pg/mL

Adult:

Age	Males	Females
18-29 years	87-1200 pg/mL	64-640 pg/mL
30-39 years	70-780 pg/mL	60-650 pg/mL
40-49 years	60-700 pg/mL	40-465 pg/mL
50-68 years	87-345 pg/mL	Not available

ADMINISTRATIVE

CPT Codes:
82523-90

COMPLETE VIEW

Available Stat:
No

Test Code:
CTX

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Electrochemiluminescent Immunoassay

Patient Preparation:
Fasting morning collection 8-10 am. (Diurnal variations cause elevated levels at night.) Minimum of 12 hours fasting is required.

Collect:
Red top, (Gold top acceptable)

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Specimen Preparation:
Centrifuge and separate the serum from the cells. Freeze as soon as possible.

Units:
pg/mL

Reference Interval:

Pediatric:

Age	Males	Females
5-9 years	574-1849 pg/mL	574-1849 pg/mL
10-13 years	519-2415 pg/mL	519-2415 pg/mL
14-17 years	435-2924 pg/mL	242-1291 pg/mL

Adult:

Age	Males	Females
18-29 years	87-1200 pg/mL	64-640 pg/mL
30-39 years	70-780 pg/mL	60-650 pg/mL
40-49 years	60-700 pg/mL	40-465 pg/mL
50-68 years	87-345 pg/mL	Not available

Synonyms:

- CTx
- Collagen Type I
- Bone markers
- osteoporosis

Stability (from collection to initiation):

Room temperature 16 hours, refrigerated 3 days, frozen 3 months.

Reported:

5-7 days

CPT Codes:

82523-90

Cutaneous Antibodies

ORDERING

Available Stat:
No

Performing Lab:
UCSF IF Lab

Performed:
Daily, Monday-Friday

Methodology:
Indirect immunofluorescence

Reported:
3-5 days

Additional Information:
Identifies the presence of serum antibodies against intercellular substance in squamous epithelium (pemphigus vulgaris) or basement membrane (bullous pemphigoid). Nuclear staining may be seen from sera of patients with systemic lupus or other connective tissue disorders. Antibodies are typically present during active disease. If positive, it is advisable to perform direct immunofluorescent testing on biopsies of skin lesions. A two-fold drop in titer is indicative of effective therapy.

Synonyms:

- Blistering diseases
- blistering disorders
- BMZ antibodies
- Bullous disease
- Cutaneous immunofluorescent antibodies
- basement membrane antibodies
- epidermolysis bullosa aquisita
- fluorescent antibodies for bullous disease
- Pemphigoid
- pemphigus

Supplemental Test Request Form Required:
Yes

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Remarks:
Complete Dermatopathology requisition and submit with sample. Samples should be received by the laboratory by Wednesday for next Monday signout.

PROCESSING

Test Code:
No test code, see Processing instructions

Sendout:
Yes

Performing Lab:
UCSF IF Lab

Specimen Preparation:
Store and transport at room temperature. Send sample and completed dermatopathology requisition to: UCSF Dermatopathology office, Mount Zion Campus, 1701 Divisadero St., 3rd floor Room 350, San Francisco, CA 94115. For questions contact the UCSF Immunofluorescence Lab at 353-7546.

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

RESULT INTERPRETATION

Units:
titer

Reference Interval:
Negative titer < 1:10

Additional Information:
Identifies the presence of serum antibodies against intercellular substance in squamous epithelium (pemphigus vulgaris) or basement membrane (bullous pemphigoid). Nuclear staining may be seen from sera of patients with systemic lupus or other connective tissue disorders. Antibodies are typically present during active disease. If positive, it is advisable to perform direct immunofluorescent testing on biopsies of skin lesions. A two-fold drop in titer is indicative of effective therapy.

COMPLETE VIEW

Available Stat:
No

Test Code:
No test code, see Processing instructions

Performing Lab:
UCSF IF Lab

Sendout:
Yes

Performed:
Daily, Monday-Friday

Methodology:
Indirect immunofluorescence

Remarks:
Complete Dermatopathology requisition and submit with sample. Samples should be received by the laboratory by Wednesday for next Monday signout.

Collect:
Gold top

Amount to Collect:
4 mL blood

Sample Type:
Serum

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Specimen Preparation:
Store and transport at room temperature. Send sample and completed dermatopathology requisition to: UCSF Dermatopathology office, Mount Zion Campus, 1701 Divisadero St., 3rd floor Room 350, San Francisco, CA 94115. For questions contact the UCSF Immunofluorescence Lab at 353-7546.

Units:
titer

Reference Interval:
Negative titer < 1:10

Synonyms:

- Blistering diseases
- blistering disorders
- BMZ antibodies
- Bullous disease
- Cutaneous immunofluorescent antibodies
- basement membrane antibodies
- epidermolysis bullosa aquisita
- fluorescent antibodies for bullous disease
- Pemphigoid
- pemphigus

Reported:

3-5 days

Additional Information:

Identifies the presence of serum antibodies against intercellular substance in squamous epithelium (pemphigus vulgaris) or basement membrane (bullous pemphigoid). Nuclear staining may be seen from sera of patients with systemic lupus or other connective tissue disorders. Antibodies are typically present during active disease. If positive, it is advisable to perform direct immunofluorescent testing on biopsies of skin lesions. A two-fold drop in titer is indicative of effective therapy.

Supplemental Test Request Form Required:

Yes

CXCL9

CXCL9

ORDERING

Performing Lab:
Machaon Diagnostics

Performed:
Varies

Methodology:
ELISA

Reported:
Varies

COLLECTION

Sample Type:
Plasma

Collect:
EDTA Lavender top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Stability (from collection to initiation):
Frozen: 6 months

Storage/Transport Temperature:
Frozen

Unacceptable Conditions:
Thawed

PROCESSING

Test Code:
CXCL9

Sendout:
Yes

Performing Lab:
Machaon Diagnostics

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Thawed

Stability (from collection to initiation):
Frozen: 6 months

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Units:
pg/mL

Reference Interval:
Non-detectable - 179 pg/mL

Interpretive Data:

CXCL9 is a recognized marker for interferon gamma (IFNgamma) activity. Sustained and consistent reductions in plasma concentrations of CXCL9 demonstrate that IFNgamma is being neutralized, which may be critical to know in assessing treatment and/or dosing decisions.

HLH is a life-threatening condition requiring rapid diagnosis and treatment. CXCL9 can differentiate HLH from sepsis and persistent systemic inflammatory response syndrome (SIRS).

CXCL9 levels quickly and significantly decreased with emapalumab treatment in HLH patients and low levels of CXCL9 were associated with treatment response. Emapalumab neutralizes IFNgamma activity; CXCL9 is a marker for IFNgamma activity.

ADMINISTRATIVE

CPT Codes:
83520

COMPLETE VIEW

Test Code:
CXCL9

Performing Lab:
Machaon Diagnostics

Sendout:
Yes

Performed:
Varies

Methodology:
ELISA

Collect:
EDTA Lavender top

Amount to Collect:
2 mL blood

Sample Type:
Plasma

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Thawed

Units:
pg/mL

Reference Interval:
Non-detectable - 179 pg/mL

Interpretive Data:

CXCL9 is a recognized marker for interferon gamma (IFNgamma) activity. Sustained and consistent reductions in plasma concentrations of CXCL9 demonstrate that IFNgamma is being neutralized, which may be critical to know in assessing treatment and/or dosing decisions.

HLH is a life-threatening condition requiring rapid diagnosis and treatment. CXCL9 can differentiate HLH from sepsis and persistent systemic inflammatory response syndrome (SIRS).

CXCL9 levels quickly and significantly decreased with emapalumab treatment in HLH patients and low levels of CXCL9 were associated with treatment response. Emapalumab neutralizes IFNgamma activity; CXCL9 is a marker for IFNgamma activity.

Storage/Transport Temperature:
Frozen

Stability (from collection to initiation):
Frozen: 6 months

Reported:
Varies

CPT Codes:
83520

Cyanide

CYAN

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Colorimetric

Reported:
Test run Monday, Wednesday, Friday. Turnaround time: 4-6 days

Additional Information:
The detection limit of this assay is 0.1 mg/L

Toxic syndromes are rapid and include flushing, headache, dizziness, and tachypnea that may progress to respiratory depression and death.

80% of cyanide is converted to thiocyanate. Administration of sodium nitroprusside contributes to the total body pool of cyanide and complicates interpretation.

Synonyms:

- Hydrogen cyanide
- Cn
- Hydrocyanic acid
- Prussic acid

COLLECTION

Sample Type:
Heparinized whole blood

Collect:
Dark Green top (Sodium Heparin)

Amount to Collect:
10 mL blood

Preferred Volume:
10 mL blood

Minimum Volume:
1 mL blood

Stability (from collection to initiation):
Room temperature 2 weeks, refrigerated 2 weeks, frozen at -20C 1 month.

PROCESSING

Test Code:
CYAN

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate. Do NOT centrifuge or open tube. Order Quest # 400

Preferred Volume:
10 mL blood

Minimum Volume:
1 mL blood

Stability (from collection to initiation):
Room temperature 2 weeks, refrigerated 2 weeks, frozen at -20C 1 month.

RESULT INTERPRETATION

Units:
mg/L

Reference Interval:
Normal: < 0.1 mg/L
Potentially toxic: > 0.5 mg/L

Critical Values:
Quest Priority-1: >= 1.0 mg/L
Quest Priority-2: 0.5-0.9 mg/L

Additional Information:
The detection limit of this assay is 0.1 mg/L

Toxic syndromes are rapid and include flushing, headache, dizziness, and tachypnea that may progress to respiratory depression and death.

80% of cyanide is converted to thiocyanate. Administration of sodium nitroprusside contributes to the total body pool of cyanide and complicates interpretation.

ADMINISTRATIVE

CPT Codes:
82600-90

LOINC Codes:
5634-1

COMPLETE VIEW

Available Stat:
No

Test Code:
CYAN

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Colorimetric

Collect:
Dark Green top (Sodium Heparin)

Amount to Collect:
10 mL blood

Sample Type:
Heparinized whole blood

Preferred Volume:
10 mL blood

Minimum Volume:
1 mL blood

Specimen Preparation:
Refrigerate. Do NOT centrifuge or open tube. Order Quest # 400

Units:
mg/L

Reference Interval:
Normal: < 0.1 mg/L
Potentially toxic: > 0.5 mg/L

Critical Values:
Quest Priority-1: >= 1.0 mg/L
Quest Priority-2: 0.5-0.9 mg/L

Synonyms:

- Hydrogen cyanide
- Cn
- Hydrocyanic acid
- Prussic acid

Stability (from collection to initiation):
Room temperature 2 weeks, refrigerated 2 weeks, frozen at -20C 1 month.

Reported:
Test run Monday, Wednesday, Friday. Turnaround time: 4-6 days

Additional Information:

The detection limit of this assay is 0.1 mg/L

Toxic syndromes are rapid and include flushing, headache, dizziness, and tachypnea that may progress to respiratory depression and death.

80% of cyanide is converted to thiocyanate. Administration of sodium nitroprusside contributes to the total body pool of cyanide and complicates interpretation.

CPT Codes:

82600-90

LOINC Codes:

5634-1

Cyclosporine A

CYCL

ORDERING

Available Stat:
No

Performing Lab:
China Basin Chemistry

Performed:
Daily (day shift)

Methodology:
Abbott Architect Chemiluminescent Immunoassay

Reported:
For samples received by 1200 (Monday-Friday) and 1000 (weekends and holidays) the results will be available by 1600. Results for samples that miss the cut-off times will be available the following day.

Note: Samples from Berkeley Outpatient Clinic (BOPC) will be reported next day.

Additional Information:
Generally recommended therapeutic trough levels vary between 50 to 500. However, there is no universally accepted therapeutic level and the desired concentrations may vary with the indications, e.g., higher for liver than for renal transplantation, higher early in the post-transplant period, higher in threatened or subacute rejection. In a patient who is doing well following liver transplantation a level of 250-300 might be sought for the first 3-4 months , 150-250 for 4 months - 12 months , and lowered to 100-150 after one year, whereas post-renal transplant a well-compensated patient might be kept at 150-300 for 6 months , then reduced to 50-150. The level usually desirable for any given patient may also be adjusted because of intercurrent illness. The current therapeutic range was established in consultation with UCSF transplant physicians and clinical pharmacists.

The Abbott Architect immunoassay for cyclosporine is reported by the manufacturer to show little or no cross reactivity with the major cyclosporine metabolites. Results with this immunoassay run approximately 30% higher than results with the previous HPLC assay mainly due to assay calibration differences. See the lab manual's "A Guide on Drug Level Monitoring" (in the Chemistry Guide) for additional information.

Synonyms:

- Neoral
- cyclosporin
- CSA
- Gengraf
- Sandimmune

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top

Amount to Collect:
1 mL blood

NOTE: This should be submitted as a unique, separate sample for testing.

Preferred Volume:
1 mL blood

NOTE: This should be submitted as a unique, separate sample for testing.

Minimum Volume:
0.5 mL blood

NOTE: This should be submitted as a unique, separate sample for testing and this minimum volume does not allow for repeat testing if needed.

Remarks:

Time to steady state: 2-5 days

Draw trough samples only (24 hours post dose or just prior to next dose) or normal ranges will not apply.

This very non-polar compound adheres tenaciously to plastic; samples should not be drawn from any line through which the drug has been infused but only from a peripheral site.

NOTE: To avoid testing delays and the possibility of QNS samples, blood for Cyclosporin should be collected as a separate sample. The sample should not be shared for any other test(s).

PROCESSING

Test Code:

CYCL

Performing Lab:

China Basin Chemistry

Specimen Preparation:

Do not centrifuge

Preferred Volume:

1 mL blood

NOTE: This should be submitted as a unique, separate sample for testing.

Minimum Volume:

0.5 mL blood

NOTE: This should be submitted as a unique, separate sample for testing and this minimum volume does not allow for repeat testing if needed.

RESULT INTERPRETATION

Units:

µg/L

Reference Interval:

Therapeutic trough 50-500 µg/L

Additional Information:

Generally recommended therapeutic trough levels vary between 50 to 500. However, there is no universally accepted therapeutic level and the desired concentrations may vary with the indications, e.g., higher for liver than for renal transplantation, higher early in the post-transplant period, higher in threatened or subacute rejection. In a patient who is doing well following liver transplantation a level of 250-300 might be sought for the first 3-4 months , 150-250 for 4 months - 12 months , and lowered to 100-150 after one year, whereas post-renal transplant a well-compensated patient might be kept at 150-300 for 6 months , then reduced to 50-150. The level usually desirable for any given patient may also be adjusted because of intercurrent illness. The current therapeutic range was established in consultation with UCSF transplant physicians and clinical pharmacists.

The Abbott Architect immunoassay for cyclosporine is reported by the manufacturer to show little or no cross reactivity with the major cyclosporine metabolites. Results with this immunoassay run approximately 30% higher than results with the previous HPLC assay mainly due to assay calibration differences. See the lab manual's "A Guide on Drug Level Monitoring" (in the Chemistry Guide) for additional information.

ADMINISTRATIVE

CPT Codes:

80158

LOINC Codes:

3520-4

COMPLETE VIEW

Available Stat:

No

Test Code:

CYCL

Performing Lab:

China Basin Chemistry

Performed:

Daily (day shift)

Methodology:
Abbott Architect Chemiluminescent Immunoassay

Remarks:
Time to steady state: 2-5 days

Draw trough samples only (24 hours post dose or just prior to next dose) or normal ranges will not apply.

This very non-polar compound adheres tenaciously to plastic; samples should not be drawn from any line through which the drug has been infused but only from a peripheral site.

NOTE: To avoid testing delays and the possibility of QNS samples, blood for Cyclosporin should be collected as a separate sample. The sample should not be shared for any other test(s).

Collect:
Lavender top

Amount to Collect:
1 mL blood

NOTE: This should be submitted as a unique, separate sample for testing.

Sample Type:
EDTA whole blood

Preferred Volume:
1 mL blood

NOTE: This should be submitted as a unique, separate sample for testing.

Minimum Volume:
0.5 mL blood

NOTE: This should be submitted as a unique, separate sample for testing and this minimum volume does not allow for repeat testing if needed.

Specimen Preparation:
Do not centrifuge

Units:
µg/L

Reference Interval:
Therapeutic trough 50-500 µg/L

Synonyms:

- Neoral
- cyclosporin
- CSA
- Gengraf
- Sandimmune

Reported:
For samples received by 1200 (Monday-Friday) and 1000 (weekends and holidays) the results will be available by 1600. Results for samples that miss the cut-off times will be available the following day.

Note: Samples from Berkeley Outpatient Clinic (BOPC) will be reported next day.

Additional Information:
Generally recommended therapeutic trough levels vary between 50 to 500. However, there is no universally accepted therapeutic level and the desired concentrations may vary with the indications, e.g., higher for liver than for renal transplantation, higher early in the post-transplant period, higher in threatened or subacute rejection. In a patient who is doing well following liver transplantation a level of 250-300 might be sought for the first 3-4 months , 150-250 for 4 months - 12 months , and lowered to 100-150 after one year, whereas post-renal transplant a well-compensated patient might be kept at 150-300 for 6 months , then reduced to 50-150. The level usually desirable for any given patient may also be adjusted because of intercurrent illness. The current therapeutic range was established in consultation with UCSF transplant physicians and clinical pharmacists.

The Abbott Architect immunoassay for cyclosporine is reported by the manufacturer to show little or no cross reactivity with the major cyclosporine metabolites. Results with this immunoassay run approximately 30% higher than results with the previous HPLC assay mainly due to assay calibration differences. See the lab manual's "A Guide on Drug Level Monitoring" (in the Chemistry Guide) for additional information.

CPT Codes:
80158

LOINC Codes:
3520-4

CYP2C19 Genotype

2C19G

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
PCR

Reported:
4-8 days

Synonyms:

- Cytochrome P450 2C19
- Plavix

COLLECTION

Sample Type:
EDTA or heparinized whole blood

Collect:
Lavender top, Dark green top

Amount to Collect:
4 mL blood

Preferred Volume:
4 mL blood

Minimum Volume:
2 mL blood

Stability (from collection to initiation):
Room temperature 8 days, Refrigerated 1 month

PROCESSING

Test Code:
2C19G

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Do not aliquot sample. Transport to CB & Quest at ambient temperature. Order Quest test code 16924.

Preferred Volume:
4 mL blood

Minimum Volume:
2 mL blood

Stability (from collection to initiation):
Room temperature 8 days, Refrigerated 1 month

ADMINISTRATIVE

CPT Codes:
81225-90

COMPLETE VIEW

Available Stat:
No

Test Code:
2C19G

Performing Lab:
Quest

Sendout:
Yes

Methodology:
PCR

Collect:
Lavender top, Dark green top

Amount to Collect:
4 mL blood

Sample Type:
EDTA or heparinized whole blood

Preferred Volume:
4 mL blood

Minimum Volume:
2 mL blood

Specimen Preparation:
Do not aliquot sample. Transport to CB & Quest at ambient temperature. Order Quest test code 16924.

Synonyms:

- Cytochrome P450 2C19
- Plavix

Stability (from collection to initiation):
Room temperature 8 days, Refrigerated 1 month

Reported:
4-8 days

CPT Codes:
81225-90

CYP2C9 Genotype

2C9G

ORDERING

Available Stat:
No

Performing Lab:
Quest

Performed:
Thursdays

Methodology:
PCR, Single nucleotide primer extension

Reported:
7 days

Synonyms:

- Cytochrome p450 2C9 Genotype

COLLECTION

Sample Type:
Blood

Collect:
Lavender (EDTA) top

Amount to Collect:
5 mL

Preferred Volume:
5 mL

Minimum Volume:
3 mL

Stability (from collection to initiation):
8 days ambient or refrigerated. Unacceptable frozen.

Storage/Transport Temperature:
Refrigerated

Unacceptable Conditions:
Frozen

PROCESSING

Test Code:
2C9G

Sendout:
Yes

Performing Lab:
Quest

Preferred Volume:
5 mL

Minimum Volume:
3 mL

Unacceptable Conditions:
Frozen

Stability (from collection to initiation):
8 days ambient or refrigerated. Unacceptable frozen.

Storage/Transport Temperature:
Refrigerated

ADMINISTRATIVE

CPT Codes:
81227

LOINC Codes:
46724-1

COMPLETE VIEW

Available Stat:
No

Test Code:
2C9G

Performing Lab:
Quest

Sendout:
Yes

Performed:
Thursdays

Methodology:
PCR, Single nucleotide primer extension

Collect:
Lavender (EDTA) top

Amount to Collect:
5 mL

Sample Type:
Blood

Preferred Volume:
5 mL

Minimum Volume:
3 mL

Unacceptable Conditions:
Frozen

Synonyms:

- Cytochrome p450 2C9 Genotype

Storage/Transport Temperature:
Refrigerated

Stability (from collection to initiation):
8 days ambient or refrigerated. Unacceptable frozen.

Reported:
7 days

CPT Codes:
81227

LOINC Codes:
46724-1

CYP2D6 Genotype

2D6G

ORDERING

Available Stat:
No

Performing Lab:
Quest

Performed:
Monday and Thursday

Methodology:
Polymerase Chain Reaction (PCR) • Single Nucleotide Primer Extension Reaction (SNP-IT)

Reported:
10-12 days

Additional Information:
The CYP2D6 gene product is responsible for the metabolism of many major drug groups including many antidepressants, neuroleptics, and cardiovascular drugs. Cytochrome 450 2D6 Genotype detects eight alleles associated with the poor metabolizer phenotype (PM). Patients with duplication of the CYP2D6 gene are ultraextensive metabolizers (UEM). Approximately 5-10% of Caucasian individuals express PM phenotype and the same percentage the UEM phenotype.

Synonyms:

- Cytochrome p450 2d6 Genotype

COLLECTION

Sample Type:
Whole blood

Collect:
EDTA Lavender-top tube

Amount to Collect:
5 mL

Preferred Volume:
5 mL

Minimum Volume:
3 mL

Stability (from collection to initiation):
Room temperature: 8 days
Refrigerated: 8 days
Frozen: Unacceptable

Storage/Transport Temperature:
Refrigerated

Unacceptable Conditions:
Wrong specimen type • Received Frozen • Exceeds specimen stability • QNS

PROCESSING

Test Code:
2D6G

Sendout:
Yes

Performing Lab:
Quest

Preferred Volume:
5 mL

Minimum Volume:
3 mL

Unacceptable Conditions:
Wrong specimen type • Received Frozen • Exceeds specimen stability • QNS

Stability (from collection to initiation):
Room temperature: 8 days
Refrigerated: 8 days
Frozen: Unacceptable

Storage/Transport Temperature:
Refrigerated

RESULT INTERPRETATION

Additional Information:
The CYP2D6 gene product is responsible for the metabolism of many major drug groups including many antidepressants, neuroleptics, and cardiovascular drugs. Cytochrome 450 2D6 Genotype detects eight alleles associated with the poor metabolizer phenotype (PM). Patients with duplication of the CYP2D6 gene are ultraextensive metabolizers (UEM). Approximately 5-10% of Caucasian individuals express PM phenotype and the same percentage the UEM phenotype.

ADMINISTRATIVE

CPT Codes:
81226

COMPLETE VIEW

Available Stat:
No

Test Code:
2D6G

Performing Lab:
Quest

Sendout:
Yes

Performed:
Monday and Thursday

Methodology:
Polymerase Chain Reaction (PCR) • Single Nucleotide Primer Extension Reaction (SNP-IT)

Collect:
EDTA Lavender-top tube

Amount to Collect:
5 mL

Sample Type:
Whole blood

Preferred Volume:
5 mL

Minimum Volume:
3 mL

Unacceptable Conditions:
Wrong specimen type • Received Frozen • Exceeds specimen stability • QNS

Synonyms:

- Cytochrome p450 2d6 Genotype

Storage/Transport Temperature:
Refrigerated

Stability (from collection to initiation):
Room temperature: 8 days
Refrigerated: 8 days
Frozen: Unacceptable

Reported:
10-12 days

Additional Information:
The CYP2D6 gene product is responsible for the metabolism of many major drug groups including many antidepressants, neuroleptics, and cardiovascular drugs. Cytochrome 450 2D6 Genotype detects eight alleles associated with the poor metabolizer phenotype (PM). Patients with duplication of the CYP2D6 gene are ultraextensive metabolizers (UEM). Approximately 5-10% of Caucasian individuals express PM phenotype and the same percentage the UEM phenotype.

CPT Codes:
81226

CYP3A4 Genotype

3A4G

ORDERING

Available Stat:
No

Performing Lab:
Quest

Performed:
Wednesday

Methodology:
Single Nucleotide Primer Extension

Reported:
9-16 days

Additional Information:
CYP3A4 and CYP3A5 are liver enzymes that are responsible for metabolizing approximately 50% of small molecule drugs, and their induction often causes unwanted drug-drug interactions and potential toxicities. Variants of CYP3A4/3A5 are associated with significant phenotypic variations that alter the rate of drug metabolism and may cause increased or decreased drug efficacy or adverse drug reactions.
Detecting genetic predisposition to altered CYP3A4/3A5 metabolism may help to avoid drug toxicity and can assist the physician with optimizing therapeutic strageties for maximum efficacy and minimal adverse effects.

COLLECTION

Sample Type:
Whole blood

Collect:
EDTA Lavender-top tube

Amount to Collect:
4 mL

Preferred Volume:
4 mL

Minimum Volume:
2 mL

Stability (from collection to initiation):
Room temperature: 8 days
Refrigerated: 8 days
Frozen: Unacceptable

Storage/Transport Temperature:
Refrigerated

Unacceptable Conditions:
Incorrect collection device • Liquid has leaked from container • No liquid present • Blood sample received frozen • Buccal swabs received refrigerated or frozen

PROCESSING

Test Code:
3A4G

Sendout:
Yes

Performing Lab:
Quest

Preferred Volume:
4 mL

Minimum Volume:
2 mL

Unacceptable Conditions:
Incorrect collection device • Liquid has leaked from container • No liquid present • Blood sample received frozen • Buccal swabs received refrigerated or frozen

Stability (from collection to initiation):
Room temperature: 8 days
Refrigerated: 8 days
Frozen: Unacceptable

Storage/Transport Temperature:
Refrigerated

RESULT INTERPRETATION

Additional Information:
CYP3A4 and CYP3A5 are liver enzymes that are responsible for metabolizing approximately 50% of small molecule drugs, and their induction often causes unwanted drug-drug interactions and potential toxicities. Variants of CYP3A4/3A5 are associated with significant phenotypic variations that alter the rate of drug metabolism and may cause increased or decreased drug efficacy or adverse drug reactions.
Detecting genetic predisposition to altered CYP3A4/3A5 metabolism may help to avoid drug toxicity and can assist the physician with optimizing therapeutic strageties for maximum efficacy and minimal adverse effects.

ADMINISTRATIVE

CPT Codes:
81230

COMPLETE VIEW

Available Stat:
No

Test Code:
3A4G

Performing Lab:
Quest

Sendout:
Yes

Performed:
Wednesday

Methodology:
Single Nucleotide Primer Extension

Collect:
EDTA Lavender-top tube

Amount to Collect:
4 mL

Sample Type:
Whole blood

Preferred Volume:
4 mL

Minimum Volume:
2 mL

Unacceptable Conditions:
Incorrect collection device • Liquid has leaked from container • No liquid present • Blood sample received frozen • Buccal swabs received refrigerated or frozen

Storage/Transport Temperature:
Refrigerated

Stability (from collection to initiation):
Room temperature: 8 days
Refrigerated: 8 days
Frozen: Unacceptable

Reported:
9-16 days

Additional Information:
CYP3A4 and CYP3A5 are liver enzymes that are responsible for metabolizing approximately 50% of small molecule drugs, and their induction often causes unwanted drug-drug interactions and potential toxicities. Variants of CYP3A4/3A5 are associated with significant phenotypic variations that alter the rate of drug metabolism and may cause increased or decreased drug efficacy or adverse drug reactions.
Detecting genetic predisposition to altered CYP3A4/3A5 metabolism may help to avoid drug toxicity and can assist the physician with optimizing therapeutic strageties for maximum efficacy and minimal adverse effects.

CPT Codes:
81230

CYP3A5 Genotype

3A5G

ORDERING

Available Stat:
No

Performing Lab:
Quest

Performed:
Wednesday

Methodology:
Single Nucleotide Primer Extension

Reported:
9-16 days

Additional Information:
CYP3A4 and CYP3A5 are liver enzymes that are responsible for metabolizing approximately 50% of small molecule drugs, and their induction often causes unwanted drug-drug interactions and potential toxicities. Variants of CYP3A4/3A5 are associated with significant phenotypic variations that alter the rate of drug metabolism and may cause increased or decreased drug efficacy or adverse drug reactions.
Detecting genetic predisposition to altered CYP3A4/3A5 metabolism may help avoid drug toxicity and can assist the physician with optimizing therapeutic strategies for maximum efficacy and minimal adverse effects.

Synonyms:

- Cytochrome p450 3A5 Genotype

COLLECTION

Sample Type:
Whole blood

Collect:
EDTA Lavender-top

Amount to Collect:
4 mL

Preferred Volume:
4 mL

Minimum Volume:
2 mL

Stability (from collection to initiation):
Room temperature: 8 days
Refrigerated: 8 days
Frozen: Unacceptable

Storage/Transport Temperature:
Refrigerated

Unacceptable Conditions:
Incorrect collection device • Liquid has leaked from container • No liquid present • Blood sample received frozen • Buccal swabs received refrigerated or frozen

PROCESSING

Test Code:
3A5G

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Do not aliquot. Transport to CB refrigerated. Order Quest test code 91618.

Preferred Volume:
4 mL

Minimum Volume:
2 mL

Unacceptable Conditions:
Incorrect collection device • Liquid has leaked from container • No liquid present • Blood sample received frozen • Buccal swabs received refrigerated or frozen

Stability (from collection to initiation):
Room temperature: 8 days
Refrigerated: 8 days
Frozen: Unacceptable

Storage/Transport Temperature:
Refrigerated

RESULT INTERPRETATION

Additional Information:
CYP3A4 and CYP3A5 are liver enzymes that are responsible for metabolizing approximately 50% of small molecule drugs, and their induction often causes unwanted drug-drug interactions and potential toxicities. Variants of CYP3A4/3A5 are associated with significant phenotypic variations that alter the rate of drug metabolism and may cause increased or decreased drug efficacy or adverse drug reactions.
Detecting genetic predisposition to altered CYP3A4/3A5 metabolism may help avoid drug toxicity and can assist the physician with optimizing therapeutic strategies for maximum efficacy and minimal adverse effects.

ADMINISTRATIVE

CPT Codes:
81231

COMPLETE VIEW

Available Stat:
No

Test Code:
3A5G

Performing Lab:
Quest

Sendout:
Yes

Performed:
Wednesday

Methodology:
Single Nucleotide Primer Extension

Collect:
EDTA Lavender-top

Amount to Collect:
4 mL

Sample Type:
Whole blood

Preferred Volume:
4 mL

Minimum Volume:
2 mL

Unacceptable Conditions:
Incorrect collection device • Liquid has leaked from container • No liquid present • Blood sample received frozen • Buccal swabs received refrigerated or frozen

Specimen Preparation:
Do not aliquot. Transport to CB refrigerated. Order Quest test code 91618.

Synonyms:

- Cytochrome p450 3A5 Genotype

Storage/Transport Temperature:
Refrigerated

Stability (from collection to initiation):
Room temperature: 8 days
Refrigerated: 8 days
Frozen: Unacceptable

Reported:

9-16 days

Additional Information:

CYP3A4 and CYP3A5 are liver enzymes that are responsible for metabolizing approximately 50% of small molecule drugs, and their induction often causes unwanted drug-drug interactions and potential toxicities. Variants of CYP3A4/3A5 are associated with significant phenotypic variations that alter the rate of drug metabolism and may cause increased or decreased drug efficacy or adverse drug reactions.

Detecting genetic predisposition to altered CYP3A4/3A5 metabolism may help avoid drug toxicity and can assist the physician with optimizing therapeutic strategies for maximum efficacy and minimal adverse effects.

CPT Codes:

81231

Cystatin C with estimated GFR

CYSTNC

ORDERING

Available Stat:
No

Performing Lab:
Parnassus Chemistry

Methodology:
Immunoturbidimetric-Gentian reagents on Architect c8000

Reported:
STAT 1 hour, Routine 4 hours

Note: TAT for STAT or Routine samples drawn at Mission Bay or Mt Zion can be up to 24 hours.

Additional Information:
eGFRcys:

Estimated GFR (eGFRcys) is reported with plasma Cystatin C results and is determined using the CKD-EPI (2012) equation.

$eGFRcys = 133 \times \min(S_{cys}/0.8, 1)^{-0.499} \times \max(S_{cys}/0.8, 1)^{-1.328} \times 0.996^{Age} \times 0.932$ [if female)

Where:
eGFRcys (estimated glomerular filtration rate) = mL/min/1.73 m^2
Scys (standardized serum cystatin C) = mg/L
min = indicates the minimum of $S_{cys}/0.8$ or 1
max = indicates the maximum of $S_{cys}/0.8$ or 1
age = years
units are in mL/min/1.73 m^2 body surface area

eGFRcr-cys:

eGFRcr-cys is calculated using CKD-EPI (2021) equation based on creatinine and cystatin C results and without a race coefficient (NKF-ASN recommendations).

$eGFRcr\text{-}cys = 135 \times [\min(sCR/kappa,1)^{alpha} \times \max(sCR/kappa, 1)^{-0.544}] \times \min(sCYS/0.8, 1)^{-0.323} \times \max(sCYS/0.8, 1)^{-0.778} \times 0.9961^{AGE} \times 0.963$ [if female]

Where:
- sCR is serum creatinine in mg/dL
- sCYS is serum cystatin C in mg/L
- alpha is -0.219 for females and -0.144 for males
- min sCR/kappa, 1 indicates the minimum of sCR/kappa or 1
- max sCR/kappa, 1 indicates the maximum of sCR/kappa or 1
- min sCYS/0.8, 1 indicates the minimum of sCYS/0.8 or 1
- max sCYS/0.8, 1 indicates the maximum of sCYS/0.8 or 1
- units are in mL/min/1.73 m^2 body surface area

eGFRcr-cys is reported only when a Creatinine and Cystatin C are both selected in the Cystatin C panel order.

COLLECTION

Sample Type:
Plasma

Collect:
Lt. Green top (preferred)

Red top or Gold top (acceptable)

Amount to Collect:
2 mL

Preferred Volume:
1.0 mL

Minimum Volume:
0.2 mL

Stability (from collection to initiation):
Room Temperature (8-25°C): = 14 days
Refrigerated (2-8°C): = 21 days
Frozen (-70°C or colder): 5 years

PROCESSING

Test Code:
CYSTNC

Performing Lab:
Parnassus Chemistry

Preferred Volume:
1.0 mL

Minimum Volume:
0.2 mL

Stability (from collection to initiation):
Room Temperature (8-25°C): = 14 days
Refrigerated (2-8°C): = 21 days
Frozen (-70°C or colder): 5 years

RESULT INTERPRETATION

Units:
Cystatin C: mg/L
eGFRcys: mL/min/1.73m^2
eGFRcr-cys: mL/min/1.73m^2

Reference Interval:
Cystatin C

Males:

Age	Males (mg/L)
0 to <1 month	1.49-2.85
1 to <5 months	1.01-1.92
5 months to <1 year	0.75-1.53
1 to <2 years	0.75-1.20
2 to <19 years	0.70-1.20
19-29 years	0.60-1.03
30-39 years	0.64-1.12
40-49 years	0.68-1.22
50-59 years	0.72-1.32
60-69 years	0.77-1.42
70-79 years	0.82-1.52
>79 years	No reference values established

Females:

Age	Females (mg/L)
0 to <1 month	1.49-2.85
1 to <5 months	1.01-1.92
5 months to <1 year	0.75-1.53
1 to <2 years	0.75-1.25
2 to <19 years	0.70-1.10
19-29 years	0.57-0.90
30-39 years	0.59-0.98
40-49 years	0.62-1.07
50-59 years	0.64-1.17
60-69 years	0.66-1.26
70-80 years	0.68-1.36
81-86 years	0.70-1.45
>86 years	No reference values established

Adult reference ranges have been adopted from Mayo Medical Laboratories based on correlation studies showing excellent agreement between the Architect Gentian method and the Mayo Roche Gentian method in samples in the Mayo reference range.

Pediatric reference ranges adopted from the Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study and Cai et al, Pediatric Nephrology, 2020, 35:1959-1966.

eGFRcys
Results < 60 mL/min per 1.73 m^2 are flagged as abnormal

eGFRcys will not be calculated for patients under 18 years

eGFRcr-cys
Results < 60 mL/min per 1.73 m^2 are flagged as abnormal

eGFRcr-cys will not be calculated for patients under 18 years

Normal to increased GFR	Stage G1	= 90 mL/min per 1.73 m^2
Mildly reduced GFR	Stage G2	60 - 89 mL/min per 1.73 m^2
Moderately reduced GFR	Stage G3a	45 - 59 mL/min per 1.73 m^2
Moderately reduced GFR	Stage G3b	30 - 44 mL/min per 1.73 m^2
Severely reduced GFR	Stage G4	15 - 29 mL/min per 1.73 m^2
Kidney failure	Stage G5	< 15 mL/min per 1.73 m^2

Source: Kidney Disease: Improving Global Outcomes (KDIGO) Consensus Conference, 2020

Additional Information:

eGFRcys:

Estimated GFR (eGFRcys) is reported with plasma Cystatin C results and is determined using the CKD-EPI (2012) equation.

$eGFRcys = 133 \times \min(S_{cys}/0.8, 1)^{-0.499} \times \max(S_{cys}/0.8, 1)^{-1.328} \times 0.996^{Age} \times 0.932$ [if female)

Where:
eGFRcys (estimated glomerular filtration rate) = mL/min/1.73 m^2
Scys (standardized serum cystatin C) = mg/L
min = indicates the minimum of $S_{cys}/0.8$ or 1
max = indicates the maximum of $S_{cys}/0.8$ or 1
age = years
units are in mL/min/1.73 m^2 body surface area

eGFRcr-cys:

eGFRcr-cys is calculated using CKD-EPI (2021) equation based on creatinine and cystatin C results and without a race coefficient (NKF-ASN recommendations).

$eGFRcr\text{-}cys = 135 \times [\min(sCR/kappa,1)^{alpha} \times \max(sCR/kappa, 1)^{-0.544}] \times \min(sCYS/0.8, 1)^{-0.323} \times \max(sCYS/0.8, 1)^{-0.778} \times 0.9961^{AGE} \times 0.963$ [if female]

Where:
- sCR is serum creatinine in mg/dL
- sCYS is serum cystatin C in mg/L
- alpha is -0.219 for females and -0.144 for males
- min sCR/kappa, 1 indicates the minimum of sCR/kappa or 1
- max sCR/kappa, 1 indicates the maximum of sCR/kappa or 1
- min sCYS/0.8, 1 indicates the minimum of sCYS/0.8 or 1
- max sCYS/0.8, 1 indicates the maximum of sCYS/0.8 or 1
- units are in mL/min/1.73 m^2 body surface area

eGFRcr-cys is reported only when a Creatinine and Cystatin C are both selected in the Cystatin C panel order.

ADMINISTRATIVE

CPT Codes:
82610

LOINC Codes:
87430-5

COMPLETE VIEW

Available Stat:
No

Test Code:
CYSTNC

Performing Lab:
Parnassus Chemistry

Methodology:
Immunoturbidimetric-Gentian reagents on Architect c8000

Collect:
Lt. Green top (preferred)

Red top or Gold top (acceptable)

Amount to Collect:
2 mL

Sample Type:
Plasma

Preferred Volume:
1.0 mL

Minimum Volume:
0.2 mL

Units:
Cystatin C: mg/L
eGFRcys: mL/min/1.73m^2
eGFRcr-cys: mL/min/1.73m^2

Reference Interval:
Cystatin C

Males:

Age	Males (mg/L)
0 to <1 month	1.49-2.85
1 to <5 months	1.01-1.92
5 months to <1 year	0.75-1.53
1 to <2 years	0.75-1.20
2 to <19 years	0.70-1.20
19-29 years	0.60-1.03
30-39 years	0.64-1.12
40-49 years	0.68-1.22
50-59 years	0.72-1.32
60-69 years	0.77-1.42
70-79 years	0.82-1.52
>79 years	No reference values established

Females:

Age	Females (mg/L)
0 to <1 month	1.49-2.85
1 to <5 months	1.01-1.92
5 months to <1 year	0.75-1.53
1 to <2 years	0.75-1.25
2 to <19 years	0.70-1.10
19-29 years	0.57-0.90
30-39 years	0.59-0.98
40-49 years	0.62-1.07
50-59 years	0.64-1.17
60-69 years	0.66-1.26

70-80 years	0.68-1.36
81-86 years	0.70-1.45
>86 years	No reference values established

Adult reference ranges have been adopted from Mayo Medical Laboratories based on correlation studies showing excellent agreement between the Architect Gentian method and the Mayo Roche Gentian method in samples in the Mayo reference range.

Pediatric reference ranges adopted from the Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study and Cai et al, Pediatric Nephrology, 2020, 35:1959-1966.

eGFRcys
Results < 60 mL/min per 1.73 m^2 are flagged as abnormal

eGFRcys will not be calculated for patients under 18 years

eGFRcr-cys
Results < 60 mL/min per 1.73 m^2 are flagged as abnormal

eGFRcr-cys will not be calculated for patients under 18 years

Normal to increased GFR	Stage G1	= 90 mL/min per 1.73 m^2
Mildly reduced GFR	Stage G2	60 - 89 mL/min per 1.73 m^2
Moderately reduced GFR	Stage G3a	45 - 59 mL/min per 1.73 m^2
Moderately reduced GFR	Stage G3b	30 - 44 mL/min per 1.73 m^2
Severely reduced GFR	Stage G4	15 - 29 mL/min per 1.73 m^2
Kidney failure	Stage G5	< 15 mL/min per 1.73 m^2

Source: Kidney Disease: Improving Global Outcomes (KDIGO) Consensus Conference, 2020

Stability (from collection to initiation):
Room Temperature (8-25°C): = 14 days
Refrigerated (2-8°C): = 21 days
Frozen (-70°C or colder): 5 years

Reported:
STAT 1 hour, Routine 4 hours

Note: TAT for STAT or Routine samples drawn at Mission Bay or Mt Zion can be up to 24 hours.

Additional Information:

eGFRcys:

Estimated GFR (eGFRcys) is reported with plasma Cystatin C results and is determined using the CKD-EPI (2012) equation.

$eGFRcys = 133 \times \min(S_{cys}/0.8, 1)^{-0.499} \times \max(S_{cys}/0.8, 1)^{-1.328} \times 0.996^{Age} \times 0.932$ [if female)

Where:
eGFRcys (estimated glomerular filtration rate) = mL/min/1.73 m^2
Scys (standardized serum cystatin C) = mg/L
min = indicates the minimum of $S_{cys}/0.8$ or 1
max = indicates the maximum of $S_{cys}/0.8$ or 1
age = years
units are in mL/min/1.73 m^2 body surface area

eGFRcr-cys:

eGFRcr-cys is calculated using CKD-EPI (2021) equation based on creatinine and cystatin C results and without a race coefficient (NKF-ASN recommendations).

$eGFRcr\text{-}cys = 135 \times [\min(sCR/kappa,1)^{alpha} \times \max(sCR/kappa, 1)^{-0.544}] \times \min(sCYS/0.8, 1)^{-0.323} \times \max(sCYS/0.8, 1)^{-0.778} \times 0.9961^{AGE} \times 0.963$ [if female]

Where:
- sCR is serum creatinine in mg/dL
- sCYS is serum cystatin C in mg/L
- alpha is -0.219 for females and -0.144 for males
- min sCR/kappa, 1 indicates the minimum of sCR/kappa or 1
- max sCR/kappa, 1 indicates the maximum of sCR/kappa or 1
- min sCYS/0.8, 1 indicates the minimum of sCYS/0.8 or 1
- max sCYS/0.8, 1 indicates the maximum of sCYS/0.8 or 1
- units are in mL/min/1.73 m^2 body surface area

eGFRcr-cys is reported only when a Creatinine and Cystatin C are both selected in the Cystatin C panel order.

CPT Codes:

82610

LOINC Codes:

87430-5

Cystic Fibrosis CBAVD Poly T Mutation

POLT

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Molecular Diagnostics

Performed:
Run 1x per week, Monday-Friday, day shift only

Methodology:
PCR and allele-specific probes

Reported:
7-10 days

Additional Information:
This test detects the 5T variant at the CFTR exon 9 splice site, which has been implicated in congenital bilateral absence of the vas deferens. The mutation can also affect the phenotype of some mild CF mutations.

If a mutation is detected it is recommended that the patient seek genetic counseling.

Note: This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Synonyms:

- PCR
- CF Poly T

COLLECTION

Sample Type:
EDTA whole blood, Tissue culture CVS

Collect:
Lavender top, Blue (citrate) and Yellow (ACD) tops acceptable

Amount to Collect:
3 mL blood

Preferred Volume:
3 mL blood

Minimum Volume:
0.5 mL blood

Remarks:
If collecting in citrate, check the expiration date on the label of the blue top vacutainer before drawing the patient

Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer.

PROCESSING

Test Code:
POLT

Test Group:
Cystic Fibrosis

Performing Lab:
Medical Genomics - Molecular Diagnostics

Specimen Preparation:
Do not centrifuge the specimen. Store at room temperature. Refrigerated samples are acceptable.

Preferred Volume:
3 mL blood

Minimum Volume:
0.5 mL blood

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer.

RESULT INTERPRETATION

Reference Interval:
5T allele not detected

Additional Information:
This test detects the 5T variant at the CFTR exon 9 splice site, which has been implicated in congenital bilateral absence of the vas deferens. The mutation can also affect the phenotype of some mild CF mutations.

If a mutation is detected it is recommended that the patient seek genetic counseling.

Note: This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

ADMINISTRATIVE

CPT Codes:
81224

LDT or Modified FDA:
Yes

LOINC Codes:
21654-9

COMPLETE VIEW

Available Stat:
No

Test Code:
POLT

Test Group:
Cystic Fibrosis

Performing Lab:
Medical Genomics - Molecular Diagnostics

Performed:
Run 1x per week, Monday-Friday, day shift only

Methodology:
PCR and allele-specific probes

Remarks:
If collecting in citrate, check the expiration date on the label of the blue top vacutainer before drawing the patient

Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Collect:
Lavender top, Blue (citrate) and Yellow (ACD) tops acceptable

Amount to Collect:
3 mL blood

Sample Type:
EDTA whole blood, Tissue culture CVS

Preferred Volume:
3 mL blood

Minimum Volume:
0.5 mL blood

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer.

Specimen Preparation:
Do not centrifuge the specimen. Store at room temperature. Refrigerated samples are acceptable.

Reference Interval:
5T allele not detected

Synonyms:

- PCR
- CF Poly T

Reported:
7-10 days

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Additional Information:
This test detects the 5T variant at the CFTR exon 9 splice site, which has been implicated in congenital bilateral absence of the vas deferens. The mutation can also affect the phenotype of some mild CF mutations.

If a mutation is detected it is recommended that the patient seek genetic counseling.

Note: This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

CPT Codes:
81224

LDT or Modified FDA:
Yes

LOINC Codes:
21654-9

Cystic Fibrosis, common mutations

MCFM

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Molecular Diagnostics

Performed:
Run 2x per week, Monday - Friday day shift only

Methodology:
Multiplex PCR, RDB

Reported:
7-10 days

Additional Information:

An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

A total of 34 mutations and the F508C polymorphism are included in this assay, which detects CF mutations in 88% of Caucasians, 94% of Ashkenazi Jewish decent, 72% of Hispanics and 65% of African Americans.

The UCSF CF panel encompasses all the ACMG recommended 23 mutations and 11 additional ones. Compared to the California CF newborn screen, the UCSF panel overlaps with 15 ACMG mutations and 2 common Hispanic mutations. A newborn who is suspected of having CF and tests negative or heterozygous by the State program might benefit from additional mutations screened for at UCSF.

Click here for comparison of UCSF, California State panels and ACMG recommended mutations

A reflex test for the 5/7/9T polymorphism is recommended to evaluate the association of CBAVD with CF, if the patient is diagnosed with the R117H mutation.

If a mutation is detected it is recommended that the patient seek genetic counseling.

Note: This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

Reflex Testing:
5/7/9T Polymorphism test is performed if sample shows R117H mutation

Synonyms:

- CF mutations
- CF polymorphisms
- F508 deletion
- Delta F508 deletion
- Phenylalanine 508 deletion
- R553X mutation

COLLECTION

Sample Type:
Whole blood, Tissue culture, Amniotic fluid, Chorionic villi

Collect:
Lavender top, Blue (citrate) and Yellow (ACD) tops acceptable

Amount to Collect:
See Preferred Volume

Preferred Volume:
Whole blood: 3 mL
Cell culture: 2 T25 flasks, 80% confluent
Amniotic fluid: 10 mL
Chorionic villi: 10 mg (2-3 mm diameter)

Minimum Volume:
0.5 mL for whole blood

Remarks:
If collecting in citrate, check the expiration date on the label of the blue top vacutainer before drawing the patient.

Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Stability (from collection to initiation):
Whole blood is stable refrigerated for 1 week.

Unacceptable Conditions:
Insufficient sample provided. Samples collected in outdated blue top vacutainer.

PROCESSING

Test Code:
MCFM

Test Group:
Cystic Fibrosis

Performing Lab:
Medical Genomics - Molecular Diagnostics

Specimen Preparation:
Do not centrifuge the specimen. Store at room temperature. Refrigerated samples are acceptable.

Preferred Volume:
Whole blood: 3 mL
Cell culture: 2 T25 flasks, 80% confluent
Amniotic fluid: 10 mL
Chorionic villi: 10 mg (2-3 mm diameter)

Minimum Volume:
0.5 mL for whole blood

Unacceptable Conditions:
Insufficient sample provided. Samples collected in outdated blue top vacutainer.

Stability (from collection to initiation):
Whole blood is stable refrigerated for 1 week.

RESULT INTERPRETATION

Reference Interval:
No mutation detected

Additional Information:

An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

A total of 34 mutations and the F508C polymorphism are included in this assay, which detects CF mutations in 88% of Caucasians, 94% of Ashkenazi Jewish decent, 72% of Hispanics and 65% of African Americans.

The UCSF CF panel encompasses all the ACMG recommended 23 mutations and 11 additional ones. Compared to the California CF newborn screen, the UCSF panel overlaps with 15 ACMG mutations and 2 common Hispanic mutations. A newborn who is suspected of having CF and tests negative or heterozygous by the State program might benefit from additional mutations screened for at UCSF.

Click here for comparison of UCSF, California State panels and ACMG recommended mutations

A reflex test for the 5/7/9T polymorphism is recommended to evaluate the association of CBAVD with CF, if the patient is diagnosed with the R117H mutation.

If a mutation is detected it is recommended that the patient seek genetic counseling.

Note: This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

ADMINISTRATIVE

CPT Codes:
81220

LDT or Modified FDA:
Yes

LOINC Codes:
21654-9

COMPLETE VIEW

Available Stat:
No

Test Code:
MCFM

Test Group:
Cystic Fibrosis

Performing Lab:
Medical Genomics - Molecular Diagnostics

Performed:
Run 2x per week, Monday - Friday day shift only

Methodology:
Multiplex PCR, RDB

Remarks:
If collecting in citrate, check the expiration date on the label of the blue top vacutainer before drawing the patient.

Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Collect:
Lavender top, Blue (citrate) and Yellow (ACD) tops acceptable

Amount to Collect:
See Preferred Volume

Sample Type:
Whole blood, Tissue culture, Amniotic fluid, Chorionic villi

Preferred Volume:
Whole blood: 3 mL
Cell culture: 2 T25 flasks, 80% confluent
Amniotic fluid: 10 mL
Chorionic villi: 10 mg (2-3 mm diameter)

Minimum Volume:
0.5 mL for whole blood

Unacceptable Conditions:
Insufficient sample provided. Samples collected in outdated blue top vacutainer.

Specimen Preparation:
Do not centrifuge the specimen. Store at room temperature. Refrigerated samples are acceptable.

Reference Interval:
No mutation detected

Synonyms:

- CF mutations
- CF polymorphisms
- F508 deletion
- Delta F508 deletion
- Phenylalanine 508 deletion
- R553X mutation

Stability (from collection to initiation):
Whole blood is stable refrigerated for 1 week.

Reported:
7-10 days

Reflex Testing:
5/7/9T Polymorphism test is performed if sample shows R117H mutation

Additional Information:

An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

A total of 34 mutations and the F508C polymorphism are included in this assay, which detects CF mutations in 88% of Caucasians, 94% of Ashkenazi Jewish decent, 72% of Hispanics and 65% of African Americans.

The UCSF CF panel encompasses all the ACMG recommended 23 mutations and 11 additional ones. Compared to the California CF newborn screen, the UCSF panel overlaps with 15 ACMG mutations and 2 common Hispanic mutations. A newborn who is suspected of having CF and tests negative or heterozygous by the State program might benefit from additional mutations screened for at UCSF.

Click here for comparison of UCSF, California State panels and ACMG recommended mutations

A reflex test for the 5/7/9T polymorphism is recommended to evaluate the association of CBAVD with CF, if the patient is diagnosed with the R117H mutation.

If a mutation is detected it is recommended that the patient seek genetic counseling.

Note: This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

CPT Codes:
81220

LDT or Modified FDA:
Yes

LOINC Codes:
21654-9

Cysticercosis Antibody

TSABS

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
ELISA

Reported:
Performed 2x per week. Turnaround 5-10 days.

Additional Information:
Testing for IgM antibodies to T. solium is not available. If confirmation is desired, order Cysticercosis IgG AB Western Blot, Quest test # 34279X

Synonyms:

- Cystercercosis
- Taenia solium
- Cysticercus cellulosae

COLLECTION

Sample Type:
Serum

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.1 mL serum

Stability (from collection to initiation):
Room temperature 7 days, refrigerated 2 weeks, frozen at -20C 1 month.

Unacceptable Conditions:
Collected in Gold top

PROCESSING

Test Code:
TSABS

Test Group:
Cysticercosis

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Order Quest test # 96008P

Preferred Volume:
1 mL serum

Minimum Volume:
0.1 mL serum

Unacceptable Conditions:
Collected in Gold top

Stability (from collection to initiation):
Room temperature 7 days, refrigerated 2 weeks, frozen at -20C 1 month.

RESULT INTERPRETATION

Units:
Index

Reference Interval:
< 0.90

Additional Information:
Testing for IgM antibodies to T. solium is not available. If confirmation is desired, order Cysticercosis IgG AB Western Blot, Quest test # 34279X

ADMINISTRATIVE

CPT Codes:
86682-90

LOINC Codes:
7847-7

COMPLETE VIEW

Available Stat:
No

Test Code:
TSABS

Test Group:
Cysticercosis

Performing Lab:
Quest

Sendout:
Yes

Methodology:
ELISA

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.1 mL serum

Unacceptable Conditions:
Collected in Gold top

Specimen Preparation:
Order Quest test # 96008P

Units:
Index

Reference Interval:
< 0.90

Synonyms:

- Cystercercosis
- Taenia solium
- Cysticercus cellulosae

Stability (from collection to initiation):
Room temperature 7 days, refrigerated 2 weeks, frozen at -20C 1 month.

Reported:
Performed 2x per week. Turnaround 5-10 days.

Additional Information:
Testing for IgM antibodies to T. solium is not available. If confirmation is desired, order Cysticercosis IgG AB Western Blot, Quest test # 34279X

CPT Codes:
86682-90

LOINC Codes:
7847-7

Cysticercosis Antibody (IgG), Western Blot

TSASB

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Western Blot

Reported:
3-5 days

Additional Information:
This assay is a qualitative test for the confirmation of specific IgG antibodies recognizing Taenia Solium, the agent causing Cysticerosis. Detection of antibodies to any 6 specific T.solium glycoprotein bands of molecular weight 50, 42-39, 24, 21, 18, and 14 kilodaltons is interpreted as a positive result. However, a positive result without reac- tivity to the 50 and 42-39 glycoprotein bands may reflect crossreactive antibodies induced by Echinococcus.

COLLECTION

Sample Type:
Serum

Collect:
Gold top (SST)

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature: 7 days
Refrigerated: 14 days
Frozen: 30 days

PROCESSING

Test Code:
TSASB

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot and freeze serum. Transport to CB frozen, Order Quest test code 34279.

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature: 7 days
Refrigerated: 14 days
Frozen: 30 days

RESULT INTERPRETATION

Additional Information:
This assay is a qualitative test for the confirmation of specific IgG antibodies recognizing Taenia Solium, the agent causing Cysticerosis. Detection of antibodies to any 6 specific T.solium glycoprotein bands of molecular weight 50, 42-39, 24, 21, 18, and 14 kilodaltons is interpreted as a positive result. However, a positive result without reac- tivity to the 50 and 42-39 glycoprotein bands may reflect crossreactive antibodies induced by Echinococcus.

ADMINISTRATIVE

CPT Codes:
86682

LOINC Codes:
6374-3

COMPLETE VIEW

Available Stat:
No

Test Code:
TSASB

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Western Blot

Collect:
Gold top (SST)

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Specimen Preparation:
Aliquot and freeze serum. Transport to CB frozen, Order Quest test code 34279.

Stability (from collection to initiation):
Room temperature: 7 days
Refrigerated: 14 days
Frozen: 30 days

Reported:
3-5 days

Additional Information:
This assay is a qualitative test for the confirmation of specific IgG antibodies recognizing Taenia Solium, the agent causing Cysticerosis. Detection of antibodies to any 6 specific T.solium glycoprotein bands of molecular weight 50, 42-39, 24, 21, 18, and 14 kilodaltons is interpreted as a positive result. However, a positive result without reac- tivity to the 50 and 42-39 glycoprotein bands may reflect crossreactive antibodies induced by Echinococcus.

CPT Codes:
86682

LOINC Codes:
6374-3

Cysticercosis Antibody, CSF (IgG)

TSCSF

ORDERING

Available Stat:
No

Performing Lab:
Focus via Quest

Methodology:
Western blot

Reported:
Performed once per week. Turnaround 5-15 days

Additional Information:
Testing for IgM antibodies to T. solium is not available.

Synonyms:

- Cystercercosis
- Taenia solium
- Cysticercus cellulosae

COLLECTION

Sample Type:
CSF

Collect:
CSF tube or sterile collection tube

Amount to Collect:
1 mL CSF

Preferred Volume:
1 mL CSF

Minimum Volume:
0.1 mL CSF

Stability (from collection to initiation):
Frozen at -20C 1 year

Rejection Criteria:
Sample received thawed.

PROCESSING

Test Code:
TSCSF

Test Group:
Cysticercosis

Sendout:
Yes

Performing Lab:
Focus via Quest

Specimen Preparation:
Freeze CSF at -20C, ship frozen. Order Quest Test #34164X

Preferred Volume:
1 mL CSF

Minimum Volume:
0.1 mL CSF

Rejection Criteria:
Sample received thawed.

Stability (from collection to initiation):
Frozen at -20C 1 year

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
Testing for IgM antibodies to T. solium is not available.

ADMINISTRATIVE

CPT Codes:
86682-90

LOINC Codes:
7846-9

COMPLETE VIEW

Available Stat:
No

Test Code:
TSCSF

Test Group:
Cysticercosis

Performing Lab:
Focus via Quest

Sendout:
Yes

Methodology:
Western blot

Collect:
CSF tube or sterile collection tube

Amount to Collect:
1 mL CSF

Sample Type:
CSF

Preferred Volume:
1 mL CSF

Minimum Volume:
0.1 mL CSF

Rejection Criteria:
Sample received thawed.

Specimen Preparation:
Freeze CSF at -20C, ship frozen. Order Quest Test #34164X

Reference Interval:
Negative

Synonyms:

- Cystercercosis
- Taenia solium
- Cysticercus cellulosae

Stability (from collection to initiation):
Frozen at -20C 1 year

Reported:
Performed once per week. Turnaround 5-15 days

Additional Information:
Testing for IgM antibodies to T. solium is not available.

CPT Codes:
86682-90

LOINC Codes:
7846-9

Cystine, Quantitative, random urine

CUQT

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
LC/MS/MS

Reported:
Test run as needed, at least 3x weekly. Turnaround 3-5 days

Additional Information:
Clinical Significance: Cystinuria is an autosomal recessive disease in which dibasic amino acids, including cystine, are excreted in excess. Also part of Amino Acid Analysis. Pediatric reference ranges are from Soldin SJ et al., eds., Pediatric Reference Ranges, 2nd ed., AACC Press,1997, pp. 20-29.

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
See preferred volume

Preferred Volume:
2 mL urine

Minimum Volume:
1.8 mL urine

PROCESSING

Test Code:
CUQT

Test Group:
Cystine

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze sample at -20C. Order Quest # 9605N.

Preferred Volume:
2 mL urine

Minimum Volume:
1.8 mL urine

RESULT INTERPRETATION

Units:
mmol/mol creatinine

Reference Interval:

Cystine
Pediatric (<18 Years): 2.8-10.9 mmol/mol creat
Adult: 2.9-14.1 mmol/mol creat

Creatinine Random Urine
<=6 Months: 0.18-2.86 mmol/L
7-11 Months: 0.18-3.19 mmol/L
1-2 Years: 0.18-11.33 mmol/L
3-8 Years: 0.18-13.19 mmol/L
9-12 Years: 0.18-16.19 mmol/L
Adult: 2.38-26.55 mmol/L

Additional Information:
Clinical Significance: Cystinuria is an autosomal recessive disease in which dibasic amino acids, including cystine, are excreted in excess. Also part of Amino Acid Analysis. Pediatric reference ranges are from Soldin SJ et al., eds., Pediatric Reference Ranges, 2nd ed., AACC Press,1997, pp. 20-29.

ADMINISTRATIVE

CPT Codes:
82131-90

LOINC Codes:
22687-8

COMPLETE VIEW

Available Stat:
No

Test Code:
CUQT

Test Group:
Cystine

Performing Lab:
Quest

Sendout:
Yes

Methodology:
LC/MS/MS

Collect:
Urine cup

Amount to Collect:
See preferred volume

Sample Type:
Random urine

Preferred Volume:
2 mL urine

Minimum Volume:
1.8 mL urine

Specimen Preparation:
Freeze sample at -20C. Order Quest # 9605N.

Units:
mmol/mol creatinine

Reference Interval:
Cystine
Pediatric (<18 Years): 2.8-10.9 mmol/mol creat
Adult: 2.9-14.1 mmol/mol creat

Creatinine Random Urine
<=6 Months: 0.18-2.86 mmol/L
7-11 Months: 0.18-3.19 mmol/L
1-2 Years: 0.18-11.33 mmol/L
3-8 Years: 0.18-13.19 mmol/L
9-12 Years: 0.18-16.19 mmol/L
Adult: 2.38-26.55 mmol/L

Reported:
Test run as needed, at least 3x weekly. Turnaround 3-5 days

Additional Information:
Clinical Significance: Cystinuria is an autosomal recessive disease in which dibasic amino acids, including cystine, are excreted in excess. Also part of Amino Acid Analysis. Pediatric reference ranges are from Soldin SJ et al., eds., Pediatric Reference Ranges, 2nd ed., AACC Press,1997, pp. 20-29.

CPT Codes:
82131-90

LOINC Codes:
22687-8

Cytomegalovirus antibody, IgG

CMVAB

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift)

Methodology:
Chemiluminescent Immunoassay

Reported:
1-4 days

Additional Information:
This assay measures IgG anti-CMV antibodies and is a useful test for evaluation of prior CMV exposure.

If the assay is positive and there is a clinical need to determine if there is an acute infection, assays for CMV IgM antibodies and/or PCR for the CMV virus could be ordered as sendout tests.

A single positive sample provides evidence of prior infection.

This test is NOT FDA approved for screening of blood, tissue, or organ donors.

Note: Sera are not retained for comparative testing with a later sample.

Synonyms:

- CMV Antibody
- CMV Ab
- CMV serology
- TORCH antibodies
- CMV inclusion disease
- CMV Antibody total

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
3 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

PROCESSING

Test Code:
CMVAB

Test Group:
Cytomegalovirus

Performing Lab:
Immunology

Specimen Preparation:
If CMV Antibody (Total) is ordered, order CMVAB (CMV Ab, IgG) instead. If CMV Antibody IgM is specifically requested, order CMVIGM. If both Total and IgM are requested, order both CMVAB and CMVIGM.

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
This assay measures IgG anti-CMV antibodies and is a useful test for evaluation of prior CMV exposure.

If the assay is positive and there is a clinical need to determine if there is an acute infection, assays for CMV IgM antibodies and/or PCR for the CMV virus could be ordered as sendout tests.

A single positive sample provides evidence of prior infection.

This test is NOT FDA approved for screening of blood, tissue, or organ donors.

Note: Sera are not retained for comparative testing with a later sample.

ADMINISTRATIVE

CPT Codes:
86644

LOINC Codes:
13949-3

COMPLETE VIEW

Available Stat:
No

Test Code:
CMVAB

Test Group:
Cytomegalovirus

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift)

Methodology:
Chemiluminescent Immunoassay

Collect:
Gold top

Amount to Collect:
3 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Specimen Preparation:
If CMV Antibody (Total) is ordered, order CMVAB (CMV Ab, IgG) instead. If CMV Antibody IgM is specifically requested, order CMVIGM. If both Total and IgM are requested, order both CMVAB and CMVIGM.

Reference Interval:
Negative

Synonyms:

- CMV Antibody
- CMV Ab
- CMV serology
- TORCH antibodies
- CMV inclusion disease
- CMV Antibody total

Reported:
1-4 days

Additional Information:

This assay measures IgG anti-CMV antibodies and is a useful test for evaluation of prior CMV exposure.

If the assay is positive and there is a clinical need to determine if there is an acute infection, assays for CMV IgM antibodies and/or PCR for the CMV virus could be ordered as sendout tests.

A single positive sample provides evidence of prior infection.

This test is NOT FDA approved for screening of blood, tissue, or organ donors.

Note: Sera are not retained for comparative testing with a later sample.

CPT Codes:

86644

LOINC Codes:

13949-3

Cytomegalovirus Antibody, IgM

CMVIGM

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift)

Methodology:
Chemiluminescent Immunoassay

Reported:
1-4 days

Additional Information:
Results from any one IgM assay should not be used as a sole determinant of a current or recent infection. If an acute infection is suspected, consider obtaining a new specimen and submit for both IgG and IgM testing in two or more weeks. Latency and reactivation of CMV influence the interpretation of serological results. The presence of CMV IgM suggests a recent CMV exposure but does not differentiate between primary infection and reactivation.

Synonyms:

- CMV
- CID
- CMV IgM
- TORCH Antibodies
- CMV inclusion disease

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 ml serum

PROCESSING

Test Code:
CMVIGM

Test Group:
Cytomegalovirus

Performing Lab:
Immunology

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 ml serum

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
Results from any one IgM assay should not be used as a sole determinant of a current or recent infection. If an acute infection is suspected, consider obtaining a new specimen and submit for both IgG and IgM testing in two or more weeks. Latency and reactivation of CMV influence the interpretation of serological results. The presence of CMV IgM suggests a recent CMV exposure but does not differentiate between primary infection and reactivation.

ADMINISTRATIVE

CPT Codes:
86645

LOINC Codes:
24119-0

COMPLETE VIEW

Available Stat:
No

Test Code:
CMVIGM

Test Group:
Cytomegalovirus

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift)

Methodology:
Chemiluminescent Immunoassay

Collect:
Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 ml serum

Reference Interval:
Negative

Synonyms:

- CMV
- CID
- CMV IgM
- TORCH Antibodies
- CMV inclusion disease

Reported:
1-4 days

Additional Information:
Results from any one IgM assay should not be used as a sole determinant of a current or recent infection. If an acute infection is suspected, consider obtaining a new specimen and submit for both IgG and IgM testing in two or more weeks. Latency and reactivation of CMV influence the interpretation of serological results. The presence of CMV IgM suggests a recent CMV exposure but does not differentiate between primary infection and reactivation.

CPT Codes:
86645

LOINC Codes:
24119-0

Cytomegalovirus DNA, Quantitative PCR, Non-plasma sample

P321

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
2-3 times per week, excluding weekends

Methodology:
Quantitative Real time PCR

Reported:
1-4 days

Additional Information:
Reportable ranges:
Lower respiratory tract (BAL, bronchial wash), CSF, and Buccal/oral swabs: 30 - 1.00 x10 IU/mL (1.48 - 8.00 Log IU/mL)
Urine: 175 - 1.00 x10 IU/mL (2.24 - 8.00 Log IU/mL)

This assay is most useful in monitoring patients at risk for development of CMV disease with end-organ manifestations (pneumonia, colitis, esophagitis, nephritis, chorioretinitis, encephalitis, polyradiculopathy, adrenalitis, hepatitis) or dissemination. Immunocompromised patients, including solid organ and hematopoietic stem cell transplant recipients and AIDS patients are at higher risk for clinical disease.

Changes in CMV viremia often parallel or precede end-organ clinical manifestations and can also be used to monitor treatment efficacy. Because different test methods can yield varying results, we recommend utilizing the same laboratory methodology to compare values.

CMV PCR from saliva (buccal/oral swabs) is generally appropriate for testing of infants failing newborn hearing screen, and is preferred to the prior method of CMV urine culture.

CMV culture will continue to be available for those occasional cases where confirmation of viable virus is clinically needed and will be orderable as Microbiology Sendout “CMV culture". Consult the laboratory when ordering for sample collection requirements.

Synonyms:

- CMV

COLLECTION

Sample Type:
CSF, Urine, Buccal/oral swab, Lower respiratory tract (BAL, bronchial wash)
Eye fluid, Corneal swab, Bone marrow, Unpreserved Stool

Collect:
Fluids: sterile tube or container
Swabs: flocked swab in Universal Transport Medium

(Buccal/oral swabs: Specimen collection for newborn baby should be performed at least 90 minutes (preferably 120 minutes) post-breastfeeding. Massage the parotid gland for 30 seconds prior to specimen collection, vigorously swab the parotid area with a sterile synthetic swab (flocked swab preferred). Place the swab into the 3mL of universal transport medium.)

Bone marrow: Lavender top EDTA tube
Stool: sterile container, unpreserved

Preferred Volume:
3ml

Minimum Volume:
1 mL for CSF, Urine, Buccal/oral swab, Lower respiratory tract (BAL, bronchial wash)
0.05 mL for Eye fluid
0.5 mL for Bone marrow
Pea size for Unpreserved stool

PROCESSING

Test Code:
P321

Sendout:
Sample types other than CSF, Urine, Lower respiratory tract (BAL, bronchial wash) and buccal/oral swabs will be sent to Viracor

Performing Lab:
Microbiology

Specimen Preparation:
See test code CMVPCR for plasma samples

Preferred Volume:
3ml

Minimum Volume:
1 mL for CSF, Urine, Buccal/oral swab, Lower respiratory tract (BAL, bronchial wash)
0.05 mL for Eye fluid
0.5 mL for Bone marrow
Pea size for Unpreserved stool

RESULT INTERPRETATION

Units:
IU/mL (International Units per milliliter)

Reference Interval:
Not detected

Additional Information:
Reportable ranges:
Lower respiratory tract (BAL, bronchial wash), CSF, and Buccal/oral swabs: 30 - 1.00 x10 IU/mL (1.48 - 8.00 Log IU/mL)
Urine: 175 - 1.00 x10 IU/mL (2.24 - 8.00 Log IU/mL)

This assay is most useful in monitoring patients at risk for development of CMV disease with end-organ manifestations (pneumonia, colitis, esophagitis, nephritis, chorioretinitis, encephalitis, polyradiculopathy, adrenalitis, hepatitis) or dissemination. Immunocompromised patients, including solid organ and hematopoietic stem cell transplant recipients and AIDS patients are at higher risk for clinical disease.

Changes in CMV viremia often parallel or precede end-organ clinical manifestations and can also be used to monitor treatment efficacy. Because different test methods can yield varying results, we recommend utilizing the same laboratory methodology to compare values.

CMV PCR from saliva (buccal/oral swabs) is generally appropriate for testing of infants failing newborn hearing screen, and is preferred to the prior method of CMV urine culture.

CMV culture will continue to be available for those occasional cases where confirmation of viable virus is clinically needed and will be orderable as Microbiology Sendout “CMV culture". Consult the laboratory when ordering for sample collection requirements.

ADMINISTRATIVE

CPT Codes:
87497

LOINC Codes:
34720-3

COMPLETE VIEW

Available Stat:
No

Test Code:
P321

Performing Lab:
Microbiology

Sendout:
Sample types other than CSF, Urine, Lower respiratory tract (BAL, bronchial wash) and buccal/oral swabs will be sent to Viracor

Performed:
2-3 times per week, excluding weekends

Methodology:
Quantitative Real time PCR

Collect:

Fluids: sterile tube or container
Swabs: flocked swab in Universal Transport Medium

(Buccal/oral swabs: Specimen collection for newborn baby should be performed at least 90 minutes (preferably 120 minutes) post-breastfeeding. Massage the parotid gland for 30 seconds prior to specimen collection, vigorously swab the parotid area with a sterile synthetic swab (flocked swab preferred). Place the swab into the 3mL of universal transport medium.)

Bone marrow: Lavender top EDTA tube
Stool: sterile container, unpreserved

Sample Type:

CSF, Urine, Buccal/oral swab, Lower respiratory tract (BAL, bronchial wash)
Eye fluid, Corneal swab, Bone marrow, Unpreserved Stool

Preferred Volume:

3ml

Minimum Volume:

1 mL for CSF, Urine, Buccal/oral swab, Lower respiratory tract (BAL, bronchial wash)
0.05 mL for Eye fluid
0.5 mL for Bone marrow
Pea size for Unpreserved stool

Specimen Preparation:

See test code CMVPCR for plasma samples

Units:

IU/mL (International Units per milliliter)

Reference Interval:

Not detected

Synonyms:

- CMV

Reported:

1-4 days

Additional Information:

Reportable ranges:
Lower respiratory tract (BAL, bronchial wash), CSF, and Buccal/oral swabs: 30 - 1.00 x10 IU/mL (1.48 - 8.00 Log IU/mL)
Urine: 175 - 1.00 x10 IU/mL (2.24 - 8.00 Log IU/mL)

This assay is most useful in monitoring patients at risk for development of CMV disease with end-organ manifestations (pneumonia, colitis, esophagitis, nephritis, chorioretinitis, encephalitis, polyradiculopathy, adrenalitis, hepatitis) or dissemination. Immunocompromised patients, including solid organ and hematopoietic stem cell transplant recipients and AIDS patients are at higher risk for clinical disease.

Changes in CMV viremia often parallel or precede end-organ clinical manifestations and can also be used to monitor treatment efficacy. Because different test methods can yield varying results, we recommend utilizing the same laboratory methodology to compare values.

CMV PCR from saliva (buccal/oral swabs) is generally appropriate for testing of infants failing newborn hearing screen, and is preferred to the prior method of CMV urine culture.

CMV culture will continue to be available for those occasional cases where confirmation of viable virus is clinically needed and will be orderable as Microbiology Sendout “CMV culture". Consult the laboratory when ordering for sample collection requirements.

CPT Codes:

87497

LOINC Codes:

34720-3

Cytomegalovirus DNA, Quantitative PCR, Plasma

CMVRT

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Performed 2x per week. Turnaround time: 3-7 days

Methodology:
RT-PCR

Reported:
3-7 days

Synonyms:

- CMV Quant PCR
- CMV quantitative
- Cytomegalovirus

COLLECTION

Sample Type:
Plasma

Collect:
EDTA Plasma, Pearl White top preferred, Lavender top acceptable

Amount to Collect:
8.5 mL blood

Preferred Volume:
3 mL plasma

Minimum Volume:
1.5 mL plasma (this volume is insufficient for repeat testing)

Stability (from collection to initiation):
Room temperature: 6 hours

Unacceptable Conditions:
Heparinized samples, Gold or Red top vacutainer received. Sample not separated from cells within 6 hours of collection.

PROCESSING

Test Code:
CMVRT

Test Group:
CMV

Performing Lab:
Immunology

Specimen Preparation:
Centrifuge and freeze Pearl White tube within 6 hours at -70C.

If Lavender top received, centrifuge and separate plasma within 6 hours of collection into a 10mL tube with white cap. Freeze plasma at -70C.

Preferred Volume:
3 mL plasma

Minimum Volume:
1.5 mL plasma (this volume is insufficient for repeat testing)

Unacceptable Conditions:
Heparinized samples, Gold or Red top vacutainer received. Sample not separated from cells within 6 hours of collection.

Stability (from collection to initiation):
Room temperature: 6 hours

RESULT INTERPRETATION

Units:
IU/mL and log IU/mL

Reference Interval:
Not detected (< 30 IU/mL or < 1.48 log IU/mL)

ADMINISTRATIVE

CPT Codes:
87497

LOINC Codes:
72493-0

COMPLETE VIEW

Available Stat:
No

Test Code:
CMVRT

Test Group:
CMV

Performing Lab:
Immunology

Performed:
Performed 2x per week. Turnaround time: 3-7 days

Methodology:
RT-PCR

Collect:
EDTA Plasma, Pearl White top preferred, Lavender top acceptable

Amount to Collect:
8.5 mL blood

Sample Type:
Plasma

Preferred Volume:
3 mL plasma

Minimum Volume:
1.5 mL plasma (this volume is insufficient for repeat testing)

Unacceptable Conditions:
Heparinized samples, Gold or Red top vacutainer received. Sample not separated from cells within 6 hours of collection.

Specimen Preparation:
Centrifuge and freeze Pearl White tube within 6 hours at -70C.

If Lavender top received, centrifuge and separate plasma within 6 hours of collection into a 10mL tube with white cap. Freeze plasma at -70C.

Units:
IU/mL and log IU/mL

Reference Interval:
Not detected (< 30 IU/mL or < 1.48 log IU/mL)

Synonyms:

- CMV Quant PCR
- CMV quantitative
- Cytomegalovirus

Stability (from collection to initiation):
Room temperature: 6 hours

Reported:
3-7 days

CPT Codes:
87497

LOINC Codes:
72493-0

Cytomegalovirus Genotyping

CMVAVR

ORDERING

Ordering Recommendations:

This should only be ordered in patients who have rising plasma CMV viral loads after at least 3-4 weeks or more of anti-viral therapy. CMV viral loads commonly rise during the first 2-3 weeks of therapy but this does not indicate resistance unless the patient has had recent exposure to the specific drug.

Available Stat:

No

Performing Lab:

Viracor

Methodology:

PCR, DNA sequencing

Reported:

Set up Monday - Friday. Turnaround 4-6 days

Additional Information:

Cytomegalovirus, also known as human herpesvirus 5, is a highly ubiquitous, double-stranded DNA virus in the Betaherpesvirinae subfamily. Serological studies have demonstrated that a majority of adults in the United States have been infected with CMV. Following primary infection, CMV establishes a lifelong latent infection, which may reactivate in both immunocompetent and immunocompromised individuals. In immunocompromised patients, primary or reactivated CMV infections can cause a range of symptoms like fever and fatigue and diseases that may include interstitial pneumonia, gastrointestinal infection, central nervous system disease, hepatitis, retinitis, and encephalitis. CMV reactivations have also been reported to occur frequently in critically ill immunocompetent patients and are associated with prolonged hospitalization or death. Due to the severity of these conditions and even life threatening outcomes, treatment of CMV diseases with antiviral drugs is common. Additionally, prophylactic treatment with antiviral drugs is used to prevent the occurrence of disease in high-risk patients. Anti-CMV drugs currently available for either treatment or prophylaxis include ganciclovir, valganciclovir (the orally administered prodrug), foscarnet, cidofovir, letermovir, and maribavir (Livtencity™). Maribavir targets UL97, and ganciclovir targets both UL97 and UL54. Cidofovir and foscarnet target UL54 alone. Letermovir, targets subunit 2 of the viral terminase complex, known as UL56. Viral UL97 phosphotransferase gene, and UL54 polymerase genotypic mutations are well documented mechanisms of resistance to these antiviral drugs.9 Mutations within UL56 have been shown to confer resistance to Letermovir. Drug resistance should be suspected if quantitative CMV PCR viral load values either persist or increase, or if CMV disease presents, after several weeks of treatment with an appropriate dose.

Synonyms:

- CMV
- CMV susceptability
- CID
- CMV resistance
- CMV inclusion disease

COLLECTION

Sample Type:

EDTA plasma

Collect:

Lavender top

Amount to Collect:

4 mL blood

Preferred Volume:

2 mL plasma

Minimum Volume:

1.5 mL plasma

Stability (from collection to initiation):

Room temperature 4 days, refrigerated 1 week, frozen at -20C 1 month

Rejection Criteria:

CMV DNA concentrations too low to allow antiviral resistance testing (<1000 IU/mL for plasma)

PROCESSING

Test Code:

CMVAVR

Test Group:

CMV

Sendout:
Yes

Performing Lab:
Viracor

Specimen Preparation:
Separate plasma within 2 hours of collection and transfer to sterile screw-top plastic vial. Freeze plasma at -20C and ship to China Basin and ViraCor on dry ice.

Order ViraCor test # 33125

Contact the laboratory for authorization on anything other than plasma. Sequencing assays are very sensitive to inhibition, and processing of other sample types, including CSF and BAL, may be affected by PCR inhibitors that affect the result.

Preferred Volume:
2 mL plasma

Minimum Volume:
1.5 mL plasma

Rejection Criteria:
CMV DNA concentrations too low to allow antiviral resistance testing (<1000 IU/mL for plasma)

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 1 week, frozen at -20C 1 month

RESULT INTERPRETATION

Additional Information:
Cytomegalovirus, also known as human herpesvirus 5, is a highly ubiquitous, double-stranded DNA virus in the Betaherpesvirinae subfamily. Serological studies have demonstrated that a majority of adults in the United States have been infected with CMV. Following primary infection, CMV establishes a lifelong latent infection, which may reactivate in both immunocompetent and immunocompromised individuals. In immunocompromised patients, primary or reactivated CMV infections can cause a range of symptoms like fever and fatigue and diseases that may include interstitial pneumonia, gastrointestinal infection, central nervous system disease, hepatitis, retinitis, and encephalitis. CMV reactivations have also been reported to occur frequently in critically ill immunocompetent patients and are associated with prolonged hospitalization or death. Due to the severity of these conditions and even life threatening outcomes, treatment of CMV diseases with antiviral drugs is common. Additionally, prophylactic treatment with antiviral drugs is used to prevent the occurrence of disease in high-risk patients. Anti-CMV drugs currently available for either treatment or prophylaxis include ganciclovir, valganciclovir (the orally administered prodrug), foscarnet, cidofovir, letermovir, and maribavir (Livtencity™). Maribavir targets UL97, and ganciclovir targets both UL97 and UL54. Cidofovir and foscarnet target UL54 alone. Letermovir, targets subunit 2 of the viral terminase complex, known as UL56. Viral UL97 phosphotransferase gene, and UL54 polymerase genotypic mutations are well documented mechanisms of resistance to these antiviral drugs.9 Mutations within UL56 have been shown to confer resistance to Letermovir. Drug resistance should be suspected if quantitative CMV PCR viral load values either persist or increase, or if CMV disease presents, after several weeks of treatment with an appropriate dose.

ADMINISTRATIVE

CPT Codes:
87910 x 2

LOINC Codes:
40444-2

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
This should only be ordered in patients who have rising plasma CMV viral loads after at least 3-4 weeks or more of anti-viral therapy. CMV viral loads commonly rise during the first 2-3 weeks of therapy but this does not indicate resistance unless the patient has had recent exposure to the specific drug.

Test Code:
CMVAVR

Test Group:
CMV

Performing Lab:
Viracor

Sendout:
Yes

Methodology:
PCR, DNA sequencing

Collect:
Lavender top

Amount to Collect:
4 mL blood

Sample Type:
EDTA plasma

Preferred Volume:
2 mL plasma

Minimum Volume:
1.5 mL plasma

Rejection Criteria:
CMV DNA concentrations too low to allow antiviral resistance testing (<1000 IU/mL for plasma)

Specimen Preparation:
Separate plasma within 2 hours of collection and transfer to sterile screw-top plastic vial. Freeze plasma at -20C and ship to China Basin and ViraCor on dry ice.

Order ViraCor test # 33125

Contact the laboratory for authorization on anything other than plasma. Sequencing assays are very sensitive to inhibition, and processing of other sample types, including CSF and BAL, may be affected by PCR inhibitors that affect the result.

Synonyms:

- CMV
- CMV susceptability
- CID
- CMV resistance
- CMV inclusion disease

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 1 week, frozen at -20C 1 month

Reported:
Set up Monday - Friday. Turnaround 4-6 days

Additional Information:
Cytomegalovirus, also known as human herpesvirus 5, is a highly ubiquitous, double-stranded DNA virus in the Betaherpesvirinae subfamily. Serological studies have demonstrated that a majority of adults in the United States have been infected with CMV. Following primary infection, CMV establishes a lifelong latent infection, which may reactivate in both immunocompetent and immunocompromised individuals. In immunocompromised patients, primary or reactivated CMV infections can cause a range of symptoms like fever and fatigue and diseases that may include interstitial pneumonia, gastrointestinal infection, central nervous system disease, hepatitis, retinitis, and encephalitis. CMV reactivations have also been reported to occur frequently in critically ill immunocompetent patients and are associated with prolonged hospitalization or death. Due to the severity of these conditions and even life threatening outcomes, treatment of CMV diseases with antiviral drugs is common. Additionally, prophylactic treatment with antiviral drugs is used to prevent the occurrence of disease in high-risk patients. Anti-CMV drugs currently available for either treatment or prophylaxis include ganciclovir, valganciclovir (the orally administered prodrug), foscarnet, cidofovir, letermovir, and maribavir (Livtencity™). Maribavir targets UL97, and ganciclovir targets both UL97 and UL54. Cidofovir and foscarnet target UL54 alone. Letermovir, targets subunit 2 of the viral terminase complex, known as UL56. Viral UL97 phosphotransferase gene, and UL54 polymerase genotypic mutations are well documented mechanisms of resistance to these antiviral drugs.9 Mutations within UL56 have been shown to confer resistance to Letermovir. Drug resistance should be suspected if quantitative CMV PCR viral load values either persist or increase, or if CMV disease presents, after several weeks of treatment with an appropriate dose.

CPT Codes:
87910 x 2

LOINC Codes:
40444-2

Daratumumab-Specific, Immunofixation

MOLT

ORDERING

Available Stat:
No

Performing Lab:
LabCorp (via ARUP)

Methodology:
Immunofixation

Reported:
4-6 days

Additional Information:

Daratumumab is an anti-CD38 IgGk monoclonal antibody currently in clinical development for multiple myeloma (MM) treatment. In MM, malignant cells secrete high levels of monoclonal immunoglobulin (M-protein) that is commonly detectable by serum immunofixation electrophoresis (IFE). As immunoglobulin, daratumumab also can be detected in IFE and may co-migrate with M-protein in a subset of patients (~50% of MM patient produce IgGk M protein). Addition of anti-idiotypic antibodies raised against daratumumab to patient serum containing daratumumab alters banding pattern as assessed to IFE (daratumumab shift) by forming a Daratumumab and anti-Daratumumab complex, helping to distinguish between therapeutic monoclonal antibody and M-protein present in the serum.

COLLECTION

Patient Preparation:
Overnight fasting is preferred.

Sample Type:
Serum

Collect:
Gold top or red top

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Stability (from collection to initiation):

Room temperature: 14 days
Refrigerated: 14 days
Frozen: 14 days

Rejection Criteria:
Specimens other than serum

PROCESSING

Test Code:
MOLT

Sendout:
Yes

Performing Lab:
LabCorp (via ARUP)

Specimen Preparation:

Aliquot on freeze serum. Send sample to CB frozen.

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Rejection Criteria:
Specimens other than serum

Stability (from collection to initiation):

Room temperature: 14 days
Refrigerated: 14 days
Frozen: 14 days

RESULT INTERPRETATION

Additional Information:

Daratumumab is an anti-CD38 IgGk monoclonal antibody currently in clinical development for multiple myeloma (MM) treatment. In MM, malignant cells secrete high levels of monoclonal immunoglobulin (M-protein) that is commonly detectable by serum immunofixation electrophoresis (IFE). As immunoglobulin, daratumumab also can be detected in IFE and may co-migrate with M-protein in a subset of patients (~50% of MM patient produce IgGk M protein). Addition of anti-idiotypic antibodies raised against daratumumab to patient serum containing daratumumab alters banding pattern as assessed to IFE (daratumumab shift) by forming a Daratumumab and anti-Daratumumab complex, helping to distinguish between therapeutic monoclonal antibody and M-protein present in the serum.

ADMINISTRATIVE

CPT Codes:
86334

LOINC Codes:
NG

COMPLETE VIEW

Available Stat:
No

Test Code:
MOLT

Performing Lab:
LabCorp (via ARUP)

Sendout:
Yes

Methodology:
Immunofixation

Patient Preparation:
Overnight fasting is preferred.

Collect:
Gold top or red top

Amount to Collect:
4 mL blood

Sample Type:
Serum

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Rejection Criteria:
Specimens other than serum

Specimen Preparation:

Aliquot on freeze serum. Send sample to CB frozen.

Stability (from collection to initiation):

Room temperature: 14 days
Refrigerated: 14 days
Frozen: 14 days

Reported:
4-6 days

Additional Information:

Daratumumab is an anti-CD38 IgGk monoclonal antibody currently in clinical development for multiple myeloma (MM) treatment. In MM, malignant cells secrete high levels of monoclonal immunoglobulin (M-protein) that is commonly detectable by serum immunofixation electrophoresis (IFE). As immunoglobulin, daratumumab also can be detected in IFE and may co-migrate with M-protein in a subset of patients (~50% of MM patient produce IgGk M protein). Addition of anti-idiotypic antibodies raised against daratumumab to patient serum containing daratumumab alters banding pattern as assessed to IFE (daratumumab shift) by forming a Daratumumab and anti-Daratumumab complex, helping to distinguish between therapeutic monoclonal antibody and M-protein present in the serum.

CPT Codes:
86334

LOINC Codes:
NG

DAT Negative Hemolytic Anemia Work-up

BOLT

ORDERING

Approval Required:
Yes, by Hematology, BMT Service or Blood Bank.

Available Stat:
No

Performing Lab:
American Red Cross Immunohematology Reference Lab (Pomona, CA)

Performed:
Test set up Monday - Thursday

Reported:
4-7 days

Additional Information:
Test is typically sent out only if a DAT done in the preceding 3 days is negative for IgG. Order DAT, if needed.

Synonyms:

- Super Coombs Test

COLLECTION

Sample Type:
Whole blood

Collect:
Lavender top

Amount to Collect:
See Preferred Volume.

Preferred Volume:
6 mL

Minimum Volume:
3 mL

Remarks:
Collect specimen Monday through Thursday only.

Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample, or phlebotomist ID.

A previously collected sample can be used provided the sample was collected less than 48 hours earlier.

Unacceptable Conditions:
Mislabeled or unlabeled sample, phlebotomist ID or name not documented on label.

PROCESSING

Test Code:
BOLT

Sendout:
Yes

Performing Lab:
American Red Cross Immunohematology Reference Lab (Pomona, CA)

Specimen Preparation:
Send samples to Blood Bank to be shipped to American Red Cross Reference Lab. Do not separate plasma or serum.

Preferred Volume:
6 mL

Minimum Volume:
3 mL

Unacceptable Conditions:
Mislabeled or unlabeled sample, phlebotomist ID or name not documented on label.

RESULT INTERPRETATION

Additional Information:
Test is typically sent out only if a DAT done in the preceding 3 days is negative for IgG. Order DAT, if needed.

COMPLETE VIEW

Approval Required:
Yes, by Hematology, BMT Service or Blood Bank.

Available Stat:
No

Test Code:
BOLT

Performing Lab:
American Red Cross Immunohematology Reference Lab (Pomona, CA)

Sendout:
Yes

Performed:
Test set up Monday - Thursday

Remarks:
Collect specimen Monday through Thursday only.

Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample, or phlebotomist ID.

A previously collected sample can be used provided the sample was collected less than 48 hours earlier.

Collect:
Lavender top

Amount to Collect:
See Preferred Volume.

Sample Type:
Whole blood

Preferred Volume:
6 mL

Minimum Volume:
3 mL

Unacceptable Conditions:
Mislabeled or unlabeled sample, phlebotomist ID or name not documented on label.

Specimen Preparation:
Send samples to Blood Bank to be shipped to American Red Cross Reference Lab. Do not separate plasma or serum.

Synonyms:

- Super Coombs Test

Reported:
4-7 days

Additional Information:
Test is typically sent out only if a DAT done in the preceding 3 days is negative for IgG. Order DAT, if needed.

Dehydroepiandrosterone Sulfate, Pediatric

PDHES

ORDERING

Available Stat:
No

Performing Lab:
Esoterix

Methodology:
LC-MS/MS

Additional Information:
To convert µg/dL to µmol/L (SI units) multiply by 0.026.

This send-out assay is primarily reserved for testing in pediatric patients with suspected or complex endocrine abnormalities. For adult patients see "Dehydroepiandrosterone Sulfate" (test code DHES). It requires approval if ordered in patients over the age of 20.

Synonyms:

- DHEAS ultrasensitive

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Remarks:
Bring sample immediately to laboratory for processing.

Unacceptable Conditions:
Delivered to lab > 30 min after collection

PROCESSING

Test Code:
PDHES

Test Group:
DHEAS

Sendout:
Yes

Performing Lab:
Esoterix

Specimen Preparation:
Separate serum within 1 hour of collection and freez at -20C. Ship frozen.

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Unacceptable Conditions:
Delivered to lab > 30 min after collection

RESULT INTERPRETATION

Units:
µg/dL

Reference Interval:

Premature Infants

26-28 weeks, day 4	123-882
31-35 weeks, day 4	122-710

Full Term Infants

3 days	88-356
1-12 months	5-111 by first month
	5-48 by six months

Prepubertal

1-5 years	< 5-57
6-7 years	9-72
8-10 years	13-115

Tanner Stage	Males	Females
I	13-83	19-144
II	42-109	32-129
III	48-200	32-226
IV	102-385	58-260
V	120-370	44-248

Additional Information:

To convert µg/dL to µmol/L (SI units) multiply by 0.026.

This send-out assay is primarily reserved for testing in pediatric patients with suspected or complex endocrine abnormalities. For adult patients see "Dehydroepiandrosterone Sulfate" (test code DHES). It requires approval if ordered in patients over the age of 20.

ADMINISTRATIVE

CPT Codes:
82627-90

LOINC Codes:
2191-5

COMPLETE VIEW

Available Stat:
No

Test Code:
PDHES

Test Group:
DHEAS

Performing Lab:
Esoterix

Sendout:
Yes

Methodology:
LC-MS/MS

Remarks:
Bring sample immediately to laboratory for processing.

Collect:
Gold top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Unacceptable Conditions:
Delivered to lab > 30 min after collection

Specimen Preparation:
Separate serum within 1 hour of collection and freez at -20C. Ship frozen.

Units:
µg/dL

Reference Interval:
Premature Infants

26-28 weeks, day 4	123-882
31-35 weeks, day 4	122-710

Full Term Infants

3 days	88-356
1-12 months	5-111 by first month
	5-48 by six months

Prepubertal

1-5 years	< 5-57
6-7 years	9-72
8-10 years	13-115

Tanner Stage	Males	Females
I	13-83	19-144
II	42-109	32-129
III	48-200	32-226
IV	102-385	58-260
V	120-370	44-248

Synonyms:

- DHEAS ultrasensitive

Additional Information:
To convert µg/dL to µmol/L (SI units) multiply by 0.026.

This send-out assay is primarily reserved for testing in pediatric patients with suspected or complex endocrine abnormalities. For adult patients see "Dehydroepiandrosterone Sulfate" (test code DHES). It requires approval if ordered in patients over the age of 20.

CPT Codes:
82627-90

LOINC Codes:
2191-5

Dehydroepiandrosterone Sulfate, Serum

DHEAS2

ORDERING

Ordering Recommendations:
Indicator of adrenal androgen production. Aids in the investigation of virilizing endocrinopathies in conjunction with other sex steroids. Not recommended for initial evaluation of polycystic ovarian syndrome.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative Electrochemiluminescent Immunoassay

Reported:
Within 24 hours

Synonyms:

- Dehydroepiandrosterone Sulfate, Serum
- DHEA S04
- DHEA Sulfate
- DHEA-S
- DHEA-SO4
- DHEAS, Serum

COLLECTION

Sample Type:
Serum

Collect:
Serum separator tube or plasma separator tube. Also acceptable: Green (lithium heparin), lavender (K_2 or K_3 EDTA), or pink (K_2EDTA).

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.4 mL serum

Stability (from collection to initiation):
After separation from cells: Ambient: 5 days; Refrigerated: 14 days; Frozen: 12 months

Storage/Transport Temperature:
Frozen.

Unacceptable Conditions:
Hemolyzed specimens.

PROCESSING

Test Code:
DHEAS2

ARUP Test Code:
0070040

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Allow specimen to clot completely at room temperature. Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.5 mL)

Preferred Volume:
1 mL serum

Minimum Volume:
0.4 mL serum

Unacceptable Conditions:
Hemolyzed specimens.

Stability (from collection to initiation):
After separation from cells: Ambient: 5 days; Refrigerated: 14 days; Frozen: 12 months

Storage/Transport Temperature:
Frozen.

RESULT INTERPRETATION

Reference Interval:

Age	Male	Female
0-6 days	108-607 µg/dL	108-607 µg/dL
7-30 days	32-431 µg/dL	32-431 µg/dL
1-5 months	3-124µg/dL	3-124 µg/dL
6-35 months	0-33 µg/dL	0-29 µg/dL
3-6 years	0-44 µg/dL	0-47 µg/dL
7-9 years	5-115 µg/dL	5-94 µg/dL
10-14 years	22-332 µg/dL	22-255 µg/dL
15-19 years	88-483 µg/dL	63-373 µg/dL
20-24 years	211-492 µg/dL	148-407 µg/dL
25-34 years	160-449 µg/dL	99-340µg/dL
35-44 years	89-427 µg/dL	61-337 µg/dL
45-54 years	44-331µg/dL	35-256 µg/dL
55-64 years	52-295 µg/dL	19-205 µg/dL
65-74 years	34-249 µg/dL	9-246 µg/dL
75 years and older	16-123 µg/dL	12-154 µg/dL
Tanner Stage I	7-209 µg/dL	7-126 µg/dL
Tanner Stage II	28-260 µg/dL	13-241 µg/dL
Tanner Stage III	39-390 µg/dL	32-446 µg/dL
Tanner Stage IV & V	81-488 µg/dL	65-371 µg/dL

ADMINISTRATIVE

CPT Codes:
82627

LOINC:

- 2191-5

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Indicator of adrenal androgen production. Aids in the investigation of virilizing endocrinopathies in conjunction with other sex steroids. Not recommended for initial evaluation of polycystic ovarian syndrome.

Test Code:
DHEAS2

ARUP Test Code:
0070040

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative Electrochemiluminescent Immunoassay

Collect:
Serum separator tube or plasma separator tube. Also acceptable: Green (lithium heparin), lavender (K_2 or K_3 EDTA), or pink (K_2EDTA).

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.4 mL serum

Unacceptable Conditions:
Hemolyzed specimens.

Specimen Preparation:
Allow specimen to clot completely at room temperature. Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.5 mL)

Reference Interval:

Age	Male	Female
0-6 days	108-607 µg/dL	108-607 µg/dL
7-30 days	32-431 µg/dL	32-431 µg/dL
1-5 months	3-124µg/dL	3-124 µg/dL
6-35 months	0-33 µg/dL	0-29 µg/dL
3-6 years	0-44 µg/dL	0-47 µg/dL
7-9 years	5-115 µg/dL	5-94 µg/dL
10-14 years	22-332 µg/dL	22-255 µg/dL
15-19 years	88-483 µg/dL	63-373 µg/dL
20-24 years	211-492 µg/dL	148-407 µg/dL
25-34 years	160-449 µg/dL	99-340µg/dL
35-44 years	89-427 µg/dL	61-337 µg/dL
45-54 years	44-331µg/dL	35-256 µg/dL
55-64 years	52-295 µg/dL	19-205 µg/dL
65-74 years	34-249 µg/dL	9-246 µg/dL
75 years and older	16-123 µg/dL	12-154 µg/dL
Tanner Stage I	7-209 µg/dL	7-126 µg/dL
Tanner Stage II	28-260 µg/dL	13-241 µg/dL
Tanner Stage III	39-390 µg/dL	32-446 µg/dL
Tanner Stage IV & V	81-488 µg/dL	65-371 µg/dL

Synonyms:

- Dehydroepiandrosterone Sulfate, Serum
- DHEA S04
- DHEA Sulfate
- DHEA-S
- DHEA-SO4
- DHEAS, Serum

Storage/Transport Temperature:
Frozen.

Stability (from collection to initiation):
After separation from cells: Ambient: 5 days; Refrigerated: 14 days; Frozen: 12 months

Reported:
Within 24 hours

CPT Codes:
82627

LOINC:

- 2191-5

Dehydroepiandrosterone, Serum or Plasma

DHEA

ORDERING

Ordering Recommendations:
Adjunct test for the investigation of hyperandrogenic and adrenal disorders. Not recommended for initial evaluation of polycystic ovarian syndrome.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative High Performance Liquid Chromatography-Tandem Mass Spectrometry

Reported:
1-5 days

Synonyms:

- DHEA
- DHEA (Dehydroepiandrosterone, Serum or Plasma)
- Unconjugated DHEA (Dehydroepiandrosterone, Serum or Plasma)

COLLECTION

Patient Preparation:
Collect between 6-10 a.m.

Sample Type:
Serum

Collect:
Serum separator tube or green (sodium or lithium heparin). Also acceptable: Lavender (EDTA).

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
After separation from cells: Ambient: 24 hours; Refrigerated: 1 week; Frozen: 6 months

Storage/Transport Temperature:
Refrigerated.

PROCESSING

Test Code:
DHEA

ARUP Test Code:
2001640

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP standard transport tube. (Min: 0.3 mL)

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
After separation from cells: Ambient: 24 hours; Refrigerated: 1 week; Frozen: 6 months

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Units:
ng/mL

Reference Interval:
Effective August 19, 2013

Age	Female	Male
Premature	Less than 40 ng/mL	Less than 40 ng/mL
0-1 day	Less than 11 ng/mL	Less than 11 ng/mL
2-6 days	Less than 8.7 ng/mL	Less than 8.7 ng/mL
7 days-1 month	Less than 5.8 ng/mL	Less than 5.8 ng/mL
1-5 months	Less than 2.9 ng/mL	Less than 2.9 ng/mL
6-24 months	Less than 1.9 9 ng/mL	Less than 2.5 ng/mL
2-3 years	Less than 0.85 ng/mL	Less than 0.63 ng/mL
4-5 years	Less than 1.03 ng/mL	Less than 0.95 ng/mL
6-7 years	Less than 1.79 ng/mL	0.06-1.93 ng/mL
8-9 years	0.14-2.35 ng/mL	0.10-2.08 ng/mL
10-11 years	0.43-3.78 ng/mL	0.32-3.08 ng/mL
12-13 years	0.89-6.21 ng/mL	0.57-4.10 ng/mL
14-15 years	1.22-7.01 ng/mL	0.93-6.04 ng/mL
16-17 years	1.42-9.00 ng/mL	1.17-6.52 ng/mL
18-39 years	1.33-7.78 ng/mL	1.33-7.78 ng/mL
40 years and older	0.63-4.70 ng/mL	0.63-4.70 ng/mL
Postmenopausal	0.60-5.73 ng/mL	Does Not Apply
Tanner Stage I	0.14-2.76 ng/mL	0.11-2.37 ng/mL
Tanner Stage II	0.83-4.87 ng/mL	0.37-3.66 ng/mL
Tanner Stage III	1.08-7.56 ng/mL	0.75-5.24 ng/mL
Tanner Stage IV-V	1.24-7.88 ng/mL	1.22-6.73 ng/mL

ADMINISTRATIVE

CPT Codes:
82626

LOINC:

- 2193-1

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Adjunct test for the investigation of hyperandrogenic and adrenal disorders. Not recommended for initial evaluation of polycystic ovarian syndrome.

Test Code:
DHEA

ARUP Test Code:
2001640

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative High Performance Liquid Chromatography-Tandem Mass Spectrometry

Patient Preparation:
Collect between 6-10 a.m.

Collect:
Serum separator tube or green (sodium or lithium heparin). Also acceptable: Lavender (EDTA).

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Specimen Preparation:
Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP standard transport tube. (Min: 0.3 mL)

Units:
ng/mL

Reference Interval:
Effective August 19, 2013

Age	Female	Male
Premature	Less than 40 ng/mL	Less than 40 ng/mL
0-1 day	Less than 11 ng/mL	Less than 11 ng/mL
2-6 days	Less than 8.7 ng/mL	Less than 8.7 ng/mL
7 days-1 month	Less than 5.8 ng/mL	Less than 5.8 ng/mL
1-5 months	Less than 2.9 ng/mL	Less than 2.9 ng/mL
6-24 months	Less than 1.9 9 ng/mL	Less than 2.5 ng/mL
2-3 years	Less than 0.85 ng/mL	Less than 0.63 ng/mL
4-5 years	Less than 1.03 ng/mL	Less than 0.95 ng/mL
6-7 years	Less than 1.79 ng/mL	0.06-1.93 ng/mL
8-9 years	0.14-2.35 ng/mL	0.10-2.08 ng/mL
10-11 years	0.43-3.78 ng/mL	0.32-3.08 ng/mL
12-13 years	0.89-6.21 ng/mL	0.57-4.10 ng/mL
14-15 years	1.22-7.01 ng/mL	0.93-6.04 ng/mL
16-17 years	1.42-9.00 ng/mL	1.17-6.52 ng/mL
18-39 years	1.33-7.78 ng/mL	1.33-7.78 ng/mL
40 years and older	0.63-4.70 ng/mL	0.63-4.70 ng/mL
Postmenopausal	0.60-5.73 ng/mL	Does Not Apply
Tanner Stage I	0.14-2.76 ng/mL	0.11-2.37 ng/mL
Tanner Stage II	0.83-4.87 ng/mL	0.37-3.66 ng/mL
Tanner Stage III	1.08-7.56 ng/mL	0.75-5.24 ng/mL
Tanner Stage IV-V	1.24-7.88 ng/mL	1.22-6.73 ng/mL

Synonyms:

- DHEA
- DHEA (Dehydroepiandrosterone, Serum or Plasma)
- Unconjugated DHEA (Dehydroepiandrosterone, Serum or Plasma)

Storage/Transport Temperature:
Refrigerated.

Stability (from collection to initiation):
After separation from cells: Ambient: 24 hours; Refrigerated: 1 week; Frozen: 6 months

Reported:
1-5 days

CPT Codes:
82626

LOINC:

- 2193-1

Deletion 11Q ATM FISH

DEL11Q, BD11Q

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Set up daily Monday - Friday

Methodology:
Fluorescent In-situ hybridization (FISH)

Reported:
1-2 weeks

Synonyms:

- ATM Deletion 11q22.3
- DEL11Q
- BD11Q

COLLECTION

Sample Type:
Heparinized whole blood or bone marrow. Bone marrow biopsy

Collect:
Dark green top (Sodium heparin)

Amount to Collect:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow biopsy: 1 cm

Remarks:
Mix blood and marrow aspirate samples well after collection. Keep at room temperature

Stability (from collection to initiation):
Room temperature 2 days

Unacceptable Conditions:
Frozen, leaking or unlabeled samples

PROCESSING

Test Code:
BD11Q: Blood
DEL11Q: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Specimen Preparation:
Keep at room temperature, do not centrifuge

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow biopsy: 1 cm

Unacceptable Conditions:
Frozen, leaking or unlabeled samples

Stability (from collection to initiation):
Room temperature 2 days

RESULT INTERPRETATION

Reference Interval:
Absent

ADMINISTRATIVE

CPT Codes:
88271,88271,88275

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BD11Q: Blood
DEL11Q: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Set up daily Monday - Friday

Methodology:
Fluorescent In-situ hybridization (FISH)

Remarks:
Mix blood and marrow aspirate samples well after collection. Keep at room temperature

Collect:
Dark green top (Sodium heparin)

Amount to Collect:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Sample Type:
Heparinized whole blood or bone marrow. Bone marrow biopsy

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow biopsy: 1 cm

Unacceptable Conditions:
Frozen, leaking or unlabeled samples

Specimen Preparation:
Keep at room temperature, do not centrifuge

Reference Interval:
Absent

Synonyms:

- ATM Deletion 11q22.3
- DEL11Q
- BD11Q

Stability (from collection to initiation):
Room temperature 2 days

Reported:
1-2 weeks

CPT Codes:
88271,88271,88275

LDT or Modified FDA:

Yes

Deletion 13Q FISH

DEL13Q, BD13Q

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Set up daily Monday - Friday

Methodology:
Fluorescent In-situ hybridization (FISH)

Reported:
1-2 weeks

Synonyms:

- D13S319/13q34Deletion
- DEL13Q
- BD13Q

COLLECTION

Sample Type:
Heparinized whole blood or bone marrow. Bone marrow biopsy

Collect:
Dark green top (Sodium heparin)

Amount to Collect:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow biopsy: 1 cm

Remarks:
Mix blood and marrow aspirate samples well after collection. Keep at room temperature

Stability (from collection to initiation):
Room temperature 2 days

Unacceptable Conditions:
Frozen, leaking or unlabeled samples

PROCESSING

Test Code:
BD13Q: Blood
DEL13Q: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Specimen Preparation:
Keep at room temperature, do not centrifuge

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow biopsy: 1 cm

Unacceptable Conditions:
Frozen, leaking or unlabeled samples

Stability (from collection to initiation):
Room temperature 2 days

RESULT INTERPRETATION

Reference Interval:
Absent

ADMINISTRATIVE

CPT Codes:
88271 x2, 88275

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BD13Q: Blood
DEL13Q: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Set up daily Monday - Friday

Methodology:
Fluorescent In-situ hybridization (FISH)

Remarks:
Mix blood and marrow aspirate samples well after collection. Keep at room temperature

Collect:
Dark green top (Sodium heparin)

Amount to Collect:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Sample Type:
Heparinized whole blood or bone marrow. Bone marrow biopsy

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow biopsy: 1 cm

Unacceptable Conditions:
Frozen, leaking or unlabeled samples

Specimen Preparation:
Keep at room temperature, do not centrifuge

Reference Interval:
Absent

Synonyms:

- D13S319/13q34Deletion
- DEL13Q
- BD13Q

Stability (from collection to initiation):
Room temperature 2 days

Reported:
1-2 weeks

CPT Codes:
88271 x2, 88275

LDT or Modified FDA:

Yes

Deletion 17P FISH

DEL17P, BD17P

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Set up daily Monday - Friday

Methodology:
Fluorescent In-situ hybridization (FISH)

Reported:
1-2 weeks

Synonyms:

- TP53 Deletion
- DEL17P

COLLECTION

Sample Type:
Heparinized whole blood or bone marrow. Bone marrow biopsy

Collect:
Dark green top (Sodium heparin)

Amount to Collect:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow biopsy: 1 cm

Remarks:
Mix blood and marrow aspirate samples well after collection. Keep at room temperature

Stability (from collection to initiation):
Room temperature 2 days

Unacceptable Conditions:
Frozen, leaking or unlabeled samples

PROCESSING

Test Code:
BD17P: Blood
DEL17P: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Specimen Preparation:
Keep at room temperature, do not centrifuge

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow biopsy: 1 cm

Unacceptable Conditions:
Frozen, leaking or unlabeled samples

Stability (from collection to initiation):
Room temperature 2 days

RESULT INTERPRETATION

Reference Interval:
Absent

ADMINISTRATIVE

CPT Codes:
88271 x2, 88275

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BD17P: Blood
DEL17P: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Set up daily Monday - Friday

Methodology:
Fluorescent In-situ hybridization (FISH)

Remarks:
Mix blood and marrow aspirate samples well after collection. Keep at room temperature

Collect:
Dark green top (Sodium heparin)

Amount to Collect:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Sample Type:
Heparinized whole blood or bone marrow. Bone marrow biopsy

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow biopsy: 1 cm

Unacceptable Conditions:
Frozen, leaking or unlabeled samples

Specimen Preparation:
Keep at room temperature, do not centrifuge

Reference Interval:
Absent

Synonyms:

- TP53 Deletion
- DEL17P

Stability (from collection to initiation):
Room temperature 2 days

Reported:
1-2 weeks

CPT Codes:
88271 x2, 88275

LDT or Modified FDA:
Yes

Deletion 20q FISH

DEL20Q, BD20Q

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Fluorescent in-situ hybridization (FISH)

Reported:
1-2 weeks

Synonyms:

- Del20q
- BD20Q

COLLECTION

Sample Type:
Heparinized whole blood, bone marrow aspirate, bone core

Collect:
Dark green top (Na-heparin)

Amount to Collect:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow biopsy: 2 cm

Remarks:
Maintain sample at room temperature.

PROCESSING

Test Code:
BD20Q: Blood
DEL20Q: Bone marrow

Test Group:
Oncology FISH

Performing Lab:
Medical Genomics - Cytogenetics

Specimen Preparation:
Maintain sample at room temperature

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow biopsy: 2 cm

RESULT INTERPRETATION

Reference Interval:
No deletion detected

ADMINISTRATIVE

CPT Codes:
88271, 88275

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BD20Q: Blood
DEL20Q: Bone marrow

Test Group:
Oncology FISH

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Fluorescent in-situ hybridization (FISH)

Remarks:
Maintain sample at room temperature.

Collect:
Dark green top (Na-heparin)

Amount to Collect:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Sample Type:
Heparinized whole blood, bone marrow aspirate, bone core

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow biopsy: 2 cm

Specimen Preparation:
Maintain sample at room temperature

Reference Interval:
No deletion detected

Synonyms:

- Del20q
- BD20Q

Reported:
1-2 weeks

CPT Codes:
88271, 88275

LDT or Modified FDA:
Yes

Deletion 9p Metaphase FISH

DEL9P, BD9P

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Fluorescent in-Situ Hybridization

Reported:
1-2 weeks

Synonyms:

- Del9p
- Deletion CDKN2A FISH
- BD9P

COLLECTION

Sample Type:
Heparinized blood or bone marrow aspirate
Bone biopsy

Collect:
Blood or marrow aspirate Dark Green top

Amount to Collect:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow biopsy: 1 cm

Remarks:
Mix blood and marrow aspirates well

Stability (from collection to initiation):
2 days at room temperature

Unacceptable Conditions:
Insufficient sample or not collected in heparin

PROCESSING

Test Code:
BD9P: Blood
DEL9P: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Specimen Preparation:
Maintain sample at room temperature; Do Not Refrigerate or freeze. Do Not centrifuge.

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow biopsy: 1 cm

Unacceptable Conditions:
Insufficient sample or not collected in heparin

Stability (from collection to initiation):
2 days at room temperature

ADMINISTRATIVE

CPT Codes:
88271 x2, 88275

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BD9P: Blood
DEL9P: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Fluorescent in-Situ Hybridization

Remarks:
Mix blood and marrow aspirates well

Collect:
Blood or marrow aspirate Dark Green top

Amount to Collect:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Sample Type:
Heparinized blood or bone marrow aspirate
Bone biopsy

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow biopsy: 1 cm

Unacceptable Conditions:
Insufficient sample or not collected in heparin

Specimen Preparation:
Maintain sample at room temperature; Do Not Refrigerate or freeze. Do Not centrifuge.

Synonyms:

- Del9p
- Deletion CDKN2A FISH
- BD9P

Stability (from collection to initiation):
2 days at room temperature

Reported:
1-2 weeks

CPT Codes:
88271 x2, 88275

LDT or Modified FDA:
Yes

Delta-Aminolevulinic Acid Quantitative, 24 hour urine

ALAQ

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Colorimetric

Reported:
Test performed Tuesday and Thursday. Turnaround time: 2-7 days.

Additional Information:
To convert mg/d to µmol/d (SI units) multiply by 7.626.

This test should almost always be ordered in conjunction with Porphobilinogen (PBG) when the diagnosis of Acute Intermittent Porphyria is being considered.

Synonyms:

- ALA
- D-ALA
- DALA
- D-aminolevulenic acid
- Porphyrin precursors
- Porphyria

COLLECTION

Sample Type:
24 hour urine collection

Collect:
Amber Container Required

Amount to Collect:
Entire 24 hour urine output

Preferred Volume:
15 mL urine

Minimum Volume:
3 mL urine

Remarks:
Obtain a special brown 24 hour urine collection container from Specimen Receiving.

It is critically important that the sample be refrigerated and shielded from light during collection by covering container with aluminum foil.

Unacceptable Conditions:
Sample not refrigerated during collection or shielded from light

PROCESSING

Test Code:
ALAQ

Test Group:
D-ALA

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze aliquot in dark pouroff container [or wrap container in aluminum foil] at -20C. Record total urine volume on the request slip and on the urine container. Order Quest test # 219.

Preferred Volume:
15 mL urine

Minimum Volume:
3 mL urine

Unacceptable Conditions:
Sample not refrigerated during collection or shielded from light

RESULT INTERPRETATION

Units:
mg/24 h

Reference Interval:
< 4.5 mg/24 h

Additional Information:
To convert mg/d to µmol/d (SI units) multiply by 7.626.

This test should almost always be ordered in conjunction with Porphobilinogen (PBG) when the diagnosis of Acute Intermittent Porphyria is being considered.

ADMINISTRATIVE

CPT Codes:
82135-90

LOINC Codes:
2200-4

COMPLETE VIEW

Available Stat:
No

Test Code:
ALAQ

Test Group:
D-ALA

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Colorimetric

Remarks:
Obtain a special brown 24 hour urine collection container from Specimen Receiving.

It is critically important that the sample be refrigerated and shielded from light during collection by covering container with aluminum foil.

Collect:
Amber Container Required

Amount to Collect:
Entire 24 hour urine output

Sample Type:
24 hour urine collection

Preferred Volume:
15 mL urine

Minimum Volume:
3 mL urine

Unacceptable Conditions:
Sample not refrigerated during collection or shielded from light

Specimen Preparation:
Freeze aliquot in dark pouroff container [or wrap container in aluminum foil] at -20C. Record total urine volume on the request slip and on the urine container. Order Quest test # 219.

Units:
mg/24 h

Reference Interval:
< 4.5 mg/24 h

Synonyms:

- ALA
- D-ALA
- DALA
- D-aminolevulenic acid
- Porphyrin precursors
- Porphyria

Reported:

Test performed Tuesday and Thursday. Turnaround time: 2-7 days.

Additional Information:

To convert mg/d to µmol/d (SI units) multiply by 7.626.

This test should almost always be ordered in conjunction with Porphobilinogen (PBG) when the diagnosis of Acute Intermittent Porphyria is being considered.

CPT Codes:

82135-90

LOINC Codes:

2200-4

Delta-Aminolevulinic Acid Quantitative, random urine

ALAQR

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Colorimetric

Reported:
Test run 2x per week. TAT 6-8 days

Additional Information:
This test is the usual first step in the diagnosis acute intermittent porphyria. Patients with hereditary forms of porphyria usually will present with profound elevations of this analyte (> 5-fold) during acute episodes. Moderate elevations (< 3-fold) are more often due to medications or enviromental factors.

Synonyms:

- ALA
- D-ALA
- DALA
- D-aminolevulenic acid
- Porphyrin precursors
- Porphyria

COLLECTION

Patient Preparation:
Do not use first morning void, late evening specimen (after 8:00 pm), or specimen after excessive fluid intake. Recommend patient to collect urine specimen and submit to laboratory on-site to maintain specimen stability.

Sample Type:
Random urine

Collect:
Plain container wrapped in aluminum foil.

Amount to Collect:
See preferred volume

Preferred Volume:
2 mL urine

Minimum Volume:
0.6 mL urine

Remarks:
Cover urine cup with foil to protect sample from light and refrigerate.

Stability (from collection to initiation):
Room temperature unaccceptable, refrigerated 1 week, frozen at -20C 1 month.

PROCESSING

Test Code:
ALAQR

Test Group:
D-ALA

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot urine into a dark brown tube and refrigerate. Order Quest test # 6301.

Preferred Volume:
2 mL urine

Minimum Volume:
0.6 mL urine

Stability (from collection to initiation):
Room temperature unaccceptable, refrigerated 1 week, frozen at -20C 1 month.

RESULT INTERPRETATION

Units:
mg/g creatinine

Reference Interval:
Pediatric:
1 - 8 years: 2.3-6.2 mg/g creat
9 - 17 years: 1.5-5.3 mg/g creat

>= 18 years:
Females: <5.4 mg/g creat
Males: <1.8 mg/g creat

Additional Information:
This test is the usual first step in the diagnosis acute intermittent porphyria. Patients with hereditary forms of porphyria usually will present with profound elevations of this analyte (> 5-fold) during acute episodes. Moderate elevations (< 3-fold) are more often due to medications or enviromental factors.

ADMINISTRATIVE

CPT Codes:
82135-90

LOINC Codes:
13728-1

COMPLETE VIEW

Available Stat:
No

Test Code:
ALAQR

Test Group:
D-ALA

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Colorimetric

Patient Preparation:
Do not use first morning void, late evening specimen (after 8:00 pm), or specimen after excessive fluid intake. Recommend patient to collect urine specimen and submit to laboratory on-site to maintain specimen stability.

Remarks:
Cover urine cup with foil to protect sample from light and refrigerate.

Collect:
Plain container wrapped in aluminum foil.

Amount to Collect:
See preferred volume

Sample Type:
Random urine

Preferred Volume:
2 mL urine

Minimum Volume:
0.6 mL urine

Specimen Preparation:
Aliquot urine into a dark brown tube and refrigerate. Order Quest test # 6301.

Units:
mg/g creatinine

Reference Interval:
Pediatric:
1 - 8 years: 2.3-6.2 mg/g creat
9 - 17 years: 1.5-5.3 mg/g creat

>= 18 years:
Females: <5.4 mg/g creat
Males: <1.8 mg/g creat

Synonyms:

- ALA
- D-ALA
- DALA
- D-aminolevulenic acid
- Porphyrin precursors
- Porphyria

Stability (from collection to initiation):
Room temperature unaccceptable, refrigerated 1 week, frozen at -20C 1 month.

Reported:
Test run 2x per week. TAT 6-8 days

Additional Information:
This test is the usual first step in the diagnosis acute intermittent porphyria. Patients with hereditary forms of porphyria usually will present with profound elevations of this analyte (> 5-fold) during acute episodes. Moderate elevations (< 3-fold) are more often due to medications or enviromental factors.

CPT Codes:
82135-90

LOINC Codes:
13728-1

Dengue Antibodies, IgG & IgM

DENGF

ORDERING

Available Stat:
No

Performing Lab:
Focus via Quest

Methodology:
ELISA

Reported:
Set up 4x per week, turnaround 4-6 days

Additional Information:
Assay detects both IgG and IgM antibodies. Dengue hemorrhagic fever and Dengue shock syndrome are caused by infection of a RNA flavivirus transmitted by a mosquito vector. Paired acute and convalescent specimens that exhibit a significant change in titer are useful to confirm clinical diagnosis of infection.

Synonyms:

- Dengue hemorrhagic fever
- Dengue shock syndrome

COLLECTION

Sample Type:
Serum

Collect:
Red top or Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen at -20C 1 month.

PROCESSING

Test Code:
DENGF

Test Group:
Dengue

Sendout:
Yes

Performing Lab:
Focus via Quest

Specimen Preparation:
Ship at room temperature. Order Quest test # 34301X

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen at -20C 1 month.

RESULT INTERPRETATION

Units:
Index

Reference Interval:
IgG: <0.90
IgM: <0.90

Additional Information:
Assay detects both IgG and IgM antibodies. Dengue hemorrhagic fever and Dengue shock syndrome are caused by infection of a RNA flavivirus transmitted by a mosquito vector. Paired acute and convalescent specimens that exhibit a significant change in titer are useful to confirm clinical diagnosis of infection.

ADMINISTRATIVE

CPT Codes:
86790-90

LOINC Codes:
41878-0

COMPLETE VIEW

Available Stat:
No

Test Code:
DENGF

Test Group:
Dengue

Performing Lab:
Focus via Quest

Sendout:
Yes

Methodology:
ELISA

Collect:
Red top or Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Specimen Preparation:
Ship at room temperature. Order Quest test # 34301X

Units:
Index

Reference Interval:
IgG: <0.90
IgM: <0.90

Synonyms:

- Dengue hemorrhagic fever
- Dengue shock syndrome

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen at -20C 1 month.

Reported:
Set up 4x per week, turnaround 4-6 days

Additional Information:
Assay detects both IgG and IgM antibodies. Dengue hemorrhagic fever and Dengue shock syndrome are caused by infection of a RNA flavivirus transmitted by a mosquito vector. Paired acute and convalescent specimens that exhibit a significant change in titer are useful to confirm clinical diagnosis of infection.

CPT Codes:
86790-90

LOINC Codes:
41878-0

Des-gamma-carboxy Prothrombin

DCP

ORDERING

Ordering Recommendations:
Surveillance and monitoring of hepatocellular carcinoma.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Mon, Thu

Methodology:
Quantitative Liquid Chromatography/Immunoassay

Reported:
1-5 days

Synonyms:

- DCP, PIVKA-II
- DCP
- PIVKA-II

COLLECTION

Sample Type:
SERUM

Collect:
Plain red or serum separator tube.

Amount to Collect:
2 mL (blood)

Preferred Volume:
1 mL (serum)

Minimum Volume:
0.5 mL (serum)

Stability (from collection to initiation):
After separation from cells: Ambient: 8 hours; Refrigerated: 1 week; Frozen: 3 weeks (avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Plasma.

PROCESSING

Test Code:
DCP

ARUP Test Code:
0081312

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Allow specimen to clot completely at room temperature. Separate from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min: 0.5 mL)

Preferred Volume:
1 mL (serum)

Minimum Volume:
0.5 mL (serum)

Unacceptable Conditions:
Plasma.

Stability (from collection to initiation):
After separation from cells: Ambient: 8 hours; Refrigerated: 1 week; Frozen: 3 weeks (avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Units:
ng/mL

Reference Interval:
Effective August 20, 2012

0.0 - 7.4 ng/mL

Interpretive Data:
The µTASWako method is used. Results obtained with different assay methods or kits cannot be used interchangeably. The des-gamma-carboxy prothrombin (DCP) assay is intended as a risk assessment for the development of hepatocellular carcinoma in patients with chronic liver diseases. Elevated DCP values have been shown to be associated with an increased risk for developing hepatocellular carcinoma. Patients with elevated serum DCP should be more intensely evaluated for evidence of hepatocellular carcinoma. Results cannot be interpreted as absolute evidence of the presence or absence of malignant disease.

Medication containing vitamin K preparations may cause a negative bias of the DCP values.
Medication containing vitamin K antagonist or antibiotic may cause a positive bias of the DCP values.

ADMINISTRATIVE

CPT Codes:
83951

LOINC:

- 34444-0

LOINC Codes:
34444-0

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Surveillance and monitoring of hepatocellular carcinoma.

Test Code:
DCP

ARUP Test Code:
0081312

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Mon, Thu

Methodology:
Quantitative Liquid Chromatography/Immunoassay

Collect:
Plain red or serum separator tube.

Amount to Collect:
2 mL (blood)

Sample Type:
SERUM

Preferred Volume:
1 mL (serum)

Minimum Volume:
0.5 mL (serum)

Unacceptable Conditions:
Plasma.

Specimen Preparation:

Allow specimen to clot completely at room temperature. Separate from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min: 0.5 mL)

Units:

ng/mL

Reference Interval:

Effective August 20, 2012

0.0 - 7.4 ng/mL

Interpretive Data:

The µTASWako method is used. Results obtained with different assay methods or kits cannot be used interchangeably. The des-gamma-carboxy prothrombin (DCP) assay is intended as a risk assessment for the development of hepatocellular carcinoma in patients with chronic liver diseases. Elevated DCP values have been shown to be associated with an increased risk for developing hepatocellular carcinoma. Patients with elevated serum DCP should be more intensely evaluated for evidence of hepatocellular carcinoma. Results cannot be interpreted as absolute evidence of the presence or absence of malignant disease.

Medication containing vitamin K preparations may cause a negative bias of the DCP values.
Medication containing vitamin K antagonist or antibiotic may cause a positive bias of the DCP values.

Synonyms:

- DCP, PIVKA-II
- DCP
- PIVKA-II

Storage/Transport Temperature:

Refrigerated.

Stability (from collection to initiation):

After separation from cells: Ambient: 8 hours; Refrigerated: 1 week; Frozen: 3 weeks (avoid repeated freeze/thaw cycles)

Reported:

1-5 days

CPT Codes:

83951

LOINC:

- 34444-0

LOINC Codes:

34444-0

Desipramine

DESI

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Liquid Chromatography Tandem Mass Spectrometry

Reported:
Test performed 4 x per week. Turnaround time 3-5 days.

Additional Information:
If both Desipramine and Imipramine are desired, order Imipramine only. Potentially toxic: > 500.

Synonyms:

- Norpramin
- Pertofrane

COLLECTION

Sample Type:
Serum

Collect:
Red top

Amount to Collect:
6 mL blood

Preferred Volume:
3 mL serum

Minimum Volume:
1.5 mL serum

Remarks:
Do not use Gold top. If both Desipramine and Imipramine are desired, order Imipramine only.

Unacceptable Conditions:
Collected in Gold top

PROCESSING

Test Code:
DESI

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Separate serum promptly. Freeze at -20C.

Preferred Volume:
3 mL serum

Minimum Volume:
1.5 mL serum

Unacceptable Conditions:
Collected in Gold top

RESULT INTERPRETATION

Units:
µg/L (mcg/L)

Reference Interval:
Therapeutic 50-300 µg/L when given as parent drug

Critical Values:
Quest Priority-1: >= 600 µg/L

Additional Information:
If both Desipramine and Imipramine are desired, order Imipramine only. Potentially toxic: > 500.

ADMINISTRATIVE

CPT Codes:
80335-90

LOINC Codes:
3531-1

COMPLETE VIEW

Available Stat:
No

Test Code:
DESI

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Liquid Chromatography Tandem Mass Spectrometry

Remarks:
Do not use Gold top. If both Desipramine and Imipramine are desired, order Imipramine only.

Collect:
Red top

Amount to Collect:
6 mL blood

Sample Type:
Serum

Preferred Volume:
3 mL serum

Minimum Volume:
1.5 mL serum

Unacceptable Conditions:
Collected in Gold top

Specimen Preparation:
Separate serum promptly. Freeze at -20C.

Units:
µg/L (mcg/L)

Reference Interval:
Therapeutic 50-300 µg/L when given as parent drug

Critical Values:
Quest Priority-1: >= 600 µg/L

Synonyms:

- Norpramin
- Pertofrane

Reported:
Test performed 4 x per week. Turnaround time 3-5 days.

Additional Information:
If both Desipramine and Imipramine are desired, order Imipramine only. Potentially toxic: > 500.

CPT Codes:
80335-90

LOINC Codes:
3531-1

Desmoglein 1 and 3 Antibodies

DSG

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
ELISA

Reported:
7-9 days

Additional Information:

Pemphigus includes a group of often fatal autoimmune, blistering diseases characterized by intraepithelial lesions. Pemphigus vulgaris and its variants may present with oral or mucosal lesions alone or with mucosal plus skin lesions. Pemphigus foliaceous and variants present with skin lesions alone.

Indirect immunofluorescence (IIF) studies reveal that both forms of pemphigus are caused by autoantibodies to cell surface antigens of stratified epithelia or mucous membranes and skin. These antibodies bind to calcium-dependent adhesion molecules in cell surface desmosomes, notably desmoglein 1 (DSG1) in pemphigus foliaceus and desmoglein 3 (DSG3) and/or DSG1 in pemphigus vulgaris. Desmogleins are protein substances located in and on the surface of keratinocytes. These proteins have been shown to be a critical factor in cell-to-cell adhesion. Antibodies to desmogleins can result in loss of cell adhesion, the primary cause of blister formation in pemphigus.

The diagnosis of pemphigus depends on biopsy and serum studies that characterize lesions and detect the autoantibodies that cause them. Originally, the serum studies were performed by IIF using monkey esophagus and other tissue substrates. The identification of the reactive antigens as DSG1 and DSG3 has made it possible to develop highly specific and sensitive enzyme-linked immunosorbent assay (ELISA) methods.

Antibodies to desmoglein 1 (DSG1) and desmoglein 3 (DSG3) have been shown to be present in patients with pemphigus. Many patients with pemphigus foliaceus, a superficial form of pemphigus have antibodies to DSG1. Patients with pemphigus vulgaris, a deeper form of pemphigus, have antibodies to DSG3 and sometimes DSG1 as well.

Antibody titer correlates in a semiquantitative manner with disease activity in many patients. Patients with severe disease can usually be expected to have high titers of antibodies to DSG. Titers are expected to decrease with clinical improvement.

Our experience demonstrates a very good correlation between DSG1 and DSG3 results and the presence of pemphigus. Adequate sensitivities and specificity for disease are documented. However, in those patients strongly suspected to have pemphigus either by clinical findings or by routine biopsy, and in whom the DSG assay is negative, the IIF test (CIFS/8052 Cutaneous Immunofluorescence Antibodies [IgG], Serum) is recommended.

Synonyms:

- DSG1 Ab
- DSG1 Antibody
- DSG3 Ab
- DSG3 Antibody

COLLECTION

Sample Type:
Serum

Collect:
Red top or Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature 1.5 days, refrigerated 1 week, frozen 2 weeks

Rejection Criteria:
Gross hemolysis, lipemia or icterus

PROCESSING

Test Code:
DSG

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Spin and freeze aliquot at -20C. Ship to China Basin.

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Rejection Criteria:
Gross hemolysis, lipemia or icterus

Stability (from collection to initiation):
Room temperature 1.5 days, refrigerated 1 week, frozen 2 weeks

RESULT INTERPRETATION

Units:
U

Reference Interval:
DESMOGLEIN 1
Negative: <14.0 U
Indeterminate: 14.0-20.0 U
Positive: >20.0 U

DESMOGLEIN 3
Negative: <9.0 U
Indeterminate: 9.0-20.0 U
Positive: >20.0 U

Additional Information:

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Indirect immunofluorescence (IIF) studies reveal that both forms of pemphigus are caused by autoantibodies to cell surface antigens of stratified epithelia or mucous membranes and skin. These antibodies bind to calcium-dependent adhesion molecules in cell surface desmosomes, notably desmoglein 1 (DSG1) in pemphigus foliaceus and desmoglein 3 (DSG3) and/or DSG1 in pemphigus vulgaris. Desmogleins are protein substances located in and on the surface of keratinocytes. These proteins have been shown to be a critical factor in cell-to-cell adhesion. Antibodies to desmogleins can result in loss of cell adhesion, the primary cause of blister formation in pemphigus.

The diagnosis of pemphigus depends on biopsy and serum studies that characterize lesions and detect the autoantibodies that cause them. Originally, the serum studies were performed by IIF using monkey esophagus and other tissue substrates. The identification of the reactive antigens as DSG1 and DSG3 has made it possible to develop highly specific and sensitive enzyme-linked immunosorbent assay (ELISA) methods.

Antibodies to desmoglein 1 (DSG1) and desmoglein 3 (DSG3) have been shown to be present in patients with pemphigus. Many patients with pemphigus foliaceus, a superficial form of pemphigus have antibodies to DSG1. Patients with pemphigus vulgaris, a deeper form of pemphigus, have antibodies to DSG3 and sometimes DSG1 as well.

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ADMINISTRATIVE

CPT Codes:
83516-90 x2

COMPLETE VIEW

Available Stat:
No

Test Code:
DSG

Performing Lab:
Mayo

Sendout:
Yes

Methodology:
ELISA

Collect:
Red top or Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Rejection Criteria:
Gross hemolysis, lipemia or icterus

Specimen Preparation:
Spin and freeze aliquot at -20C. Ship to China Basin.

Units:
U

Reference Interval:
DESMOGLEIN 1
Negative: <14.0 U
Indeterminate: 14.0-20.0 U
Positive: >20.0 U

DESMOGLEIN 3
Negative: <9.0 U
Indeterminate: 9.0-20.0 U
Positive: >20.0 U

Synonyms:

- DSG1 Ab
- DSG1 Antibody
- DSG3 Ab
- DSG3 Antibody

Stability (from collection to initiation):
Room temperature 1.5 days, refrigerated 1 week, frozen 2 weeks

Reported:
7-9 days

Additional Information:

Pemphigus includes a group of often fatal autoimmune, blistering diseases characterized by intraepithelial lesions. Pemphigus vulgaris and its variants may present with oral or mucosal lesions alone or with mucosal plus skin lesions. Pemphigus foliaceous and variants present with skin lesions alone.

Indirect immunofluorescence (IIF) studies reveal that both forms of pemphigus are caused by autoantibodies to cell surface antigens of stratified epithelia or mucous membranes and skin. These antibodies bind to calcium-dependent adhesion molecules in cell surface desmosomes, notably desmoglein 1 (DSG1) in pemphigus foliaceus and desmoglein 3 (DSG3) and/or DSG1 in pemphigus vulgaris. Desmogleins are protein substances located in and on the surface of keratinocytes. These proteins have been shown to be a critical factor in cell-to-cell adhesion. Antibodies to desmogleins can result in loss of cell adhesion, the primary cause of blister formation in pemphigus.

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Antibodies to desmoglein 1 (DSG1) and desmoglein 3 (DSG3) have been shown to be present in patients with pemphigus. Many patients with pemphigus foliaceus, a superficial form of pemphigus have antibodies to DSG1. Patients with pemphigus vulgaris, a deeper form of pemphigus, have antibodies to DSG3 and sometimes DSG1 as well.

Antibody titer correlates in a semiquantitative manner with disease activity in many patients. Patients with severe disease can usually be expected to have high titers of antibodies to DSG. Titers are expected to decrease with clinical improvement.

Our experience demonstrates a very good correlation between DSG1 and DSG3 results and the presence of pemphigus. Adequate sensitivities and specificity for disease are documented. However, in those patients strongly suspected to have pemphigus either by clinical findings or by routine biopsy, and in whom the DSG assay is negative, the IIF test (CIFS/8052 Cutaneous Immunofluorescence Antibodies [IgG], Serum) is recommended.

CPT Codes:

83516-90 x2

Dexamethasone Suppression Test

ORDERING

Available Stat:
No

Additional Information:
For Depressive Illness based on Carrollet al. Arch Gen Psych 1981;38:15.

1 mg dexamethasone is given at 2300 on day 1, and serum cortisol levels are obtained 18 and 24 hours later (1600 and 2300 on day 2). A cortisol level of > 4 µg/dL (> 110 nmol/L) in either day 2 specimen is considered abnormal.

Indomethacin and similar drugs may give false-negative results, and the diagnostic value of this test is in any case dubious.

COLLECTION

Sample Type:
see Cortisol

PROCESSING

Test Group:
Dexamethasone Suppression Test

RESULT INTERPRETATION

Reference Interval:
See Additional Information

Additional Information:
For Depressive Illness based on Carrollet al. Arch Gen Psych 1981;38:15.

1 mg dexamethasone is given at 2300 on day 1, and serum cortisol levels are obtained 18 and 24 hours later (1600 and 2300 on day 2). A cortisol level of > 4 µg/dL (> 110 nmol/L) in either day 2 specimen is considered abnormal.

Indomethacin and similar drugs may give false-negative results, and the diagnostic value of this test is in any case dubious.

COMPLETE VIEW

Available Stat:
No

Test Group:
Dexamethasone Suppression Test

Sample Type:
see Cortisol

Reference Interval:
See Additional Information

Additional Information:
For Depressive Illness based on Carrollet al. Arch Gen Psych 1981;38:15.

1 mg dexamethasone is given at 2300 on day 1, and serum cortisol levels are obtained 18 and 24 hours later (1600 and 2300 on day 2). A cortisol level of > 4 µg/dL (> 110 nmol/L) in either day 2 specimen is considered abnormal.

Indomethacin and similar drugs may give false-negative results, and the diagnostic value of this test is in any case dubious.

Dexamethasone Suppression Test, High-Dose

ORDERING

Available Stat:
No

Additional Information:

For Differential Diagnosis of Cushing's Syndrome.

Rapid Test (based on Tyrrell JB et al. Ann Intern Med 1986;104:180.: Obtain a baseline serum cortisol at 0700-0800 hours. Administer 8.0 mg po dexamethasone that evening at 2300 hours and obtain another serum cortisol at 0700-0800 hours the following morning. Interpretation: A positive response (suppressibility) is a reduction of the post-dexamethasone serum cortisol to <=50% of the baseline cortisol level (sensitivity 89%, CI 80-94%; specificity 100%, CI 84-100%).

Standard Test (based on Liddle GW. J Clin Endocrinol Metab 1960;20:1539): Obtain a baseline serum cortisol at 0700-0800 hours and a 24 hour urine collection of urine for 17-OH corticosteroids beginning at the same time. On the following day administer 2.0 mg po dexamethasone q6h for 8 doses. Repeat the 24 hour urine 17-OHS collection during day 2 of dexamethasone administration and repeat the plasma cortisol at 0700-0800 hours on the morning after the last steroid dose. Interpretation: A positive response (suppressibility) is a reduction in both assays to <=50% of baseline values (sensitivity 92%, CI 82-97%; specificity 94%, CI 85-97%).

Significance: A positive response generally indicates an ACTH-producing pituitary tumor, rather than an ectopic (primarily thoracic) ACTH-producing tumoror an adrenal source.

COLLECTION

Sample Type:
see Cortisol

PROCESSING

Test Group:
Dexamethasone Suppression Test

RESULT INTERPRETATION

Reference Interval:
See Additional Information

Additional Information:

For Differential Diagnosis of Cushing's Syndrome.

Rapid Test (based on Tyrrell JB et al. Ann Intern Med 1986;104:180.: Obtain a baseline serum cortisol at 0700-0800 hours. Administer 8.0 mg po dexamethasone that evening at 2300 hours and obtain another serum cortisol at 0700-0800 hours the following morning. Interpretation: A positive response (suppressibility) is a reduction of the post-dexamethasone serum cortisol to <=50% of the baseline cortisol level (sensitivity 89%, CI 80-94%; specificity 100%, CI 84-100%).

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Significance: A positive response generally indicates an ACTH-producing pituitary tumor, rather than an ectopic (primarily thoracic) ACTH-producing tumoror an adrenal source.

COMPLETE VIEW

Available Stat:
No

Test Group:
Dexamethasone Suppression Test

Sample Type:
see Cortisol

Reference Interval:
See Additional Information

Additional Information:

For Differential Diagnosis of Cushing's Syndrome.

Rapid Test (based on Tyrrell JB et al. Ann Intern Med 1986;104:180.: Obtain a baseline serum cortisol at 0700-0800 hours. Administer 8.0 mg po dexamethasone that evening at 2300 hours and obtain another serum cortisol at 0700-0800 hours the following morning. Interpretation: A positive response (suppressibility) is a reduction of the post-dexamethasone serum cortisol to <=50% of the baseline cortisol level (sensitivity 89%, CI 80-94%; specificity 100%, CI 84-100%).

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Significance: A positive response generally indicates an ACTH-producing pituitary tumor, rather than an ectopic (primarily thoracic) ACTH-producing tumoror an adrenal source.

Dexamethasone Suppression Test, Low-Dose

ORDERING

Available Stat:
No

Additional Information:

For Diagnosis of Cushing's Syndrome.

Rapid Test (based on Pavlatos FC et al. JAMA 1965;193:720): Obtain a baseline serum cortisol at 0700-0800 hours. Administer 1.0 mg po dexamethasone that evening at 2300 hours and obtain another serum cortisol at 0700-0800 hours the following morning. Interpretation: A normal response (suppressibility) is a reduction of the post-dexamethasone serum cortisol to < 5 µg/dL (< 140 nmol/L).

Standard Test (based on Liddle GW. J Clin Endocrinol Metab 1960;20:1539): Obtain a baseline serum cortisol at 0700-0800 hours and a 24 hour urine collection of urine for 17-OH corticosteroids beginning at the same time. On the following day administer 0.5 mg po dexamethasone q6h for 8 doses. Repeat the 24 hour urine 17-OHC collection during day 2 of dexamethasone administration and repeat the plasma cortisol at 0700-0800 hours on the morning after the last steroid dose.

Interpretation: A normal response (suppressibility) is a reduction in cortisol to < 5 µg/dL (< 140 nmol/L) and of 17-OHC to < 4 mg/d (< 11 µmol/d).

Significance: An (abnormal) lack of suppression typifies Cushing's Syndrome.

COLLECTION

Sample Type:
see Cortisol

PROCESSING

Test Group:
Dexamethasone Suppression Test

RESULT INTERPRETATION

Reference Interval:
See Additional Information

Additional Information:

For Diagnosis of Cushing's Syndrome.

Rapid Test (based on Pavlatos FC et al. JAMA 1965;193:720): Obtain a baseline serum cortisol at 0700-0800 hours. Administer 1.0 mg po dexamethasone that evening at 2300 hours and obtain another serum cortisol at 0700-0800 hours the following morning. Interpretation: A normal response (suppressibility) is a reduction of the post-dexamethasone serum cortisol to < 5 µg/dL (< 140 nmol/L).

Standard Test (based on Liddle GW. J Clin Endocrinol Metab 1960;20:1539): Obtain a baseline serum cortisol at 0700-0800 hours and a 24 hour urine collection of urine for 17-OH corticosteroids beginning at the same time. On the following day administer 0.5 mg po dexamethasone q6h for 8 doses. Repeat the 24 hour urine 17-OHC collection during day 2 of dexamethasone administration and repeat the plasma cortisol at 0700-0800 hours on the morning after the last steroid dose.

Interpretation: A normal response (suppressibility) is a reduction in cortisol to < 5 µg/dL (< 140 nmol/L) and of 17-OHC to < 4 mg/d (< 11 µmol/d).

Significance: An (abnormal) lack of suppression typifies Cushing's Syndrome.

COMPLETE VIEW

Available Stat:
No

Test Group:
Dexamethasone Suppression Test

Sample Type:
see Cortisol

Reference Interval:

See Additional Information

Additional Information:

For Diagnosis of Cushing's Syndrome.

Rapid Test (based on Pavlatos FC et al. JAMA 1965;193:720): Obtain a baseline serum cortisol at 0700-0800 hours. Administer 1.0 mg po dexamethasone that evening at 2300 hours and obtain another serum cortisol at 0700-0800 hours the following morning. Interpretation: A normal response (suppressibility) is a reduction of the post-dexamethasone serum cortisol to < 5 µg/dL (< 140 nmol/L).

Standard Test (based on Liddle GW. J Clin Endocrinol Metab 1960;20:1539): Obtain a baseline serum cortisol at 0700-0800 hours and a 24 hour urine collection of urine for 17-OH corticosteroids beginning at the same time. On the following day administer 0.5 mg po dexamethasone q6h for 8 doses. Repeat the 24 hour urine 17-OHC collection during day 2 of dexamethasone administration and repeat the plasma cortisol at 0700-0800 hours on the morning after the last steroid dose.

Interpretation: A normal response (suppressibility) is a reduction in cortisol to < 5 µg/dL (< 140 nmol/L) and of 17-OHC to < 4 mg/d (< 11 µmol/d).

Significance: An (abnormal) lack of suppression typifies Cushing's Syndrome.

Dexamethasone, Serum or Plasma by LC-MS/MS

DEXA

ORDERING

Ordering Recommendations:
Compliance assessment of dexamethasone suppression testing.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Wed, Sat

Methodology:
Liquid Chromatography-Tandem Mass Spectrometry

Reported:
2-5 days

COLLECTION

Patient Preparation:
Specimen should be collected between 8-10 a.m.

Sample Type:
Serum or plasma

Collect:
Serum separator tube, lavender (EDTA), pink (K_2EDTA), or green (sodium or lithium heparin).

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.5 mL serum or plasma

Stability (from collection to initiation):
After separation from cells: Ambient: Unacceptable; Refrigerated: 1 week; Frozen: 6 months

Storage/Transport Temperature:
Refrigerated.

PROCESSING

Test Code:
DEXA

ARUP Test Code:
2003248

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.5 mL)

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.5 mL serum or plasma

Stability (from collection to initiation):
After separation from cells: Ambient: Unacceptable; Refrigerated: 1 week; Frozen: 6 months

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:
Adults baseline: Less than 50 ng/dL
8:00 AM draw following 1 mg dexamethasone between 11:00 pm and 12:00 am the previous evening: 140 - 295 ng/dL
8:00 AM draw following 8 mg dexamethasone (4 x 2 mg doses) between 11:00 pm and 12:00 am the previous evening: 1600 - 2850 ng/dL

Interpretive Data:
This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:
80299

LOINC:

- 14062-4

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Compliance assessment of dexamethasone suppression testing.

Test Code:
DEXA

ARUP Test Code:
2003248

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Wed, Sat

Methodology:
Liquid Chromatography-Tandem Mass Spectrometry

Patient Preparation:
Specimen should be collected between 8-10 a.m.

Collect:
Serum separator tube, lavender (EDTA), pink (K_2EDTA), or green (sodium or lithium heparin).

Amount to Collect:
2 mL blood

Sample Type:
Serum or plasma

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.5 mL serum or plasma

Specimen Preparation:
Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.5 mL)

Reference Interval:
Adults baseline: Less than 50 ng/dL
8:00 AM draw following 1 mg dexamethasone between 11:00 pm and 12:00 am the previous evening: 140 - 295 ng/dL
8:00 AM draw following 8 mg dexamethasone (4 x 2 mg doses) between 11:00 pm and 12:00 am the previous evening: 1600 - 2850 ng/dL

Interpretive Data:
This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Storage/Transport Temperature:
Refrigerated.

Stability (from collection to initiation):
After separation from cells: Ambient: Unacceptable; Refrigerated: 1 week; Frozen: 6 months

Reported:
2-5 days

CPT Codes:
80299

LOINC:

- 14062-4

Diazepam

MOLT

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
HPLC

Reported:
Test performed Monday, Wednesday, Friday. Turnaround time: 2-4 days.

Additional Information:
Includes nordiazepam and oxazepam. Potentially toxic: > 2.5.

Synonyms:

- Valium
- nordiazepam
- oxazepam
- Desmethyldiazepam

COLLECTION

Sample Type:
Serum

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Remarks:
Do NOT use a serum separator tube.

Unacceptable Conditions:
Collected in Gold top

PROCESSING

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate. Order Quest # 94130

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Unacceptable Conditions:
Collected in Gold top

RESULT INTERPRETATION

Units:
mg/L

Reference Interval:
Therapeutic: 0.1-2.5 mg/L for the SUM of the parent drug and its metabolite

Critical Values:
Quest Priority-1: Diazepam + Norazepam >= 3.0 mg/L

Additional Information:
Includes nordiazepam and oxazepam. Potentially toxic: > 2.5.

ADMINISTRATIVE

CPT Codes:
80154-90

COMPLETE VIEW

Available Stat:
No

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Performing Lab:
Quest

Sendout:
Yes

Methodology:
HPLC

Remarks:
Do NOT use a serum separator tube.

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
4 mL blood

Sample Type:
Serum

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Unacceptable Conditions:
Collected in Gold top

Specimen Preparation:
Refrigerate. Order Quest # 94130

Units:
mg/L

Reference Interval:
Therapeutic: 0.1-2.5 mg/L for the SUM of the parent drug and its metabolite

Critical Values:
Quest Priority-1: Diazepam + Norazepam >= 3.0 mg/L

Synonyms:

- Valium
- nordiazepam
- oxazepam
- Desmethyldiazepam

Reported:
Test performed Monday, Wednesday, Friday. Turnaround time: 2-4 days.

Additional Information:
Includes nordiazepam and oxazepam. Potentially toxic: > 2.5.

CPT Codes:
80154-90

Differential Time to Positivity

P060 & P061

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Daily, all shifts

Methodology:
Culture

Reported:
6 days

Additional Information:
If organisms grow in the sample drawn through the line at least two hours earlier than from the peripheral blood, then the line is considered to be the source of infection.

Synonyms:

- catheter tip
- catheter infection
- blood culture

COLLECTION

Sample Type:
Whole blood

Collect:
Two sets of paired blood culture bottles (BD BACTEC Plus Aerobic and Lytic Anaerobic)

Amount to Collect:

Adults: 40 mL total (20 mL for each set / 10 mL for each bottle)

Pediatrics: Collect blood sample amount according to weight for EACH set:
< 1 kg = 1 mL for aerobic only (0.5 ml for neonates < 72h old)
1 - 5 kg = 2 mL total (1 mL for each bottle)
5 - 15 kg = 3 mL total (1.5 mL for each bottle)
15 - 40 kg = 6 mL total (3 mL for each bottle)
>40 kg = 10 mL total (5 mL for each bottle)

Preferred Volume:
Adults: 40 mL total (20 mL for each set / 10 mL for each bottle)

Pediatrics: Collect blood sample amount according to weight for EACH set (see "Amount to Collect" above)

Minimum Volume:
Adults: 20 mL total (10 mL for each set / 5 mL for each bottle)

Pediatrics: Draw 1.0 mL minimum for culture (0.5 ml for neonates < 72h old) when collecting aerobic only (standard). If both aerobic and anaerobic needed, instill minimum of 1 mL in each bottle when collecting.

Remarks:

For detailed instructions, see nursing manual.

Peripheral vein and CVC line samples must be obtained within 15 minutes of each other.

The volumes of blood obtained from the peripheral vein & from the CVC must match. (e.g. if only 12 mLs is obtained from peripheral stick, obtain only 12 mLs from CVC).

Draw peripheral blood sample first since the amount of blood obtained will determine how much is obtained from the CVC.

Inoculate one set of aerobic & anaerobic bottles with the peripheral sample, dividing the volume in half for each bottle. Label bottles as "peripheral" and submit with a microbiology requisition (if applicable) for a DTTP Peripheral Blood Culture.

Inoculate a second set of aerobic & anaerobic bottles with the line sample, dividing the volume in half for each bottle. Label bottles as "line" and submit with a microbiology requisition (if applicable) for a DTTP Central Blood Culture.

Put all 4 bottles and requisitions (if applicable) in the same specimen bag and send to the lab.

Stability (from collection to initiation):
36 hours at room temperature

Unacceptable Conditions:
Samples that are not collected per "Collection Instructions"

PROCESSING

Test Code:
P060 & P061

Test Group:
Bacterial culture

Performing Lab:
Microbiology

Specimen Preparation:

1. Maintain samples at room temperature.
2. Both peripheral and central blood cultures, collected within 15 minutes of each other are submitted. More than one type of central blood culture may be submitted. Each set should be labeled as peripheral or central. Physician will order DTTP Peripheral Blood Culture and DTTP Central Blood Culture.
3. If unsuitable collection, complete a credit form and indicate reason NOTTP (DTTP culture not performed due to improper collection. Test requires peripheral and central line blood draws, collected within 15 minutes of each other.)
4. Accession one set and then the other(s).
5. Send all bottles to China Basin in one bag.
6. If the time from collection to loading bottles on the instrument is more than 12 hours, give the bottles to a CLS to subculture before loading.
7. Load all bottles into the instrument at the same time.

See Peripheral and Central Blood Culture processing notes for more information.

Preferred Volume:
Adults: 40 mL total (20 mL for each set / 10 mL for each bottle)

Pediatrics: Collect blood sample amount according to weight for EACH set (see "Amount to Collect" above)

Minimum Volume:
Adults: 20 mL total (10 mL for each set / 5 mL for each bottle)

Pediatrics: Draw 1.0 mL minimum for culture (0.5 ml for neonates < 72h old) when collecting aerobic only (standard). If both aerobic and anaerobic needed, instill minimum of 1 mL in each bottle when collecting.

Unacceptable Conditions:
Samples that are not collected per "Collection Instructions"

Stability (from collection to initiation):
36 hours at room temperature

RESULT INTERPRETATION

Reference Interval:
No growth

Critical Values:
Inpatient results only. After hours outpatient results will be phoned the following morning. Gram stain results from the first positive blood culture on a patient will be phoned.

Additional calls only made if > 7 days have elapsed since first call or a different organism is identified.

Additional Information:
If organisms grow in the sample drawn through the line at least two hours earlier than from the peripheral blood, then the line is considered to be the source of infection.

ADMINISTRATIVE

CPT Codes:
87040

LOINC Codes:
600-7

COMPLETE VIEW

Available Stat:
No

Test Code:
P060 & P061

Test Group:
Bacterial culture

Performing Lab:
Microbiology

Performed:
Daily, all shifts

Methodology:
Culture

Remarks:

For detailed instructions, see nursing manual.

Peripheral vein and CVC line samples must be obtained within 15 minutes of each other.

The volumes of blood obtained from the peripheral vein & from the CVC must match. (e.g. if only 12 mLs is obtained from peripheral stick, obtain only 12 mLs from CVC).

Draw peripheral blood sample first since the amount of blood obtained will determine how much is obtained from the CVC.

Inoculate one set of aerobic & anaerobic bottles with the peripheral sample, dividing the volume in half for each bottle. Label bottles as "peripheral" and submit with a microbiology requisition (if applicable) for a DTTP Peripheral Blood Culture.

Inoculate a second set of aerobic & anaerobic bottles with the line sample, dividing the volume in half for each bottle. Label bottles as "line" and submit with a microbiology requisition (if applicable) for a DTTP Central Blood Culture.

Put all 4 bottles and requisitions (if applicable) in the same specimen bag and send to the lab.

Collect:
Two sets of paired blood culture bottles (BD BACTEC Plus Aerobic and Lytic Anaerobic)

Amount to Collect:

Adults: 40 mL total (20 mL for each set / 10 mL for each bottle)

Pediatrics: Collect blood sample amount according to weight for EACH set:
< 1 kg = 1 mL for aerobic only (0.5 ml for neonates < 72h old)
1 - 5 kg = 2 mL total (1 mL for each bottle)
5 - 15 kg = 3 mL total (1.5 mL for each bottle)
15 - 40 kg = 6 mL total (3 mL for each bottle)
>40 kg = 10 mL total (5 mL for each bottle)

Sample Type:
Whole blood

Preferred Volume:
Adults: 40 mL total (20 mL for each set / 10 mL for each bottle)

Pediatrics: Collect blood sample amount according to weight for EACH set (see "Amount to Collect" above)

Minimum Volume:
Adults: 20 mL total (10 mL for each set / 5 mL for each bottle)

Pediatrics: Draw 1.0 mL minimum for culture (0.5 ml for neonates < 72h old) when collecting aerobic only (standard). If both aerobic and anaerobic needed, instill minimum of 1 mL in each bottle when collecting.

Unacceptable Conditions:
Samples that are not collected per "Collection Instructions"

Specimen Preparation:

1. Maintain samples at room temperature.
2. Both peripheral and central blood cultures, collected within 15 minutes of each other are submitted. More than one type of central blood culture may be submitted. Each set should be labeled as peripheral or central. Physician will order DTTP Peripheral Blood Culture and DTTP Central Blood Culture.
3. If unsuitable collection, complete a credit form and indicate reason NOTTP (DTTP culture not performed due to improper collection. Test requires peripheral and central line blood draws, collected within 15 minutes of each other.)
4. Accession one set and then the other(s).
5. Send all bottles to China Basin in one bag.
6. If the time from collection to loading bottles on the instrument is more than 12 hours, give the bottles to a CLS to subculture before loading.
7. Load all bottles into the instrument at the same time.

See Peripheral and Central Blood Culture processing notes for more information.

Reference Interval:
No growth

Critical Values:
Inpatient results only. After hours outpatient results will be phoned the following morning. Gram stain results from the first positive blood culture on a patient will be phoned.

Additional calls only made if > 7 days have elapsed since first call or a different organism is identified.

Synonyms:

- catheter tip
- catheter infection
- blood culture

Stability (from collection to initiation):
36 hours at room temperature

Reported:
6 days

Additional Information:
If organisms grow in the sample drawn through the line at least two hours earlier than from the peripheral blood, then the line is considered to be the source of infection.

CPT Codes:
87040

LOINC Codes:
600-7

Digitoxin

DIGT

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Immunoasssay

Reported:
Test run daily. Turnaround time: 2-3 days.

Additional Information:
Potentially toxic: > 30 µg/L.

COLLECTION

Sample Type:
Serum or EDTA plasma

Collect:
Red top, Lavender top (Gold top **NOT** acceptable)

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum or plasma

Remarks:
Draw at least 6-12 hours after administration.

Unacceptable Conditions:
Collected in Gold top

PROCESSING

Test Code:
DIGT

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Order Quest #417Z.

Preferred Volume:
1 mL serum or plasma

Unacceptable Conditions:
Collected in Gold top

RESULT INTERPRETATION

Units:
ng/mL

Reference Interval:
Therapeutic: 10-30 ng/mL
Potentially toxic: > 30 ng/mL

Critical Values:
Quest Priority-1: >= 45 ng/mL

Additional Information:
Potentially toxic: > 30 µg/L.

ADMINISTRATIVE

CPT Codes:
80299-90

LOINC Codes:
3559-2

COMPLETE VIEW

Available Stat:
No

Test Code:
DIGT

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Immunoasssay

Remarks:
Draw at least 6-12 hours after administration.

Collect:
Red top, Lavender top (Gold top **NOT** acceptable)

Amount to Collect:
2 mL blood

Sample Type:
Serum or EDTA plasma

Preferred Volume:
1 mL serum or plasma

Unacceptable Conditions:
Collected in Gold top

Specimen Preparation:
Order Quest #417Z.

Units:
ng/mL

Reference Interval:
Therapeutic: 10-30 ng/mL
Potentially toxic: > 30 ng/mL

Critical Values:
Quest Priority-1: >= 45 ng/mL

Reported:
Test run daily. Turnaround time: 2-3 days.

Additional Information:
Potentially toxic: > 30 µg/L.

CPT Codes:
80299-90

LOINC Codes:
3559-2

Digoxin
DIG

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Particle-enhanced turbidimetric inhibition immunoassay (PETINIA)

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
Non-specific immunologic CROSS-REACTIVITY can occur in patients with renal failure, pregnant women and neonates.

Note: In patients receiving Digibind therapy for treatment of digoxin overdose, the measured levels of digoxin are unreliable and may accurately reflect neither the total level of digoxin (bound and free) nor the level of free digoxin.

Although offered Stat, therapeutic decisions are typically not altered by stat results except in cases of accidental massive overdose when Digibind therapy is contemplated. Due to the long T1/2 for Digoxin it is generally acceptable to merely hold the next dose and obtain a routine Digoxin level.

See the lab manual's "A Guide on Drug Level Monitoring" (in the Chemistry Guide) for additional information.

Synonyms:

- Lanoxin

COLLECTION

Sample Type:
Serum or plasma

Collect:
Gold top or Light Green top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

Remarks:
Time to steady state: 3-5 days

Collect samples 30 minutes before next dose or at least 6-8 hours post dose.

PROCESSING

Test Code:
DIG

Performing Lab:
Parnassus & Mission Bay Chemistry

Specimen Preparation:
Refrigerate serum.

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

RESULT INTERPRETATION

Units:
µg/L

Reference Interval:
Therapeutic: 0.5-2.0 µg/L

Critical Values:
> 2.0 ug/L

Additional Information:
Non-specific immunologic CROSS-REACTIVITY can occur in patients with renal failure, pregnant women and neonates.

Note: In patients receiving Digibind therapy for treatment of digoxin overdose, the measured levels of digoxin are unreliable and may accurately reflect neither the total level of digoxin (bound and free) nor the level of free digoxin.

Although offered Stat, therapeutic decisions are typically not altered by stat results except in cases of accidental massive overdose when Digibind therapy is contemplated. Due to the long T1/2 for Digoxin it is generally acceptable to merely hold the next dose and obtain a routine Digoxin level.

See the lab manual's "A Guide on Drug Level Monitoring" (in the Chemistry Guide) for additional information.

ADMINISTRATIVE

CPT Codes:
80162

LOINC Codes:
10535-3

COMPLETE VIEW

Available Stat:
Yes

Test Code:
DIG

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Particle-enhanced turbidimetric inhibition immunoassay (PETINIA)

Remarks:
Time to steady state: 3-5 days

Collect samples 30 minutes before next dose or at least 6-8 hours post dose.

Collect:
Gold top or Light Green top

Amount to Collect:
1 mL blood

Sample Type:
Serum or plasma

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

Specimen Preparation:
Refrigerate serum.

Units:
µg/L

Reference Interval:
Therapeutic: 0.5-2.0 µg/L

Critical Values:
> 2.0 ug/L

Synonyms:

- Lanoxin

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:

Non-specific immunologic CROSS-REACTIVITY can occur in patients with renal failure, pregnant women and neonates.

Note: In patients receiving Digibind therapy for treatment of digoxin overdose, the measured levels of digoxin are unreliable and may accurately reflect neither the total level of digoxin (bound and free) nor the level of free digoxin.

Although offered Stat, therapeutic decisions are typically not altered by stat results except in cases of accidental massive overdose when Digibind therapy is contemplated. Due to the long T1/2 for Digoxin it is generally acceptable to merely hold the next dose and obtain a routine Digoxin level.

See the lab manual's "A Guide on Drug Level Monitoring" (in the Chemistry Guide) for additional information.

CPT Codes:

80162

LOINC Codes:

10535-3

Diphtheria Antitoxin

DIPH

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Enzyme Immunoassay

Reported:
Set up 3x per week. Turnaround time 1-5 days

Additional Information:
Following immunization, levels usually increase > 4-fold.

Synonyms:

- Diphtheria antitoxoid Ab

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Remarks:
Label samples as "PRE" or "POST".

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 1 week, frozen at -20C 1 month.

PROCESSING

Test Code:
DIPH

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Label samples as "PRE" or "POST". Freeze serum at -20C. Order Quest # 4865

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 1 week, frozen at -20C 1 month.

RESULT INTERPRETATION

Units:
IU/mL

Reference Interval:
Protective: >= 0.01 IU/mL

Additional Information:
Following immunization, levels usually increase > 4-fold.

ADMINISTRATIVE

CPT Codes:
86648-90

LOINC Codes:
13227-4

COMPLETE VIEW

Available Stat:
No

Test Code:
DIPH

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Enzyme Immunoassay

Remarks:
Label samples as "PRE" or "POST".

Collect:
Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Specimen Preparation:
Label samples as "PRE" or "POST". Freeze serum at -20C. Order Quest # 4865

Units:
IU/mL

Reference Interval:
Protective: >= 0.01 IU/mL

Synonyms:

- Diphtheria antitoxoid Ab

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 1 week, frozen at -20C 1 month.

Reported:
Set up 3x per week. Turnaround time 1-5 days

Additional Information:
Following immunization, levels usually increase > 4-fold.

CPT Codes:
86648-90

LOINC Codes:
13227-4

Diphtheria Culture

P126

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Set up daily, day and evening shifts.

Methodology:
Selective media

Additional Information:
Diphtheria species culture is NOT part of routine throat or wound cultures, it must be specifically requested. For non-NP or throat specimens an aerobic wound culture is routinely added to the Diphtheria specific culture.

Because of overlapping symptoms, a Group A Streptococcus culture will also be performed.

Synonyms:

- Bacterial culture

COLLECTION

Sample Type:
Throat, skin or wound swab

Collect:
Swab in transport media

Remarks:
Please alert Microbiology, x3-1268.

Stability (from collection to initiation):
Room temperature 12 hours

Unacceptable Conditions:
Swabs not received in transport media.

PROCESSING

Test Code:
P126

Performing Lab:
Microbiology

Unacceptable Conditions:
Swabs not received in transport media.

Stability (from collection to initiation):
Room temperature 12 hours

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
Diphtheria species culture is NOT part of routine throat or wound cultures, it must be specifically requested. For non-NP or throat specimens an aerobic wound culture is routinely added to the Diphtheria specific culture.

Because of overlapping symptoms, a Group A Streptococcus culture will also be performed.

ADMINISTRATIVE

CPT Codes:
87081 x 2

LOINC Codes:
567-8

COMPLETE VIEW

Available Stat:
No

Test Code:
P126

Performing Lab:
Microbiology

Performed:
Set up daily, day and evening shifts.

Methodology:
Selective media

Remarks:
Please alert Microbiology, x3-1268.

Collect:
Swab in transport media

Sample Type:
Throat, skin or wound swab

Unacceptable Conditions:
Swabs not received in transport media.

Reference Interval:
Negative

Synonyms:

- Bacterial culture

Stability (from collection to initiation):
Room temperature 12 hours

Additional Information:
Diphtheria species culture is NOT part of routine throat or wound cultures, it must be specifically requested. For non-NP or throat specimens an aerobic wound culture is routinely added to the Diphtheria specific culture.

Because of overlapping symptoms, a Group A Streptococcus culture will also be performed.

CPT Codes:
87081 x 2

LOINC Codes:
567-8

Direct LDL

LDLD

ORDERING

Ordering Recommendations:

For routine testing, please order our in-house assay (Cholesterol, LDL; test code LDL) which uses the Friedewald formula to calculate LDL. If a calculated LDL is unreliable (e.g. elevated triglycerides >400 mg/dL or low calculated LDL values), then this direct LDL test can be ordered to provide more accurate results.

Available Stat:

No

Performing Lab:

Quest

Performed:

Sunday - Thursday

Methodology:

Enzymatic

Reported:

3 - 6 days

Additional Information:

LDL cholesterol is a key factor in the pathogenesis of atherosclerosis and Coronary Artery Disease (CAD), while HDL cholesterol has often been observed to have a protective effect. Even within the normal range of total cholesterol concentrations, an increase in LDL cholesterol can produce an associated increased risk for CAD. LDL cholesterol binds to receptor sites on macrophages in blood vessel walls inciting several changes to the blood wall which enhance atherosclerotic plaque development.

COLLECTION

Sample Type:

Serum or plasma

Collect:

Gold top preferred; Red or light green top acceptable

Amount to Collect:

2 mL blood

Preferred Volume:

1 mL serum/plasma

Minimum Volume:

0.5 mL serum/plasma

Stability (from collection to initiation):

Room temperature: 6 days
Refrigerated: 7 days
Frozen: 31 days

Storage/Transport Temperature:

Frozen

PROCESSING

Test Code:

LDLD

Sendout:

Yes

Performing Lab:

Quest

Specimen Preparation:

NOTE: For routine testing, please order our in-house assay (Cholesterol, LDL; test code LDL)

If a calculated LDL is potentially inaccurate (e.g. due to high triglycerides) and a direct LDL test is needed:
Aliquot and freeze serum. Order Quest test code 8293.

Preferred Volume:

1 mL serum/plasma

Minimum Volume:

0.5 mL serum/plasma

Stability (from collection to initiation):
Room temperature: 6 days
Refrigerated: 7 days
Frozen: 31 days

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:
<20 Years old: <110 mg/dL
>=20 Years old: <100 mg/dL

Additional Information:
LDL cholesterol is a key factor in the pathogenesis of atherosclerosis and Coronary Artery Disease (CAD), while HDL cholesterol has often been observed to have a protective effect. Even within the normal range of total cholesterol concentrations, an increase in LDL cholesterol can produce an associated increased risk for CAD. LDL cholesterol binds to receptor sites on macrophages in blood vessel walls inciting several changes to the blood wall which enhance atherosclerotic plaque development.

ADMINISTRATIVE

CPT Codes:
83721

LOINC Codes:
18262-6

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
For routine testing, please order our in-house assay (Cholesterol, LDL; test code LDL) which uses the Friedewald formula to calculate LDL. If a calculated LDL is unreliable (e.g. elevated triglycerides >400 mg/dL or low calculated LDL values), then this direct LDL test can be ordered to provide more accurate results.

Test Code:
LDLD

Performing Lab:
Quest

Sendout:
Yes

Performed:
Sunday - Thursday

Methodology:
Enzymatic

Collect:
Gold top preferred; Red or light green top acceptable

Amount to Collect:
2 mL blood

Sample Type:
Serum or plasma

Preferred Volume:
1 mL serum/plasma

Minimum Volume:
0.5 mL serum/plasma

Specimen Preparation:
NOTE: For routine testing, please order our in-house assay (Cholesterol, LDL; test code LDL)

If a calculated LDL is potentially inaccurate (e.g. due to high triglycerides) and a direct LDL test is needed:
Aliquot and freeze serum. Order Quest test code 8293.

Units:
mg/dL

Reference Interval:

<20 Years old: <110 mg/dL
>=20 Years old: <100 mg/dL

Storage/Transport Temperature:

Frozen

Stability (from collection to initiation):

Room temperature: 6 days
Refrigerated: 7 days
Frozen: 31 days

Reported:

3 - 6 days

Additional Information:

LDL cholesterol is a key factor in the pathogenesis of atherosclerosis and Coronary Artery Disease (CAD), while HDL cholesterol has often been observed to have a protective effect. Even within the normal range of total cholesterol concentrations, an increase in LDL cholesterol can produce an associated increased risk for CAD. LDL cholesterol binds to receptor sites on macrophages in blood vessel walls inciting several changes to the blood wall which enhance atherosclerotic plaque development.

CPT Codes:

83721

LOINC Codes:

18262-6

Disaccharidases

DSCS

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Spectrometry

Additional Information:
Lactase, maltase, palatinase and sucrase are mucosal disaccharidases that are present in normal small intestine and fetal colon. A decrease in the enzyme activity of these disaccharidases has been noted in colonic adenomas, adenocarcinomas and malabsorption. Decreased disaccharidase activity is a good indication of mucosal injury with the exception of lactase.

Synonyms:

- Lactase deficiency
- palatinase deficiency
- sucrase deficiency
- maltase deficiency

COLLECTION

Sample Type:
Small bowel biopsy

Collect:
Small bowel biopsy

Amount to Collect:
5 mg

Preferred Volume:
5 mg

Minimum Volume:
2 mg

Remarks:
Do not place tissue on gauze or filter paper; do not add saline or allow contact with support, preservatives or embedding material. Transport immediately to laboratory.

Unacceptable Conditions:
Sample submitted improperly. Delivered to laboratory > 30 minutes after collection

PROCESSING

Test Code:
DSCS

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Specimen must be kept frozen and stored at -70C. Do not thaw. Deliver to China Basin on dry ice.

Preferred Volume:
5 mg

Minimum Volume:
2 mg

Unacceptable Conditions:
Sample submitted improperly. Delivered to laboratory > 30 minutes after collection

RESULT INTERPRETATION

Units:
µM glucose generated/min/ g protein

Reference Interval:
Lactase: 15.0-45.5 µM gluc/min/g prot
Maltase: 25-69.9 µM gluc/min/g prot
Palatinase: 100-224.4 µM gluc/min/g prot
Sucrase: 5-26.3 µM gluc/min/g prot

Additional Information:
Lactase, maltase, palatinase and sucrase are mucosal disaccharidases that are present in normal small intestine and fetal colon. A decrease in the enzyme activity of these disaccharidases has been noted in colonic adenomas, adenocarcinomas and malabsorption. Decreased disaccharidase activity is a good indication of mucosal injury with the exception of lactase.

ADMINISTRATIVE

CPT Codes:
84311-90 x4

LOINC Codes:
1942-2

COMPLETE VIEW

Available Stat:
No

Test Code:
DSCS

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Spectrometry

Remarks:
Do not place tissue on gauze or filter paper; do not add saline or allow contact with support, preservatives or embedding material. Transport immediately to laboratory.

Collect:
Small bowel biopsy

Amount to Collect:
5 mg

Sample Type:
Small bowel biopsy

Preferred Volume:
5 mg

Minimum Volume:
2 mg

Unacceptable Conditions:
Sample submitted improperly. Delivered to laboratory > 30 minutes after collection

Specimen Preparation:
Specimen must be kept frozen and stored at -70C. Do not thaw. Deliver to China Basin on dry ice.

Units:
µM glucose generated/min/ g protein

Reference Interval:
Lactase: 15.0-45.5 µM gluc/min/g prot
Maltase: 25-69.9 µM gluc/min/g prot
Palatinase: 100-224.4 µM gluc/min/g prot
Sucrase: 5-26.3 µM gluc/min/g prot

Synonyms:

- Lactase deficiency
- palatinase deficiency
- sucrase deficiency
- maltase deficiency

Additional Information:
Lactase, maltase, palatinase and sucrase are mucosal disaccharidases that are present in normal small intestine and fetal colon. A decrease in the enzyme activity of these disaccharidases has been noted in colonic adenomas, adenocarcinomas and malabsorption. Decreased disaccharidase activity is a good indication of mucosal injury with the exception of lactase.

CPT Codes:
84311-90 x4

LOINC Codes:
1942-2

Disopyramide

DISO

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
FPIA

Reported:
Test performed Monday-Saturday. Turnaround time: 1-3 days.

Additional Information:
Potentially toxic: > 8 mg/L.

Synonyms:

- Norpace

COLLECTION

Sample Type:
Serum

Collect:
Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

PROCESSING

Test Code:
DISO

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate serum. Order Quest # 35766P.

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

RESULT INTERPRETATION

Units:
mg/L

Reference Interval:
Therapeutic: 2-5 mg/L

Critical Values:
Quest Priority-1: >= 7.0 mg/L

Additional Information:
Potentially toxic: > 8 mg/L.

ADMINISTRATIVE

CPT Codes:
80299-90

LOINC Codes:
3576-6

COMPLETE VIEW

Available Stat:
No

Test Code:
DISO

Performing Lab:
Quest

Sendout:
Yes

Methodology:
FPIA

Collect:
Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Specimen Preparation:
Refrigerate serum. Order Quest # 35766P.

Units:
mg/L

Reference Interval:
Therapeutic: 2-5 mg/L

Critical Values:
Quest Priority-1: >= 7.0 mg/L

Synonyms:

- Norpace

Reported:
Test performed Monday-Saturday. Turnaround time: 1-3 days.

Additional Information:
Potentially toxic: > 8 mg/L.

CPT Codes:
80299-90

LOINC Codes:
3576-6

Diuretic Screen and Identification

DIUS

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
HPLC

Additional Information:
Qualitative test for thiazides, furosemide, and ethacrynic acid; an attempt will be made to identify the individual thiazide.

COLLECTION

Sample Type:
Random Urine

Collect:
Urine cup

Amount to Collect:
20 mL urine

Preferred Volume:
20 mL urine

Minimum Volume:
10 mL urine

PROCESSING

Test Code:
DIUS

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Refrigerate. Order MAYO# 8246 Call MCS for pickup.

Preferred Volume:
20 mL urine

Minimum Volume:
10 mL urine

RESULT INTERPRETATION

Additional Information:
Qualitative test for thiazides, furosemide, and ethacrynic acid; an attempt will be made to identify the individual thiazide.

ADMINISTRATIVE

CPT Codes:
80307

LOINC Codes:
12286-1

COMPLETE VIEW

Available Stat:
No

Test Code:
DIUS

Performing Lab:
Mayo

Sendout:
Yes

Methodology:
HPLC

Collect:
Urine cup

Amount to Collect:
20 mL urine

Sample Type:
Random Urine

Preferred Volume:
20 mL urine

Minimum Volume:
10 mL urine

Specimen Preparation:
Refrigerate. Order MAYO# 8246 Call MCS for pickup.

Additional Information:
Qualitative test for thiazides, furosemide, and ethacrynic acid; an attempt will be made to identify the individual thiazide.

CPT Codes:
80307

LOINC Codes:
12286-1

DNA Extraction and Hold

DNAX

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Molecular Diagnostics

Performed:
Run daily, Monday through Friday, day shift only

Methodology:
DNA Extraction

Additional Information:
All extracted DNA samples will be held for 90 days. Extracted DNA samples of fetal origin (e.g. Chorionic villi, cultured amniocytes, etc.) and their corresponding maternal DNA samples, will be held for 1 year. If no testing is ordered within this time frame, the sample will be discarded.

For questions, contact the molecular diagnostics laboratory at (415)514-8488.

COLLECTION

Sample Type:

EDTA whole blood and bone marrow
Amniotic fluid
Cultured amniocytes
Chorionic villi
Cultured chorionic villi
Miscellaneous fresh tissue

Collect:
Lavender top preferred, Yellow top (ACD) or Blue top (citrate) acceptable

Preferred Volume:

Blood	5 mL
Bone marrow	3 mL
Amniotic fluid	20 mL
Cultured amniocytes	2 T25 flasks
Chorionic villi	20 mg
Cultured chorionic villi	2 T25 flasks
Miscellaneous fresh tissue	20 mg

Minimum Volume:

Blood	2 mL
Bone marrow	1 mL
Amniotic fluid	10 mL
Cultured amniocytes	1 T25 flasks
Chorionic villi	10 mg
Cultured chorionic villi	1 T25 flasks
Miscellaneous fresh tissue	10 mg

Remarks:
Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Unacceptable Conditions:
Unabeled
Less than minimal sample types (see Table)
Clotted samples
Samples collectedin heparin

PROCESSING

Test Code:
DNAX

Performing Lab:
Medical Genomics - Molecular Diagnostics

Preferred Volume:

Blood	5 mL
Bone marrow	3 mL
Amniotic fluid	20 mL
Cultured amniocytes	2 T25 flasks
Chorionic villi	20 mg
Cultured chorionic villi	2 T25 flasks
Miscellaneous fresh tissue	20 mg

Minimum Volume:

Blood	2 mL
Bone marrow	1 mL
Amniotic fluid	10 mL
Cultured amniocytes	1 T25 flasks
Chorionic villi	10 mg
Cultured chorionic villi	1 T25 flasks
Miscellaneous fresh tissue	10 mg

Unacceptable Conditions:
Unabeled
Less than minimal sample types (see Table)
Clotted samples
Samples collectedin heparin

RESULT INTERPRETATION

Additional Information:
All extracted DNA samples will be held for 90 days. Extracted DNA samples of fetal origin (e.g. Chorionic villi, cultured amniocytes, etc.) and their corresponding maternal DNA samples, will be held for 1 year. If no testing is ordered within this time frame, the sample will be discarded.

For questions, contact the molecular diagnostics laboratory at (415)514-8488.

ADMINISTRATIVE

CPT Codes:
81479

COMPLETE VIEW

Available Stat:
No

Test Code:
DNAX

Performing Lab:
Medical Genomics - Molecular Diagnostics

Performed:
Run daily, Monday through Friday, day shift only

Methodology:
DNA Extraction

Remarks:
Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Collect:
Lavender top preferred, Yellow top (ACD) or Blue top (citrate) acceptable

Sample Type:

EDTA whole blood and bone marrow
Amniotic fluid
Cultured amniocytes
Chorionic villi
Cultured chorionic villi
Miscellaneous fresh tissue

Preferred Volume:

Blood	5 mL
Bone marrow	3 mL
Amniotic fluid	20 mL
Cultured amniocytes	2 T25 flasks
Chorionic villi	20 mg
Cultured chorionic villi	2 T25 flasks
Miscellaneous fresh tissue	20 mg

Minimum Volume:

Blood	2 mL
Bone marrow	1 mL
Amniotic fluid	10 mL
Cultured amniocytes	1 T25 flasks
Chorionic villi	10 mg
Cultured chorionic villi	1 T25 flasks
Miscellaneous fresh tissue	10 mg

Unacceptable Conditions:

Unabeled
Less than minimal sample types (see Table)
Clotted samples
Samples collectedin heparin

Additional Information:

All extracted DNA samples will be held for 90 days. Extracted DNA samples of fetal origin (e.g. Chorionic villi, cultured amniocytes, etc.) and their corresponding maternal DNA samples, will be held for 1 year. If no testing is ordered within this time frame, the sample will be discarded.

For questions, contact the molecular diagnostics laboratory at (415)514-8488.

CPT Codes:

81479

DNA Preparation & Storage

HTCPP (Sunquest: ILCPP)

ORDERING

Available Stat:
No

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Qiagen, EZ-1, Promega

COLLECTION

Sample Type:
ACD anticoagulated whole blood

Contact ITL at 415-476-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Preferred Volume:
8.5 mL blood

For other specimens, contact ITL at 415-476-3887

Minimum Volume:
1 mL blood

For other specimens, contact ITL at 415-476-3887

Remarks:
Fill ACD tube completely. Obtain ACD tube from Specimen Receiving. If being collected with other HLA intermediate resolution typing such as HLA-B, HLA-C, HLA-DR, HLA-DQ, etc., 1 tube is sufficient for all tests. Collect additional samples if white blood cell (WBC) count is low (<1,000).

For other specimens, contact ITL at 415-476-3887

Stability (from collection to initiation):
Room temperature 5 days.

For other specimens, contact ITL at 415-476-3887

Unacceptable Conditions:
WBC count too low (<1,000).

For other specimens, contact ITL at 415-476-3387.

PROCESSING

Test Code:
HTCPP (Sunquest: ILCPP)

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge

For other specimens, contact ITL at 415-476-3887

Preferred Volume:
8.5 mL blood

For other specimens, contact ITL at 415-476-3887

Minimum Volume:
1 mL blood

For other specimens, contact ITL at 415-476-3887

Unacceptable Conditions:
WBC count too low (<1,000).

For other specimens, contact ITL at 415-476-3387.

Stability (from collection to initiation):
Room temperature 5 days.

For other specimens, contact ITL at 415-476-3887

ADMINISTRATIVE

CPT Codes:
N/A

COMPLETE VIEW

Available Stat:
No

Test Code:
HTCPP (Sunquest: ILCPP)

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Qiagen, EZ-1, Promega

Remarks:
Fill ACD tube completely. Obtain ACD tube from Specimen Receiving. If being collected with other HLA intermediate resolution typing such as HLA-B, HLA-C, HLA-DR, HLA-DQ, etc., 1 tube is sufficient for all tests. Collect additional samples if white blood cell (WBC) count is low (<1,000).

For other specimens, contact ITL at 415-476-3887

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Sample Type:
ACD anticoagulated whole blood

Contact ITL at 415-476-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Preferred Volume:
8.5 mL blood

For other specimens, contact ITL at 415-476-3887

Minimum Volume:
1 mL blood

For other specimens, contact ITL at 415-476-3887

Unacceptable Conditions:
WBC count too low (<1,000).

For other specimens, contact ITL at 415-476-3387.

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge

For other specimens, contact ITL at 415-476-3887

Stability (from collection to initiation):
Room temperature 5 days.

For other specimens, contact ITL at 415-476-3887

CPT Codes:
N/A

DNAase B Antibody

ADAB

ORDERING

Available Stat:
No

Performing Lab:
Quest at Specialty laboratories

Methodology:
Nephelometry

Reported:
Performed Monday-Friday. Turnaround time 4-7 days.

Additional Information:
Clinical Significance: Dnase-B Antibody is useful in patients with group A streptococcal infection. DNase-B Antibody may persist for as long as three months.

Synonyms:

- Anti-streptococcal DNAase B
- anti-DNAase B
- Deoxyribonuclease antibody
- Strepdornase antibody

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Room temperature 1 week, refrigerated: 2 weeks, frozen at -20C 2 months.

PROCESSING

Test Code:
ADAB

Sendout:
Yes

Performing Lab:
Quest at Specialty laboratories

Specimen Preparation:
Separate serum and freeze at -20C. Order Quest # 256.

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Room temperature 1 week, refrigerated: 2 weeks, frozen at -20C 2 months.

RESULT INTERPRETATION

Units:
U/mL

Reference Interval:
<187 U/mL

Additional Information:
Clinical Significance: Dnase-B Antibody is useful in patients with group A streptococcal infection. DNase-B Antibody may persist for as long as three months.

ADMINISTRATIVE

CPT Codes:
86215-90

LOINC Codes:
14207-5

COMPLETE VIEW

Available Stat:
No

Test Code:
ADAB

Performing Lab:
Quest at Specialty laboratories

Sendout:
Yes

Methodology:
Nephelometry

Collect:
Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Specimen Preparation:
Separate serum and freeze at -20C. Order Quest # 256.

Units:
U/mL

Reference Interval:
<187 U/mL

Synonyms:

- Anti-streptococcal DNAase B
- anti-DNAase B
- Deoxyribonuclease antibody
- Strepdornase antibody

Stability (from collection to initiation):
Room temperature 1 week, refrigerated: 2 weeks, frozen at -20C 2 months.

Reported:
Performed Monday-Friday. Turnaround time 4-7 days.

Additional Information:
Clinical Significance: Dnase-B Antibody is useful in patients with group A streptococcal infection. DNase-B Antibody may persist for as long as three months.

CPT Codes:
86215-90

LOINC Codes:
14207-5

Donath Landsteiner

MOLT

ORDERING

Ordering Recommendations:
Use to diagnose paroxysmal cold hemoglobinuria. The presence of other red blood cell antibodies may interfere with testing, leading to inconclusive results.

Available Stat:
No

Performed:
Mon-Fri

Methodology:
Hemolysis

Reported:
1-3 days

Synonyms:

- Donath Landsteiner Antibody test

COLLECTION

Collect:
Plain Red.

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 1 week; Frozen: Unacceptable

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Separator or gel tubes.

PROCESSING

Test Code:
MOLT

ARUP Test Code:
0013039

Specimen Preparation:
Maintain specimen at 37°C until serum is separated from cells. Transport 3 mL serum. (Min: 2 mL)

Unacceptable Conditions:
Separator or gel tubes.

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 1 week; Frozen: Unacceptable

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:
By report

ADMINISTRATIVE

CPT Codes:
86940; 86941

LOINC:

- 18287-3

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Use to diagnose paroxysmal cold hemoglobinuria. The presence of other red blood cell antibodies may interfere with testing, leading to inconclusive results.

Test Code:
MOLT

ARUP Test Code:
0013039

Performed:
Mon-Fri

Methodology:
Hemolysis

Collect:
Plain Red.

Unacceptable Conditions:
Separator or gel tubes.

Specimen Preparation:
Maintain specimen at 37°C until serum is separated from cells. Transport 3 mL serum. (Min: 2 mL)

Reference Interval:
By report

Synonyms:

- Donath Landsteiner Antibody test

Storage/Transport Temperature:
Refrigerated.

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 1 week; Frozen: Unacceptable

Reported:
1-3 days

CPT Codes:
86940; 86941

LOINC:

- 18287-3

Double Hit Lymphoma FISH Panel

CYDHL, BCYDHL

ORDERING

Available Stat:
No

Performing Lab:
Cytogenetics

Performed:
Monday - Friday 9:00 am-5:00 pm

Methodology:
FISH

Reported:
7-14 days

Additional Information:
Panel includes the following:

BCL6 3q27 break apart rearrangment FISH
BCL2 18q21.3 break apart rearrangement FISH
MYC break apart FISH

Synonyms:

- BCYDHL
- CYDHL

COLLECTION

Sample Type:
Blood or Bone marrow
FFPE Tissue slides

Collect:
Blood: Dark green top (sodium Heparin)
Bone marrow aspirate: Dark green top (sodium heparin)
Bone marrow core: Sterile container with medium
Non-decalcified formalin fixed and paraffin-embedded (FFPE) tumor specimen.

Amount to Collect:
See preferred volume

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm
Unstained 6 slides, (3-4 micron thick sections), with a circled H&E slide

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm
Unstained 3 slides, (3-4 micron thick sections), with a circled H&E slide

Remarks:
MIx blood and marrow samples well to prevent clotting

Stability (from collection to initiation):
2 days at room temperature

Storage/Transport Temperature:
Room temperature

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen
For Paraffin embed slides-No tumor in tissue. Decalcified specimens.

PROCESSING

Test Code:
BCYDHL: Blood
CYDHL: Non-blood

Performing Lab:
Cytogenetics

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm
Unstained 6 slides, (3-4 micron thick sections), with a circled H&E slide

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm
Unstained 3 slides, (3-4 micron thick sections), with a circled H&E slide

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen
For Paraffin embed slides-No tumor in tissue. Decalcified specimens.

Stability (from collection to initiation):
2 days at room temperature

Storage/Transport Temperature:
Room temperature

RESULT INTERPRETATION

Additional Information:
Panel includes the following:

BCL6 3q27 break apart rearrangment FISH
BCL2 18q21.3 break apart rearrangement FISH
MYC break apart FISH

ADMINISTRATIVE

CPT Codes:
88271x6, 88275x3

COMPLETE VIEW

Available Stat:
No

Test Code:
BCYDHL: Blood
CYDHL: Non-blood

Performing Lab:
Cytogenetics

Performed:
Monday - Friday 9:00 am-5:00 pm

Methodology:
FISH

Remarks:
MIx blood and marrow samples well to prevent clotting

Collect:
Blood: Dark green top (sodium Heparin)
Bone marrow aspirate: Dark green top (sodium heparin)
Bone marrow core: Sterile container with medium
Non-decalcified formalin fixed and paraffin-embedded (FFPE) tumor specimen.

Amount to Collect:
See preferred volume

Sample Type:
Blood or Bone marrow
FFPE Tissue slides

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm
Unstained 6 slides, (3-4 micron thick sections), with a circled H&E slide

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm
Unstained 3 slides, (3-4 micron thick sections), with a circled H&E slide

Unacceptable Conditions:

Clotted samples. Samples received refrigerated or frozen
For Paraffin embed slides-No tumor in tissue. Decalcified specimens.

Synonyms:

- BCYDHL
- CYDHL

Storage/Transport Temperature:

Room temperature

Stability (from collection to initiation):

2 days at room temperature

Reported:

7-14 days

Additional Information:

Panel includes the following:

BCL6 3q27 break apart rearrangment FISH
BCL2 18q21.3 break apart rearrangement FISH
MYC break apart FISH

CPT Codes:

88271x6, 88275x3

Double-Stranded DNA Antibody

ADNA

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday and Thursday (day shift)

Methodology:
Chemiluminescent immunoassay

Reported:
1-4 days

Synonyms:

- dsDNA Ab
- anti-DNA
- Deoxyribonucleic acid antibody
- DNA antibody
- dsDNA antibody
- ds-DNA antibody
- anti-ds-DNA
- anti-dsDNA

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

PROCESSING

Test Code:
ADNA

Performing Lab:
Immunology

Specimen Preparation:
Freeze at -20C

Preferred Volume:
0.5 mL serum

RESULT INTERPRETATION

Units:
IU/mL

Reference Interval:
Negative: < 27.0 IU/mL
Equivocal: 27.0 - 35.0 IU/mL
Positive: > 35.0 IU/mL

ADMINISTRATIVE

CPT Codes:
86225

LOINC Codes:
5130-0

COMPLETE VIEW

Available Stat:
No

Test Code:
ADNA

Performing Lab:
Immunology

Performed:
Monday and Thursday (day shift)

Methodology:
Chemiluminescent immunoassay

Collect:
Gold top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Specimen Preparation:
Freeze at -20C

Units:
IU/mL

Reference Interval:
Negative: < 27.0 IU/mL
Equivocal: 27.0 - 35.0 IU/mL
Positive: > 35.0 IU/mL

Synonyms:

- dsDNA Ab
- anti-DNA
- Deoxyribonucleic acid antibody
- DNA antibody
- dsDNA antibody
- ds-DNA antibody
- anti-ds-DNA
- anti-dsDNA

Reported:
1-4 days

CPT Codes:
86225

LOINC Codes:
5130-0

Doxepin

DOX

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Liquid Chromatography Tandem Mass Spectrometry

Reported:
Test run 3x per week. Turnaround time 3-5 days

Additional Information:
Assay measures both parent and nordoxepin metabolite. Potentially toxic: > 500 for the SUM of the two compounds. See also Drug Screening.

Synonyms:

- Adapin
- Sinequan

COLLECTION

Sample Type:
Serum

Collect:
Red top

Amount to Collect:
6 mL blood

Preferred Volume:
3 mL serum

Minimum Volume:
1.5 mL serum

Remarks:
Do not use Gold top.Optimum time to collect is 10-14 hours after oral dose.

Stability (from collection to initiation):
Room temperature 5 days, refrigerated 1 week, frozen at -20C 1 month

Unacceptable Conditions:
Collected in Gold top, hemolysis.

PROCESSING

Test Code:
DOX

Test Group:
Doxepin

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate.

Preferred Volume:
3 mL serum

Minimum Volume:
1.5 mL serum

Unacceptable Conditions:
Collected in Gold top, hemolysis.

Stability (from collection to initiation):
Room temperature 5 days, refrigerated 1 week, frozen at -20C 1 month

RESULT INTERPRETATION

Units:
µg/L (mcg/L)

Reference Interval:
Therapeutic: 150-250 µg/L for SUM of Doxepin and Nordeoxepin

Critical Values:
Quest Priority-1: Doxepin + Nordoxepin >= 600 µg/L

Additional Information:
Assay measures both parent and nordoxepin metabolite. Potentially toxic: > 500 for the SUM of the two compounds. See also Drug Screening.

ADMINISTRATIVE

CPT Codes:
80335

LOINC Codes:
3579-0

COMPLETE VIEW

Available Stat:
No

Test Code:
DOX

Test Group:
Doxepin

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Liquid Chromatography Tandem Mass Spectrometry

Remarks:
Do not use Gold top.Optimum time to collect is 10-14 hours after oral dose.

Collect:
Red top

Amount to Collect:
6 mL blood

Sample Type:
Serum

Preferred Volume:
3 mL serum

Minimum Volume:
1.5 mL serum

Unacceptable Conditions:
Collected in Gold top, hemolysis.

Specimen Preparation:
Refrigerate.

Units:
µg/L (mcg/L)

Reference Interval:
Therapeutic: 150-250 µg/L for SUM of Doxepin and Nordeoxepin

Critical Values:
Quest Priority-1: Doxepin + Nordoxepin >= 600 µg/L

Synonyms:

- Adapin
- Sinequan

Stability (from collection to initiation):
Room temperature 5 days, refrigerated 1 week, frozen at -20C 1 month

Reported:
Test run 3x per week. Turnaround time 3-5 days

Additional Information:

Assay measures both parent and nordoxepin metabolite. Potentially toxic: > 500 for the SUM of the two compounds. See also Drug Screening.

CPT Codes:

80335

LOINC Codes:

3579-0

Drug Detection Panel, Umbilical Cord Tissue, Qualitative

DOAUC

ORDERING

Ordering Recommendations:
Use to detect and document fetal drug exposure during approximately the last trimester of a full-term pregnancy. For panel testing that includes THC metabolite, refer to Drug Detection Panel and THC Metabolite, Umbilical Cord Tissue, Qualitative (3006371).

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Qualitative Liquid Chromatography-Tandem Mass Spectrometry

Reported:
1-3 days

Synonyms:

- Drug Screen, Targeted, Serum or Plasma
- Drugs of Abuse Panel, Meconium - Screen with Reflex to Confirmation/Quantitation

COLLECTION

Collect:
Umbilical cord (At least 8 inches, approximately the width of a sheet of paper.)

Stability (from collection to initiation):
Ambient: 1 week; Refrigerated: 3 weeks; Frozen: 1 year

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Cords soaking in blood or other fluid. Formalin fixed. Tissue that is obviously decomposed.

PROCESSING

Test Code:
DOAUC

ARUP Test Code:
2006621

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Drain and discard any blood. Rinse the exterior of the cord segment with normal saline or water. Pat the cord dry and transport at least 8 inches of umbilical cord in a routine urine collection cup or Security Kit for Meconium/Umbilical Drug Detection (ARUP supply #51548) available online through eSupply using ARUP Connect(TM) or by contacting ARUP Client Services at 800-522-2787.

Unacceptable Conditions:
Cords soaking in blood or other fluid. Formalin fixed. Tissue that is obviously decomposed.

Stability (from collection to initiation):
Ambient: 1 week; Refrigerated: 3 weeks; Frozen: 1 year

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:

Effective February 20, 2018

Drugs covered and range of cutoff concentrations.			
Drugs/Drug Classes	**Cutoff Concentrations (ng/g)**	**Drugs/Drug Classes**	**Cutoff Concentrations (ng/g)**
Buprenorphine	1	Amphetamine	5
Norbuprenorphine	0.5	Benzoylecgonine	1
		m-OH-Benzoylecgonine	1
Codeine	0.5	Cocaethylene	1
Dihydrocodeine	1	Cocaine	1
Fentanyl	0.5	MDMA (Ecstasy)	5
Hydrocodone	0.5	Methamphetamine	5
Norhydrocodone	1	Phentermine	8
Hydromorphone	0.5	Alprazolam	0.5
Meperidine	2	Alpha-OH-Alprazolam	0.5
Methadone	2	Butalbital	25
Methadone metabolite	1	Clonazepam	1
6-Acetylmorphine	1	7-Aminoclonazepam	1
Morphine	0.5	Diazepam	1
Naloxone	1	Lorazepam	5
Oxycodone	0.5	Midazolam	1
Noroxycodone	1	Alpha-OH-Midazolam	2
Oxymorphone	0.5	Nordiazepam	1
Noroxymorphone	0.5	Oxazepam	2
Propoxyphene	1	Phenobarbital	75
Tapentadol	2	Temazepam	1
Tramadol	2	Zolpidem	0.5
N-desmethyltramadol	2	Phencyclidine (PCP)	1
O-desmethyltramadol	2	Gabapentin	10

Interpretive Data:

Methodology: Qualitative Liquid Chromatography/Tandem Mass Spectrometry

Detection of drugs in umbilical cord tissue is intended to reflect maternal drug use during approximately the last trimester of a full-term pregnancy. The pattern and frequency of drug(s) used by the mother cannot be determined by this test. A negative result does not exclude the possibility that a mother used drugs during pregnancy. Detection of drugs in umbilical cord tissue depends on extent of maternal drug use, as well as drug stability, unique characteristics of drug deposition in umbilical cord tissue, and the performance of the analytical method. Drugs administered during labor and delivery may be detected. Detection of drugs in umbilical cord tissue does not insinuate impairment and may not affect outcomes for the infant. Interpretive questions should be directed to the laboratory.

For medical purposes only; not valid for forensic use.

ADMINISTRATIVE

CPT Codes:

80346; 80348; 80353; 80361; 80356; 80365; 80373; 80354; 80362; 80355; 80359; 80325; 80345; 80372; 80358; 83992; 80368; 80367 (Alt code: G0482)

LOINC:

- 32057-2
- 32093-7
- 61038-6
- 32108-3
- 61074-1
- 29530-3
- 43230-2
- 40481-4
- 32101-8
- 61037-8
- 97310-7
- 32080-4
- 40625-6
- 32081-2
- 61031-1
- 93121-2
- 97296-8
- 61061-8
- 32088-7
- 61039-4
- 11526-1
- 62364-5
- 40626-4
- 32100-0
- 61042-8
- 61044-4
- 100358-1
- 40609-0
- 40381-6
- 59712-0
- 97278-6
- 59355-8
- 82373-2
- 100357-3
- 41859-0
- 32107-5
- 97286-9
- 97306-5
- 61051-9
- 61055-0
- 82375-7
- 32099-4
- 97290-1
- 43811-9
- 97242-2
- 48946-8
- 91053-9
- 97292-7

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Use to detect and document fetal drug exposure during approximately the last trimester of a full-term pregnancy. For panel testing that includes THC metabolite, refer to Drug Detection Panel and THC Metabolite, Umbilical Cord Tissue, Qualitative (3006371).

Test Code:
DOAUC

ARUP Test Code:
2006621

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Qualitative Liquid Chromatography-Tandem Mass Spectrometry

Collect:
Umbilical cord (At least 8 inches, approximately the width of a sheet of paper.)

Unacceptable Conditions:
Cords soaking in blood or other fluid. Formalin fixed. Tissue that is obviously decomposed.

Specimen Preparation:
Drain and discard any blood. Rinse the exterior of the cord segment with normal saline or water. Pat the cord dry and transport at least 8 inches of umbilical cord in a routine urine collection cup or Security Kit for Meconium/Umbilical Drug Detection (ARUP supply #51548) available online through eSupply using ARUP Connect(TM) or by contacting ARUP Client Services at 800-522-2787.

Reference Interval:
Effective February 20, 2018

Drugs covered and range of cutoff concentrations.			
Drugs/Drug Classes	**Cutoff Concentrations (ng/g)**	**Drugs/Drug Classes**	**Cutoff Concentrations (ng/g)**
Buprenorphine	1	Amphetamine	5
Norbuprenorphine	0.5	Benzoylecgonine	1
		m-OH-Benzoylecgonine	1
Codeine	0.5	Cocaethylene	1
Dihydrocodeine	1	Cocaine	1
Fentanyl	0.5	MDMA (Ecstasy)	5
Hydrocodone	0.5	Methamphetamine	5
Norhydrocodone	1	Phentermine	8
Hydromorphone	0.5	Alprazolam	0.5
Meperidine	2	Alpha-OH-Alprazolam	0.5
Methadone	2	Butalbital	25
Methadone metabolite	1	Clonazepam	1
6-Acetylmorphine	1	7-Aminoclonazepam	1
Morphine	0.5	Diazepam	1
Naloxone	1	Lorazepam	5
Oxycodone	0.5	Midazolam	1
Noroxycodone	1	Alpha-OH-Midazolam	2
Oxymorphone	0.5	Nordiazepam	1
Noroxymorphone	0.5	Oxazepam	2
Propoxyphene	1	Phenobarbital	75
Tapentadol	2	Temazepam	1
Tramadol	2	Zolpidem	0.5
N-desmethyltramadol	2	Phencyclidine (PCP)	1
O-desmethyltramadol	2	Gabapentin	10

Interpretive Data:
Methodology: Qualitative Liquid Chromatography/Tandem Mass Spectrometry

Detection of drugs in umbilical cord tissue is intended to reflect maternal drug use during approximately the last trimester of a full-term pregnancy. The pattern and frequency of drug(s) used by the mother cannot be determined by this test. A negative result does not exclude the possibility that a mother used drugs during pregnancy. Detection of drugs in umbilical cord tissue depends on extent of maternal drug use, as well as drug stability, unique characteristics of drug deposition in umbilical cord tissue, and the performance of the analytical method. Drugs administered during labor and delivery may be detected. Detection of drugs in umbilical cord tissue does not insinuate impairment and may not affect outcomes for the infant. Interpretive questions should be directed to the laboratory.

For medical purposes only; not valid for forensic use.

Synonyms:

- Drug Screen, Targeted, Serum or Plasma
- Drugs of Abuse Panel, Meconium - Screen with Reflex to Confirmation/Quantitation

Storage/Transport Temperature:
Refrigerated.

Stability (from collection to initiation):
Ambient: 1 week; Refrigerated: 3 weeks; Frozen: 1 year

Reported:
1-3 days

CPT Codes:
80346; 80348; 80353; 80361; 80356; 80365; 80373; 80354; 80362; 80355; 80359; 80325; 80345; 80372; 80358; 83992; 80368; 80367 (Alt code: G0482)

LOINC:

- 32057-2
- 32093-7
- 61038-6
- 32108-3
- 61074-1
- 29530-3
- 43230-2
- 40481-4
- 32101-8
- 61037-8
- 97310-7
- 32080-4
- 40625-6
- 32081-2
- 61031-1
- 93121-2
- 97296-8
- 61061-8
- 32088-7
- 61039-4
- 11526-1
- 62364-5
- 40626-4
- 32100-0
- 61042-8
- 61044-4
- 100358-1
- 40609-0
- 40381-6
- 59712-0
- 97278-6
- 59355-8
- 82373-2
- 100357-3
- 41859-0
- 32107-5
- 97286-9
- 97306-5
- 61051-9
- 61055-0
- 82375-7
- 32099-4
- 97290-1
- 43811-9
- 97242-2
- 48946-8
- 91053-9
- 97292-7

Notes:
Absolute Minimum: 6 inches. For marijuana metabolite, order Marijuana Metabolite, Umbilical Cord Tissue, Qualitative (ARUP test code 3000256). For alcohol metabolite, order Ethyl Glucuronide, Umbilical Cord Tissue, Qualitative (ARUP test code 3000443).
For kratom analyte, order Kratom, Umbilical Cord, Qualitative (ARUP test code 3005874).
When ordering multipleumbilical cord tests, unless ARUP is otherwise notified, testing will be performed in the following order of priority:

Drug Detection Panel (1.0g)
Marijuana Metabolite (1.0g)
Ethyl Glucuronide (1.0g)
Kratom(1.0 g)

Drug Screen Urine, Rapid

DAU

ORDERING

Ordering Recommendations:

The primary use of this immunoassay is to screen for use of common drugs when there is a suspicion that drug use may be contributing to the clinical picture (e.g. altered mental status, coma).

Due to extensive cross reactivity and the inability of this assay to detect commonly prescribed medications (e.g. hydrocodone) it is not useful for determine patient adherence to therapeutic regimens or potential drug diversion. For this purpose order specific drug tests (e.g. Opiates, urine, quantitative).

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Enzyme immunoassay method

Reported:
Stat 2 hours, Routine 4 hours

Additional Information:

This test is NOT useful for the detection or monitoring of prescribed opiates such as codeine or therapeutic level of hydromorphone, or hydrocodone. See cross reactivity information below.

This test is not recommended for neonates where there is a question of maternal drug abuse as it is not as sensitive as the Quest drug screen panel in meconium (Quest #30427X: Neonatal Drug Screen, Meconium; required specimen: 5g of meconium).

This test panel screens for the presence of: Amphetamines, Barbiturates, Benzodiazepine, Cocaine (as benzoylecgonine), Cannabinoids, Fentanyl, Methadone, Oxycodone, and Opiates.

Each of the above panel components can be ordered separately.

This testing is performed using immunologic methods therefore these assays may cross-react with similar compounds. For a listing of the cross-reactivities see the test menu entry for the individual drug/metabolite.

Detection Cutoff Limits:

Drug/metabolite	Cutoff	Reported as
Amphetamines	<1000 µg/L	NEG
Barbiturates	<200 µg/L	NEG
Benzodiazepines	<200 µg/L	NEG
Cocaine metabolite	<300 µg/L	NEG
Opiates	<300 µg/L	NEG
Cannabinoids	<50 µg/L	NEG
Fentanyl	<1 µg/L	NEG
Methadone	<300 µg/L	NEG
Oxycodone	<100 µg/L	NEG

CAUTION!: Presumptive screening test only. Cross reactions and false-positive results may occur within each drug class. However, positive results are NOT routinely confirmed by a second method. If confirmation of the test result is required, it is the responsibility of the physician to separately order a specific confirmatory test for the drug(s) identified. False negative results can also occur in presence of low drug concentrations or drugs/metabolites that do not react in the assay [Click on the name of the drug(s) of interest from the list above for more information].

This test is NOT useful for the detection or monitoring of prescribed opiates such as codeine, or for therapeutic concentrations of hydromorphone or hydrocodone. (See cross reactivity information above). If hydrocodone or hydromorphone use is suspected, an opiate confirmation should be ordered from ARUP (test code: OPIQNT). False negative results may also occur as use of synthetic and some semi-synthetic opiates cannot be ruled out by this assay. Specifically, this assay will not detect use of meperidine or tramadol. If use of opiates not detected by this screen is

suspected, immunoassay screens can be ordered from ARUP [e.g. meperidine (ARUP#2102288) or tramadol (ARUP#2012297)].

Typical Urine Detection Window after use:

Drug	Detection Time (hrs)	Max. Detection Time (days)
Amphetamine	24	9
Methamphetamine	87+/-51	6
Cannabis	34	95
Cocaine	48-72	22
Morphine	11-54	11
Barbiturates	24	1-4 (Phenobarbital)
Benzodiazepines	6	14 or longer in chronic users
Fentanyl	24-72	7
Methadone	24-72	14
Oxydodone	30-40	3

From: Verstraete AG. Detection Times of Drugs of Abuse in Blood, Urine and Oral Fluid. Ther Drug Monit, 26(2) April 2004, 200-205; Kale N. Urine drug tests: ordering and interpreting results. Am Fam Physician, 2019 99(1): 33-39.

Results cannot be used for Medico-legal purposes.

Confirmatory testing can be ordered for the specific class of agent found using the test order codes found under the 'Processing' tab of this test menu entry.

Confirmatory testing performed Monday-Friday with a 3-6 day turn around time after receipt by reference laboratory.

See also Drug Screening and individual drug entries.

Synonyms:

- amphetamines
- barbiturates
- cocaine
- opiates
- benzodiazepines
- THC
- cannabinoids
- cannibis
- cocaine metabolites
- benzoylecgonine
- drug screen
- drug test
- cannabis
- methadone
- oxycodone
- fentanyl
- norfentanyl
- fentanyl analogues

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
See preferred volume

Preferred Volume:
10 mL urine

Minimum Volume:
1.5 mL urine (insufficient for confirmation)

Stability (from collection to initiation):
Refrigerated 1 week, frozen 2 weeks

PROCESSING

Test Code:
DAU

Test Group:
Drug screening

Performing Lab:
Parnassus & Mission Bay Chemistry

Specimen Preparation:

Refrigerate. If requested freeze excess sample not used for this test for possible confirmatory testing at -20C

Confirmatory testing can be ordered for the specific class of agent found using the following test order codes:

Amphetamines	AMPQNT	ARUP #2010075
Barbiturates	BARQNT	ARUP #2012213
Benzodiazepines	BNZQNT	ARUP #2008291
Cocaine metabolite	COCQNT	ARUP# 0090359
Opiates	OPIQNT	ARUP #0090364
THC (Cannabinoids)	THCQNT	ARUP #0090369
Fentanyl	FENQNT	Quest #39393
Oxycodone	OPIQNT	ARUP #0090364
Methadone	MEDQNT	ARUP #0090362

Preferred Volume:
10 mL urine

Minimum Volume:
1.5 mL urine (insufficient for confirmation)

Stability (from collection to initiation):
Refrigerated 1 week, frozen 2 weeks

RESULT INTERPRETATION

Reference Interval:
Negative (Note: a negative result indicates that the specific class of drugs is not present, or is present at a concentration below that of the cut off concentration. See each drug class for specific concentration cut-offs).

Additional Information:

This test is NOT useful for the detection or monitoring of prescribed opiates such as codeine or therapeutic level of hydromorphone, or hydrocodone. See cross reactivity information below.

This test is not recommended for neonates where there is a question of maternal drug abuse as it is not as sensitive as the Quest drug screen panel in meconium (Quest #30427X: Neonatal Drug Screen, Meconium; required specimen: 5g of meconium).

This test panel screens for the presence of: Amphetamines, Barbiturates, Benzodiazepine, Cocaine (as benzoylecgonine), Cannabinoids, Fentanyl, Methadone, Oxycodone, and Opiates.

Each of the above panel components can be ordered separately.

This testing is performed using immunologic methods therefore these assays may cross-react with similar compounds. For a listing of the cross-reactivities see the test menu entry for the individual drug/metabolite.

Detection Cutoff Limits:

Drug/metabolite	Cutoff	Reported as
Amphetamines	<1000 µg/L	NEG
Barbiturates	<200 µg/L	NEG
Benzodiazepines	<200 µg/L	NEG
Cocaine metabolite	<300 µg/L	NEG
Opiates	<300 µg/L	NEG
Cannabinoids	<50 µg/L	NEG
Fentanyl	<1 µg/L	NEG
Methadone	<300 µg/L	NEG

Oxycodone	<100 µg/L	NEG

CAUTION!: Presumptive screening test only. Cross reactions and false-positive results may occur within each drug class. However, positive results are NOT routinely confirmed by a second method. If confirmation of the test result is required, it is the responsibility of the physician to separately order a specific confirmatory test for the drug(s) identified. False negative results can also occur in presence of low drug concentrations or drugs/metabolites that do not react in the assay [Click on the name of the drug(s) of interest from the list above for more information].

This test is NOT useful for the detection or monitoring of prescribed opiates such as codeine, or for therapeutic concentrations of hydromorphone or hydrocodone. (See cross reactivity information above). If hydrocodone or hydromorphone use is suspected, an opiate confirmation should be ordered from ARUP (test code: OPIQNT). False negative results may also occur as use of synthetic and some semi-synthetic opiates cannot be ruled out by this assay. Specifically, this assay will not detect use of meperidine or tramadol. If use of opiates not detected by this screen is suspected, immunoassay screens can be ordered from ARUP [e.g. meperidine (ARUP#2102288) or tramadol (ARUP#2012297)].

Typical Urine Detection Window after use:

Drug	Detection Time (hrs)	Max. Detection Time (days)
Amphetamine	24	9
Methamphetamine	87+/-51	6
Cannabis	34	95
Cocaine	48-72	22
Morphine	11-54	11
Barbiturates	24	1-4 (Phenobarbital)
Benzodiazepines	6	14 or longer in chronic users
Fentanyl	24-72	7
Methadone	24-72	14
Oxydodone	30-40	3

From: Verstraete AG. Detection Times of Drugs of Abuse in Blood, Urine and Oral Fluid. Ther Drug Monit, 26(2) April 2004, 200-205; Kale N. Urine drug tests: ordering and interpreting results. Am Fam Physician, 2019 99(1): 33-39.

Results cannot be used for Medico-legal purposes.

Confirmatory testing can be ordered for the specific class of agent found using the test order codes found under the 'Processing' tab of this test menu entry.

Confirmatory testing performed Monday-Friday with a 3-6 day turn around time after receipt by reference laboratory.

See also Drug Screening and individual drug entries.

ADMINISTRATIVE

CPT Codes:
80307

COMPLETE VIEW

Available Stat:
Yes

Ordering Recommendations:

The primary use of this immunoassay is to screen for use of common drugs when there is a suspicion that drug use may be contributing to the clinical picture (e.g. altered mental status, coma).

Due to extensive cross reactivity and the inability of this assay to detect commonly prescribed medications (e.g. hydrocodone) it is not useful for determine patient adherence to therapeutic regimens or potential drug diversion. For this purpose order specific drug tests (e.g. Opiates, urine, quantitative).

Test Code:
DAU

Test Group:
Drug screening

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Enzyme immunoassay method

Collect:
Urine cup

Amount to Collect:
See preferred volume

Sample Type:
Random urine

Preferred Volume:
10 mL urine

Minimum Volume:
1.5 mL urine (insufficient for confirmation)

Specimen Preparation:

Refrigerate. If requested freeze excess sample not used for this test for possible confirmatory testing at -20C

Confirmatory testing can be ordered for the specific class of agent found using the following test order codes:

Amphetamines	AMPQNT	ARUP #2010075
Barbiturates	BARQNT	ARUP #2012213
Benzodiazepines	BNZQNT	ARUP #2008291
Cocaine metabolite	COCQNT	ARUP# 0090359
Opiates	OPIQNT	ARUP #0090364
THC (Cannabinoids)	THCQNT	ARUP #0090369
Fentanyl	FENQNT	Quest #39393
Oxycodone	OPIQNT	ARUP #0090364
Methadone	MEDQNT	ARUP #0090362

Reference Interval:
Negative (Note: a negative result indicates that the specific class of drugs is not present, or is present at a concentration below that of the cut off concentration. See each drug class for specific concentration cut-offs).

Synonyms:

- amphetamines
- barbiturates
- cocaine
- opiates
- benzodiazepines
- THC
- cannabinoids
- cannibis
- cocaine metabolites
- benzoylecgonine
- drug screen
- drug test
- cannabis
- methadone
- oxycodone
- fentanyl
- norfentanyl
- fentanyl analogues

Stability (from collection to initiation):
Refrigerated 1 week, frozen 2 weeks

Reported:
Stat 2 hours, Routine 4 hours

Additional Information:

This test is NOT useful for the detection or monitoring of prescribed opiates such as codeine or therapeutic level of hydromorphone, or hydrocodone. See cross reactivity information below.

This test is not recommended for neonates where there is a question of maternal drug abuse as it is not as sensitive as the Quest drug screen panel in meconium (Quest #30427X: Neonatal Drug Screen, Meconium; required specimen: 5g of meconium).

This test panel screens for the presence of: Amphetamines, Barbiturates, Benzodiazepine, Cocaine (as benzoylecgonine), Cannabinoids, Fentanyl, Methadone, Oxycodone, and Opiates.

Each of the above panel components can be ordered separately.

This testing is performed using immunologic methods therefore these assays may cross-react with similar compounds. For a listing of the cross-reactivities see the test menu entry for the individual drug/metabolite.

Detection Cutoff Limits:

Drug/metabolite	Cutoff	Reported as
Amphetamines	<1000 µg/L	NEG
Barbiturates	<200 µg/L	NEG
Benzodiazepines	<200 µg/L	NEG
Cocaine metabolite	<300 µg/L	NEG
Opiates	<300 µg/L	NEG
Cannabinoids	<50 µg/L	NEG
Fentanyl	<1 µg/L	NEG
Methadone	<300 µg/L	NEG
Oxycodone	<100 µg/L	NEG

CAUTION!: Presumptive screening test only. Cross reactions and false-positive results may occur within each drug class. However, positive results are NOT routinely confirmed by a second method. If confirmation of the test result is required, it is the responsibility of the physician to separately order a specific confirmatory test for the drug(s) identified. False negative results can also occur in presence of low drug concentrations or drugs/metabolites that do not react in the assay [Click on the name of the drug(s) of interest from the list above for more information].

This test is NOT useful for the detection or monitoring of prescribed opiates such as codeine, or for therapeutic concentrations of hydromorphone or hydrocodone. (See cross reactivity information above). If hydrocodone or hydromorphone use is suspected, an opiate confirmation should be ordered from ARUP (test code: OPIQNT). False negative results may also occur as use of synthetic and some semi-synthetic opiates cannot be ruled out by this assay. Specifically, this assay will not detect use of meperidine or tramadol. If use of opiates not detected by this screen is suspected, immunoassay screens can be ordered from ARUP [e.g. meperidine (ARUP#2102288) or tramadol (ARUP#2012297)].

Typical Urine Detection Window after use:

Drug	Detection Time (hrs)	Max. Detection Time (days)
Amphetamine	24	9
Methamphetamine	87+/-51	6
Cannabis	34	95
Cocaine	48-72	22
Morphine	11-54	11
Barbiturates	24	1-4 (Phenobarbital)
Benzodiazepines	6	14 or longer in chronic users
Fentanyl	24-72	7
Methadone	24-72	14
Oxydodone	30-40	3

From: Verstraete AG. Detection Times of Drugs of Abuse in Blood, Urine and Oral Fluid. Ther Drug Monit, 26(2) April 2004, 200-205; Kale N. Urine drug tests: ordering and interpreting results. Am Fam Physician, 2019 99(1): 33-39.

Results cannot be used for Medico-legal purposes.

Confirmatory testing can be ordered for the specific class of agent found using the test order codes found under the 'Processing' tab of this test menu entry.

Confirmatory testing performed Monday-Friday with a 3-6 day turn around time after receipt by reference laboratory.

See also Drug Screening and individual drug entries.

CPT Codes:
80307

Drug-Dependent Platelet Antibody

MOLT

ORDERING

Approval Required:
Yes; Approval from the Clinical Hematology Consult Service is required before order is placed.

Available Stat:
No

Performing Lab:
Versiti

Methodology:
Flow Cytometry

Reported:
3-4 days

Supplemental Test Request Form Required:
Yes

COLLECTION

Sample Type:
Serum

Collect:
2 red tops

Amount to Collect:
10 mL blood

Preferred Volume:
5 mL serum

Minimum Volume:
5 mL serum

Remarks:
Provider must fill out the outside lab (BCW) requisition form.

https://media.versiti.org/versiti/versiti/media/downloadables/diagnostic-labs/requisitions/pnil_requisition.pdf?_ga=2.88586079.573452753.1671484325-543083915.1671484325

Submit form, APEX MOLT order requisition and specimen to Central Processing.

PROCESSING

Test Code:
MOLT

Sendout:
Yes

Performing Lab:
Versiti

Specimen Preparation:
Provider must fill out the outside lab (BCW) requisition form.

https://media.versiti.org/versiti/versiti/media/downloadables/diagnostic-labs/requisitions/pnil_requisition.pdf?_ga=2.88586079.573452753.1671484325-543083915.1671484325

Submit form, APEX MOLT order requisition and specimen to Central Processing

Sample should be spun down and taken off the clot. Store refrigerated. Send sample refrigerated. Sample must be received within 7 days of draw date.

Preferred Volume:
5 mL serum

Minimum Volume:
5 mL serum

ADMINISTRATIVE

CPT Codes:
86022 per drug

COMPLETE VIEW

Approval Required:
Yes; Approval from the Clinical Hematology Consult Service is required before order is placed.

Available Stat:
No

Test Code:
MOLT

Performing Lab:
Versiti

Sendout:
Yes

Methodology:
Flow Cytometry

Remarks:
Provider must fill out the outside lab (BCW) requisition form.

https://media.versiti.org/versiti/versiti/media/downloadables/diagnostic-labs/requisitions/pnil_requisition.pdf?_ga=2.88586079.573452753.1671484325-543083915.1671484325

Submit form, APEX MOLT order requisition and specimen to Central Processing.

Collect:
2 red tops

Amount to Collect:
10 mL blood

Sample Type:
Serum

Preferred Volume:
5 mL serum

Minimum Volume:
5 mL serum

Specimen Preparation:
Provider must fill out the outside lab (BCW) requisition form.

https://media.versiti.org/versiti/versiti/media/downloadables/diagnostic-labs/requisitions/pnil_requisition.pdf?_ga=2.88586079.573452753.1671484325-543083915.1671484325

Submit form, APEX MOLT order requisition and specimen to Central Processing

Sample should be spun down and taken off the clot. Store refrigerated. Send sample refrigerated. Sample must be received within 7 days of draw date.

Reported:
3-4 days

CPT Codes:
86022 per drug

Supplemental Test Request Form Required:
Yes

Duplication 1Q FISH

DUP1Q, BDUP1Q

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Set up daily Monday - Friday

Methodology:
Fluorescent In-situ hybridization (FISH)

Reported:
1-2 weeks

Synonyms:

- CKS1B Amplification
- Dup 1Q
- DUP1Q
- BDUP1Q

COLLECTION

Sample Type:
Heparinized whole blood or bone marrow. Bone marrow biopsy

Collect:
Dark green top (Sodium heparin)

Amount to Collect:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow biopsy: 1 cm

Remarks:
Mix blood and marrow aspirate samples well after collection. Keep at room temperature

Stability (from collection to initiation):
Room temperature 2 days

Unacceptable Conditions:
Frozen, leaking or unlabeled samples

PROCESSING

Test Code:
BDUP1Q: Blood
DUP1Q: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Specimen Preparation:
Keep at room temperature, do not centrifuge

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow biopsy: 1 cm

Unacceptable Conditions:
Frozen, leaking or unlabeled samples

Stability (from collection to initiation):
Room temperature 2 days

RESULT INTERPRETATION

Reference Interval:
Absent

ADMINISTRATIVE

CPT Codes:
88271 x2, 88275

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BDUP1Q: Blood
DUP1Q: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Set up daily Monday - Friday

Methodology:
Fluorescent In-situ hybridization (FISH)

Remarks:
Mix blood and marrow aspirate samples well after collection. Keep at room temperature

Collect:
Dark green top (Sodium heparin)

Amount to Collect:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Sample Type:
Heparinized whole blood or bone marrow. Bone marrow biopsy

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow biopsy: 1 cm

Unacceptable Conditions:
Frozen, leaking or unlabeled samples

Specimen Preparation:
Keep at room temperature, do not centrifuge

Reference Interval:
Absent

Synonyms:

- CKS1B Amplification
- Dup 1Q
- DUP1Q
- BDUP1Q

Stability (from collection to initiation):
Room temperature 2 days

Reported:
1-2 weeks

CPT Codes:
88271 x2, 88275

LDT or Modified FDA:
Yes

D-Xylose Absorption, blood

XYL1

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Colorimetry

Reported:
Blood test set up as needed; urine test performed Monday-Friday. Turnaround time: 1-4 days.

Synonyms:

- xylose

COLLECTION

Patient Preparation:
Adults must have fasted for 8 hours prior to sample collection. Children must fast for 4 hours before sample collection. Outpatients should be given a prescription for the proper dose of (D+)-xylose powder to be obtained at an outside pharmacy.

Sample Type:
Blood

Collect:
Gray top

Amount to Collect:
4 mL blood

Preferred Volume:
4 mL blood

Minimum Volume:
1 mL blood

Remarks:
Note the dose on the requisition and in the patient's chart. Dose: 1.0 g/kg-maximum 25 g. Draw sample 1 hour after D-xylose administration.

PROCESSING

Test Code:
XYL1

Test Group:
D-Xylose

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Mix the sample well and refrigerate it-do not freeze. Enter the xylose dose in the computer at the time of accession. Order Quest # 1199X.

Preferred Volume:
4 mL blood

Minimum Volume:
1 mL blood

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:
< 6 years: >14.9 mg/dL
>= 6 years: >19.9 mg/dL

ADMINISTRATIVE

CPT Codes:
84620-90

LOINC Codes:
30575-5

COMPLETE VIEW

Available Stat:
No

Test Code:
XYL1

Test Group:
D-Xylose

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Colorimetry

Patient Preparation:
Adults must have fasted for 8 hours prior to sample collection. Children must fast for 4 hours before sample collection. Outpatients should be given a prescription for the proper dose of (D+)-xylose powder to be obtained at an outside pharmacy.

Remarks:
Note the dose on the requisition and in the patient's chart. Dose: 1.0 g/kg-maximum 25 g. Draw sample 1 hour after D-xylose administration.

Collect:
Gray top

Amount to Collect:
4 mL blood

Sample Type:
Blood

Preferred Volume:
4 mL blood

Minimum Volume:
1 mL blood

Specimen Preparation:
Mix the sample well and refrigerate it-do not freeze. Enter the xylose dose in the computer at the time of accession. Order Quest # 1199X.

Units:
mg/dL

Reference Interval:
< 6 years: >14.9 mg/dL
>= 6 years: >19.9 mg/dL

Synonyms:

- xylose

Reported:
Blood test set up as needed; urine test performed Monday-Friday. Turnaround time: 1-4 days.

CPT Codes:
84620-90

LOINC Codes:
30575-5

D-Xylose Absorption, urine

MOLT

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Colorimetry

Reported:
Urine test performed Monday-Friday. Turnaround time: 1-4 days.

COLLECTION

Sample Type:
5-hour urine

Collect:
Plain Container Required

Amount to Collect:
Entire urine output over 5 hour period

Preferred Volume:
5 mL urine

Minimum Volume:
1 mL urine

Remarks:
Refrigerate container during collection.

Unacceptable Conditions:
Container not refrigerated during collection.

PROCESSING

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Test Group:
D-Xylose

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Transfer urine sample promptly to a gray top vacutainer tube containing fluoride and oxalate to inhibit metabolism of the xylose. Mix well and refrigerate, do not freeze. Enter the xylose dose in the computer at the time of accession and record the total urine volume on the request slip and the gray top tube. Order Quest # 941

Preferred Volume:
5 mL urine

Minimum Volume:
1 mL urine

Unacceptable Conditions:
Container not refrigerated during collection.

RESULT INTERPRETATION

Units:
g

Reference Interval:
>= 18 year old: > 4.0 g excreted in 5 hours after a 25 g dose
>= 18 year old: > 1.2 g after a 5g dose

Child: 16-33% of the ingested dose

COMPLETE VIEW

Available Stat:
No

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Test Group:
D-Xylose

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Colorimetry

Remarks:
Refrigerate container during collection.

Collect:
Plain Container Required

Amount to Collect:
Entire urine output over 5 hour period

Sample Type:
5-hour urine

Preferred Volume:
5 mL urine

Minimum Volume:
1 mL urine

Unacceptable Conditions:
Container not refrigerated during collection.

Specimen Preparation:
Transfer urine sample promptly to a gray top vacutainer tube containing fluoride and oxalate to inhibit metabolism of the xylose. Mix well and refrigerate, do not freeze. Enter the xylose dose in the computer at the time of accession and record the total urine volume on the request slip and the gray top tube. Order Quest # 941

Units:
g

Reference Interval:
>= 18 year old: > 4.0 g excreted in 5 hours after a 25 g dose
>= 18 year old: > 1.2 g after a 5g dose

Child: 16-33% of the ingested dose

Reported:
Urine test performed Monday-Friday. Turnaround time: 1-4 days.

Echinococcus granulosa Antibody (IgG)

ECHINO

ORDERING

Available Stat:
No

Performing Lab:
Focus via Quest

Methodology:
Immunoassay +/- Western Blot

Reported:
Set up once per week. Turnaround 5-7 days

Additional Information:
Detection of serum antibodies to Echinococcus plays an important role in the diagnosis of hydatid disease, since infected individuals do not exhibit fecal shedding of Echinococcus eggs. The frequency of a positive result for serum antibodies may persist for years after cyst removal. Serologic crossreactivity between Echinococcus and Cysticercus may occur.

Increasing antibody values between acute and convalescent specimens is considered evidence of recent or current infection. The frequency of a positive result for serum antibodies to Echinococcus is higher in patients with active cysts in the liver than in patients with hydatid cysts in the lung or calcified cysts. Serologic crossreactivity between Echinococcus and Cysticercus may occur.

See also Parasites-Duodenal,-Sputum and-Stool

Reflex Testing:
Positive/equivocal samples will automatically have a Western Blot performed with a separate charge.

Synonyms:

- hydatid disease

COLLECTION

Sample Type:
Serum

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen at -20C 1 month.

PROCESSING

Test Code:
ECHINO

Sendout:
Yes

Performing Lab:
Focus via Quest

Specimen Preparation:
Freeze sample. Order Quest #91307

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen at -20C 1 month.

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
Detection of serum antibodies to Echinococcus plays an important role in the diagnosis of hydatid disease, since infected individuals do not exhibit fecal shedding of Echinococcus eggs. The frequency of a positive result for serum antibodies may persist for years after cyst removal. Serologic crossreactivity between Echinococcus and Cysticercus may occur.

Increasing antibody values between acute and convalescent specimens is considered evidence of recent or current infection. The frequency of a positive result for serum antibodies to Echinococcus is higher in patients with active cysts in the liver than in patients with hydatid cysts in the lung or calcified cysts. Serologic crossreactivity between Echinococcus and Cysticercus may occur.

See also Parasites-Duodenal,-Sputum and-Stool

ADMINISTRATIVE

CPT Codes:
86682-90

LOINC Codes:
47431-2

COMPLETE VIEW

Available Stat:
No

Test Code:
ECHINO

Performing Lab:
Focus via Quest

Sendout:
Yes

Methodology:
Immunoassay +/- Western Blot

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Specimen Preparation:
Freeze sample. Order Quest #91307

Reference Interval:
Negative

Synonyms:

- hydatid disease

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen at -20C 1 month.

Reported:
Set up once per week. Turnaround 5-7 days

Reflex Testing:
Positive/equivocal samples will automatically have a Western Blot performed with a separate charge.

Additional Information:

Detection of serum antibodies to Echinococcus plays an important role in the diagnosis of hydatid disease, since infected individuals do not exhibit fecal shedding of Echinococcus eggs. The frequency of a positive result for serum antibodies may persist for years after cyst removal. Serologic crossreactivity between Echinococcus and Cysticercus may occur.

Increasing antibody values between acute and convalescent specimens is considered evidence of recent or current infection. The frequency of a positive result for serum antibodies to Echinococcus is higher in patients with active cysts in the liver than in patients with hydatid cysts in the lung or calcified cysts. Serologic crossreactivity between Echinococcus and Cysticercus may occur.

See also Parasites-Duodenal,-Sputum and-Stool

CPT Codes:

86682-90

LOINC Codes:

47431-2

Ectoparasite identification

P416

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Monday-Friday, day shift

Reflex Testing:
If Lyme disease IFA testing is requested, Ixodes species ticks will be forwarded to County of Sonoma Department of Health Services Public Health Laboratory, 3313 Chanate Road, Rm. 214, Santa Rosa, CA 95404 707-565-4711. An additional charge will be billed to patient. Test is performed on Thursday morning, and positive results are reported the following day.

Synonyms:

- flea
- insect
- mite
- tick
- arthropod
- scabies
- bedbug
- louse

COLLECTION

Sample Type:
Arthropod; skin scrapings

Collect:
Urine cup or clean container

Remarks:
Place insect in gauze or tissue moistened with water and submit in a clean container. Refrigerate until submitted to laboratory.

Skin scrapings for scabies: Scrapings are best performed at the end of the burrows in non-excoriated and non-inflamed areas using a sterile scalpel blade containing a drop of mineral oil. The mineral oil enhances the adherence of the mites to the blade and can then be transferred to a glass slide. Glass slides can be sandwiched" together and placed in a sterile container for transport to the lab.

Stability (from collection to initiation):
Moist ticks are stable for 1 month at room temperature. Skin scrapings should be submitted to the lab as soon as possible.

Unacceptable Conditions:
Improperly collected or stored sample

PROCESSING

Test Code:
P416

Performing Lab:
Microbiology

Unacceptable Conditions:
Improperly collected or stored sample

Stability (from collection to initiation):
Moist ticks are stable for 1 month at room temperature. Skin scrapings should be submitted to the lab as soon as possible.

RESULT INTERPRETATION

Reference Interval:
No parasites seen

ADMINISTRATIVE

CPT Codes:
87168

LOINC Codes:
673-4

COMPLETE VIEW

Available Stat:
No

Test Code:
P416

Performing Lab:
Microbiology

Performed:
Monday-Friday, day shift

Remarks:
Place insect in gauze or tissue moistened with water and submit in a clean container. Refrigerate until submitted to laboratory.

Skin scrapings for scabies: Scrapings are best performed at the end of the burrows in non-excoriated and non-inflamed areas using a sterile scalpel blade containing a drop of mineral oil. The mineral oil enhances the adherence of the mites to the blade and can then be transferred to a glass slide. Glass slides can be sandwiched" together and placed in a sterile container for transport to the lab.

Collect:
Urine cup or clean container

Sample Type:
Arthropod; skin scrapings

Unacceptable Conditions:
Improperly collected or stored sample

Reference Interval:
No parasites seen

Synonyms:

- flea
- insect
- mite
- tick
- arthropod
- scabies
- bedbug
- louse

Stability (from collection to initiation):
Moist ticks are stable for 1 month at room temperature. Skin scrapings should be submitted to the lab as soon as possible.

Reflex Testing:
If Lyme disease IFA testing is requested, Ixodes species ticks will be forwarded to County of Sonoma Department of Health Services Public Health Laboratory, 3313 Chanate Road, Rm. 214, Santa Rosa, CA 95404 707-565-4711. An additional charge will be billed to patient. Test is performed on Thursday morning, and positive results are reported the following day.

CPT Codes:
87168

LOINC Codes:
673-4

Eculizumab

MOLT

ORDERING

Ordering Recommendations:

Assessing the response to eculizumab therapy

Assessing the need for dose escalation

Evaluating the potential for dose de-escalation or discontinuation of therapy in remission states

Monitoring patients who need to be above a certain eculizumab concentration in order to improve the odds of a clinical response for therapy optimization

Available Stat:

No

Performing Lab:

Mayo

Performed:

Wednesday

Methodology:

Liquid chromatography (high-resolution accurate-mass, HRAM) mass spectrometry

Reported:

3-7 days

Additional Information:

Eculizumab (Soliris, Alexion Pharmaceuticals), a humanized monoclonal IgG2/4 kappa antibody therapeutic directed against complement component C5, has been heralded as a breakthrough treatment for paroxysmal nocturnal hemoglobinuria (PNH) and atypical hemolytic uremic syndrome (aHUS). By association with C5, eculizumab inhibits the terminal complement pathway through simultaneous blockade of the generation of the potent prothrombotic and proinflammatory molecule, C5a, and the formation of membrane attack complex initiator, C5b. Since all 3 arms of the complement cascade converge at the point of C5 activation, targeted by eculizumab, this drug may have broad potential application and is being clinically evaluated in other disorders with complement overactivation. In PNH, eculizumab has become the standard of care, proving to be a safe and effective therapy with long-lasting effects, potentially enabling patients to become transfusion-independent and extending their survival.

COLLECTION

Patient Preparation:

Pembrolizumab/Keytruda must be discontinued at least 4 weeks prior to testing for eculizumab quantitation in serum.

Sample Type:

Serum

Collect:

SST/Red-top tube

Amount to Collect:

2 mL blood

Preferred Volume:

1 mL serum

Minimum Volume:

0.5 mL serum

Remarks:

Draw blood immediately before next scheduled dose.

Stability (from collection to initiation):

Refrigerated (preferred) 28 days
Frozen 30 days
Ambient 4 days

Storage/Transport Temperature:

Refrigerated

Unacceptable Conditions:

Gross hemolysis
Gross lipemia

PROCESSING

Test Code:

MOLT

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Spin down within 2 hours of draw. Aliquot and send refrigerated to CB. Order Mayo test code ECULI.

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Gross hemolysis
Gross lipemia

Stability (from collection to initiation):
Refrigerated (preferred) 28 days
Frozen 30 days
Ambient 4 days

Storage/Transport Temperature:
Refrigerated

RESULT INTERPRETATION

Units:
mcg/mL

Reference Interval:
Lower limit of quantitation =5.0 mcg/mL

>35 Therapeutic concentration for paroxysmal nocturnal hemoglobinuria (PNH)

>50 Therapeutic concentration for atypical hemolytic uremic syndrome (aHUS)

Additional Information:
Eculizumab (Soliris, Alexion Pharmaceuticals), a humanized monoclonal IgG2/4 kappa antibody therapeutic directed against complement component C5, has been heralded as a breakthrough treatment for paroxysmal nocturnal hemoglobinuria (PNH) and atypical hemolytic uremic syndrome (aHUS). By association with C5, eculizumab inhibits the terminal complement pathway through simultaneous blockade of the generation of the potent prothrombotic and proinflammatory molecule, C5a, and the formation of membrane attack complex initiator, C5b. Since all 3 arms of the complement cascade converge at the point of C5 activation, targeted by eculizumab, this drug may have broad potential application and is being clinically evaluated in other disorders with complement overactivation. In PNH, eculizumab has become the standard of care, proving to be a safe and effective therapy with long-lasting effects, potentially enabling patients to become transfusion-independent and extending their survival.

Interpretive Data:
Minimum trough therapeutic concentrations (immediately before next infusion) of eculizumab are expected to be above 35 mcg/mL for paroxysmal nocturnal hemoglobinuria (PNH) and above 50 mcg/mL for aHUS.

ADMINISTRATIVE

CPT Codes:
80299

LOINC Codes:
90240-3

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Assessing the response to eculizumab therapy

Assessing the need for dose escalation

Evaluating the potential for dose de-escalation or discontinuation of therapy in remission states

Monitoring patients who need to be above a certain eculizumab concentration in order to improve the odds of a clinical response for therapy optimization

Test Code:
MOLT

Performing Lab:
Mayo

Sendout:
Yes

Performed:
Wednesday

Methodology:
Liquid chromatography (high-resolution accurate-mass, HRAM) mass spectrometry

Patient Preparation:
Pembrolizumab/Keytruda must be discontinued at least 4 weeks prior to testing for eculizumab quantitation in serum.

Remarks:
Draw blood immediately before next scheduled dose.

Collect:
SST/Red-top tube

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Gross hemolysis
Gross lipemia

Specimen Preparation:
Spin down within 2 hours of draw. Aliquot and send refrigerated to CB. Order Mayo test code ECULI.

Units:
mcg/mL

Reference Interval:
Lower limit of quantitation =5.0 mcg/mL

>35 Therapeutic concentration for paroxysmal nocturnal hemoglobinuria (PNH)

>50 Therapeutic concentration for atypical hemolytic uremic syndrome (aHUS)

Interpretive Data:
Minimum trough therapeutic concentrations (immediately before next infusion) of eculizumab are expected to be above 35 mcg/mL for paroxysmal nocturnal hemoglobinuria (PNH) and above 50 mcg/mL for aHUS.

Storage/Transport Temperature:
Refrigerated

Stability (from collection to initiation):
Refrigerated (preferred) 28 days
Frozen 30 days
Ambient 4 days

Reported:
3-7 days

Additional Information:
Eculizumab (Soliris, Alexion Pharmaceuticals), a humanized monoclonal IgG2/4 kappa antibody therapeutic directed against complement component C5, has been heralded as a breakthrough treatment for paroxysmal nocturnal hemoglobinuria (PNH) and atypical hemolytic uremic syndrome (aHUS). By association with C5, eculizumab inhibits the terminal complement pathway through simultaneous blockade of the generation of the potent prothrombotic and proinflammatory molecule, C5a, and the formation of membrane attack complex initiator, C5b. Since all 3 arms of the complement cascade converge at the point of C5 activation, targeted by eculizumab, this drug may have broad potential application and is being clinically evaluated in other disorders with complement overactivation. In PNH, eculizumab has become the standard of care, proving to be a safe and effective therapy with long-lasting effects, potentially enabling patients to become transfusion-independent and extending their survival.

CPT Codes:
80299

LOINC Codes:
90240-3

Ehrlichia chaffeensis Antibodies (IgG & IgM)

EHRL

ORDERING

Available Stat:
No

Performing Lab:
Focus via Quest

Methodology:
Immunofluorescence assay

Reported:
Set up 6x per week, turnaround 4-5 days

Additional Information:
Human monocytic ehrlichiosis (HME), a tick-transmitted disease caused by Ehrlichia chaffeensis bacteria and is often described as 'spotless' rocky mountain spotted fever has been reported in various regions of the United States. Infected individuals produce specific antibody to E. chaffeensis which can be detected by the IFA test. A single IgG titer of 1:64 or greater indicates exposure to E. chaffeensis. A four fold or greater rise in IgG titer between acute and convalescent sera and/or an IgM titer of 1:20 or more is suggestive of recent or current infection.

This test was developed and its performance characteristics determined by Quest Diagnostics Nichols Institute. It has not been cleared or approved by the U.S. Food and Drug Administration. The FDA has determined that such clearance or approval is not necessary. Performance characteristics refer to the analytical performance of the test.

Synonyms:

- Human Monocytic ehrlichiosis
- HME

COLLECTION

Sample Type:
Serum

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 1 week, frozen at -20C 1 month.

Unacceptable Conditions:
Sample collected in Gold top

PROCESSING

Test Code:
EHRL

Test Group:
Ehrlichia

Sendout:
Yes

Performing Lab:
Focus via Quest

Specimen Preparation:
Refrigerate sample. Order Quest # 8524N

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Unacceptable Conditions:
Sample collected in Gold top

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 1 week, frozen at -20C 1 month.

RESULT INTERPRETATION

Units:
titer

Reference Interval:
IgG: < 1:64 titer
IgM: < 1:20 titer

Additional Information:
Human monocytic ehrlichiosis (HME), a tick-transmitted disease caused by Ehrlichia chaffeensis bacteria and is often described as 'spotless' rocky mountain spotted fever has been reported in various regions of the United States. Infected individuals produce specific antibody to E. chaffeensis which can be detected by the IFA test. A single IgG titer of 1:64 or greater indicates exposure to E. chaffeensis. A four fold or greater rise in IgG titer between acute and convalescent sera and/or an IgM titer of 1:20 or more is suggestive of recent or current infection.

This test was developed and its performance characteristics determined by Quest Diagnostics Nichols Institute. It has not been cleared or approved by the U.S. Food and Drug Administration. The FDA has determined that such clearance or approval is not necessary. Performance characteristics refer to the analytical performance of the test.

ADMINISTRATIVE

CPT Codes:
86666-90 x2

LOINC Codes:
45059-3

COMPLETE VIEW

Available Stat:
No

Test Code:
EHRL

Test Group:
Ehrlichia

Performing Lab:
Focus via Quest

Sendout:
Yes

Methodology:
Immunofluorescence assay

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Unacceptable Conditions:
Sample collected in Gold top

Specimen Preparation:
Refrigerate sample. Order Quest # 8524N

Units:
titer

Reference Interval:
IgG: < 1:64 titer
IgM: < 1:20 titer

Synonyms:

- Human Monocytic ehrlichiosis
- HME

Stability (from collection to initiation):

Room temperature 4 days, refrigerated 1 week, frozen at -20C 1 month.

Reported:

Set up 6x per week, turnaround 4-5 days

Additional Information:

Human monocytic ehrlichiosis (HME), a tick-transmitted disease caused by Ehrlichia chaffeensis bacteria and is often described as 'spotless' rocky mountain spotted fever has been reported in various regions of the United States. Infected individuals produce specific antibody to E. chaffeensis which can be detected by the IFA test. A single IgG titer of 1:64 or greater indicates exposure to E. chaffeensis. A four fold or greater rise in IgG titer between acute and convalescent sera and/or an IgM titer of 1:20 or more is suggestive of recent or current infection.

This test was developed and its performance characteristics determined by Quest Diagnostics Nichols Institute. It has not been cleared or approved by the U.S. Food and Drug Administration. The FDA has determined that such clearance or approval is not necessary. Performance characteristics refer to the analytical performance of the test.

CPT Codes:

86666-90 x2

LOINC Codes:

45059-3

Electrolytes, Plasma / Serum

LYTE

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
Includes sodium, potassium, chloride and carbon dioxide, total. Individual tests may be ordered separately.

Synonyms:

- Sodium
- Potassium
- Chloride
- CO2
- Carbon dioxide
- K
- Na
- CL
- K+
- Na+
- Cl-

COLLECTION

Sample Type:
Plasma or serum

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.25 mL plasma or serum

PROCESSING

Test Code:
LYTE

Test Group:
Electrolytes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.25 mL plasma or serum

RESULT INTERPRETATION

Units:
mmol/L

Reference Interval:
See individual test entries for normal ranges.

Critical Values:
Sodium: < 125 or > 155 mmol/L
Potassium: < 3.0 or > 6.0 mmol/L
CO2, Total: < 15 or > 40 mmol/L

Additional Information:
Includes sodium, potassium, chloride and carbon dioxide, total. Individual tests may be ordered separately.

ADMINISTRATIVE

CPT Codes:
80051

COMPLETE VIEW

Available Stat:
Yes

Test Code:
LYTE

Test Group:
Electrolytes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
1 mL blood

Sample Type:
Plasma or serum

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.25 mL plasma or serum

Units:
mmol/L

Reference Interval:
See individual test entries for normal ranges.

Critical Values:
Sodium: < 125 or > 155 mmol/L
Potassium: < 3.0 or > 6.0 mmol/L
CO2, Total: < 15 or > 40 mmol/L

Synonyms:

- Sodium
- Potassium
- Chloride
- CO2
- Carbon dioxide
- K
- Na
- CL
- K+
- Na+
- Cl-

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
Includes sodium, potassium, chloride and carbon dioxide, total. Individual tests may be ordered separately.

CPT Codes:
80051

Electrolytes, Whole Blood

NLYTE

ORDERING

Ordering Recommendations:
Follow the link for information about Blood Gas Panels that contain this test.

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay and Mt Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Direct ion selective electrodes (ISE), Radiometer ABL 90 FLEX Plus

Additional Information:

This panel includes:

Sodium (NAWB), potassium (KSB), chloride (CLWB) and ionized calcium (CAIB)

Iodide, bromide, thiosulfate, salicylate and nitrate cause a positive interference on chloride measured by ABL blood gas analyzers.

Ha, L et al, Annals Clin Biochem, 2015, 52(2): 288-292
Wendroth, S et al, Clin Chim Acta, 2014, 431: 77-79
ABL90 Flex Plus Instructions for Use Manual, Radiometer.

All reported values are corrected to 37C unless otherwise specified. Results beyond the linear range of the instrument will be reported as < or > the extreme of the linear range. Samples containing small bubbles may be run at the laboratory's discretion. If analyzed, a comment will beadded to the result regarding the presence of bubbles in the sample.

Synonyms:

- sodium
- potassium
- chloride
- ionized calcium
- Na
- K
- Cl
- iCa
- ARTBGL
- VENBGL
- CVBGL
- MVBGL
- CAPBG
- MVBGCX
- CIRBGA
- CIRBGV
- Blood gas
- ABG

COLLECTION

Sample Type:
Heparinized whole blood (Blood gas syringe only)

Collect:
Plastic blood gas syringe containing 100 U of dry heparin or capillary tube with 70 IU/mL dry electrolyte-balanced heparin

Amount to Collect:
3 mL blood

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood

Remarks:

Arterial puncture:
Due to the risk of arterial damage and subsequent distal ischemia, prior to puncturing an artery the RN assesses the collateral circulation. If the radial artery is to be punctured, then the pulse of the ulnar artery is assessed. If the dorsalis pedis artery is to be accessed then the posterial tibial pulse is assessed and likewise if the posterial tibial approach is used the dorsalis pedispulse is assessed. The modified Allens's test may be used to assess collateral circulation of the ulnar artery before a radial artery puncture, but it does not always ensure adequate flow. A Doppler ultrasound flow indicator may be used to verify collateral circulation. If the collateral circulation is poor and the RN cannot palpate a pulse then the physician should be notified before proceeding. If for any reason the circulation is compromised to the extremity being assessed for arterial puncture then the physician should be notified prior to proceeding.

1. Palpate the radial artery and identify the site where the pulse is the strongest. Avoid areas with overlying veins to prevent venous admixture.
2. Prepare the patient's skin with an alcohol or 2% chlorhexidine wipe/swab.
3. Place two or three fingers along the course of the artery both to locate its position and direction, and to stabilize it.
4. Penetrate the skin smoothly holding the needle at 30-60 degree angle with the needle bevel up and pointed proximally. The angle of the "butterfly" IV catheter should not exceed 45° for pediatric patients.
5. Re-establish the position and direction of the artery by palpation.
6. Gently and slowly advance the needle or "butterfly", aiming directly for the area of maximum pulsation.
7. When the arterial lumen has been entered, less resistance is felt and blood appears in the syringe above the needle hub.
8 Obtain required amount of arterial blood for test(s).
9. If blood is not obtained on first attempt, withdraw the needle to just below the skin surface and advance needle at same angle but at 1 mm to either side of previous attempt.
10. Place the 2x2 gauze over the site of the puncture then withdraw the needle from the artery. Press firmly at the site for at least five minutes, or until the bleeding stops. Apply bandage or pressure dressing.
11. Expel any air bubble in the syringe with air filter cap placed on specimen syringe.
12. Label sample with patient's name, ID number and DOB.

Venous samples:
1. Avoid excessive venous stasis from prolonged tourniquet application or clenching of the fist prior to sample collection.
2. For central line draws make sure to waste a full red top tube then draw via the blood gas syringe as noted above.
3. Fill syringe completely, remove needle (in peripheral draws), cap sample, expel all bubbles (while holding syringe upright) until blood hits the top of cap.
4. Label sample with patient's name, ID number and DOB.

Capillary Samples:
1. The following are recommended sampling sites: earlobe, fingertip, big toe, heel. The heel and big toe are more suitable for use on neonates and infants.
2. Warm the area or puncture site for 5 to 10 minutes prior to actual sampling. This accelerates flow for blood to be representative of general status of patient.
3. Make a puncture using a lancet or similar device. Do not squeeze the area to avoid tissue juice from mixing into blood sample.
4. Wipe off the first drop of blood. Take the sample from the center of the second drop of blood and hold the capillary at a slightly downward angle for an uninterrupted blood flow. Avoid getting air bubbles in the specimen.
5. Refrain from squeezing or milking the puncture site as this may result in faulty measurements or cause hemolysis of blood sample and cause elevated K+ readings.
6. Apply accompanying caps to both ends of the capillary tube and mix the sample with the heparin immediately after collection to prevent blood from clotting. The manufacturer recommends the use of a mixing wire and magnet for capillary samples.
7. Label sample with patient's name, ID and DOB.

Stability (from collection to initiation):

10 min.

PROCESSING

Test Code:

NLYTE

Performing Lab:

Parnassus, Mission Bay and Mt Zion Chemistry

Preferred Volume:

3 mL blood

Minimum Volume:

1 mL blood

Stability (from collection to initiation):

10 min.

RESULT INTERPRETATION

Units:

mmol/L

Reference Interval:

Please follow the following hyperlinks for reference intervals:

Sodium

Potassium

Chloride

Ionized Calcium

Critical Values:

See hyperlinks above.

Note: Panic values from Post-filter samples are not called.

Additional Information:

This panel includes:

Sodium (NAWB), potassium (KSB), chloride (CLWB) and ionized calcium (CAIB)

Iodide, bromide, thiosulfate, salicylate and nitrate cause a positive interference on chloride measured by ABL blood gas analyzers.

Ha, L et al, Annals Clin Biochem, 2015, 52(2): 288-292
Wendroth, S et al, Clin Chim Acta, 2014, 431: 77-79
ABL90 Flex Plus Instructions for Use Manual, Radiometer.

All reported values are corrected to 37C unless otherwise specified. Results beyond the linear range of the instrument will be reported as < or > the extreme of the linear range. Samples containing small bubbles may be run at the laboratory's discretion. If analyzed, a comment will beadded to the result regarding the presence of bubbles in the sample.

ADMINISTRATIVE

LOINC Codes:

55231-5

COMPLETE VIEW

Available Stat:

Yes

Ordering Recommendations:

Follow the link for information about Blood Gas Panels that contain this test.

Test Code:

NLYTE

Performing Lab:

Parnassus, Mission Bay and Mt Zion Chemistry

Performed:

Test available 24 hours per day 7 days per week

Methodology:

Direct ion selective electrodes (ISE), Radiometer ABL 90 FLEX Plus

Remarks:

Arterial puncture:
Due to the risk of arterial damage and subsequent distal ischemia, prior to puncturing an artery the RN assesses the collateral circulation. If the radial artery is to be punctured, then the pulse of the ulnar artery is assessed. If the dorsalis pedis artery is to be accessed then the posterial tibial pulse is assessed and likewise if the posterial tibial approach is used the dorsalis pedispulse is assessed. The modified Allens's test may be used to assess collateral circulation of the ulnar artery before a radial artery puncture, but it does not always ensure adequate flow. A Doppler ultrasound flow indicator may be used to verify collateral circulation. If the collateral circulation is poor and the RN cannot palpate a pulse then the physician should be notified before proceeding. If for any reason the circulation is compromised to the extremity being assessed for arterial puncture then the physician should be notified prior to proceeding.

1. Palpate the radial artery and identify the site where the pulse is the strongest. Avoid areas with overlying veins to prevent venous admixture.
2. Prepare the patient's skin with an alcohol or 2% chlorhexidine wipe/swab.
3. Place two or three fingers along the course of the artery both to locate its position and direction, and to stabilize it.
4. Penetrate the skin smoothly holding the needle at 30-60 degree angle with the needle bevel up and pointed proximally. The angle of the "butterfly" IV catheter should not exceed 45° for pediatric patients.
5. Re-establish the position and direction of the artery by palpation.
6. Gently and slowly advance the needle or "butterfly", aiming directly for the area of maximum pulsation.
7. When the arterial lumen has been entered, less resistance is felt and blood appears in the syringe above the needle hub.
8 Obtain required amount of arterial blood for test(s).
9. If blood is not obtained on first attempt, withdraw the needle to just below the skin surface and advance needle at same angle but at 1 mm to either side of previous attempt.
10. Place the 2x2 gauze over the site of the puncture then withdraw the needle from the artery. Press firmly at the site for at least five minutes, or until the bleeding stops. Apply bandage or pressure dressing.
11. Expel any air bubble in the syringe with air filter cap placed on specimen syringe.
12. Label sample with patient's name, ID number and DOB.

Venous samples:
1. Avoid excessive venous stasis from prolonged tourniquet application or clenching of the fist prior to sample collection.
2. For central line draws make sure to waste a full red top tube then draw via the blood gas syringe as noted above.
3. Fill syringe completely, remove needle (in peripheral draws), cap sample, expel all bubbles (while holding syringe upright) until blood hits the top of cap.
4. Label sample with patient's name, ID number and DOB.

Capillary Samples:
1. The following are recommended sampling sites: earlobe, fingertip, big toe, heel. The heel and big toe are more suitable for use on neonates and infants.
2. Warm the area or puncture site for 5 to 10 minutes prior to actual sampling. This accelerates flow for blood to be representative of general status of patient.
3. Make a puncture using a lancet or similar device. Do not squeeze the area to avoid tissue juice from mixing into blood sample.
4. Wipe off the first drop of blood. Take the sample from the center of the second drop of blood and hold the capillary at a slightly downward angle for an uninterrupted blood flow. Avoid getting air bubbles in the specimen.
5. Refrain from squeezing or milking the puncture site as this may result in faulty measurements or cause hemolysis of blood sample and cause elevated K+ readings.
6. Apply accompanying caps to both ends of the capillary tube and mix the sample with the heparin immediately after collection to prevent blood from clotting. The manufacturer recommends the use of a mixing wire and magnet for capillary samples.
7. Label sample with patient's name, ID and DOB.

Collect:

Plastic blood gas syringe containing 100 U of dry heparin or capillary tube with 70 IU/mL dry electrolyte-balanced heparin

Amount to Collect:

3 mL blood

Sample Type:

Heparinized whole blood (Blood gas syringe only)

Preferred Volume:

3 mL blood

Minimum Volume:

1 mL blood

Units:

mmol/L

Reference Interval:

Please follow the following hyperlinks for reference intervals:

Sodium

Potassium

Chloride

Ionized Calcium

Critical Values:

See hyperlinks above.

Note: Panic values from Post-filter samples are not called.

Synonyms:

- sodium
- potassium
- chloride
- ionized calcium
- Na
- K
- Cl
- iCa
- ARTBGL
- VENBGL
- CVBGL
- MVBGL
- CAPBG
- MVBGCX
- CIRBGA
- CIRBGV
- Blood gas
- ABG

Stability (from collection to initiation):

10 min.

Additional Information:

This panel includes:

Sodium (NAWB), potassium (KSB), chloride (CLWB) and ionized calcium (CAIB)

Iodide, bromide, thiosulfate, salicylate and nitrate cause a positive interference on chloride measured by ABL blood gas analyzers.

Ha, L et al, Annals Clin Biochem, 2015, 52(2): 288-292
Wendroth, S et al, Clin Chim Acta, 2014, 431: 77-79
ABL90 Flex Plus Instructions for Use Manual, Radiometer.

All reported values are corrected to 37C unless otherwise specified. Results beyond the linear range of the instrument will be reported as < or > the extreme of the linear range. Samples containing small bubbles may be run at the laboratory's discretion. If analyzed, a comment will beadded to the result regarding the presence of bubbles in the sample.

LOINC Codes:

55231-5

Endothelial Cell Crossmatch (for Donor)

HTENDOXM (Sunquest: ILENDD)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Luminex-based

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Additional Information:
This test assigns cPRA (calculated PRA) and determines specific Class II antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring. This test is NOT for evaluation of transfusion-related fever or refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

Reflex Testing:
Yes

Synonyms:

- Class II Single Antigen Testing by Luminex, Single Antigen Specificity Class II

COLLECTION

Sample Type:
Serum

Collect:
Red top

Amount to Collect:
6 mL blood

Preferred Volume:
3 mL serum

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

PROCESSING

Test Code:
HTENDOXM (Sunquest: ILENDD)

Test Group:
HLA Antibody Testing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Preferred Volume:
3 mL serum

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

RESULT INTERPRETATION

Additional Information:
This test assigns cPRA (calculated PRA) and determines specific Class II antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring. This test is NOT for evaluation of transfusion-related fever or refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

ADMINISTRATIVE

CPT Codes:
86833

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTENDOXM (Sunquest: ILENDD)

Test Group:
HLA Antibody Testing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Luminex-based

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Collect:
Red top

Amount to Collect:
6 mL blood

Sample Type:
Serum

Preferred Volume:
3 mL serum

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Synonyms:

- Class II Single Antigen Testing by Luminex, Single Antigen Specificity Class II

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Reflex Testing:
Yes

Additional Information:
This test assigns cPRA (calculated PRA) and determines specific Class II antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring. This test is NOT for evaluation of transfusion-related fever or refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

CPT Codes:
86833

Endothelial Cell Crossmatch (for Recipient)

HTENDOXM (Sunquest: ILENDX)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Luminex-based

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Additional Information:
This test assigns cPRA (calculated PRA) and determines specific Class II antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring. This test is NOT for evaluation of transfusion-related fever or refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

Reflex Testing:
Yes

Synonyms:

- Class II Single Antigen Testing by Luminex, Single Antigen Specificity Class II

COLLECTION

Sample Type:
Serum

Collect:
Red top

Amount to Collect:
6 mL blood

Preferred Volume:
3 mL serum

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

PROCESSING

Test Code:
HTENDOXM (Sunquest: ILENDX)

Test Group:
HLA Antibody Testing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Preferred Volume:
3 mL serum

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

RESULT INTERPRETATION

Additional Information:
This test assigns cPRA (calculated PRA) and determines specific Class II antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring. This test is NOT for evaluation of transfusion-related fever or refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

ADMINISTRATIVE

CPT Codes:
86833

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTENDOXM (Sunquest: ILENDX)

Test Group:
HLA Antibody Testing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Luminex-based

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Collect:
Red top

Amount to Collect:
6 mL blood

Sample Type:
Serum

Preferred Volume:
3 mL serum

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Synonyms:

- Class II Single Antigen Testing by Luminex, Single Antigen Specificity Class II

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Reflex Testing:
Yes

Additional Information:
This test assigns cPRA (calculated PRA) and determines specific Class II antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring. This test is NOT for evaluation of transfusion-related fever or refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

CPT Codes:
86833

Entamoeba histolytica antibody (IgG)

AMOEB

ORDERING

Available Stat:
No

Performing Lab:
Focus

Methodology:
ELISA

Reported:
Test performed once per week. Turnaround 5-7 days.

Additional Information:
For patients who are unable to make antibodies, PCR of abscess fluid is available through the CDC. Contact the Microbiology Lab at x3-1268 for more information.

Synonyms:

- Amebiasis
- Entamoeba
- Protozoa

COLLECTION

Sample Type:
Serum

Collect:
Red top or Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.25 mL serum

Stability (from collection to initiation):
Room temperature 7 days, refrigerated 2 weeks, frozen at -20C 1 month

PROCESSING

Test Code:
AMOEB

Test Group:
E. histolytica

Sendout:
Yes

Performing Lab:
Focus

Specimen Preparation:
Freeze serum at -20C. Order Quest test # 34728N

Preferred Volume:
1 mL serum

Minimum Volume:
0.25 mL serum

Stability (from collection to initiation):
Room temperature 7 days, refrigerated 2 weeks, frozen at -20C 1 month

RESULT INTERPRETATION

Reference Interval:
Negative
Not detected: < 1.00
Detected: >= 1.00

Additional Information:
For patients who are unable to make antibodies, PCR of abscess fluid is available through the CDC. Contact the Microbiology Lab at x3-1268 for more information.

ADMINISTRATIVE

CPT Codes:
86753-90

LOINC Codes:
9522-4

COMPLETE VIEW

Available Stat:
No

Test Code:
AMOEB

Test Group:
E. histolytica

Performing Lab:
Focus

Sendout:
Yes

Methodology:
ELISA

Collect:
Red top or Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.25 mL serum

Specimen Preparation:
Freeze serum at -20C. Order Quest test # 34728N

Reference Interval:
Negative
Not detected: < 1.00
Detected: >= 1.00

Synonyms:

- Amebiasis
- Entamoeba
- Protozoa

Stability (from collection to initiation):
Room temperature 7 days, refrigerated 2 weeks, frozen at -20C 1 month

Reported:
Test performed once per week. Turnaround 5-7 days.

Additional Information:
For patients who are unable to make antibodies, PCR of abscess fluid is available through the CDC. Contact the Microbiology Lab at x3-1268 for more information.

CPT Codes:
86753-90

LOINC Codes:
9522-4

Enterovirus RNA

P365

ORDERING

Available Stat:
No

Performing Lab:
Viracor IBT

Methodology:
Real-time PCR

Reported:
2-5 days

Additional Information:
The enteroviruses are well-known etiologic agents of viral meningitis, viral encephalitis, myocarditis, and respiratory tract disease as well as a wide variety of other clinical conditions. Quantitative PCR can be used to detect the presence of the virus as well as track the course of infection. Detects the entire spectrum of human enteroviruses, including coxsackie A viruses, coxsackie B viruses, echoviruses, polioviruses, and enteroviruses 68 - 71. The assay does not differentiate between serotypes.

COLLECTION

Sample Type:
EDTA plasma, CSF, stool, tissue, nasopharyngeal swab

Collect:
Blood: Lavendar top tube, CSF: CSF tube; Stool, tissue: Sterile container; Nasopharyngeal swab: Flocked swab in Universal Transport Medium

Amount to Collect:
Blood: 2 mL, CSF: 1 mL; Stool: size of pea or 2 mL liquid stool; Tissue: 5 cu.mm

Preferred Volume:
Plasma, CSF: 1 mL; Stool: size of pea or 2 mL liquid stool; Tissue: 5 cu.mm

Minimum Volume:
Plasma, CSF: 0.5 mL; Stool: size of pea or 0.5 mL liquid; Tissue: 2 cu.mm

Stability (from collection to initiation):
CSF, stool, tissue: Frozen -70ºC 1 month
Plasma, nasopharyngeal swab: Room temperature 4 days, frozen -70ºC 1 month

PROCESSING

Test Code:
P365

Sendout:
Yes

Performing Lab:
Viracor IBT

Specimen Preparation:
Centrifuge blood at 1300 g for 10 minutes, and aliquot plasma. Freeze samples at -70ºC. Viracor test code 1400; For sample types reported as Detected/Not detected (e.g. stool, tissue, nasopharyngeal swab), credit with retain results and bill manually.

Preferred Volume:
Plasma, CSF: 1 mL; Stool: size of pea or 2 mL liquid stool; Tissue: 5 cu.mm

Minimum Volume:
Plasma, CSF: 0.5 mL; Stool: size of pea or 0.5 mL liquid; Tissue: 2 cu.mm

Stability (from collection to initiation):
CSF, stool, tissue: Frozen -70ºC 1 month
Plasma, nasopharyngeal swab: Room temperature 4 days, frozen -70ºC 1 month

RESULT INTERPRETATION

Units:
copies/mL for quantitative results

Reference Interval:
Not Detected

Critical Values:
Positive result for CSF

Additional Information:
The enteroviruses are well-known etiologic agents of viral meningitis, viral encephalitis, myocarditis, and respiratory tract disease as well as a wide variety of other clinical conditions. Quantitative PCR can be used to detect the presence of the virus as well as track the course of infection. Detects the entire spectrum of human enteroviruses, including coxsackie A viruses, coxsackie B viruses, echoviruses, polioviruses, and enteroviruses 68 - 71. The assay does not differentiate between serotypes.

ADMINISTRATIVE

CPT Codes:
CSF, plasma: 87799-90, Stool, tissue, nasopharyngeal swab: 87498-90

LOINC Codes:
53256-4

COMPLETE VIEW

Available Stat:
No

Test Code:
P365

Performing Lab:
Viracor IBT

Sendout:
Yes

Methodology:
Real-time PCR

Collect:
Blood: Lavendar top tube, CSF: CSF tube; Stool, tissue: Sterile container; Nasopharyngeal swab: Flocked swab in Universal Transport Medium

Amount to Collect:
Blood: 2 mL, CSF: 1 mL; Stool: size of pea or 2 mL liquid stool; Tissue: 5 cu.mm

Sample Type:
EDTA plasma, CSF, stool, tissue, nasopharyngeal swab

Preferred Volume:
Plasma, CSF: 1 mL; Stool: size of pea or 2 mL liquid stool; Tissue: 5 cu.mm

Minimum Volume:
Plasma, CSF: 0.5 mL; Stool: size of pea or 0.5 mL liquid; Tissue: 2 cu.mm

Specimen Preparation:
Centrifuge blood at 1300 g for 10 minutes, and aliquot plasma. Freeze samples at -70ºC. Viracor test code 1400; For sample types reported as Detected/Not detected (e.g. stool, tissue, nasopharyngeal swab), credit with retain results and bill manually.

Units:
copies/mL for quantitative results

Reference Interval:
Not Detected

Critical Values:
Positive result for CSF

Stability (from collection to initiation):
CSF, stool, tissue: Frozen -70ºC 1 month
Plasma, nasopharyngeal swab: Room temperature 4 days, frozen -70ºC 1 month

Reported:
2-5 days

Additional Information:
The enteroviruses are well-known etiologic agents of viral meningitis, viral encephalitis, myocarditis, and respiratory tract disease as well as a wide variety of other clinical conditions. Quantitative PCR can be used to detect the presence of the virus as well as track the course of infection. Detects the entire spectrum of human enteroviruses, including coxsackie A viruses, coxsackie B viruses, echoviruses, polioviruses, and enteroviruses 68 - 71. The assay does not differentiate between serotypes.

CPT Codes:
CSF, plasma: 87799-90, Stool, tissue, nasopharyngeal swab: 87498-90

LOINC Codes:
53256-4

Eosinophilia FISH panel

BCYESO, CYESO

ORDERING

Available Stat:
No

Performing Lab:
Cytogenetics

Performed:
Monday - Friday, 9 am to 5 pm

Methodology:
FISH

Reported:
7-14 days

Additional Information:
This panel contains the following tests:

PDGFRA 4q12 Rearrangement FISH
PDGFRB 5q33.1 Rearrangment FISH
Translocation 8/9 FISH
FGFR1 8p11 Break apart FISH

Synonyms:

- PDGFR-alpha
- PDGFR-beta
- FGFR1 FISH panel
- Eosinophilic leukemia
- Hypereosinophilia
- BCYESO
- CYESO

COLLECTION

Sample Type:
Heparinized whole blood or bone marrow aspirate, bone marrow core biopsy

Collect:
Blood or Bone marrow aspirate: Dark green top
Bone marrow core: Sterile container with transport media

Amount to Collect:
See Preferred Volume

Preferred Volume:
Blood: 2 mL
Bone marrow: 2 mL
Bone marrow core biopsy: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow: 1 mL
Bone marrow core biopsy: 1 cm

Stability (from collection to initiation):
Room temperature: 2 days

Storage/Transport Temperature:
Room temperature

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

PROCESSING

Test Code:
BCYESO: Blood
CYESO: Bone marrow

Performing Lab:
Cytogenetics

Specimen Preparation:
Do not centrifuge, refrigerate or freeze samples.Transport to China Basin Cytogenetics asap.

Preferred Volume:
Blood: 2 mL
Bone marrow: 2 mL
Bone marrow core biopsy: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow: 1 mL
Bone marrow core biopsy: 1 cm

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

Stability (from collection to initiation):
Room temperature: 2 days

Storage/Transport Temperature:
Room temperature

RESULT INTERPRETATION

Additional Information:
This panel contains the following tests:

PDGFRA 4q12 Rearrangement FISH
PDGFRB 5q33.1 Rearrangment FISH
Translocation 8/9 FISH
FGFR1 8p11 Break apart FISH

ADMINISTRATIVE

CPT Codes:
88271 x8, 88275 x4

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BCYESO: Blood
CYESO: Bone marrow

Performing Lab:
Cytogenetics

Performed:
Monday - Friday, 9 am to 5 pm

Methodology:
FISH

Collect:
Blood or Bone marrow aspirate: Dark green top
Bone marrow core: Sterile container with transport media

Amount to Collect:
See Preferred Volume

Sample Type:
Heparinized whole blood or bone marrow aspirate, bone marrow core biopsy

Preferred Volume:
Blood: 2 mL
Bone marrow: 2 mL
Bone marrow core biopsy: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow: 1 mL
Bone marrow core biopsy: 1 cm

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

Specimen Preparation:
Do not centrifuge, refrigerate or freeze samples.Transport to China Basin Cytogenetics asap.

Synonyms:

- PDGFR-alpha
- PDGFR-beta
- FGFR1 FISH panel
- Eosinophilic leukemia
- Hypereosinophilia
- BCYESO
- CYESO

Storage/Transport Temperature:
Room temperature

Stability (from collection to initiation):
Room temperature: 2 days

Reported:
7-14 days

Additional Information:
This panel contains the following tests:

PDGFRA 4q12 Rearrangement FISH
PDGFRB 5q33.1 Rearrangment FISH
Translocation 8/9 FISH
FGFR1 8p11 Break apart FISH

CPT Codes:
88271 x8, 88275 x4

LDT or Modified FDA:
Yes

Eosinophils, urine

UEOS

ORDERING

Approval Required:
Requests restricted to renal service.

Available Stat:
No

Performing Lab:
Parnassus Hematology

Performed:
Test available 0800-2200 daily

Reported:
2 hours

Additional Information:
Not available at Mount Zion.

Synonyms:

- Hansel stain

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
See preferred volume

Preferred Volume:
10 mL urine

Remarks:
After urine sample is collected, deliver immediately to Hematology Laboratory (Room M524). Specimen should still be warm (body temperature) when received. Do not artificially warm. Do not use heat packs. Inform the technologist that the urine sample is for Urine Eosinophils.

Stability (from collection to initiation):
Eosinophils are very unstable in urine and rapidly degenerate. Samples must be hand carried to the Hematology Laboratory (Room M524) as soon as possible after collection while sample is still warm. Inform the technologist that the sample is for Urine Eosinophils

PROCESSING

Test Code:
UEOS

Test Group:
Eosinophils

Performing Lab:
Parnassus Hematology

Specimen Preparation:
Route immediately to Hematology after order entry.

Preferred Volume:
10 mL urine

Stability (from collection to initiation):
Eosinophils are very unstable in urine and rapidly degenerate. Samples must be hand carried to the Hematology Laboratory (Room M524) as soon as possible after collection while sample is still warm. Inform the technologist that the sample is for Urine Eosinophils

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
Not available at Mount Zion.

ADMINISTRATIVE

CPT Codes:
89051

LOINC Codes:
34557-9

COMPLETE VIEW

Approval Required:
Requests restricted to renal service.

Available Stat:
No

Test Code:
UEOS

Test Group:
Eosinophils

Performing Lab:
Parnassus Hematology

Performed:
Test available 0800-2200 daily

Remarks:
After urine sample is collected, deliver immediately to Hematology Laboratory (Room M524). Specimen should still be warm (body temperature) when received. Do not artificially warm. Do not use heat packs. Inform the technologist that the urine sample is for Urine Eosinophils.

Collect:
Urine cup

Amount to Collect:
See preferred volume

Sample Type:
Random urine

Preferred Volume:
10 mL urine

Specimen Preparation:
Route immediately to Hematology after order entry.

Reference Interval:
Negative

Synonyms:

- Hansel stain

Stability (from collection to initiation):
Eosinophils are very unstable in urine and rapidly degenerate. Samples must be hand carried to the Hematology Laboratory (Room M524) as soon as possible after collection while sample is still warm. Inform the technologist that the sample is for Urine Eosinophils

Reported:
2 hours

Additional Information:
Not available at Mount Zion.

CPT Codes:
89051

LOINC Codes:
34557-9

Epidemiology Culture, Air Sample

P039

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Daily

Methodology:
Culture

Reported:
5-8 days

Synonyms:

- Bacterial culture
- environmental culture

COLLECTION

Collect:
Rose-Bengal Agar Strips

Remarks:
Collection of air samples is performed by EH&S

PROCESSING

Test Code:
P039

Performing Lab:
Microbiology

Specimen Preparation:
1. Accession test code P039 using appropriate account number, based upon which department submitted samples: Infection Control air samples: MOP-1641/ Physician Code O135 Infection Control Adult Bone Marrow Transplant air samples: MOP-4 / Physician Code 43782 Leavitt, Andrew Clinical Labs Pedi Immunology air samples: MOP-4351/ Physician Code O137 Air Samples from other departments will need to have a new MOP account number auto generated, when accessioning.
2. Enter AIR in SDES and location of sampling in SREQ.
3. Place strips on mycology bench, at room temperature.

ADMINISTRATIVE

LOINC Codes:
45335-7

COMPLETE VIEW

Available Stat:
No

Test Code:
P039

Performing Lab:
Microbiology

Performed:
Daily

Methodology:
Culture

Remarks:
Collection of air samples is performed by EH&S

Collect:
Rose-Bengal Agar Strips

Specimen Preparation:

1. Accession test code P039 using appropriate account number, based upon which department submitted samples: Infection Control air samples: MOP-1641/ Physician Code O135 Infection Control Adult Bone Marrow Transplant air samples: MOP-4 / Physician Code 43782 Leavitt, Andrew Clinical Labs Pedi Immunology air samples: MOP-4351/ Physician Code O137 Air Samples from other departments will need to have a new MOP account number auto generated, when accessioning.
2. Enter AIR in SDES and location of sampling in SREQ.
3. Place strips on mycology bench, at room temperature.

Synonyms:

- Bacterial culture
- environmental culture

Reported:

5-8 days

LOINC Codes:

45335-7

EPOR BREAK-APART REARRANGEMENT FISH

EPOR, BEPOR

ORDERING

Performing Lab:
Cytogenetics

Performed:
Monday -Friday 9am-5pm

Methodology:
FISH

Reported:
7-14 days

Synonyms:

- EPOR
- BPOR
- 19q13 BA FISH

COLLECTION

Sample Type:
Bone marrow aspirate, Bone marrow core, Blood

Collect:
Bone marrow: Dark Green Top Sodium Heparin tube
Bone Core: Sterile container with medium
Blood: Dark Green Top Sodium Heparin tube

Preferred Volume:
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm
Blood: 2mL

Minimum Volume:
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm
Blood: 1mL

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Room temperature

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen

PROCESSING

Test Code:
EPOR: Non-blood/bone marrow
BEPOR: Blood

Performing Lab:
Cytogenetics

Preferred Volume:
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm
Blood: 2mL

Minimum Volume:
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm
Blood: 1mL

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Room temperature

ADMINISTRATIVE

CPT Codes:
88271x2, 88275x1

COMPLETE VIEW

Test Code:
EPOR: Non-blood/bone marrow
BEPOR: Blood

Performing Lab:
Cytogenetics

Performed:
Monday -Friday 9am-5pm

Methodology:
FISH

Collect:
Bone marrow: Dark Green Top Sodium Heparin tube
Bone Core: Sterile container with medium
Blood: Dark Green Top Sodium Heparin tube

Sample Type:
Bone marrow aspirate, Bone marrow core, Blood

Preferred Volume:
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm
Blood: 2mL

Minimum Volume:
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm
Blood: 1mL

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen

Synonyms:

- EPOR
- BPOR
- 19q13 BA FISH

Storage/Transport Temperature:
Room temperature

Stability (from collection to initiation):
2 days

Reported:
7-14 days

CPT Codes:
88271x2, 88275x1

Epstein-Barr virus Antibodies

EBV

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift)

Methodology:
Chemiluminescent Immunoassay

Reported:
1-4 days

Additional Information:
The components of this battery test are IgM anti-VCA (Viral Capsid Antigen), IgG anti-VCA and IgG anti-EBNA-1 (Epstein-Barr Nuclear Antigen-1). Each test component can also be ordered separately using test code VCAM (Viral Capsid Antigen IgM), VCAG (Viral Capsid Antigen IgG) or EBNA (Epstein-Barr Nuclear Antigen-1 IgG).

The following table shows the typical antibody response following EBV infection:

	IgM anti-VCA	IgG anti-VCA	IgG anti-EBNA
Acute infection	+	+	-
Early convalescence (3-6 weeks)	-	+	-
Recovery (>6-8 weeks)	-	+	+

The heterophile agglutination test has been discontinued since it is no longer recommended by the CDC.

Equivocal results may represent low-titer antibody in early infection; testing may be repeated, if clinically indicated. The so-called 'early' antibodies to EA/D and EA/R may or may not be present in acute or prior infection and are not useful in assessing acute infection.
EBV antibodies CANNOT be used to diagnose "chronic" or recurrent mononucleosis.

Synonyms:

- EBV
- anti-EA
- anti-EA/D
- Anti-EA/R
- Anti-early antigen
- anti-ebna
- anti-vca
- ea antibody
- ea/d antibody
- ea/r antibody
- early antigen
- ebna antibody
- IgM anti-VCA
- VCA antibody
- IgG anti-VCA
- Heterophile antibody
- Infectious mononucleosis
- Monospot

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

PROCESSING

Test Code:
EBV (VCAM, VCAG and EBNA) - battery test
Please use VCAM, VCAG or EBNA for individual test order

Test Group:
EBV

Performing Lab:
Immunology

Specimen Preparation:
Freeze serum at -20C.

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

RESULT INTERPRETATION

Reference Interval:
IgM anti-VCA: Neg
IgG anti-VCA: Neg
Anti-EBNA: Neg

Additional Information:
The components of this battery test are IgM anti-VCA (Viral Capsid Antigen), IgG anti-VCA and IgG anti-EBNA-1 (Epstein-Barr Nuclear Antigen-1). Each test component can also be ordered separately using test code VCAM (Viral Capsid Antigen IgM), VCAG (Viral Capsid Antigen IgG) or EBNA (Epstein-Barr Nuclear Antigen-1 IgG).

The following table shows the typical antibody response following EBV infection:

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Acute infection	+	+	-
Early convalescence (3-6 weeks)	-	+	-
Recovery (>6-8 weeks)	-	+	+

The heterophile agglutination test has been discontinued since it is no longer recommended by the CDC.

Equivocal results may represent low-titer antibody in early infection; testing may be repeated, if clinically indicated. The so-called 'early' antibodies to EA/D and EA/R may or may not be present in acute or prior infection and are not useful in assessing acute infection.
EBV antibodies CANNOT be used to diagnose "chronic" or recurrent mononucleosis.

ADMINISTRATIVE

CPT Codes:
86665 x2; 86664

LOINC Codes:
5156-5; 24115-8; 24114-1

COMPLETE VIEW

Available Stat:
No

Test Code:
EBV (VCAM, VCAG and EBNA) - battery test
Please use VCAM, VCAG or EBNA for individual test order

Test Group:
EBV

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift)

Methodology:
Chemiluminescent Immunoassay

Collect:
Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Specimen Preparation:
Freeze serum at -20C.

Reference Interval:
IgM anti-VCA: Neg
IgG anti-VCA: Neg
Anti-EBNA: Neg

Synonyms:

- EBV
- anti-EA
- anti-EA/D
- Anti-EA/R
- Anti-early antigen
- anti-ebna
- anti-vca
- ea antibody
- ea/d antibody
- ea/r antibody
- early antigen
- ebna antibody
- IgM anti-VCA
- VCA antibody
- IgG anti-VCA
- Heterophile antibody
- Infectious mononucleosis
- Monospot

Reported:
1-4 days

Additional Information:
The components of this battery test are IgM anti-VCA (Viral Capsid Antigen), IgG anti-VCA and IgG anti-EBNA-1 (Epstein-Barr Nuclear Antigen-1). Each test component can also be ordered separately using test code VCAM (Viral Capsid Antigen IgM), VCAG (Viral Capsid Antigen IgG) or EBNA (Epstein-Barr Nuclear Antigen-1 IgG).

The following table shows the typical antibody response following EBV infection:

	IgM anti-VCA	IgG anti-VCA	IgG anti-EBNA
Acute infection	+	+	-
Early convalescence (3-6 weeks)	-	+	-
Recovery (>6-8 weeks)	-	+	+

The heterophile agglutination test has been discontinued since it is no longer recommended by the CDC.

Equivocal results may represent low-titer antibody in early infection; testing may be repeated, if clinically indicated. The so-called 'early' antibodies to EA/D and EA/R may or may not be present in acute or prior infection and are not useful in assessing acute infection.
EBV antibodies CANNOT be used to diagnose "chronic" or recurrent mononucleosis.

CPT Codes:
86665 x2; 86664

LOINC Codes:
5156-5; 24115-8; 24114-1

Epstein-Barr virus DNA, Quantitative, blood

EBVQT

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
3 times per week

Methodology:
Real time PCR

Reported:
1-4 days

Synonyms:

- EBV PCR
- EBV Quant
- Epstein-Barr virus
- EBV
- Quantitative DNA detection of Epstein-Barr virus
- Human herpesvirus 4 (HHV-4)

COLLECTION

Sample Type:
EDTA plasma

Collect:
Lavender top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL plasma

Minimum Volume:
0.6 mL plasma

Stability (from collection to initiation):
Up to 5 days at 4 degrees Celsius

Storage/Transport Temperature:
Frozen at -70 degrees Celsius

Unacceptable Conditions:
Grossly hemolyzed samples, samples in heparin, and duplicate samples with the same collection day will be rejected.

PROCESSING

Test Code:
EBVQT

Test Group:
EBV

Performing Lab:
Microbiology

Specimen Preparation:
Separate plasma from blood cells within 6 hours of collection.

Preferred Volume:
1 mL plasma

Minimum Volume:
0.6 mL plasma

Unacceptable Conditions:
Grossly hemolyzed samples, samples in heparin, and duplicate samples with the same collection day will be rejected.

Stability (from collection to initiation):
Up to 5 days at 4 degrees Celsius

Storage/Transport Temperature:
Frozen at -70 degrees Celsius

RESULT INTERPRETATION

Units:
Linear Range: 500 IU/mL to 5x10^6 IU/mL of plasma

Reference Interval:
Not detected

ADMINISTRATIVE

CPT Codes:
87799

LDT or Modified FDA:
Yes

LOINC Codes:
36923-1

COMPLETE VIEW

Available Stat:
No

Test Code:
EBVQT

Test Group:
EBV

Performing Lab:
Microbiology

Performed:
3 times per week

Methodology:
Real time PCR

Collect:
Lavender top

Amount to Collect:
2 mL blood

Sample Type:
EDTA plasma

Preferred Volume:
1 mL plasma

Minimum Volume:
0.6 mL plasma

Unacceptable Conditions:
Grossly hemolyzed samples, samples in heparin, and duplicate samples with the same collection day will be rejected.

Specimen Preparation:
Separate plasma from blood cells within 6 hours of collection.

Units:
Linear Range: 500 IU/mL to 5x10^6 IU/mL of plasma

Reference Interval:
Not detected

Synonyms:

- EBV PCR
- EBV Quant
- Epstein-Barr virus
- EBV
- Quantitative DNA detection of Epstein-Barr virus
- Human herpesvirus 4 (HHV-4)

Storage/Transport Temperature:
Frozen at -70 degrees Celsius

Stability (from collection to initiation):
Up to 5 days at 4 degrees Celsius

Reported:
1-4 days

CPT Codes:
87799

LDT or Modified FDA:
Yes

LOINC Codes:
36923-1

Epstein-Barr virus DNA, Quantitative, non-plasma samples

EBVMIS

ORDERING

Ordering Recommendations:
There is no indication for EBV testing on urine samples.

Available Stat:
No

Performing Lab:
Viracor

Methodology:
RTPCR

Synonyms:

- EBV PCR

COLLECTION

Sample Type:
CSF, bone marrow, unfixed tissue, BAL

Collect:
CSF tube or sterile collection tube, EDTA Tube, Black top tube, other sterile screw top container

Minimum Volume:
Fluid samples: 2 mL
Fresh Tissue: 5 mg (Pencil eraser size)

Unacceptable Conditions:
Improperly submitted samples

PROCESSING

Test Code:
EBVMIS

Test Group:
EBV

Sendout:
Yes

Performing Lab:
Viracor

Specimen Preparation:
Freeze samples and ship frozen to China Basin. Ship on dry ice to Viracor.

Minimum Volume:
Fluid samples: 2 mL
Fresh Tissue: 5 mg (Pencil eraser size)

Unacceptable Conditions:
Improperly submitted samples

RESULT INTERPRETATION

Units:
IU/mL

Reference Interval:
Not detected

ADMINISTRATIVE

CPT Codes:
87799-90

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
There is no indication for EBV testing on urine samples.

Test Code:
EBVMIS

Test Group:
EBV

Performing Lab:
Viracor

Sendout:
Yes

Methodology:
RTPCR

Collect:
CSF tube or sterile collection tube, EDTA Tube, Black top tube, other sterile screw top container

Sample Type:
CSF, bone marrow, unfixed tissue, BAL

Minimum Volume:
Fluid samples: 2 mL
Fresh Tissue: 5 mg (Pencil eraser size)

Unacceptable Conditions:
Improperly submitted samples

Specimen Preparation:
Freeze samples and ship frozen to China Basin. Ship on dry ice to Viracor.

Units:
IU/mL

Reference Interval:
Not detected

Synonyms:

- EBV PCR

CPT Codes:
87799-90

Erythrocyte Porphyrin (EP), Whole Blood

EPWB

ORDERING

Ordering Recommendations:
Screen for erythropoietic protoporphyria (EPP) in patients with cutaneous photosensitivity.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Mon, Wed, Sat

Methodology:
Fluorometry

Reported:
1-4 days

Synonyms:

- FEP
- Free Erythrocyte Porphyrin
- Porphyrins (FEP)
- Protoporphyrin, Free Erythrocyte (FEP)
- Protoporphyrins, Total, Erythrocytes
- RBC Porphyrins
- Red Blood Cell Porphyrins

COLLECTION

Collect:
Royal blue (EDTA), lavender (EDTA), pink (K_2EDTA), or Tan (K_2EDTA). Use royal blue tube when also testing for lead.

Remarks:
Specimen should be tested for lead FIRST to avoid potential contamination problems. Specimens not protected from light acceptable with a disclaimer.

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 2 weeks; Frozen: 1 month

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Specimens not collected in EDTA. Clotted specimens.

PROCESSING

Test Code:
EPWB

ARUP Test Code:
0020610

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Protect from light during collection, storage, and shipment. Transfer 1 mL whole blood to an ARUP Amber Transport Tube. (Min: 0.5 mL)

Unacceptable Conditions:
Specimens not collected in EDTA. Clotted specimens.

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 2 weeks; Frozen: 1 month

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:
0-35 µg/dL

Interpretive Data:
This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:
84202

LOINC:

- 2898-5

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Screen for erythropoietic protoporphyria (EPP) in patients with cutaneous photosensitivity.

Test Code:
EPWB

ARUP Test Code:
0020610

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Mon, Wed, Sat

Methodology:
Fluorometry

Remarks:
Specimen should be tested for lead FIRST to avoid potential contamination problems. Specimens not protected from light acceptable with a disclaimer.

Collect:
Royal blue (EDTA), lavender (EDTA), pink (K_2EDTA), or Tan (K_2EDTA). Use royal blue tube when also testing for lead.

Unacceptable Conditions:
Specimens not collected in EDTA. Clotted specimens.

Specimen Preparation:
Protect from light during collection, storage, and shipment. Transfer 1 mL whole blood to an ARUP Amber Transport Tube. (Min: 0.5 mL)

Reference Interval:
0-35 µg/dL

Interpretive Data:
This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Synonyms:

- FEP
- Free Erythrocyte Porphyrin
- Porphyrins (FEP)
- Protoporphyrin, Free Erythrocyte (FEP)
- Protoporphyrins, Total, Erythrocytes
- RBC Porphyrins
- Red Blood Cell Porphyrins

Storage/Transport Temperature:
Refrigerated.

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 2 weeks; Frozen: 1 month

Reported:
1-4 days

CPT Codes:
84202

LOINC:

- 2898-5

Notes:
Elevated EP results are seen in early and late iron deficiency, in the anemia of chronic disease, and in chronic lead poisoning (typically when blood lead is greater than 25 µg/dL). Elevated protoporphyrin (as in erythropoietic protoporphyria) and zinc coproporphyrin (usually associated with childbirth) can increase the apparent EP signal. A more specific test for free protoporphyrin is Porphyrins, Serum Total (0080429). Specimens which are hemolyzed, clotted, or improperly aliquoted may show false elevations.

Erythropoietin

ERP

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Immunoassay

Reported:
Test performed 3x per week. Turnaround time: 2-5 days.

Additional Information:
The Erythropoietin reference range is based on individuals with normal hemoglobin and hematocrit values.

Synonyms:

- Epo
- EPO
- Epogen

COLLECTION

Sample Type:
Serum

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen at -20C 2 months

Unacceptable Conditions:
Gross hemolysis

Rejection Criteria:
Gross hemolysis

PROCESSING

Test Code:
ERP

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Centrifuge clotted sample and freeze serum at -20C. Order Quest Nichols test # 427.

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Gross hemolysis

Rejection Criteria:
Gross hemolysis

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen at -20C 2 months

RESULT INTERPRETATION

Units:
mIU/mL

Reference Interval:
Pediatric:
3 weeks-2 months: 5.0-13.0 mIU/mL
3 months-16 years: 9.0-28.0 mIU/mL

>= 18 years: 4.1-19.5 mIU/mL

Additional Information:
The Erythropoietin reference range is based on individuals with normal hemoglobin and hematocrit values.

ADMINISTRATIVE

CPT Codes:
82668-90

LOINC Codes:
15061-5

COMPLETE VIEW

Available Stat:
No

Test Code:
ERP

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Immunoassay

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Rejection Criteria:
Gross hemolysis

Unacceptable Conditions:
Gross hemolysis

Specimen Preparation:
Centrifuge clotted sample and freeze serum at -20C. Order Quest Nichols test # 427.

Units:
mIU/mL

Reference Interval:
Pediatric:
3 weeks-2 months: 5.0-13.0 mIU/mL
3 months-16 years: 9.0-28.0 mIU/mL

>= 18 years: 4.1-19.5 mIU/mL

Synonyms:

- Epo
- EPO
- Epogen

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen at -20C 2 months

Reported:
Test performed 3x per week. Turnaround time: 2-5 days.

Additional Information:

The Erythropoietin reference range is based on individuals with normal hemoglobin and hematocrit values.

CPT Codes:

82668-90

LOINC Codes:

15061-5

Estradiol, Ultrasensitive

E2U (Quest)

ORDERING

Available Stat:
No

Performing Lab:
Quest

Performed:
Sunday - Friday

Methodology:
Chromatography/Mass Spectrometry

Reported:
3-7 days

COLLECTION

Sample Type:
Blood

Collect:
Red top

Amount to Collect:
1 mL

Preferred Volume:
0.5 mL

Minimum Volume:
0.2 mL

Stability (from collection to initiation):
Room temperature: 24 hours
Refrigerated: 7 days
Frozen: 28 days

Storage/Transport Temperature:
Frozen

Unacceptable Conditions:
Hemolysis • Serum Separator Tube (SST®) • Lipemic

PROCESSING

Test Code:
E2U

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Spin to serum and freeze. Ship to CB frozen. Order Quest test code 30289.

Preferred Volume:
0.5 mL

Minimum Volume:
0.2 mL

Unacceptable Conditions:
Hemolysis • Serum Separator Tube (SST®) • Lipemic

Stability (from collection to initiation):
Room temperature: 24 hours
Refrigerated: 7 days
Frozen: 28 days

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Units:
pg/mL

Reference Interval:
Males: <= 29 pg/mL

Females:

Follicular Phase	39-375 pg/mL
Luteal Phase	48-440 pg/mL
Postmenopausal Phase	<= 10 pg/mL

Prediatric:

Age	Males (pg/mL)	Females (pg/mL)
Pre-pubertal - <1 year	Not Established	Not Established
1-9 years	<= 4	<= 16
10-11 years	<= 12	<= 65
12-14 years	<= 24	<= 142
15-17 years	<= 31	<= 283

Interpretive Data:
Estradiol, Ultrasensitive, LC/MS - Diagnostic applications of estradiol assays include assessment of ovarian function in a wide variety of situations (menstrual disorders, precocious or delayed puberty, assisted reproduction protocols). For men, estradiol measurement may be useful in the evaluation of gynecomastia.

ADMINISTRATIVE

CPT Codes:
82670

LOINC Codes:
35384-7

COMPLETE VIEW

Available Stat:
No

Test Code:
E2U

Performing Lab:
Quest

Sendout:
Yes

Performed:
Sunday - Friday

Methodology:
Chromatography/Mass Spectrometry

Collect:
Red top

Amount to Collect:
1 mL

Sample Type:
Blood

Preferred Volume:
0.5 mL

Minimum Volume:
0.2 mL

Unacceptable Conditions:
Hemolysis • Serum Separator Tube (SST®) • Lipemic

Specimen Preparation:
Spin to serum and freeze. Ship to CB frozen. Order Quest test code 30289.

Units:
pg/mL

Reference Interval:

Males: <= 29 pg/mL

Females:

Follicular Phase	39-375 pg/mL
Luteal Phase	48-440 pg/mL
Postmenopausal Phase	<= 10 pg/mL

Prediatric:

Age	Males (pg/mL)	Females (pg/mL)
Pre-pubertal - <1 year	Not Established	Not Established
1-9 years	<= 4	<= 16
10-11 years	<= 12	<= 65
12-14 years	<= 24	<= 142
15-17 years	<= 31	<= 283

Interpretive Data:

Estradiol, Ultrasensitive, LC/MS - Diagnostic applications of estradiol assays include assessment of ovarian function in a wide variety of situations (menstrual disorders, precocious or delayed puberty, assisted reproduction protocols). For men, estradiol measurement may be useful in the evaluation of gynecomastia.

Storage/Transport Temperature:

Frozen

Stability (from collection to initiation):

Room temperature: 24 hours
Refrigerated: 7 days
Frozen: 28 days

Reported:

3-7 days

CPT Codes:

82670

LOINC Codes:

35384-7

Estrogens, Fractionated, by Mass Spectrometry

MOLT

ORDERING

Ordering Recommendations:
Use to evaluate estrogen status in children, cisgender males, and postmenopausal cisgender females. Most useful when low estrogen concentrations are expected, regardless of the patient's sex assigned at birth.To compare this test to other estrogen tests, refer to the ARUP Estrogen Tests Comparison table.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative High Performance Liquid Chromatography-Tandem Mass Spectrometry

Reported:
1-5 days

Synonyms:

- Estrone (E1) and Estradiols (E2)
- Total Estrogens

COLLECTION

Sample Type:
Serum or plasma

Collect:
Serum separator tube, lavender (EDTA), pink (K_2EDTA), or green (sodium or lithium heparin).

Amount to Collect:
1.0 mL blood

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.3 mL serum of plasma

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 1 week; Frozen: 1 month

Storage/Transport Temperature:
Refrigerated.

PROCESSING

Test Code:
MOLT

ARUP Test Code:
0093248

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate serum or plasma from cells within 2 hours of collection. Transfer 0.5 mL serum or plasma to an ARUP Standard Transport Tube. (Min 0.3 mL)

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.3 mL serum of plasma

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 1 week; Frozen: 1 month

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:

Components	Reference Interval

Estradiol by Mass Spec

Age	Male (pg/mL)	Female (pg/mL)
7-9 years	Less than 7.0	Less than 36.0
10-12 years	Less than 11.0	1.0-87.0
13-15 years	1.0-36.0	9.0-249.0
16-17 years	3.0-34.0	2.0-266.0
18 years and older	10.0-42.0	Premenopausal Early Follicular: 30.0-100.0 Late Follicular: 100.0-400.0 Luteal: 50.0-150.0 Postmenopausal: 2.0-21.0
Tanner Stage I	Less than 8.0	Less than 56.0
Tanner Stage II	Less than 10.0	2.0-133.0
Tanner Stage III	1.0-35.0	12.0-277.0
Tanner Stage IV-V	3.0-35.0	2.0-259.0

Estrone by Mass Spec

Age	Male (pg/mL)	Female (pg/mL)
7-9 years	Less than 7.0	Less than 20.0
10-12 years	Less than 11.0	1.0-40.0
13-15 years	1.0-30.0	8.0-105.0
16-17 years	1.0-32.0	4.0-133.0
18 years and older	9.0-36.0	Premenopausal Early Follicular: Less than 150.0 Late Follicular: 100.0-250.0. Luteal: Less than 200.0 Postmenopausal: 3.0-32.0
Tanner Stage I	Less than 7.0	Less than 27.0
Tanner Stage II	Less than 11.0	1.0-39.0
Tanner Stage III	1.0-31.0	8.0-117.0
Tanner Stage IV-V	2.0-30.0	4.0-109.0

Estrogens Total Calculation

Age	Male (pg/mL)	Female (pg/mL)
7-9 years	Less than 10.0	1.0-48.0
10-12 years	1.0-19.0	2.0-116.0
13-15 years	3.0-62.0	15.0-333.0
16-17 years	4.0-64.0	6.0-354.0
18 years or older	19.0-69.0	Premenopausal Early Follicular: 30.0-250.0 Late Follicular: 200.0-650.0 Luteal: 50.0-350.0 Postmenopausal: 5.0-52.0
Tanner Stage I	1.0-11.0	1.0-86.0
Tanner Stage II	1.0-19.0	3.0-169.0
Tanner Stage III	3.0-61.0	23.0-351.0
Tanner Stage IV-V	4.0-62.0	8.0-341.0

Interpretive Data:

For a complete set of all established reference intervals, refer to ltd.aruplab.com/Tests/Pub/0093248.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:

82671

LOINC:

- 2258-2
- 53765-4
- 35384-7

COMPLETE VIEW

Available Stat:

No

Ordering Recommendations:

Use to evaluate estrogen status in children, cisgender males, and postmenopausal cisgender females. Most useful when low estrogen concentrations are expected, regardless of the patient's sex assigned at birth.To compare this test to other estrogen tests, refer to the ARUP Estrogen Tests Comparison table.

Test Code:

MOLT

ARUP Test Code:

0093248

Performing Lab:

ARUP

Sendout:

Yes

Performed:

Sun-Sat

Methodology:

Quantitative High Performance Liquid Chromatography-Tandem Mass Spectrometry

Collect:

Serum separator tube, lavender (EDTA), pink (K_2EDTA), or green (sodium or lithium heparin).

Amount to Collect:

1.0 mL blood

Sample Type:

Serum or plasma

Preferred Volume:

0.5 mL serum or plasma

Minimum Volume:

0.3 mL serum of plasma

Specimen Preparation:

Separate serum or plasma from cells within 2 hours of collection. Transfer 0.5 mL serum or plasma to an ARUP Standard Transport Tube. (Min 0.3 mL)

Reference Interval:

Components	Reference Interval

Estradiol by Mass Spec

Age	Male (pg/mL)	Female (pg/mL)
7-9 years	Less than 7.0	Less than 36.0
10-12 years	Less than 11.0	1.0-87.0
13-15 years	1.0-36.0	9.0-249.0
16-17 years	3.0-34.0	2.0-266.0
18 years and older	10.0-42.0	Premenopausal Early Follicular: 30.0-100.0 Late Follicular: 100.0-400.0 Luteal: 50.0-150.0 Postmenopausal: 2.0-21.0
Tanner Stage I	Less than 8.0	Less than 56.0
Tanner Stage II	Less than 10.0	2.0-133.0
Tanner Stage III	1.0-35.0	12.0-277.0
Tanner Stage IV-V	3.0-35.0	2.0-259.0

Estrone by Mass Spec

Age	Male (pg/mL)	Female (pg/mL)
7-9 years	Less than 7.0	Less than 20.0
10-12 years	Less than 11.0	1.0-40.0
13-15 years	1.0-30.0	8.0-105.0
16-17 years	1.0-32.0	4.0-133.0
18 years and older	9.0-36.0	Premenopausal Early Follicular: Less than 150.0 Late Follicular: 100.0-250.0. Luteal: Less than 200.0 Postmenopausal: 3.0-32.0
Tanner Stage I	Less than 7.0	Less than 27.0
Tanner Stage II	Less than 11.0	1.0-39.0
Tanner Stage III	1.0-31.0	8.0-117.0
Tanner Stage IV-V	2.0-30.0	4.0-109.0

Estrogens Total Calculation

Age	Male (pg/mL)	Female (pg/mL)
7-9 years	Less than 10.0	1.0-48.0
10-12 years	1.0-19.0	2.0-116.0
13-15 years	3.0-62.0	15.0-333.0
16-17 years	4.0-64.0	6.0-354.0
18 years or older	19.0-69.0	Premenopausal Early Follicular: 30.0-250.0 Late Follicular: 200.0-650.0 Luteal: 50.0-350.0 Postmenopausal: 5.0-52.0
Tanner Stage I	1.0-11.0	1.0-86.0
Tanner Stage II	1.0-19.0	3.0-169.0
Tanner Stage III	3.0-61.0	23.0-351.0
Tanner Stage IV-V	4.0-62.0	8.0-341.0

Interpretive Data:

For a complete set of all established reference intervals, refer to ltd.aruplab.com/Tests/Pub/0093248.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Synonyms:

- Estrone (E1) and Estradiols (E2)
- Total Estrogens

Storage/Transport Temperature:

Refrigerated.

Stability (from collection to initiation):

After separation from cells: Ambient: 48 hours; Refrigerated: 1 week; Frozen: 1 month

Reported:

1-5 days

CPT Codes:

82671

LOINC:

- 2258-2
- 53765-4
- 35384-7

Estrone, by Mass Spectrometry

E1P

ORDERING

Ordering Recommendations:
Rarely indicated in clinical practice. The preferred test for the measurement of estrone is Estrogens, Fractionated, by Mass Spectrometry (0093248).

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative High Performance Liquid Chromatography-Tandem Mass Spectrometry

Reported:
1-5 days

Synonyms:

- ER
- ERA
- PR
- PRA
- E1
- Estrone (E1)

COLLECTION

Sample Type:
Serum or plasma

Collect:
Serum separator tube, lavender (EDTA), pink (K_2EDTA), or green (sodium or lithium heparin).

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 1 week; Frozen: 1 month

Storage/Transport Temperature:
Refrigerated.

PROCESSING

Test Code:
E1P

Test Group:
Estrone

ARUP Test Code:
0093249

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate serum or plasma from cells within 2 hours of collection. Transfer 0.5 mL serum or plasma to an ARUP Standard Transport Tube. (Min 0.3 mL)

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 1 week; Frozen: 1 month

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:

Components	Reference Interval		
	Age	**Male (pg/mL)**	**Female (pg/mL)**
Estrone by Mass Spec	7-9 years	Less than 7.0	Less than 20.0
	10-12 years	Less than 11.0	1.0-40.0
	13-15 years	1.0-30.0	8.0-105.0
	16-17 years	1.0-32.0	4.0-133.0
	18 years and older	9.0-36.0	Premenopausal Early Follicular: Less than 150.0 Late Follicular: 100.0-250.0. Luteal: Less than 200.0 Postmenopausal: 3.0-32.0
	Tanner Stage I	Less than 7.0	Less than 27.0
	Tanner Stage II	Less than 11.0	1.0-39.0
	Tanner Stage III	1.0-31.0	8.0-117.0
	Tanner Stage IV-V	2.0-30.0	4.0-109.0

Interpretive Data:
For a complete set of all established reference intervals, refer to ltd.aruplab.com/Tests/Pub/0093249.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:
82679

LOINC:

- 2258-2

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Rarely indicated in clinical practice. The preferred test for the measurement of estrone is Estrogens, Fractionated, by Mass Spectrometry (0093248).

Test Code:
E1P

Test Group:
Estrone

ARUP Test Code:
0093249

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative High Performance Liquid Chromatography-Tandem Mass Spectrometry

Collect:
Serum separator tube, lavender (EDTA), pink (K_2EDTA), or green (sodium or lithium heparin).

Amount to Collect:
1 mL blood

Sample Type:
Serum or plasma

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

Specimen Preparation:
Separate serum or plasma from cells within 2 hours of collection. Transfer 0.5 mL serum or plasma to an ARUP Standard Transport Tube. (Min 0.3 mL)

Reference Interval:

Components	Reference Interval		
	Age	**Male (pg/mL)**	**Female (pg/mL)**
Estrone by Mass Spec	7-9 years	Less than 7.0	Less than 20.0
	10-12 years	Less than 11.0	1.0-40.0
	13-15 years	1.0-30.0	8.0-105.0
	16-17 years	1.0-32.0	4.0-133.0
	18 years and older	9.0-36.0	Premenopausal Early Follicular: Less than 150.0 Late Follicular: 100.0-250.0. Luteal: Less than 200.0 Postmenopausal: 3.0-32.0
	Tanner Stage I	Less than 7.0	Less than 27.0
	Tanner Stage II	Less than 11.0	1.0-39.0
	Tanner Stage III	1.0-31.0	8.0-117.0
	Tanner Stage IV-V	2.0-30.0	4.0-109.0

Interpretive Data:
For a complete set of all established reference intervals, refer to ltd.aruplab.com/Tests/Pub/0093249.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Synonyms:

- ER
- ERA
- PR
- PRA
- E1
- Estrone (E1)

Storage/Transport Temperature:
Refrigerated.

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 1 week; Frozen: 1 month

Reported:
1-5 days

CPT Codes:
82679

LOINC:

- 2258-2

Ethanol, Plasma / Serum

ALC

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Alcohol dehydrogenase enzymatic rate method

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
To convert g/dL to mmol/L (SI units) multiply by 217.

Each 0.10 g/dL of ethanol contributes about 22 mmol/kg to the endogenous osmolality of serum. An osmolar gap (normally < 10) which is greater than explainable by ethanol (or other underlying medical conditions, such as chronic renal failure, diabetic ketoacidosis or underestimation of sodium due to hyperlipidemia) suggests the possibility of ingestion of additional toxins such as methanol or ethylene glycol.

Our assay employing separated serum or plasma gives values 10-35% higher than those used forensically on whole blood. A plasma level of 0.09-0.11 g/dL approximates the whole blood level of >= 0.08 g/dL which legally defines intoxication. If there is reason to suspect that the ethanol level may have legal implications, the time of collection, the venipuncture site, the presence and site of any intravenous infusions, and the name of the phlebotomist should be recorded in the chart and on the requisition.

Please note: elevated lactic acid concentrations and elevated lactate dehydrogenase activity may cause a slightly falsely elevated ethanol concentration.

Substance	Concentration tested	Observed effect on ethanol concentration
Lactic acid	14 mmol/L	+ 0.004 g/dL
Lactate dehydrogenase	1890 U/L	+0.004 g/dL

Temozolomide at elevated concentrations (20 mg/L) may lead to falsely low results.

Synonyms:

- Alcohol
- Ethyl alcohol
- etoh

COLLECTION

Sample Type:
Plasma or serum

Collect:
Light green top preferred, gold, red, dark green, or gray top acceptable.

Amount to Collect:
5 mL blood

Preferred Volume:
Full vacutainer

Remarks:
Do NOT disinfect the skin with alcohol when collecting the specimen, nor collect the sample above a running iv. See also entries for Drug Screens.

Stability (from collection to initiation):
Run immediately after uncapping tube.

Room temperature 2 weeks, refrigerated 6 months, frozen at -20C 6 months

Unacceptable Conditions:
Partially filled tubes are acceptable only if brought promptly to the laboratory for stat assay.

PROCESSING

Test Code:
ALC

Test Group:
Ethanol

Performing Lab:
Parnassus & Mission Bay Chemistry

Specimen Preparation:
Do not open the tubes until loading the instrument.

Preferred Volume:
Full vacutainer

Unacceptable Conditions:
Partially filled tubes are acceptable only if brought promptly to the laboratory for stat assay.

Stability (from collection to initiation):
Run immediately after uncapping tube.

Room temperature 2 weeks, refrigerated 6 months, frozen at -20C 6 months

RESULT INTERPRETATION

Units:
g/dL

Reference Interval:
Negative < 0.01 g/dL

Additional Information:
To convert g/dL to mmol/L (SI units) multiply by 217.

Each 0.10 g/dL of ethanol contributes about 22 mmol/kg to the endogenous osmolality of serum. An osmolar gap (normally < 10) which is greater than explainable by ethanol (or other underlying medical conditions, such as chronic renal failure, diabetic ketoacidosis or underestimation of sodium due to hyperlipidemia) suggests the possibility of ingestion of additional toxins such as methanol or ethylene glycol.

Our assay employing separated serum or plasma gives values 10-35% higher than those used forensically on whole blood. A plasma level of 0.09-0.11 g/dL approximates the whole blood level of >= 0.08 g/dL which legally defines intoxication. If there is reason to suspect that the ethanol level may have legal implications, the time of collection, the venipuncture site, the presence and site of any intravenous infusions, and the name of the phlebotomist should be recorded in the chart and on the requisition.

Please note: elevated lactic acid concentrations and elevated lactate dehydrogenase activity may cause a slightly falsely elevated ethanol concentration.

Substance	Concentration tested	Observed effect on ethanol concentration
Lactic acid	14 mmol/L	+ 0.004 g/dL
Lactate dehydrogenase	1890 U/L	+0.004 g/dL

Temozolomide at elevated concentrations (20 mg/L) may lead to falsely low results.

ADMINISTRATIVE

CPT Codes:
82077

LOINC Codes:
5643-2

COMPLETE VIEW

Available Stat:
Yes

Test Code:
ALC

Test Group:
Ethanol

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Alcohol dehydrogenase enzymatic rate method

Remarks:
Do NOT disinfect the skin with alcohol when collecting the specimen, nor collect the sample above a running iv. See also entries for Drug Screens.

Collect:
Light green top preferred, gold, red, dark green, or gray top acceptable.

Amount to Collect:
5 mL blood

Sample Type:
Plasma or serum

Preferred Volume:
Full vacutainer

Unacceptable Conditions:
Partially filled tubes are acceptable only if brought promptly to the laboratory for stat assay.

Specimen Preparation:
Do not open the tubes until loading the instrument.

Units:
g/dL

Reference Interval:
Negative < 0.01 g/dL

Synonyms:

- Alcohol
- Ethyl alcohol
- etoh

Stability (from collection to initiation):
Run immediately after uncapping tube.

Room temperature 2 weeks, refrigerated 6 months, frozen at -20C 6 months

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
To convert g/dL to mmol/L (SI units) multiply by 217.

Each 0.10 g/dL of ethanol contributes about 22 mmol/kg to the endogenous osmolality of serum. An osmolar gap (normally < 10) which is greater than explainable by ethanol (or other underlying medical conditions, such as chronic renal failure, diabetic ketoacidosis or underestimation of sodium due to hyperlipidemia) suggests the possibility of ingestion of additional toxins such as methanol or ethylene glycol.

Our assay employing separated serum or plasma gives values 10-35% higher than those used forensically on whole blood. A plasma level of 0.09-0.11 g/dL approximates the whole blood level of >= 0.08 g/dL which legally defines intoxication. If there is reason to suspect that the ethanol level may have legal implications, the time of collection, the venipuncture site, the presence and site of any intravenous infusions, and the name of the phlebotomist should be recorded in the chart and on the requisition.

Please note: elevated lactic acid concentrations and elevated lactate dehydrogenase activity may cause a slightly falsely elevated ethanol concentration.

Substance	Concentration tested	Observed effect on ethanol concentration
Lactic acid	14 mmol/L	+ 0.004 g/dL
Lactate dehydrogenase	1890 U/L	+0.004 g/dL

Temozolomide at elevated concentrations (20 mg/L) may lead to falsely low results.

CPT Codes:
82077

LOINC Codes:
5643-2

Ethanol, Urine

ALCO

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Immunoassay. Positive results confirmed by Gas chromatography

Reported:
Test run Monday-Saturday. Turnaround 3-4 days

Synonyms:

- Alcohol
- Ethyl alcohol
- etoh

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
See preferred volume

Preferred Volume:
10 mL urine

Minimum Volume:
5 mL urine

Stability (from collection to initiation):
Room temperature 5 days, refrigerated 7 days,frozen at -20C 30 days.

PROCESSING

Test Code:
ALCO

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze sample at -20C. Order Quest # 2128X.

Preferred Volume:
10 mL urine

Minimum Volume:
5 mL urine

Stability (from collection to initiation):
Room temperature 5 days, refrigerated 7 days,frozen at -20C 30 days.

RESULT INTERPRETATION

Units:
g/dL

Reference Interval:
Not detected

ADMINISTRATIVE

CPT Codes:
80320

LOINC Codes:
5645-7

COMPLETE VIEW

Available Stat:
No

Test Code:
ALCO

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Immunoassay. Positive results confirmed by Gas chromatography

Collect:
Urine cup

Amount to Collect:
See preferred volume

Sample Type:
Random urine

Preferred Volume:
10 mL urine

Minimum Volume:
5 mL urine

Specimen Preparation:
Freeze sample at -20C. Order Quest # 2128X.

Units:
g/dL

Reference Interval:
Not detected

Synonyms:

- Alcohol
- Ethyl alcohol
- etoh

Stability (from collection to initiation):
Room temperature 5 days, refrigerated 7 days,frozen at -20C 30 days.

Reported:
Test run Monday-Saturday. Turnaround 3-4 days

CPT Codes:
80320

LOINC Codes:
5645-7

Ethosuximide

ETHO

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
FPIA

Reported:
Set up 6x per week. Turnaround 3-4 days

Additional Information:
See the lab manual's "A Guide on Drug Level Monitoring" (in the Chemistry Guide) for additional information.

Synonyms:

- Zarontin

COLLECTION

Sample Type:
Serum (Plasma acceptable)

Collect:
Red top (Lavender acceptable)

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.5 mL serum or plasma

Remarks:
Time to steady state: 4-7 days Do NOT use a serum separator tube (Gold top) to collect the specimen. Indicate the time of draw on the requisition. Optimum time for sample collection 4 hours post oral dose.

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 2 weeks, frozen at -20C 1 month

Unacceptable Conditions:
Collected in Gold top

PROCESSING

Test Code:
ETHO

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze separated serum. Order Quest # 36160P.

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.5 mL serum or plasma

Unacceptable Conditions:
Collected in Gold top

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 2 weeks, frozen at -20C 1 month

RESULT INTERPRETATION

Units:
mg/L

Reference Interval:
Therapeutic: 40-100 mg/L
Potentially toxic: > 150 mg/L

Critical Values:
UCSF: > 200 mg/L
Quest Priority-1: >= 150 mg/L

Additional Information:
See the lab manual's "A Guide on Drug Level Monitoring" (in the Chemistry Guide) for additional information.

ADMINISTRATIVE

CPT Codes:
80168-90

LOINC Codes:
3616-0

COMPLETE VIEW

Available Stat:
No

Test Code:
ETHO

Performing Lab:
Quest

Sendout:
Yes

Methodology:
FPIA

Remarks:
Time to steady state: 4-7 days Do NOT use a serum separator tube (Gold top) to collect the specimen. Indicate the time of draw on the requisition. Optimum time for sample collection 4 hours post oral dose.

Collect:
Red top (Lavender acceptable)

Amount to Collect:
2 mL blood

Sample Type:
Serum (Plasma acceptable)

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.5 mL serum or plasma

Unacceptable Conditions:
Collected in Gold top

Specimen Preparation:
Freeze separated serum. Order Quest # 36160P.

Units:
mg/L

Reference Interval:
Therapeutic: 40-100 mg/L
Potentially toxic: > 150 mg/L

Critical Values:
UCSF: > 200 mg/L
Quest Priority-1: >= 150 mg/L

Synonyms:

- Zarontin

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 2 weeks, frozen at -20C 1 month

Reported:
Set up 6x per week. Turnaround 3-4 days

Additional Information:
See the lab manual's "A Guide on Drug Level Monitoring" (in the Chemistry Guide) for additional information.

CPT Codes:
80168-90

LOINC Codes:
3616-0

Ethyl glucuronide with confirmation

ETGS

ORDERING

Available Stat:
No

Performing Lab:
China Basin Chemistry

Methodology:
LC-MS/MS

Reported:
Test set up once per week (Thursdays). Turnaround 2-8 days.

Additional Information:
Both ethyl glucuronide and ethyl sulfate are markers for detecting recent alcohol consumption. Both are minor ethanol metabolites formed by uridine diphosphate-glucuronosyltransferase and sulfotransferase, respectively, and are excreted in urine for a longer time than ethanol. Positive results thus provide a strong indication that the person has recently consumed alcohol, even when ethanol is no longer detectable.

Positive evidence of recent alcohol consumption is provided by detection of increased urinary concentrations of both metabolites together. The results of this assay will be reported as follows:

Ethyl glucuronide result (ng/mL)	Ethyl sulfate result (ng/mL)	Ethyl glucuronide result reported in APeX	Ehtyl sulfate result reported in APeX
< 500	< 100	Negative	Negative
>= 500	< 100	Negative	Negative
< 500	>= 100	Negative	Negative
>= 500	>= 100	Numerical value	Numerical value

Synonyms:

- Alcoholism
- etohism
- alcohol metabolites
- ethanol metabolites
- ethyl glucuronid
- ethyl sulfate
- alcohol

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
20 mL urine

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Remarks:
Avoid contact with ethanol, disinfectants, swabs.

Stability (from collection to initiation):
Room temperature: 14 days
Refrigerated (2-8C): 14 days
Frozen (-20C or colder): 30 days

PROCESSING

Test Code:
ETGS

Performing Lab:
China Basin Chemistry

Specimen Preparation:
Refrigerate sample.

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Stability (from collection to initiation):
Room temperature: 14 days
Refrigerated (2-8C): 14 days
Frozen (-20C or colder): 30 days

RESULT INTERPRETATION

Units:
ng/mL

Reference Interval:
Ethyl glucuronide: < 500 ng/mL
Ethyl sulfate: < 100 ng/mL

Additional Information:
Both ethyl glucuronide and ethyl sulfate are markers for detecting recent alcohol consumption. Both are minor ethanol metabolites formed by uridine diphosphate-glucuronosyltransferase and sulfotransferase, respectively, and are excreted in urine for a longer time than ethanol. Positive results thus provide a strong indication that the person has recently consumed alcohol, even when ethanol is no longer detectable.

Positive evidence of recent alcohol consumption is provided by detection of increased urinary concentrations of both metabolites together. The results of this assay will be reported as follows:

Ethyl glucuronide result (ng/mL)	Ethyl sulfate result (ng/mL)	Ethyl glucuronide result reported in APeX	Ehtyl sulfate result reported in APeX
< 500	< 100	Negative	Negative
>= 500	< 100	Negative	Negative
< 500	>= 100	Negative	Negative
>= 500	>= 100	Numerical value	Numerical value

ADMINISTRATIVE

CPT Codes:
83789

LOINC Codes:
58378-1 (Ethyl Glucuronide)
58425-0 (Ethyl Sulfate)

COMPLETE VIEW

Available Stat:
No

Test Code:
ETGS

Performing Lab:
China Basin Chemistry

Methodology:
LC-MS/MS

Remarks:
Avoid contact with ethanol, disinfectants, swabs.

Collect:
Urine cup

Amount to Collect:
20 mL urine

Sample Type:
Random urine

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Specimen Preparation:
Refrigerate sample.

Units:
ng/mL

Reference Interval:
Ethyl glucuronide: < 500 ng/mL
Ethyl sulfate: < 100 ng/mL

Synonyms:

- Alcoholism
- etohism
- alcohol metabolites
- ethanol metabolites
- ethyl glucuronid
- ethyl sulfate
- alcohol

Stability (from collection to initiation):
Room temperature: 14 days
Refrigerated (2-8C): 14 days
Frozen (-20C or colder): 30 days

Reported:
Test set up once per week (Thursdays). Turnaround 2-8 days.

Additional Information:
Both ethyl glucuronide and ethyl sulfate are markers for detecting recent alcohol consumption. Both are minor ethanol metabolites formed by uridine diphosphate-glucuronosyltransferase and sulfotransferase, respectively, and are excreted in urine for a longer time than ethanol. Positive results thus provide a strong indication that the person has recently consumed alcohol, even when ethanol is no longer detectable.

Positive evidence of recent alcohol consumption is provided by detection of increased urinary concentrations of both metabolites together. The results of this assay will be reported as follows:

Ethyl glucuronide result (ng/mL)	Ethyl sulfate result (ng/mL)	Ethyl glucuronide result reported in APeX	Ehtyl sulfate result reported in APeX
< 500	< 100	Negative	Negative
>= 500	< 100	Negative	Negative
< 500	>= 100	Negative	Negative
>= 500	>= 100	Numerical value	Numerical value

CPT Codes:
83789

LOINC Codes:
58378-1 (Ethyl Glucuronide)
58425-0 (Ethyl Sulfate)

Ethylene Glycol

ETGL

ORDERING

Ordering Recommendations:
Aid in assessment of the etiology of anion gap acidosis. Determine whether ethylene glycol poisoning exists.

Available Stat:
No

Performed:
Sun-Sat

Methodology:
Quantitative Enzymatic Assay

Reported:
1-4 days

Synonyms:

- Antifreeze
- Ethane-1, 2-Diol

COLLECTION

Patient Preparation:
Timing of specimen collection: Dependent on time of exposure - test upon presentation to hospital.

Collect:
Plain red. Also acceptable: Lavender (K_2 or K_3EDTA) or pink (K_2EDTA).

Stability (from collection to initiation):
After separation from cells: Ambient: 1 week; Refrigerated: 1 week; Frozen: 1 month

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Whole blood. Gel separator tubes, light blue (citrate), or yellow (SPS or ACD solution).

PROCESSING

Test Code:
ETGL

ARUP Test Code:
0090110

Specimen Preparation:
Separate serum or plasma from cells within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.5 mL) When drawing a blood specimen for ethylene glycol testing, use a nonalcohol-based cleanser at the venipuncture site.

Unacceptable Conditions:
Whole blood. Gel separator tubes, light blue (citrate), or yellow (SPS or ACD solution).

Stability (from collection to initiation):
After separation from cells: Ambient: 1 week; Refrigerated: 1 week; Frozen: 1 month

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:
Effective February 19, 2013

Therapeutic Range	No therapeutic range - Limit of detection 5 mg/dL
Toxic Level	Greater than 20 mg/dL

Interpretive Data:

Toxic concentrations may cause intoxication, CNS depression, metabolic acidosis, renal damage and hypocalcemia. Ethylene glycol is extremely toxic. Ingestion can be fatal if patients do not receive immediate medical treatment.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:

82693

LOINC:

- 5646-5

COMPLETE VIEW

Available Stat:

No

Ordering Recommendations:

Aid in assessment of the etiology of anion gap acidosis. Determine whether ethylene glycol poisoning exists.

Test Code:

ETGL

ARUP Test Code:

0090110

Performed:

Sun-Sat

Methodology:

Quantitative Enzymatic Assay

Patient Preparation:

Timing of specimen collection: Dependent on time of exposure - test upon presentation to hospital.

Collect:

Plain red. Also acceptable: Lavender (K_2 or K_3EDTA) or pink (K_2EDTA).

Unacceptable Conditions:

Whole blood. Gel separator tubes, light blue (citrate), or yellow (SPS or ACD solution).

Specimen Preparation:

Separate serum or plasma from cells within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.5 mL) When drawing a blood specimen for ethylene glycol testing, use a nonalcohol-based cleanser at the venipuncture site.

Reference Interval:

Effective February 19, 2013

Therapeutic Range	No therapeutic range - Limit of detection 5 mg/dL
Toxic Level	Greater than 20 mg/dL

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Toxic concentrations may cause intoxication, CNS depression, metabolic acidosis, renal damage and hypocalcemia. Ethylene glycol is extremely toxic. Ingestion can be fatal if patients do not receive immediate medical treatment.

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Synonyms:

- Antifreeze
- Ethane-1, 2-Diol

Storage/Transport Temperature:

Refrigerated.

Stability (from collection to initiation):

After separation from cells: Ambient: 1 week; Refrigerated: 1 week; Frozen: 1 month

Reported:

1-4 days

CPT Codes:
82693

LOINC:

- 5646-5

ETV6 Break-apart rearrangement FISH

ETV6, BETV6

ORDERING

Available Stat:
No

Performing Lab:
Cytogenetics

Performed:
Monday - Friday, 9AM to 5PM

Methodology:
FISH

Reported:
7-14 days

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Synonyms:

- ETV6
- BETV6
- 12p13 BA FISH

COLLECTION

Sample Type:
Bone marrow aspirate, Bone marrow core, Blood

Preferred Volume:
Bone marrow: Dark Green Top Sodium Heparin tube
Bone Core: Sterile container with medium
Blood: Dark Green Top Sodium Heparin tube

Minimum Volume:
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm
Blood: 1mL

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Room temperature

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen

PROCESSING

Performing Lab:
Cytogenetics

Preferred Volume:
Bone marrow: Dark Green Top Sodium Heparin tube
Bone Core: Sterile container with medium
Blood: Dark Green Top Sodium Heparin tube

Minimum Volume:
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm
Blood: 1mL

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Room temperature

ADMINISTRATIVE

CPT Codes:
88271x2, 88275x1

COMPLETE VIEW

Available Stat:
No

Performing Lab:
Cytogenetics

Performed:
Monday - Friday, 9AM to 5PM

Methodology:
FISH

Sample Type:
Bone marrow aspirate, Bone marrow core, Blood

Preferred Volume:
Bone marrow: Dark Green Top Sodium Heparin tube
Bone Core: Sterile container with medium
Blood: Dark Green Top Sodium Heparin tube

Minimum Volume:
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm
Blood: 1mL

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen

Synonyms:

- ETV6
- BETV6
- 12p13 BA FISH

Storage/Transport Temperature:
Room temperature

Stability (from collection to initiation):
2 days

Reported:
7-14 days

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

CPT Codes:
88271x2, 88275x1

Everolimus

EVER

ORDERING

Available Stat:
No

Performing Lab:
China Basin Chemistry

Performed:
Daily, day shift only

Methodology:
Abbott Architect chemiluminescent immunoassay

Reported:
For samples received by 1200 (Monday-Friday) and 1000 (weekends and holidays) the results will be available by 1600. Results for samples that miss the cut-off times will be available the following day.

Note: Samples from Berkeley Outpatient Clinic (BOPC) will be reported next day.

Additional Information:
This everolimus immunoassay has SIGNIFICANT cross-reactivity with sirolimus. If a patient is on both everolimus and sirolimus, DO NOT order this everolimus immunoassay. Please order a miscellaneous outside lab test" and write ARUP everolimus mass spec assay" in the notes section

NOTE: If patient is taking everolimus AND sirolimus, this immunoassay should not be run to determine the everolimus concentration of the sample. The clinicians should order a MOLT with ARUP everolimus mass spec assay" written in the notes section. Please order ARUP test #0092118 (everolimus by LC-MS/MS). Ship refrigerated.

Synonyms:

- Afinitor
- Certican
- Zortress

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top

Amount to Collect:
3 mL blood

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood

Remarks:
Trough levels should be collected just before next dose.

NOTE: If patient is taking everolimus AND sirolimus, this immunoassay should not be run to determine the everolimus concentration of the sample. The clinicians should order a MOLT with ARUP everolimus

Stability (from collection to initiation):
Refrigerated 3 days, frozen 28 days.

Unacceptable Conditions:
Non-EDTA whole blood samples

PROCESSING

Test Code:
EVER

Performing Lab:
China Basin Chemistry

Specimen Preparation:
Refrigerate sample.

NOTE: If MOLT order for "ARUP everolimus mass spec assay" is received. Please order ARUP test #0092118 (everolimus by LC-MS/MS). Ship refrigerated.

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood

Unacceptable Conditions:
Non-EDTA whole blood samples

Stability (from collection to initiation):
Refrigerated 3 days, frozen 28 days.

RESULT INTERPRETATION

Units:
ng/mL

Reference Interval:
Therapeutic: 3-8 ng/mL
Potentially toxic: > 12 ng/mL

Note: this therapeutic range is based upon use of everolimus in adult patients to prevent rejection after receiving a kidney transplant. The therapeutic range for the use of everolimus in other indications has not yet been established and may vary from the range documented here.

Kovarik JM et al, Transplantation 2002; 73(6):920-925.
Kovarik JM et al, Therapeutic Drug Monitoring 2004; 26(5):499-505.
McMillin GA et al, Therapeutic Drug Monitoring 2012; 34:222-226.

Additional Information:
This everolimus immunoassay has SIGNIFICANT cross-reactivity with sirolimus. If a patient is on both everolimus and sirolimus, DO NOT order this everolimus immunoassay. Please order a miscellaneous outside lab test" and write ARUP everolimus mass spec assay" in the notes section

NOTE: If patient is taking everolimus AND sirolimus, this immunoassay should not be run to determine the everolimus concentration of the sample. The clinicians should order a MOLT with ARUP everolimus mass spec assay" written in the notes section. Please order ARUP test #0092118 (everolimus by LC-MS/MS). Ship refrigerated.

ADMINISTRATIVE

CPT Codes:
80169

COMPLETE VIEW

Available Stat:
No

Test Code:
EVER

Performing Lab:
China Basin Chemistry

Performed:
Daily, day shift only

Methodology:
Abbott Architect chemiluminescent immunoassay

Remarks:
Trough levels should be collected just before next dose.

NOTE: If patient is taking everolimus AND sirolimus, this immunoassay should not be run to determine the everolimus concentration of the sample. The clinicians should order a MOLT with ARUP everolimus

Collect:
Lavender top

Amount to Collect:
3 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood

Unacceptable Conditions:
Non-EDTA whole blood samples

Specimen Preparation:
Refrigerate sample.

NOTE: If MOLT order for "ARUP everolimus mass spec assay" is received. Please order ARUP test #0092118 (everolimus by LC-MS/MS). Ship refrigerated.

Units:
ng/mL

Reference Interval:
Therapeutic: 3-8 ng/mL
Potentially toxic: > 12 ng/mL

Note: this therapeutic range is based upon use of everolimus in adult patients to prevent rejection after receiving a kidney transplant. The therapeutic range for the use of everolimus in other indications has not yet been established and may vary from the range documented here.

Kovarik JM et al, Transplantation 2002; 73(6):920-925.
Kovarik JM et al, Therapeutic Drug Monitoring 2004; 26(5):499-505.
McMillin GA et al, Therapeutic Drug Monitoring 2012; 34:222-226.

Synonyms:

- Afinitor
- Certican
- Zortress

Stability (from collection to initiation):
Refrigerated 3 days, frozen 28 days.

Reported:
For samples received by 1200 (Monday-Friday) and 1000 (weekends and holidays) the results will be available by 1600. Results for samples that miss the cut-off times will be available the following day.

Note: Samples from Berkeley Outpatient Clinic (BOPC) will be reported next day.

Additional Information:
This everolimus immunoassay has SIGNIFICANT cross-reactivity with sirolimus. If a patient is on both everolimus and sirolimus, DO NOT order this everolimus immunoassay. Please order a miscellaneous outside lab test" and write ARUP everolimus mass spec assay" in the notes section

NOTE: If patient is taking everolimus AND sirolimus, this immunoassay should not be run to determine the everolimus concentration of the sample. The clinicians should order a MOLT with ARUP everolimus mass spec assay" written in the notes section. Please order ARUP test #0092118 (everolimus by LC-MS/MS). Ship refrigerated.

CPT Codes:
80169

Expanded Carrier Screening

ECS

ORDERING

Available Stat:
No

Performing Lab:
Counsyl

Methodology:
Full Exon Sequencing

Reported:
2 weeks

Additional Information:
The Counsyl Foresight™ Carrier Screen is a physician-prescribed DNA screen performed on a blood or saliva sample. This screen provides information about whether you are a carrier of an inherited disease, such as cystic fibrosis (CF), spinal muscular atrophy (SMA), and fragile X syndrome. A carrier is typically a healthy individual with no family history of the disease he/she is carrying. If parents are carriers of the same genetic condition their baby has a one in four chance of inheriting that disease.

Disease List:

11-beta-hydroxylase-deficient Congenital Adrenal Hyperplasia
21-hydroxylase-deficient Congenital Adrenal Hyperplasia
6-pyruvoyl-tetrahydropterin Synthase Deficiency
ABCC8-related Hyperinsulinism
Achondrogenesis Type 1B
Adenosine Deaminase Deficiency
Alkaptonuria
Alpha Thalassemia
Alpha-1 Antitrypsin Deficiency
Alpha-mannosidosis
Alpha-sarcoglycanopathy
Alstrom Syndrome
AMT-related Glycine Encephalopathy
Andermann Syndrome
Argininemia
Argininosuccinic Aciduria
ARSACS
Aspartylglycosaminuria
Ataxia with Vitamin E Deficiency
Ataxia-telangiectasia
ATP7A-related Disorders
Autosomal Recessive Osteopetrosis Type 1
Bardet-Biedl Syndrome, BBS1-related
Bardet-Biedl Syndrome, BBS10-related
Bardet-Biedl Syndrome, BBS12-related
Bardet-Biedl Syndrome, BBS2-related
Beta-sarcoglycanopathy
Biotinidase Deficiency
Bloom Syndrome
Calpainopathy
Canavan Disease
Carbamoylphosphate Synthetase I Deficiency
Carnitine Palmitoyltransferase IA Deficiency
Carnitine Palmitoyltransferase II Deficiency
Cartilage-hair Hypoplasia
Cerebrotendinous Xanthomatosis
Choroideremia
Citrullinemia Type 1
CLN3-related Neuronal Ceroid Lipofuscinosis
CLN5-related Neuronal Ceroid Lipofuscinosis
CLN6-related Neuronal Ceroid Lipofuscinosis
CNGB3-related Achromatopsia
Cohen Syndrome
COL4A3-related Alport Syndrome
COL4A4-related Alport Syndrome
Congenital Disorder of Glycosylation Type Ia
Congenital Disorder of Glycosylation Type Ib
Congenital Disorder of Glycosylation Type Ic
Congenital Finnish Nephrosis

Costeff Optic Atrophy Syndrome
Cystic Fibrosis
Cystinosis
D-bifunctional Protein Deficiency
Diastrophic Dysplasia
Dihydropyrimidine Dehydrogenase Deficiency
Dysferlinopathy
Dystrophinopathy (Including Duchenne/Becker Muscular Dystrophy)
ERCC6-related Disorders
ERCC8-related Disorders
EVC-related Ellis-van Creveld Syndrome
EVC2-related Ellis-van Creveld Syndrome
Fabry Disease
* Factor V Leiden Thrombophilia
Factor XI Deficiency
Familial Dysautonomia
Familial Mediterranean Fever
Fanconi Anemia Type C
FKRP-related Disorders
FKTN-related Disorders
Fragile X Syndrome
Galactokinase Deficiency
Galactosemia
Gamma-sarcoglycanopathy
Gaucher Disease
GJB2-related DFNB1 Nonsyndromic Hearing Loss and Deafness
GLB1-related Disorders
GLDC-related Glycine Encephalopathy
* Glucose-6-phosphate Dehydrogenase Deficiency
Glutaric Acidemia Type 1
Glycogen Storage Disease Type Ia
Glycogen Storage Disease Type Ib
Glycogen Storage Disease Type III
Glycogen Storage Disease Type V
GNPTAB-related Disorders
GRACILE Syndrome
HADHA-related Disorders
Hb Beta Chain-related Hemoglobinopathy (Including Beta Thalassemia and Sickle Cell Disease)
Hereditary Fructose Intolerance
Herlitz Junctional Epidermolysis Bullosa, LAMA3-related
Herlitz Junctional Epidermolysis Bullosa, LAMB3-related
Herlitz Junctional Epidermolysis Bullosa, LAMC2-related
Hexosaminidase A Deficiency (Including Tay-Sachs Disease)
* HFE-associated Hereditary Hemochromatosis
HMG-CoA Lyase Deficiency
Holocarboxylase Synthetase Deficiency
Homocystinuria Caused by Cystathionine Beta-synthase Deficiency
Hydrolethalus Syndrome
Hypophosphatasia, Autosomal Recessive
Inclusion Body Myopathy 2
Isovaleric Acidemia
Joubert Syndrome 2
KCNJ11-related Familial Hyperinsulinism
Krabbe Disease
LAMA2-related Muscular Dystrophy
Leigh Syndrome, French-Canadian Type
Lipoamide Dehydrogenase Deficiency
Lipoid Congenital Adrenal Hyperplasia
Lysosomal Acid Lipase Deficiency
Maple Syrup Urine Disease Type 1B
Maple Syrup Urine Disease Type Ia
Maple Syrup Urine Disease Type II
Medium Chain Acyl-CoA Dehydrogenase Deficiency
Megalencephalic Leukoencephalopathy with Subcortical Cysts
Metachromatic Leukodystrophy
Methylmalonic Acidemia, cblA Type
Methylmalonic Acidemia, cblB Type
Methylmalonic Aciduria and Homocystinuria, cblC Type
* Mild Hyperhomocysteinemia Caused by MTHFR Deficiency
MKS1-related Disorders
Mucolipidosis III Gamma
Mucolipidosis IV
Mucopolysaccharidosis Type I
Mucopolysaccharidosis Type II

Mucopolysaccharidosis Type IIIA
Mucopolysaccharidosis Type IIIB
Mucopolysaccharidosis Type IIIC
Muscle-eye-brain Disease
MUT-related Methylmalonic Acidemia
MYO7A-related Disorders
NEB-related Nemaline Myopathy
Niemann-Pick Disease Type C
Niemann-Pick Disease Type C2
Niemann-Pick Disease, SMPD1-associated
Nijmegen Breakage Syndrome
Northern Epilepsy
Ornithine Transcarbamylase Deficiency
PCCA-related Propionic Acidemia
PCDH15-related Disorders
Pendred Syndrome
Peroxisome Biogenesis Disorder Type 3
Peroxisome Biogenesis Disorder Type 4
Peroxisome Biogenesis Disorder Type 5
Peroxisome Biogenesis Disorder Type 6
PEX1-related Zellweger Syndrome Spectrum
Phenylalanine Hydroxylase Deficiency
PKHD1-related Autosomal Recessive Polycystic Kidney Disease
Polyglandular Autoimmune Syndrome Type 1
Pompe Disease
PPT1-related Neuronal Ceroid Lipofuscinosis
Primary Carnitine Deficiency
Primary Hyperoxaluria Type 1
Primary Hyperoxaluria Type 2
Primary Hyperoxaluria Type 3
PROP1-related Combined Pituitary Hormone Deficiency
* Prothrombin Thrombophilia
* Pseudocholinesterase Deficiency
Pycnodysostosis
Pyruvate Carboxylase Deficiency
Recessive Multiple Epiphyseal Dysplasia
Rhizomelic Chondrodysplasia Punctata Type 1
RTEL1-related Disorders
Salla Disease
Sandhoff Disease
Segawa Syndrome
Short Chain Acyl-CoA Dehydrogenase Deficiency
Sjogren-Larsson Syndrome
Smith-Lemli-Opitz Syndrome
Spastic Paraplegia Type 15
Spinal Muscular Atrophy
Spondylothoracic Dysostosis
Steroid-resistant Nephrotic Syndrome
Sulfate Transporter-related Osteochondrodysplasia
TGM1-related Autosomal Recessive Congenital Ichthyosis
TPP1-related Neuronal Ceroid Lipofuscinosis
Tyrosinemia Type I
Tyrosinemia Type II
USH1C-related Disorders
USH2A-related Disorders
Usher Syndrome Type 3
Very Long Chain Acyl-CoA Dehydrogenase Deficiency
Wilson Disease
X-linked Adrenoleukodystrophy
X-linked Alport Syndrome
X-linked Juvenile Retinoschisis
X-linked Myotubular Myopathy
X-linked Severe Combined Immunodeficiency
Xeroderma Pigmentosum Group A
Xeroderma Pigmentosum Group C
* Must be specifically requested to be included on your panel.

Synonyms:

- Foresight Carrier Screen

Supplemental Test Request Form Required:
Yes

COLLECTION

Sample Type:
Whole blood

Collect:
Lavender-top

Amount to Collect:
4 mL

Preferred Volume:
4 mL

Minimum Volume:
4 mL

Remarks:
Only use tube supplied in kit from Counsyl.

Stability (from collection to initiation):
5 days

Rejection Criteria:
No Counsyl collection kit when patient presents.

PROCESSING

Test Code:
ECS

Sendout:
Yes

Performing Lab:
Counsyl

Specimen Preparation:
Use only tube supplied in kit from Counsyl. Replace full tube back into kit with completed Counsyl TRF.

Preferred Volume:
4 mL

Minimum Volume:
4 mL

Rejection Criteria:
No Counsyl collection kit when patient presents.

Stability (from collection to initiation):
5 days

RESULT INTERPRETATION

Additional Information:
The Counsyl Foresight™ Carrier Screen is a physician-prescribed DNA screen performed on a blood or saliva sample. This screen provides information about whether you are a carrier of an inherited disease, such as cystic fibrosis (CF), spinal muscular atrophy (SMA), and fragile X syndrome. A carrier is typically a healthy individual with no family history of the disease he/she is carrying. If parents are carriers of the same genetic condition their baby has a one in four chance of inheriting that disease.

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ABCC8-related Hyperinsulinism
Achondrogenesis Type 1B
Adenosine Deaminase Deficiency
Alkaptonuria
Alpha Thalassemia
Alpha-1 Antitrypsin Deficiency
Alpha-mannosidosis
Alpha-sarcoglycanopathy
Alstrom Syndrome
AMT-related Glycine Encephalopathy
Andermann Syndrome
Argininemia
Argininosuccinic Aciduria
ARSACS
Aspartylglycosaminuria

Ataxia with Vitamin E Deficiency
Ataxia-telangiectasia
ATP7A-related Disorders
Autosomal Recessive Osteopetrosis Type 1
Bardet-Biedl Syndrome, BBS1-related
Bardet-Biedl Syndrome, BBS10-related
Bardet-Biedl Syndrome, BBS12-related
Bardet-Biedl Syndrome, BBS2-related
Beta-sarcoglycanopathy
Biotinidase Deficiency
Bloom Syndrome
Calpainopathy
Canavan Disease
Carbamoylphosphate Synthetase I Deficiency
Carnitine Palmitoyltransferase IA Deficiency
Carnitine Palmitoyltransferase II Deficiency
Cartilage-hair Hypoplasia
Cerebrotendinous Xanthomatosis
Choroideremia
Citrullinemia Type 1
CLN3-related Neuronal Ceroid Lipofuscinosis
CLN5-related Neuronal Ceroid Lipofuscinosis
CLN6-related Neuronal Ceroid Lipofuscinosis
CNGB3-related Achromatopsia
Cohen Syndrome
COL4A3-related Alport Syndrome
COL4A4-related Alport Syndrome
Congenital Disorder of Glycosylation Type Ia
Congenital Disorder of Glycosylation Type Ib
Congenital Disorder of Glycosylation Type Ic
Congenital Finnish Nephrosis
Costeff Optic Atrophy Syndrome
Cystic Fibrosis
Cystinosis
D-bifunctional Protein Deficiency
Diastrophic Dysplasia
Dihydropyrimidine Dehydrogenase Deficiency
Dysferlinopathy
Dystrophinopathy (Including Duchenne/Becker Muscular Dystrophy)
ERCC6-related Disorders
ERCC8-related Disorders
EVC-related Ellis-van Creveld Syndrome
EVC2-related Ellis-van Creveld Syndrome
Fabry Disease
* Factor V Leiden Thrombophilia
Factor XI Deficiency
Familial Dysautonomia
Familial Mediterranean Fever
Fanconi Anemia Type C
FKRP-related Disorders
FKTN-related Disorders
Fragile X Syndrome
Galactokinase Deficiency
Galactosemia
Gamma-sarcoglycanopathy
Gaucher Disease
GJB2-related DFNB1 Nonsyndromic Hearing Loss and Deafness
GLB1-related Disorders
GLDC-related Glycine Encephalopathy
* Glucose-6-phosphate Dehydrogenase Deficiency
Glutaric Acidemia Type 1
Glycogen Storage Disease Type Ia
Glycogen Storage Disease Type Ib
Glycogen Storage Disease Type III
Glycogen Storage Disease Type V
GNPTAB-related Disorders
GRACILE Syndrome
HADHA-related Disorders
Hb Beta Chain-related Hemoglobinopathy (Including Beta Thalassemia and Sickle Cell Disease)
Hereditary Fructose Intolerance
Herlitz Junctional Epidermolysis Bullosa, LAMA3-related
Herlitz Junctional Epidermolysis Bullosa, LAMB3-related
Herlitz Junctional Epidermolysis Bullosa, LAMC2-related
Hexosaminidase A Deficiency (Including Tay-Sachs Disease)

* HFE-associated Hereditary Hemochromatosis
HMG-CoA Lyase Deficiency
Holocarboxylase Synthetase Deficiency
Homocystinuria Caused by Cystathionine Beta-synthase Deficiency
Hydrolethalus Syndrome
Hypophosphatasia, Autosomal Recessive
Inclusion Body Myopathy 2
Isovaleric Acidemia
Joubert Syndrome 2
KCNJ11-related Familial Hyperinsulinism
Krabbe Disease
LAMA2-related Muscular Dystrophy
Leigh Syndrome, French-Canadian Type
Lipoamide Dehydrogenase Deficiency
Lipoid Congenital Adrenal Hyperplasia
Lysosomal Acid Lipase Deficiency
Maple Syrup Urine Disease Type 1B
Maple Syrup Urine Disease Type Ia
Maple Syrup Urine Disease Type II
Medium Chain Acyl-CoA Dehydrogenase Deficiency
Megalencephalic Leukoencephalopathy with Subcortical Cysts
Metachromatic Leukodystrophy
Methylmalonic Acidemia, cblA Type
Methylmalonic Acidemia, cblB Type
Methylmalonic Aciduria and Homocystinuria, cblC Type
* Mild Hyperhomocysteinemia Caused by MTHFR Deficiency
MKS1-related Disorders
Mucolipidosis III Gamma
Mucolipidosis IV
Mucopolysaccharidosis Type I
Mucopolysaccharidosis Type II
Mucopolysaccharidosis Type IIIA
Mucopolysaccharidosis Type IIIB
Mucopolysaccharidosis Type IIIC
Muscle-eye-brain Disease
MUT-related Methylmalonic Acidemia
MYO7A-related Disorders
NEB-related Nemaline Myopathy
Niemann-Pick Disease Type C
Niemann-Pick Disease Type C2
Niemann-Pick Disease, SMPD1-associated
Nijmegen Breakage Syndrome
Northern Epilepsy
Ornithine Transcarbamylase Deficiency
PCCA-related Propionic Acidemia
PCDH15-related Disorders
Pendred Syndrome
Peroxisome Biogenesis Disorder Type 3
Peroxisome Biogenesis Disorder Type 4
Peroxisome Biogenesis Disorder Type 5
Peroxisome Biogenesis Disorder Type 6
PEX1-related Zellweger Syndrome Spectrum
Phenylalanine Hydroxylase Deficiency
PKHD1-related Autosomal Recessive Polycystic Kidney Disease
Polyglandular Autoimmune Syndrome Type 1
Pompe Disease
PPT1-related Neuronal Ceroid Lipofuscinosis
Primary Carnitine Deficiency
Primary Hyperoxaluria Type 1
Primary Hyperoxaluria Type 2
Primary Hyperoxaluria Type 3
PROP1-related Combined Pituitary Hormone Deficiency
* Prothrombin Thrombophilia
* Pseudocholinesterase Deficiency
Pycnodysostosis
Pyruvate Carboxylase Deficiency
Recessive Multiple Epiphyseal Dysplasia
Rhizomelic Chondrodysplasia Punctata Type 1
RTEL1-related Disorders
Salla Disease
Sandhoff Disease
Segawa Syndrome
Short Chain Acyl-CoA Dehydrogenase Deficiency
Sjogren-Larsson Syndrome

Smith-Lemli-Opitz Syndrome
Spastic Paraplegia Type 15
Spinal Muscular Atrophy
Spondylothoracic Dysostosis
Steroid-resistant Nephrotic Syndrome
Sulfate Transporter-related Osteochondrodysplasia
TGM1-related Autosomal Recessive Congenital Ichthyosis
TPP1-related Neuronal Ceroid Lipofuscinosis
Tyrosinemia Type I
Tyrosinemia Type II
USH1C-related Disorders
USH2A-related Disorders
Usher Syndrome Type 3
Very Long Chain Acyl-CoA Dehydrogenase Deficiency
Wilson Disease
X-linked Adrenoleukodystrophy
X-linked Alport Syndrome
X-linked Juvenile Retinoschisis
X-linked Myotubular Myopathy
X-linked Severe Combined Immunodeficiency
Xeroderma Pigmentosum Group A
Xeroderma Pigmentosum Group C
* Must be specifically requested to be included on your panel.

ADMINISTRATIVE

CPT Codes:
81479

COMPLETE VIEW

Available Stat:
No

Test Code:
ECS

Performing Lab:
Counsyl

Sendout:
Yes

Methodology:
Full Exon Sequencing

Remarks:
Only use tube supplied in kit from Counsyl.

Collect:
Lavender-top

Amount to Collect:
4 mL

Sample Type:
Whole blood

Preferred Volume:
4 mL

Minimum Volume:
4 mL

Rejection Criteria:
No Counsyl collection kit when patient presents.

Specimen Preparation:
Use only tube supplied in kit from Counsyl. Replace full tube back into kit with completed Counsyl TRF.

Synonyms:

- Foresight Carrier Screen

Stability (from collection to initiation):
5 days

Reported:
2 weeks

Additional Information:
The Counsyl Foresight™ Carrier Screen is a physician-prescribed DNA screen performed on a blood or saliva sample. This

screen provides information about whether you are a carrier of an inherited disease, such as cystic fibrosis (CF), spinal muscular atrophy (SMA), and fragile X syndrome. A carrier is typically a healthy individual with no family history of the disease he/she is carrying. If parents are carriers of the same genetic condition their baby has a one in four chance of inheriting that disease.

Disease List:

11-beta-hydroxylase-deficient Congenital Adrenal Hyperplasia
21-hydroxylase-deficient Congenital Adrenal Hyperplasia
6-pyruvoyl-tetrahydropterin Synthase Deficiency
ABCC8-related Hyperinsulinism
Achondrogenesis Type 1B
Adenosine Deaminase Deficiency
Alkaptonuria
Alpha Thalassemia
Alpha-1 Antitrypsin Deficiency
Alpha-mannosidosis
Alpha-sarcoglycanopathy
Alstrom Syndrome
AMT-related Glycine Encephalopathy
Andermann Syndrome
Argininemia
Argininosuccinic Aciduria
ARSACS
Aspartylglycosaminuria
Ataxia with Vitamin E Deficiency
Ataxia-telangiectasia
ATP7A-related Disorders
Autosomal Recessive Osteopetrosis Type 1
Bardet-Biedl Syndrome, BBS1-related
Bardet-Biedl Syndrome, BBS10-related
Bardet-Biedl Syndrome, BBS12-related
Bardet-Biedl Syndrome, BBS2-related
Beta-sarcoglycanopathy
Biotinidase Deficiency
Bloom Syndrome
Calpainopathy
Canavan Disease
Carbamoylphosphate Synthetase I Deficiency
Carnitine Palmitoyltransferase IA Deficiency
Carnitine Palmitoyltransferase II Deficiency
Cartilage-hair Hypoplasia
Cerebrotendinous Xanthomatosis
Choroideremia
Citrullinemia Type 1
CLN3-related Neuronal Ceroid Lipofuscinosis
CLN5-related Neuronal Ceroid Lipofuscinosis
CLN6-related Neuronal Ceroid Lipofuscinosis
CNGB3-related Achromatopsia
Cohen Syndrome
COL4A3-related Alport Syndrome
COL4A4-related Alport Syndrome
Congenital Disorder of Glycosylation Type Ia
Congenital Disorder of Glycosylation Type Ib
Congenital Disorder of Glycosylation Type Ic
Congenital Finnish Nephrosis
Costeff Optic Atrophy Syndrome
Cystic Fibrosis
Cystinosis
D-bifunctional Protein Deficiency
Diastrophic Dysplasia
Dihydropyrimidine Dehydrogenase Deficiency
Dysferlinopathy
Dystrophinopathy (Including Duchenne/Becker Muscular Dystrophy)
ERCC6-related Disorders
ERCC8-related Disorders
EVC-related Ellis-van Creveld Syndrome
EVC2-related Ellis-van Creveld Syndrome
Fabry Disease
* Factor V Leiden Thrombophilia
Factor XI Deficiency
Familial Dysautonomia
Familial Mediterranean Fever
Fanconi Anemia Type C

FKRP-related Disorders
FKTN-related Disorders
Fragile X Syndrome
Galactokinase Deficiency
Galactosemia
Gamma-sarcoglycanopathy
Gaucher Disease
GJB2-related DFNB1 Nonsyndromic Hearing Loss and Deafness
GLB1-related Disorders
GLDC-related Glycine Encephalopathy
* Glucose-6-phosphate Dehydrogenase Deficiency
Glutaric Acidemia Type 1
Glycogen Storage Disease Type Ia
Glycogen Storage Disease Type Ib
Glycogen Storage Disease Type III
Glycogen Storage Disease Type V
GNPTAB-related Disorders
GRACILE Syndrome
HADHA-related Disorders
Hb Beta Chain-related Hemoglobinopathy (Including Beta Thalassemia and Sickle Cell Disease)
Hereditary Fructose Intolerance
Herlitz Junctional Epidermolysis Bullosa, LAMA3-related
Herlitz Junctional Epidermolysis Bullosa, LAMB3-related
Herlitz Junctional Epidermolysis Bullosa, LAMC2-related
Hexosaminidase A Deficiency (Including Tay-Sachs Disease)
* HFE-associated Hereditary Hemochromatosis
HMG-CoA Lyase Deficiency
Holocarboxylase Synthetase Deficiency
Homocystinuria Caused by Cystathionine Beta-synthase Deficiency
Hydrolethalus Syndrome
Hypophosphatasia, Autosomal Recessive
Inclusion Body Myopathy 2
Isovaleric Acidemia
Joubert Syndrome 2
KCNJ11-related Familial Hyperinsulinism
Krabbe Disease
LAMA2-related Muscular Dystrophy
Leigh Syndrome, French-Canadian Type
Lipoamide Dehydrogenase Deficiency
Lipoid Congenital Adrenal Hyperplasia
Lysosomal Acid Lipase Deficiency
Maple Syrup Urine Disease Type 1B
Maple Syrup Urine Disease Type Ia
Maple Syrup Urine Disease Type II
Medium Chain Acyl-CoA Dehydrogenase Deficiency
Megalencephalic Leukoencephalopathy with Subcortical Cysts
Metachromatic Leukodystrophy
Methylmalonic Acidemia, cblA Type
Methylmalonic Acidemia, cblB Type
Methylmalonic Aciduria and Homocystinuria, cblC Type
* Mild Hyperhomocysteinemia Caused by MTHFR Deficiency
MKS1-related Disorders
Mucolipidosis III Gamma
Mucolipidosis IV
Mucopolysaccharidosis Type I
Mucopolysaccharidosis Type II
Mucopolysaccharidosis Type IIIA
Mucopolysaccharidosis Type IIIB
Mucopolysaccharidosis Type IIIC
Muscle-eye-brain Disease
MUT-related Methylmalonic Acidemia
MYO7A-related Disorders
NEB-related Nemaline Myopathy
Niemann-Pick Disease Type C
Niemann-Pick Disease Type C2
Niemann-Pick Disease, SMPD1-associated
Nijmegen Breakage Syndrome
Northern Epilepsy
Ornithine Transcarbamylase Deficiency
PCCA-related Propionic Acidemia
PCDH15-related Disorders
Pendred Syndrome
Peroxisome Biogenesis Disorder Type 3
Peroxisome Biogenesis Disorder Type 4

Peroxisome Biogenesis Disorder Type 5
Peroxisome Biogenesis Disorder Type 6
PEX1-related Zellweger Syndrome Spectrum
Phenylalanine Hydroxylase Deficiency
PKHD1-related Autosomal Recessive Polycystic Kidney Disease
Polyglandular Autoimmune Syndrome Type 1
Pompe Disease
PPT1-related Neuronal Ceroid Lipofuscinosis
Primary Carnitine Deficiency
Primary Hyperoxaluria Type 1
Primary Hyperoxaluria Type 2
Primary Hyperoxaluria Type 3
PROP1-related Combined Pituitary Hormone Deficiency
* Prothrombin Thrombophilia
* Pseudocholinesterase Deficiency
Pycnodysostosis
Pyruvate Carboxylase Deficiency
Recessive Multiple Epiphyseal Dysplasia
Rhizomelic Chondrodysplasia Punctata Type 1
RTEL1-related Disorders
Salla Disease
Sandhoff Disease
Segawa Syndrome
Short Chain Acyl-CoA Dehydrogenase Deficiency
Sjogren-Larsson Syndrome
Smith-Lemli-Opitz Syndrome
Spastic Paraplegia Type 15
Spinal Muscular Atrophy
Spondylothoracic Dysostosis
Steroid-resistant Nephrotic Syndrome
Sulfate Transporter-related Osteochondrodysplasia
TGM1-related Autosomal Recessive Congenital Ichthyosis
TPP1-related Neuronal Ceroid Lipofuscinosis
Tyrosinemia Type I
Tyrosinemia Type II
USH1C-related Disorders
USH2A-related Disorders
Usher Syndrome Type 3
Very Long Chain Acyl-CoA Dehydrogenase Deficiency
Wilson Disease
X-linked Adrenoleukodystrophy
X-linked Alport Syndrome
X-linked Juvenile Retinoschisis
X-linked Myotubular Myopathy
X-linked Severe Combined Immunodeficiency
Xeroderma Pigmentosum Group A
Xeroderma Pigmentosum Group C
* Must be specifically requested to be included on your panel.

CPT Codes:
81479

Supplemental Test Request Form Required:
Yes

Extended Myositis Panel

MYOPAN

ORDERING

Ordering Recommendations:
May be useful for differential evaluation of polymyositis, dermatomyositis, necrotizing autoimmune myopathy, or overlap syndromes associated with connective tissue disease.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Semi-Quantitative Enzyme-Linked Immunosorbent Assay/Qualitative Immunoprecipitation/Semi-Quantitative Multiplex Bead Assay/Qualitative Immunoblot

Reported:
7-15 days

Synonyms:

- U3RNP

COLLECTION

Sample Type:
Serum

Collect:
Serum separator tube (SST), red top tube

Amount to Collect:
6 mL blood

Preferred Volume:
3 mL serum

Minimum Volume:
1.5 mL serum

Stability (from collection to initiation):
Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Hemolyzed, hyperlipemic, icteric, heat-treated or contaminated specimens.

PROCESSING

Test Code:
MYOPAN

ARUP Test Code:
3001781

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate from cells ASAP or within 2 hours of collection. Transfer three 1 mL serum aliquots to ARUP Standard Transport Tubes. (Min: 0.5 mL/aliquot)

Additional Processing Instructions:
Freeze aliquot. Transport aliquot frozen to CB. Order ARUP test code 2013961.

Preferred Volume:
3 mL serum

Minimum Volume:
1.5 mL serum

Unacceptable Conditions:
Hemolyzed, hyperlipemic, icteric, heat-treated or contaminated specimens.

Stability (from collection to initiation):
Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:

Components	Reference Interval
Smith/RNP (ENA) Ab, IgG	19 Units or less
SSA-52 (Ro52) (ENA) Antibody, IgG	40 AU/mL or less
Jo-1 (Histidyl-tRNA Synthetase) Ab, IgG	40 AU/mL or less
PM/Scl 100 Antibody, IgG	Negative
Mi-2 (nuclear helicase protein) Antibody	Negative
PL-7 (threonyl-tRNA synthetase) Antibody	Negative
PL-12 (alanyl-tRNA synthetase) Antibody	Negative
P155/140 Antibody	Negative
EJ (glycyl-tRNA synthetase) Antibody	Negative
Ku Antibody	Negative
SRP (Signal Recognition Particle) Ab	Negative
OJ (isoleucyl-tRNA synthetase) Antibody	Negative
SSA-60 (Ro60) (ENA) Antibody, IgG	40 AU/mL or less
Fibrillarin (U3 RNP) Ab, IgG	Negative
SAE1 (SUMO activating enzyme) Ab	Negative
MDA5 (CADM-140) Ab	Negative
NXP2 (Nuclear matrix protein-2) Ab	Negative
TIF-1 gamma (155 kDa) Ab	Negative

Interpretive Data:
Refer to report.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Component	Interpretation
SSA-52 (Ro52) (ENA) Antibody, IgG	29 AU/mL or Less: Negative 30-40 AU/mL: Equivocal 41 AU/mL or greater: Positive
SSA-60 (Ro60) (ENA) Antibody, IgG	29 AU/mL or Less: Negative 30-40 AU/mL: Equivocal 41 AU/mL or greater: Positive
Smith/RNP (ENA) Antibody, IgG	19 Units or less Negative 20-39 Units Weak Positive 40-80 Units Moderate Positive 81 Units or greater Strong Positive
Jo-1 Antibody, IgG	29 AU/mL or less Negative 30-40 AU/mL Equivocal 41 AU/mL or greater Positive

ADMINISTRATIVE

CPT Codes:
83516 x8; 86235 x6; 84182 x4

LOINC:

- 33771-7
- 18485-3
- 18484-6
- 33772-5
- 82426-8
- 33571-1
- 33983-8
- 31625-7
- 33921-8
- 49963-2
- 81732-0
- 82448-2
- 53019-6
- 8061-4
- 45149-2
- 82424-3
- 82440-9
- 48767-8
- 45152-6

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
May be useful for differential evaluation of polymyositis, dermatomyositis, necrotizing autoimmune myopathy, or overlap syndromes associated with connective tissue disease.

Test Code:
MYOPAN

ARUP Test Code:
3001781

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Semi-Quantitative Enzyme-Linked Immunosorbent Assay/Qualitative Immunoprecipitation/Semi-Quantitative Multiplex Bead Assay/Qualitative Immunoblot

Collect:
Serum separator tube (SST), red top tube

Amount to Collect:
6 mL blood

Sample Type:
Serum

Preferred Volume:
3 mL serum

Minimum Volume:
1.5 mL serum

Unacceptable Conditions:
Hemolyzed, hyperlipemic, icteric, heat-treated or contaminated specimens.

Specimen Preparation:
Separate from cells ASAP or within 2 hours of collection. Transfer three 1 mL serum aliquots to ARUP Standard Transport Tubes. (Min: 0.5 mL/aliquot)

Additional Processing Instructions:
Freeze aliquot. Transport aliquot frozen to CB. Order ARUP test code 2013961.

Reference Interval:

Components	Reference Interval
Smith/RNP (ENA) Ab, IgG	19 Units or less
SSA-52 (Ro52) (ENA) Antibody, IgG	40 AU/mL or less
Jo-1 (Histidyl-tRNA Synthetase) Ab, IgG	40 AU/mL or less
PM/Scl 100 Antibody, IgG	Negative
Mi-2 (nuclear helicase protein) Antibody	Negative
PL-7 (threonyl-tRNA synthetase) Antibody	Negative
PL-12 (alanyl-tRNA synthetase) Antibody	Negative
P155/140 Antibody	Negative
EJ (glycyl-tRNA synthetase) Antibody	Negative
Ku Antibody	Negative
SRP (Signal Recognition Particle) Ab	Negative
OJ (isoleucyl-tRNA synthetase) Antibody	Negative
SSA-60 (Ro60) (ENA) Antibody, IgG	40 AU/mL or less
Fibrillarin (U3 RNP) Ab, IgG	Negative
SAE1 (SUMO activating enzyme) Ab	Negative
MDA5 (CADM-140) Ab	Negative
NXP2 (Nuclear matrix protein-2) Ab	Negative
TIF-1 gamma (155 kDa) Ab	Negative

Interpretive Data:

Refer to report.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Component	Interpretation
SSA-52 (Ro52) (ENA) Antibody, IgG	29 AU/mL or Less: Negative 30-40 AU/mL: Equivocal 41 AU/mL or greater: Positive
SSA-60 (Ro60) (ENA) Antibody, IgG	29 AU/mL or Less: Negative 30-40 AU/mL: Equivocal 41 AU/mL or greater: Positive
Smith/RNP (ENA) Antibody, IgG	19 Units or less Negative 20-39 Units Weak Positive 40-80 Units Moderate Positive 81 Units or greater Strong Positive
Jo-1 Antibody, IgG	29 AU/mL or less Negative 30-40 AU/mL Equivocal 41 AU/mL or greater Positive

Synonyms:

- U3RNP

Storage/Transport Temperature:

Refrigerated.

Stability (from collection to initiation):

Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month

Reported:

7-15 days

CPT Codes:

83516 x8; 86235 x6; 84182 x4

LOINC:

- 33771-7
- 18485-3
- 18484-6
- 33772-5
- 82426-8
- 33571-1
- 33983-8
- 31625-7
- 33921-8
- 49963-2
- 81732-0
- 82448-2
- 53019-6
- 8061-4
- 45149-2
- 82424-3
- 82440-9
- 48767-8
- 45152-6

Notes:

Antibodies: Mi-2, PL-7, PL12, P155/140, EJ, Ku, OJ, PM/Scl, SRP, Smith/RNP, Ro52, Ro60, Jo-1, U3 Fib, SAE1, NXP2, MDA5, TIF1-gamma

Factor 10 Activity, Chromogenic

FXCH

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Chromogenic

Reported:
Test run 6 x per week. Turnaround 3-5 days.

Additional Information:
Useful in regulating coumadin therapy in a patient with a lupus anticoagulant, which occasionally interferes with PT assays.

A prothrombin time (PT) and Factor X Chromogenic should be ordered on the same specimen when a Factor X Chromogenic is requested. If the INR is <1.5, the Factor X Chromogenic will be cancelled.

Synonyms:

- F10
- FX
- Factor X chromogenic

COLLECTION

Sample Type:
Citrated plasma

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap. Deliver immediately to the laboratory.

For patients with Hct's >= 55% please contact Hematology (Parnassus: 3-1747, Mission Bay: call 6-0194). To obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Stability (from collection to initiation):
Factor assays should generally be performed within four hours of specimen collection or the plasma frozen; the latter is stable for 2 weeks at -20C or 6 months at -70C.

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

PROCESSING

Test Code:
FXCH

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:

Deliver sample to Hematology ASAP for processing. Separate platelet poor plasma. Freeze at least 1 mL of plasma in a plastic tube at -20C. Order Quest test# 10663X

Ship Monday-Thursday on dry ice to Send-outs at China Basin for processing to forward to Quest.

NOTE: For Brown and Toland patients (BTMOLT), ship the frozen plasma to LabCorp, test code 821728.

Preferred Volume:

1 mL plasma

Minimum Volume:

0.5 mL plasma

Unacceptable Conditions:

Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Stability (from collection to initiation):

Factor assays should generally be performed within four hours of specimen collection or the plasma frozen; the latter is stable for 2 weeks at -20C or 6 months at -70C.

RESULT INTERPRETATION

Units:

% activity

Reference Interval:

Normal: 73-158% activity
Therapeutic range for patients on coumadin: 11-42%

Additional Information:

Useful in regulating coumadin therapy in a patient with a lupus anticoagulant, which occasionally interferes with PT assays.

A prothrombin time (PT) and Factor X Chromogenic should be ordered on the same specimen when a Factor X Chromogenic is requested. If the INR is <1.5, the Factor X Chromogenic will be cancelled.

ADMINISTRATIVE

CPT Codes:

85260-90

LOINC Codes:

33984-6

COMPLETE VIEW

Available Stat:

No

Test Code:

FXCH

Performing Lab:

Quest

Sendout:

Yes

Methodology:

Chromogenic

Remarks:

1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap. Deliver immediately to the laboratory.

For patients with Hct's >= 55% please contact Hematology (Parnassus: 3-1747, Mission Bay: call 6-0194). To obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Collect:

Blue top filled to full extent of vacuum

Amount to Collect:

2.7 mL blood

Sample Type:

Citrated plasma

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Specimen Preparation:
Deliver sample to Hematology ASAP for processing. Separate platelet poor plasma. Freeze at least 1 mL of plasma in a plastic tube at -20C. Order Quest test# 10663X

Ship Monday-Thursday on dry ice to Send-outs at China Basin for processing to forward to Quest.

NOTE: For Brown and Toland patients (BTMOLT), ship the frozen plasma to LabCorp, test code 821728.

Units:
% activity

Reference Interval:
Normal: 73-158% activity
Therapeutic range for patients on coumadin: 11-42%

Synonyms:

- F10
- FX
- Factor X chromogenic

Stability (from collection to initiation):
Factor assays should generally be performed within four hours of specimen collection or the plasma frozen; the latter is stable for 2 weeks at -20C or 6 months at -70C.

Reported:
Test run 6 x per week. Turnaround 3-5 days.

Additional Information:
Useful in regulating coumadin therapy in a patient with a lupus anticoagulant, which occasionally interferes with PT assays.

A prothrombin time (PT) and Factor X Chromogenic should be ordered on the same specimen when a Factor X Chromogenic is requested. If the INR is <1.5, the Factor X Chromogenic will be cancelled.

CPT Codes:
85260-90

LOINC Codes:
33984-6

Factor 10 Activity, Routine

F10

ORDERING

Available Stat:
No

Performing Lab:
Parnassus Hematology

Performed:
Test run 0800-1500 Monday-Friday

Methodology:
Clotting assay (Stago - STAR)

Reported:
1-3 days

Reflex Testing:
If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for

Synonyms:

- F10
- FX
- Factor X

COLLECTION

Sample Type:
Citrated plasma

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap. Deliver immediately to the laboratory.

For patients with Hct's >= 55% please contact Hematology (Parnassus: 3-1747, Mission Bay 6-1094) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Stability (from collection to initiation):
Factor assays should generally be performed within four hours of specimen collection or the plasma frozen; the latter is stable for 2 weeks at -20C or 6 months at -70C.

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

PROCESSING

Test Code:
F10

Test Group:
Coagulation Factor Activities

Performing Lab:
Parnassus Hematology

Specimen Preparation:
Provide sample(s) to Hematology section asap.

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Stability (from collection to initiation):
Factor assays should generally be performed within four hours of specimen collection or the plasma frozen; the latter is stable for 2 weeks at -20C or 6 months at -70C.

RESULT INTERPRETATION

Units:
%

Reference Interval:

Age	Activity
0D-2D	12-68%
2D-6D	19-79%
6D-31D	31-87%
31D-91D	35-107%
91D-1Y	38-118%
1Y-6Y	58-116%
6Y-11Y	55-101%
11Y-16Y	50-117%
16+	71-143%

UCSF HAS NOT ESTABLISHED NORMAL REFERENCE RANGES FOR FACTOR LEVELS FOR CHILDREN <18 YEARS OLD.

The table above gives age-adjusted reference ranges for Pediatric Factor 10 Levels as percentages. The values are expressed by the upper and lower boundary encompassing 95% of the population. These values are based upon these references:

Andrew M. et al. Development of the Human Coagulation System in the Full Term Infant. Blood 1987 70:165
Andrew M, et al. Maturation of the Hemostatic System During Childhood. Blood October 1992, 80(8): 1998-2005

Values are converted from the original tables, which express values as units/ml. Original tables provide values for infants at 1 day, 5 days, 30 days, 90 days, and 180 days of age as well as for children 1-5 years, 6-10 years, and 11-16 years. The published tables have been converted to the reference range shown.

ADMINISTRATIVE

CPT Codes:
85260

LOINC Codes:
3218-5

COMPLETE VIEW

Available Stat:
No

Test Code:
F10

Test Group:
Coagulation Factor Activities

Performing Lab:
Parnassus Hematology

Performed:
Test run 0800-1500 Monday-Friday

Methodology:
Clotting assay (Stago - STAR)

Remarks:

1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap. Deliver immediately to the laboratory.

For patients with Hct's >= 55% please contact Hematology (Parnassus: 3-1747, Mission Bay 6-1094) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Collect:

Blue top filled to full extent of vacuum

Amount to Collect:

2.7 mL blood

Sample Type:

Citrated plasma

Preferred Volume:

1 mL plasma

Minimum Volume:

0.5 mL plasma

Unacceptable Conditions:

Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Specimen Preparation:

Provide sample(s) to Hematology section asap.

Units:

%

Reference Interval:

Age	Activity
0D-2D	12-68%
2D-6D	19-79%
6D-31D	31-87%
31D-91D	35-107%
91D-1Y	38-118%
1Y-6Y	58-116%
6Y-11Y	55-101%
11Y-16Y	50-117%
16+	71-143%

UCSF HAS NOT ESTABLISHED NORMAL REFERENCE RANGES FOR FACTOR LEVELS FOR CHILDREN <18 YEARS OLD.

The table above gives age-adjusted reference ranges for Pediatric Factor 10 Levels as percentages. The values are expressed by the upper and lower boundary encompassing 95% of the population. These values are based upon these references:

Andrew M. et al. Development of the Human Coagulation System in the Full Term Infant. Blood 1987 70:165
Andrew M, et al. Maturation of the Hemostatic System During Childhood. Blood October 1992, 80(8): 1998-2005

Values are converted from the original tables, which express values as units/ml. Original tables provide values for infants at 1 day, 5 days, 30 days, 90 days, and 180 days of age as well as for children 1-5 years, 6-10 years, and 11-16 years. The published tables have been converted to the reference range shown.

Synonyms:

- F10
- FX
- Factor X

Stability (from collection to initiation):

Factor assays should generally be performed within four hours of specimen collection or the plasma frozen; the latter is stable for 2 weeks at -20C or 6 months at -70C.

Reported:

1-3 days

Reflex Testing:

If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for

CPT Codes:

85260

LOINC Codes:

3218-5

Factor 11 Activity

F11

ORDERING

Available Stat:
No

Performing Lab:
Parnassus & Mission Bay Hematology

Performed:
Test run 0800-1500 Monday-Friday

Note: If testing is needed outside of these hours, contact Hematology. For Parnassus patients call 3-1747, for Mission Bay patients call 6-0194.

Methodology:
Clotting assay (Stago - STAR)

Reported:
1-3 days

Reflex Testing:
If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

Synonyms:

- FXI
- F11
- Factor XI

COLLECTION

Sample Type:
Citrated plasma

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap. Deliver immediately to the laboratory.

For patients with Hct's >= 55% please contact Hematology (Parnassus: 3-1747, Mission Bay: call 6-0194) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Stability (from collection to initiation):
Factor assays should generally be performed within four hours of specimen collection or the plasma frozen; the latter is stable for 2 weeks at -20C or 6 months at -70C.

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

PROCESSING

Test Code:
F11

Test Group:
Coagulation Factor Activities

Performing Lab:
Parnassus & Mission Bay Hematology

Specimen Preparation:
Provide sample(s) to Hematology section asap.

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Stability (from collection to initiation):
Factor assays should generally be performed within four hours of specimen collection or the plasma frozen; the latter is stable for 2 weeks at -20C or 6 months at -70C.

RESULT INTERPRETATION

Units:
%

Reference Interval:

Age	Activity
0D-2D	10-66%
2D-6D	23-87%
6D-31D	27-79%
31D-91D	41-97%
91D-1Y	38-134%
1Y+	72-161%

UCSF HAS NOT ESTABLISHED NORMAL REFERENCE RANGES FOR FACTOR LEVELS FOR CHILDREN <18 YEARS OLD. The table above gives age-adjusted reference ranges for Pediatric Factor 11 Levels as percentages. The values are expressed by the upper and lower boundary encompassing 95% of the population.

These values are based upon these references: Andrew M. et al. Development of the Human Coagulation System in the Full Term Infant. Blood 1987 70:165 Andrew M, et al. Maturation of the Hemostatic System During Childhood. Blood October 1992, 80(8): 1998-2005

Values are converted from the original tables, which express values as units/ml. Original tables provide values for infants at 1 day, 5 days, 30 days, 90 days, and 180 days of age as well as for children 1-5 years, 6-10 years, and 11-16 years. The published tables have been converted to the reference range shown.

ADMINISTRATIVE

CPT Codes:
85270

LDT or Modified FDA:
Yes

LOINC Codes:
3226-8

COMPLETE VIEW

Available Stat:
No

Test Code:
F11

Test Group:
Coagulation Factor Activities

Performing Lab:
Parnassus & Mission Bay Hematology

Performed:
Test run 0800-1500 Monday-Friday

Note: If testing is needed outside of these hours, contact Hematology. For Parnassus patients call 3-1747, for Mission Bay patients call 6-0194.

Methodology:
Clotting assay (Stago - STAR)

Remarks:

1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap. Deliver immediately to the laboratory.

For patients with Hct's >= 55% please contact Hematology (Parnassus: 3-1747, Mission Bay: call 6-0194) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Sample Type:
Citrated plasma

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Specimen Preparation:
Provide sample(s) to Hematology section asap.

Units:
%

Reference Interval:

Age	Activity
0D-2D	10-66%
2D-6D	23-87%
6D-31D	27-79%
31D-91D	41-97%
91D-1Y	38-134%
1Y+	72-161%

UCSF HAS NOT ESTABLISHED NORMAL REFERENCE RANGES FOR FACTOR LEVELS FOR CHILDREN <18 YEARS OLD. The table above gives age-adjusted reference ranges for Pediatric Factor 11 Levels as percentages. The values are expressed by the upper and lower boundary encompassing 95% of the population.

These values are based upon these references: Andrew M. et al. Development of the Human Coagulation System in the Full Term Infant. Blood 1987 70:165 Andrew M, et al. Maturation of the Hemostatic System During Childhood. Blood October 1992, 80(8): 1998-2005

Values are converted from the original tables, which express values as units/ml. Original tables provide values for infants at 1 day, 5 days, 30 days, 90 days, and 180 days of age as well as for children 1-5 years, 6-10 years, and 11-16 years. The published tables have been converted to the reference range shown.

Synonyms:

- FXI
- F11
- Factor XI

Stability (from collection to initiation):
Factor assays should generally be performed within four hours of specimen collection or the plasma frozen; the latter is stable for 2 weeks at -20C or 6 months at -70C.

Reported:
1-3 days

Reflex Testing:
If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

CPT Codes:
85270

LDT or Modified FDA:
Yes

LOINC Codes:
3226-8

Factor 12 Activity

F12A

ORDERING

Available Stat:
No

Performing Lab:
UC Davis

Methodology:
Photometric clot detection

Reported:
Performed 5x per week. Turnaround 3-5 days.

Additional Information:
Factor 12 Deficiency is not associated with a bleeding diathesis.

Synonyms:

- F12
- FXII
- Factor XII
- Contact factor
- Contact activation factor

COLLECTION

Sample Type:
Citrated plasma

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Preferred Volume:
1.5 mL plasma

Minimum Volume:
0.5 mL plasma

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap. Deliver immediately to the laboratory.

For patients with Hct's >= 55% please contact Hematology (Parnassus: 3-1747, Mission Bay: call 6-0194) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Stability (from collection to initiation):
Factor assays should generally be performed within four hours of specimen collection or the plasma frozen; the latter is stable for 2 weeks at -20C or 6 months at -70C.

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

PROCESSING

Test Code:
F12A

Test Group:
Coagulation Factor Activities

Sendout:
Yes

Performing Lab:
UC Davis

Specimen Preparation:
Provide sample(s) to Hematology section asap. Centrifuge and freeze platelet poor plasma at -20C.

For B&T patients order Labcorp test #086322

Preferred Volume:
1.5 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Stability (from collection to initiation):
Factor assays should generally be performed within four hours of specimen collection or the plasma frozen; the latter is stable for 2 weeks at -20C or 6 months at -70C.

RESULT INTERPRETATION

Units:
%

Reference Interval:
Newborn - Day: 4 13-93%
Day 5 - 1 Month: 11-83%
1 Month - 3 Months: 17-81%
3 Months - 6 Months: 25-109%
6 Months - 1 Year: 39-115%
1 Year - 5 Years: 64-129%
6 Years - 10 years: 60-140%
11 Years - 16 Years: 34-137%
>= 17 Years: 50-150%

Additional Information:
Factor 12 Deficiency is not associated with a bleeding diathesis.

ADMINISTRATIVE

CPT Codes:
85280-90

LOINC Codes:
3232-6

COMPLETE VIEW

Available Stat:
No

Test Code:
F12A

Test Group:
Coagulation Factor Activities

Performing Lab:
UC Davis

Sendout:
Yes

Methodology:
Photometric clot detection

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap. Deliver immediately to the laboratory.

For patients with Hct's >= 55% please contact Hematology (Parnassus: 3-1747, Mission Bay: call 6-0194) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Sample Type:
Citrated plasma

Preferred Volume:
1.5 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Specimen Preparation:
Provide sample(s) to Hematology section asap. Centrifuge and freeze platelet poor plasma at -20C.

For B&T patients order Labcorp test #086322

Units:
%

Reference Interval:
Newborn - Day: 4 13-93%
Day 5 - 1 Month: 11-83%
1 Month - 3 Months: 17-81%
3 Months - 6 Months: 25-109%
6 Months - 1 Year: 39-115%
1 Year - 5 Years: 64-129%
6 Years - 10 years: 60-140%
11 Years - 16 Years: 34-137%
>= 17 Years: 50-150%

Synonyms:

- F12
- FXII
- Factor XII
- Contact factor
- Contact activation factor

Stability (from collection to initiation):
Factor assays should generally be performed within four hours of specimen collection or the plasma frozen; the latter is stable for 2 weeks at -20C or 6 months at -70C.

Reported:
Performed 5x per week. Turnaround 3-5 days.

Additional Information:
Factor 12 Deficiency is not associated with a bleeding diathesis.

CPT Codes:
85280-90

LOINC Codes:
3232-6

Factor 13 Activity

F13A

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Chromogenic

Reported:
7-10 days

Additional Information:
Assay values reported down to 3%.

Low Factor XIII levels ie., < 15% may cause a bleeding disorder and levels < 2% have been associated with spontaneous intercranial hemorrhage.

This assay replaces the previously offered Urea Clot Solubility assay that was discontinued 8/1/07.

This test is performed at Quest using a kit that has not been approved or cleared by the FDA. The analytical performance characteristics of this test have been determined by Quest Diagnostics Nichols Institute, San Juan Capistrano. This test should not be used for diagnosis without confirmation by other medically established means.

Synonyms:

- FSF
- Fibrin stabilizing factor
- Urea Clot Solubility Assay
- Factor 13
- F13
- FXIII
- Factor XIII

COLLECTION

Sample Type:
Citrated plasma

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Preferred Volume:
1 mL plasma

Minimum Volume:
0.3 mL plasma

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap. Avoid hemolysis. Deliver immediately to the laboratory.

For patients with Hct's >= 55% please contact Hematology (Parnassus: 3-1747, Mission Bay: call 6-0194) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Stability (from collection to initiation):
Factor assays should generally be performed within four hours of specimen collection or the plasma frozen; the latter is stable for 2 weeks at -20C or 6 months at -70C.

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected Hemolyzed

Rejection Criteria:
Thawed or hemolyzed sample

PROCESSING

Test Code:
F13A

Test Group:
Factor XIII

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Deliver sample to Hematology ASAP for processing.

Separate and freeze plasma at -20C. Ship frozen.

Order Quest #14461X. For Brown and Toland patients (BTMOLT), ship the plasma on dry ice to LabCorp, test code 276937.

Preferred Volume:
1 mL plasma

Minimum Volume:
0.3 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected Hemolyzed

Rejection Criteria:
Thawed or hemolyzed sample

Stability (from collection to initiation):
Factor assays should generally be performed within four hours of specimen collection or the plasma frozen; the latter is stable for 2 weeks at -20C or 6 months at -70C.

RESULT INTERPRETATION

Units:
%

Reference Interval:
57-192%

Additional Information:
Assay values reported down to 3%.

Low Factor XIII levels ie., < 15% may cause a bleeding disorder and levels < 2% have been associated with spontaneous intercranial hemorrhage.

This assay replaces the previously offered Urea Clot Solubility assay that was discontinued 8/1/07.

This test is performed at Quest using a kit that has not been approved or cleared by the FDA. The analytical performance characteristics of this test have been determined by Quest Diagnostics Nichols Institute, San Juan Capistrano. This test should not be used for diagnosis without confirmation by other medically established means.

ADMINISTRATIVE

CPT Codes:
85290-90

LOINC Codes:
27815-0

COMPLETE VIEW

Available Stat:
No

Test Code:
F13A

Test Group:
Factor XIII

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Chromogenic

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap. Avoid hemolysis. Deliver immediately to the laboratory.

For patients with Hct's >= 55% please contact Hematology (Parnassus: 3-1747, Mission Bay: call 6-0194) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Sample Type:
Citrated plasma

Preferred Volume:
1 mL plasma

Minimum Volume:
0.3 mL plasma

Rejection Criteria:
Thawed or hemolyzed sample

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected Hemolyzed

Specimen Preparation:
Deliver sample to Hematology ASAP for processing.

Separate and freeze plasma at -20C. Ship frozen.

Order Quest #14461X. For Brown and Toland patients (BTMOLT), ship the plasma on dry ice to LabCorp, test code 276937.

Units:
%

Reference Interval:
57-192%

Synonyms:

- FSF
- Fibrin stabilizing factor
- Urea Clot Solubility Assay
- Factor 13
- F13
- FXIII
- Factor XIII

Stability (from collection to initiation):
Factor assays should generally be performed within four hours of specimen collection or the plasma frozen; the latter is stable for 2 weeks at -20C or 6 months at -70C.

Reported:
7-10 days

Additional Information:
Assay values reported down to 3%.

Low Factor XIII levels ie., < 15% may cause a bleeding disorder and levels < 2% have been associated with spontaneous intercranial hemorrhage.

This assay replaces the previously offered Urea Clot Solubility assay that was discontinued 8/1/07.

This test is performed at Quest using a kit that has not been approved or cleared by the FDA. The analytical performance characteristics of this test have been determined by Quest Diagnostics Nichols Institute, San Juan Capistrano. This test should not be used for diagnosis without confirmation by other medically established means.

CPT Codes:
85290-90

LOINC Codes:
27815-0

Factor 2 Activity

F2

ORDERING

Available Stat:
No

Performing Lab:
Parnassus Hematology

Performed:
Test run 0800-1500 Monday-Friday

Methodology:
Clotting assay (Stago - STAR)

Reported:
1-3 days

Reflex Testing:
If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

Synonyms:

- Prothrombin
- F2
- Factor 2
- Factor II

COLLECTION

Sample Type:
Citrated plasma

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap. Deliver immediately to the laboratory.

For patients with Hct's >= 55% please contact Hematology (Parnassus: 3-1747, Mission Bay 6-1094) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Stability (from collection to initiation):
Factor assays should generally be performed within four hours of specimen collection or the plasma frozen; the latter is stable for 2 weeks at -20C or 6 months at -70C.

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

PROCESSING

Test Code:
F2

Test Group:
Coagulation Factor Activities

Performing Lab:
Parnassus Hematology

Specimen Preparation:
Provide sample(s) to Hematology section asap.

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Stability (from collection to initiation):
Factor assays should generally be performed within four hours of specimen collection or the plasma frozen; the latter is stable for 2 weeks at -20C or 6 months at -70C.

RESULT INTERPRETATION

Units:
% activity

Reference Interval:

Age	Activity
0D-2D	26-70%
2D-6D	33-93%
6D-31D	34-102%
31D-91D	45-105%
91D-1Y	60-116%
1Y-6Y	71-116%
6Y-11Y	67-107%
11Y-16Y	61-104%
16+	81-127%

UCSF HAS NOT ESTABLISHED NORMAL REFERENCE RANGES FOR FACTOR LEVELS FOR CHILDREN <18 YEARS OLD. The table above gives age-adjusted reference ranges for Pediatric Factor 2 Levels as percentages. The values are expressed by the upper and lower boundary encompassing 95% of the population.

These values are based upon these references: Andrew M. et al. Development of the Human Coagulation System in the Full Term Infant. Blood 1987 70:165 Andrew M, et al. Maturation of the Hemostatic System During Childhood. Blood October 1992, 80(8): 1998-2005

Values are converted from the original tables, which express values as units/ml. Original tables provide values for infants at 1 day, 5 days, 30 days, 90 days, and 180 days of age as well as for children 1-5 years, 6-10 years, and 11-16 years. The published tables have been converted to the reference range shown.

ADMINISTRATIVE

CPT Codes:
85210

LOINC Codes:
3289-6

COMPLETE VIEW

Available Stat:
No

Test Code:
F2

Test Group:
Coagulation Factor Activities

Performing Lab:
Parnassus Hematology

Performed:
Test run 0800-1500 Monday-Friday

Methodology:
Clotting assay (Stago - STAR)

Remarks:

1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap. Deliver immediately to the laboratory.

For patients with Hct's >= 55% please contact Hematology (Parnassus: 3-1747, Mission Bay 6-1094) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Collect:

Blue top filled to full extent of vacuum

Amount to Collect:

2.7 mL blood

Sample Type:

Citrated plasma

Preferred Volume:

1 mL plasma

Minimum Volume:

0.5 mL plasma

Unacceptable Conditions:

Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Specimen Preparation:

Provide sample(s) to Hematology section asap.

Units:

% activity

Reference Interval:

Age	Activity
0D-2D	26-70%
2D-6D	33-93%
6D-31D	34-102%
31D-91D	45-105%
91D-1Y	60-116%
1Y-6Y	71-116%
6Y-11Y	67-107%
11Y-16Y	61-104%
16+	81-127%

UCSF HAS NOT ESTABLISHED NORMAL REFERENCE RANGES FOR FACTOR LEVELS FOR CHILDREN <18 YEARS OLD. The table above gives age-adjusted reference ranges for Pediatric Factor 2 Levels as percentages. The values are expressed by the upper and lower boundary encompassing 95% of the population.

These values are based upon these references: Andrew M. et al. Development of the Human Coagulation System in the Full Term Infant. Blood 1987 70:165 Andrew M, et al. Maturation of the Hemostatic System During Childhood. Blood October 1992, 80(8): 1998-2005

Values are converted from the original tables, which express values as units/ml. Original tables provide values for infants at 1 day, 5 days, 30 days, 90 days, and 180 days of age as well as for children 1-5 years, 6-10 years, and 11-16 years. The published tables have been converted to the reference range shown.

Synonyms:

- Prothrombin
- F2
- Factor 2
- Factor II

Stability (from collection to initiation):

Factor assays should generally be performed within four hours of specimen collection or the plasma frozen; the latter is stable for 2 weeks at -20C or 6 months at -70C.

Reported:

1-3 days

Reflex Testing:

If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

CPT Codes:
85210

LOINC Codes:
3289-6

Factor 5 Activity

F5

ORDERING

Available Stat:
No

Performing Lab:
Parnassus Hematology

Performed:
Test run 0800-1500 Monday-Friday

Methodology:
Clotting assay (Stago - STAR)

Reported:
1-3 days

Reflex Testing:
If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

Synonyms:

- F5
- FV
- Factor V

COLLECTION

Sample Type:
Citrated plasma

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap. Deliver immediately to the laboratory.

For patients with Hct's >= 55% please contact Hematology (Parnassus: 3-1747, Mission Bay 6-1094) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Stability (from collection to initiation):
Factor assays should generally be performed within four hours of specimen collection or the plasma frozen; the latter is stable for 2 weeks at -20C or 6 months at -70C.

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

PROCESSING

Test Code:
F5

Test Group:
Coagulation Factor Activities

Performing Lab:
Parnassus Hematology

Specimen Preparation:
Provide sample(s) to Hematology section asap.

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Stability (from collection to initiation):
Factor assays should generally be performed within four hours of specimen collection or the plasma frozen; the latter is stable for 2 weeks at -20C or 6 months at -70C.

RESULT INTERPRETATION

Units:
%

Reference Interval:

Age	Activity
0D-2D	36-108%
2D-6D	45-145%
6D-31D	62-134%
31D-91D	48-132%
91D-1Y	55-127%
1Y-6Y	79-127%
6Y-11Y	63-116%
11Y-16Y	55-99%
16+	67-154%

UCSF HAS NOT ESTABLISHED NORMAL REFERENCE RANGES FOR FACTOR LEVELS FOR CHILDREN <18 YEARS OLD. The table above gives age-adjusted reference ranges for Pediatric Factor 5 Levels as percentages. The values are expressed by the upper and lower boundary encompassing 95% of the population.

These values are based upon these references: Andrew M, et al. Maturation of the Hemostatic System During Childhood. Blood October 1992, 80(8): 1998-2005 Andrew M. et al. Development of the Human Coagulation System in the Full Term Infant. Blood 1987 70:165

Values are converted from the original tables, which express values as units/mL. Original tables provide values for infants at 1 day, 5 days, 30 days, 90 days, and 180 days of ages as well as for children 1-5 year, 6-10 years, and 11 - 16 years. The published tables have been converted to the reference range shown.

ADMINISTRATIVE

CPT Codes:
85220

LOINC Codes:
3193-0

COMPLETE VIEW

Available Stat:
No

Test Code:
F5

Test Group:
Coagulation Factor Activities

Performing Lab:
Parnassus Hematology

Performed:
Test run 0800-1500 Monday-Friday

Methodology:
Clotting assay (Stago - STAR)

Remarks:

1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap. Deliver immediately to the laboratory.

For patients with Hct's >= 55% please contact Hematology (Parnassus: 3-1747, Mission Bay 6-1094) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Collect:

Blue top filled to full extent of vacuum

Amount to Collect:

2.7 mL blood

Sample Type:

Citrated plasma

Preferred Volume:

1 mL plasma

Minimum Volume:

0.5 mL plasma

Unacceptable Conditions:

Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Specimen Preparation:

Provide sample(s) to Hematology section asap.

Units:

%

Reference Interval:

Age	Activity
0D-2D	36-108%
2D-6D	45-145%
6D-31D	62-134%
31D-91D	48-132%
91D-1Y	55-127%
1Y-6Y	79-127%
6Y-11Y	63-116%
11Y-16Y	55-99%
16+	67-154%

UCSF HAS NOT ESTABLISHED NORMAL REFERENCE RANGES FOR FACTOR LEVELS FOR CHILDREN <18 YEARS OLD. The table above gives age-adjusted reference ranges for Pediatric Factor 5 Levels as percentages. The values are expressed by the upper and lower boundary encompassing 95% of the population.

These values are based upon these references: Andrew M, et al. Maturation of the Hemostatic System During Childhood. Blood October 1992, 80(8): 1998-2005 Andrew M. et al. Development of the Human Coagulation System in the Full Term Infant. Blood 1987 70:165

Values are converted from the original tables, which express values as units/mL. Original tables provide values for infants at 1 day, 5 days, 30 days, 90 days, and 180 days of ages as well as for children 1-5 year, 6-10 years, and 11 - 16 years. The published tables have been converted to the reference range shown.

Synonyms:

- F5
- FV
- Factor V

Stability (from collection to initiation):

Factor assays should generally be performed within four hours of specimen collection or the plasma frozen; the latter is stable for 2 weeks at -20C or 6 months at -70C.

Reported:

1-3 days

Reflex Testing:

If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

CPT Codes:
85220

LOINC Codes:
3193-0

Factor 7 Activity

F7

ORDERING

Available Stat:
No

Performing Lab:
Parnassus Hematology

Performed:
Test run 0800-1500 Monday-Friday

Methodology:
Clotting assay (Stago - STAR)

Reported:
1-3 days

Reflex Testing:
If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

Synonyms:

- FVII
- F7
- Factor VII

COLLECTION

Sample Type:
Citrated plasma

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap. Deliver immediately to the laboratory.

For patients with Hct's >= 55% please contact Hematology (Parnassus: 3-1747, Mission Bay 6-1094) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Stability (from collection to initiation):
Factor assays should generally be performed within four hours of specimen collection or the plasma frozen; the latter is stable for 2 weeks at -20C or 6 months at -70C.

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

PROCESSING

Test Code:
F7

Test Group:
Coagulation Factor Activities

Performing Lab:
Parnassus Hematology

Specimen Preparation:
Provide sample(s) to Hematology section asap.

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Stability (from collection to initiation):
Factor assays should generally be performed within four hours of specimen collection or the plasma frozen; the latter is stable for 2 weeks at -20C or 6 months at -70C.

RESULT INTERPRETATION

Units:
%

Reference Interval:

Age	Activity
0D-2D	28-104%
2D-6D	35-143%
6D-31D	42-138%
31D-91D	39-143%
91D-1Y	47-127%
1Y-6Y	55-116%
6Y-11Y	52-120%
11Y-16Y	58-115%
16+	54-169%

UCSF HAS NOT ESTABLISHED NORMAL REFERENCE RANGES FOR FACTOR LEVELS FOR CHILDREN <18 YEARS OLD. The table above gives age-adjusted reference ranges for Pediatric Factor 7 Levels as percentages. The values are expressed by the upper and lower boundary encompassing 95% of the population.

These values are based upon these references: Andrew M. et al. Development of the Human Coagulation System in the Full Term Infant. Blood 1987 70:165 Andrew M, et al. Maturation of the Hemostatic System During Childhood. Blood October 1992, 80(8): 1998-2005

Values are converted from the original tables, which express values as units/ml. Original tables provide values for infants at 1 day, 5 days, 30 days, 90 days, and 180 days of age as well as for children 1-5 years, 6-10 years, and 11-16 years. The published tables have been converted to the reference range shown.

ADMINISTRATIVE

CPT Codes:
85230

LOINC Codes:
3200-3

COMPLETE VIEW

Available Stat:
No

Test Code:
F7

Test Group:
Coagulation Factor Activities

Performing Lab:
Parnassus Hematology

Performed:
Test run 0800-1500 Monday-Friday

Methodology:
Clotting assay (Stago - STAR)

Remarks:

1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap. Deliver immediately to the laboratory.

For patients with Hct's >= 55% please contact Hematology (Parnassus: 3-1747, Mission Bay 6-1094) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Collect:

Blue top filled to full extent of vacuum

Amount to Collect:

2.7 mL blood

Sample Type:

Citrated plasma

Preferred Volume:

1 mL plasma

Minimum Volume:

0.5 mL plasma

Unacceptable Conditions:

Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Specimen Preparation:

Provide sample(s) to Hematology section asap.

Units:

%

Reference Interval:

Age	Activity
0D-2D	28-104%
2D-6D	35-143%
6D-31D	42-138%
31D-91D	39-143%
91D-1Y	47-127%
1Y-6Y	55-116%
6Y-11Y	52-120%
11Y-16Y	58-115%
16+	54-169%

UCSF HAS NOT ESTABLISHED NORMAL REFERENCE RANGES FOR FACTOR LEVELS FOR CHILDREN <18 YEARS OLD. The table above gives age-adjusted reference ranges for Pediatric Factor 7 Levels as percentages. The values are expressed by the upper and lower boundary encompassing 95% of the population.

These values are based upon these references: Andrew M. et al. Development of the Human Coagulation System in the Full Term Infant. Blood 1987 70:165 Andrew M, et al. Maturation of the Hemostatic System During Childhood. Blood October 1992, 80(8): 1998-2005

Values are converted from the original tables, which express values as units/ml. Original tables provide values for infants at 1 day, 5 days, 30 days, 90 days, and 180 days of age as well as for children 1-5 years, 6-10 years, and 11-16 years. The published tables have been converted to the reference range shown.

Synonyms:

- FVII
- F7
- Factor VII

Stability (from collection to initiation):

Factor assays should generally be performed within four hours of specimen collection or the plasma frozen; the latter is stable for 2 weeks at -20C or 6 months at -70C.

Reported:

1-3 days

Reflex Testing:

If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

CPT Codes:
85230

LOINC Codes:
3200-3

Factor 8 Activity

F8

ORDERING

Available Stat:
No

Performing Lab:
Parnassus & Mission Bay Hematology

Performed:
Test run 0800-1500 Monday-Friday.

Note: If testing is needed outside of these hours, contact Hematology. For Parnassus patients call 3-1747, for Mission Bay patients call 6-0194.

Methodology:
Clotting assay (Stago - STAR)

Reported:
1-3 days

Additional Information:
Emicizumab affects intrinsic pathway clotting-based laboratory tests, including activated clotting time (ACT); activated partial thromboplastin time (aPTT); and all assays based on aPTT, such as one-stage, factor VIII (FVIII) activity. Therefore, intrinsic pathway clotting-based coagulation laboratory test results in patients who have been treated with Emicizumab prophylaxis should not be used to monitor Emicizumab activity.

Reflex Testing:
If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

Synonyms:

- F8
- FVIII
- FVIII:C
- Factor VIII

COLLECTION

Sample Type:
Citrated plasma

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap. Deliver immediately to the laboratory.

For patients with Hct's >= 55% please contact Hematology (Parnassus: x3-1747, Mission Bay 6-0194) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Stability (from collection to initiation):
Factor assays should generally be performed within four hours of specimen collection or the plasma frozen; the latter is stable for 2 weeks at -20C or 6 months at -70C.

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

PROCESSING

Test Code:
F8

Test Group:
Coagulation Factor Activities

Performing Lab:
Parnassus & Mission Bay Hematology

Specimen Preparation:
Provide sample(s) to Hematology section asap.

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Stability (from collection to initiation):
Factor assays should generally be performed within four hours of specimen collection or the plasma frozen; the latter is stable for 2 weeks at -20C or 6 months at -70C.

RESULT INTERPRETATION

Units:
%

Reference Interval:
43-168%

Note: During infancy, Factor VIII values can be greater than those observed in adults. Nevertheless, a value of approximately 50% was noted as the lower limit of normal for full term infants from birth to 6 months. (Reference: Andrew M. et al. Blood 1987 70:165).

Additional Information:
Emicizumab affects intrinsic pathway clotting-based laboratory tests, including activated clotting time (ACT); activated partial thromboplastin time (aPTT); and all assays based on aPTT, such as one-stage, factor VIII (FVIII) activity. Therefore, intrinsic pathway clotting-based coagulation laboratory test results in patients who have been treated with Emicizumab prophylaxis should not be used to monitor Emicizumab activity.

ADMINISTRATIVE

CPT Codes:
85240

LDT or Modified FDA:
Yes

LOINC Codes:
3209-4

COMPLETE VIEW

Available Stat:
No

Test Code:
F8

Test Group:
Coagulation Factor Activities

Performing Lab:
Parnassus & Mission Bay Hematology

Performed:
Test run 0800-1500 Monday-Friday.

Note: If testing is needed outside of these hours, contact Hematology. For Parnassus patients call 3-1747, for Mission Bay patients call 6-0194.

Methodology:
Clotting assay (Stago - STAR)

Remarks:

1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap. Deliver immediately to the laboratory.

For patients with Hct's >= 55% please contact Hematology (Parnassus: x3-1747, Mission Bay 6-0194) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Sample Type:
Citrated plasma

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Specimen Preparation:
Provide sample(s) to Hematology section asap.

Units:
%

Reference Interval:
43-168%

Note: During infancy, Factor VIII values can be greater than those observed in adults. Nevertheless, a value of approximately 50% was noted as the lower limit of normal for full term infants from birth to 6 months. (Reference: Andrew M. et al. Blood 1987 70:165).

Synonyms:

- F8
- FVIII
- FVIII:C
- Factor VIII

Stability (from collection to initiation):
Factor assays should generally be performed within four hours of specimen collection or the plasma frozen; the latter is stable for 2 weeks at -20C or 6 months at -70C.

Reported:
1-3 days

Reflex Testing:
If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

Additional Information:
Emicizumab affects intrinsic pathway clotting-based laboratory tests, including activated clotting time (ACT); activated partial thromboplastin time (aPTT); and all assays based on aPTT, such as one-stage, factor VIII (FVIII) activity. Therefore, intrinsic pathway clotting-based coagulation laboratory test results in patients who have been treated with Emicizumab prophylaxis should not be used to monitor Emicizumab activity.

CPT Codes:
85240

LDT or Modified FDA:
Yes

LOINC Codes:
3209-4

Factor 9 Activity

F9

ORDERING

Available Stat:
No

Performing Lab:
Parnassus & Mission Bay Hematology

Performed:
Test run 0800-1500 Monday-Friday

Note: If testing is needed outside of these hours, contact Hematology. For Parnassus patients call 3-1747, for Mission Bay patients call 6-0194.

Methodology:
Clotting assay (Stago - STAR)

Reported:
1-3 days

Reflex Testing:
If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

Synonyms:

- FIX
- F9
- Factor IX

COLLECTION

Sample Type:
Citrated plasma

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap. Deliver immediately to the laboratory.

For patients with Hct's >= 55% please contact Hematology. (Parnassus: 3-1747, Mission Bay 6-1094) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Stability (from collection to initiation):
Factor assays should generally be performed within four hours of specimen collection or the plasma frozen; the latter is stable for 2 weeks at -20C or 6 months at -70C.

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

PROCESSING

Test Code:
F9

Test Group:
Coagulation Factor Activities

Performing Lab:
Parnassus & Mission Bay Hematology

Specimen Preparation:
Provide sample(s) to Hematology section asap.

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Stability (from collection to initiation):
Factor assays should generally be performed within four hours of specimen collection or the plasma frozen; the latter is stable for 2 weeks at -20C or 6 months at -70C.

RESULT INTERPRETATION

Units:
%

Reference Interval:

Age	Activity
0D-2D	15-91%
2D-6D	15-91%
6D-31D	21-81%
31D-91D	21-113%
91D-1Y	36-136%
1Y-6Y	47-104%
6Y-11Y	63-89%
11Y-16Y	59-122%
16+	60-160%

UCSF HAS NOT ESTABLISHED NORMAL REFERENCE RANGES FOR FACTOR LEVELS FOR CHILDREN <18 YEARS OLD. The table above gives age-adjusted reference ranges for Pediatric Factor 9 Levels as percentages. The values are expressed by the upper and lower boundary encompassing 95% of the population.

These values are based upon these references: Andrew M. et al. Development of the Human Coagulation System in the Full Term Infant. Blood 1987 70:165 Andrew M, et al. Maturation of the Hemostatic System During Childhood. Blood October 1992, 80(8): 1998-2005

Values are converted from the original tables, which express values as units/ml. Original tables provide values for infants at 1 day, 5 days, 30 days, 90 days, and 180 days of age as well as for children 1-5 years, 6-10 years, and 11-16 years. The published tables have been converted to the reference range shown.

ADMINISTRATIVE

CPT Codes:
85250

LDT or Modified FDA:
Yes

LOINC Codes:
3187-2

COMPLETE VIEW

Available Stat:
No

Test Code:
F9

Test Group:
Coagulation Factor Activities

Performing Lab:
Parnassus & Mission Bay Hematology

Performed:
Test run 0800-1500 Monday-Friday

Note: If testing is needed outside of these hours, contact Hematology. For Parnassus patients call 3-1747, for Mission Bay patients call 6-0194.

Methodology:
Clotting assay (Stago - STAR)

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap. Deliver immediately to the laboratory.

For patients with Hct's >= 55% please contact Hematology. (Parnassus: 3-1747, Mission Bay 6-1094) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Sample Type:
Citrated plasma

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Specimen Preparation:
Provide sample(s) to Hematology section asap.

Units:
%

Reference Interval:

Age	Activity
0D-2D	15-91%
2D-6D	15-91%
6D-31D	21-81%
31D-91D	21-113%
91D-1Y	36-136%
1Y-6Y	47-104%
6Y-11Y	63-89%
11Y-16Y	59-122%
16+	60-160%

UCSF HAS NOT ESTABLISHED NORMAL REFERENCE RANGES FOR FACTOR LEVELS FOR CHILDREN <18 YEARS OLD. The table above gives age-adjusted reference ranges for Pediatric Factor 9 Levels as percentages. The values are expressed by the upper and lower boundary encompassing 95% of the population.

These values are based upon these references: Andrew M. et al. Development of the Human Coagulation System in the Full Term Infant. Blood 1987 70:165 Andrew M, et al. Maturation of the Hemostatic System During Childhood. Blood October 1992, 80(8): 1998-2005

Values are converted from the original tables, which express values as units/ml. Original tables provide values for infants at 1 day, 5 days, 30 days, 90 days, and 180 days of age as well as for children 1-5 years, 6-10 years, and 11-16 years. The published tables have been converted to the reference range shown.

Synonyms:

- FIX
- F9
- Factor IX

Stability (from collection to initiation):
Factor assays should generally be performed within four hours of specimen collection or the plasma frozen; the latter is stable for 2 weeks at -20C or 6 months at -70C.

Reported:
1-3 days

Reflex Testing:
If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

CPT Codes:
85250

LDT or Modified FDA:
Yes

LOINC Codes:
3187-2

Factor Inhibitor Titer

FIT

ORDERING

Approval Required:

The factor inhibitor titer may require approval by the Lab Medicine resident. Approval will depend on: (1) patient's clinical history, (2) patient's response to factor therapy, and (3) laboratory results such as the inhibitor screen and factor activity assays.

Available Stat:

No

Performing Lab:

Parnassus Hematology

Reported:

2 weeks

Additional Information:

The inhibitor titer assay, which was originally intended for the measurement of inhibitors occurring in hemophiliacs, can be used with modifications for acquired factor inhibitors from non-hemophiliacs.

Heparin contamination or contamination with other anticoagulants may invalidate results of a factor inhibitor titer.

Reflex Testing:

If a Factor VIII, FIX, or FXI level has not been performed within the preceding 24 hours, one will be automatically ordered and charged for before the inhibitor titer is performed. If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

Synonyms:

- F8 inhibitor titer
- Factor 8 inhibitor titer
- FVIII inhibitor titer
- Factor VIII inhibitor titer F9 inhibitor titer
- Factor 9 inhibitor titer
- FIX inhibitor titer

COLLECTION

Sample Type:

Citrated plasma

Collect:

Blue top filled to full extent of vacuum x3

Amount to Collect:

8.1 mL blood

Preferred Volume:

3 mL plasma

Minimum Volume:

2 mL plasma

Remarks:

1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap. Deliver immediately to the laboratory.

For patients with Hct's >= 55% please contact Hematology (Parnassus: 3-1747, Mission Bay 6-1094) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Stability (from collection to initiation):

The plasma for a Factor Inhibitor Titer must be frozen within four hours of specimen collection. The frozen plasma is stable for 2 weeks at -20C or 6 months at -70C.

Unacceptable Conditions:

Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

PROCESSING

Test Code:

FIT

Test Group:
Factor Inhibitor Titer

Performing Lab:
Parnassus Hematology

Specimen Preparation:
Deliver specimen to Hematology section for processing ASAP

Preferred Volume:
3 mL plasma

Minimum Volume:
2 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Stability (from collection to initiation):
The plasma for a Factor Inhibitor Titer must be frozen within four hours of specimen collection. The frozen plasma is stable for 2 weeks at -20C or 6 months at -70C.

RESULT INTERPRETATION

Units:
Nijmegen Bethesda units (NBU)

Reference Interval:
< 0.1 NBU

Additional Information:
The inhibitor titer assay, which was originally intended for the measurement of inhibitors occurring in hemophiliacs, can be used with modifications for acquired factor inhibitors from non-hemophiliacs.

Heparin contamination or contamination with other anticoagulants may invalidate results of a factor inhibitor titer.

ADMINISTRATIVE

CPT Codes:
85335 x 6

LDT or Modified FDA:
Yes

LOINC Codes:
13591-3

COMPLETE VIEW

Approval Required:
The factor inhibitor titer may require approval by the Lab Medicine resident. Approval will depend on: (1) patient's clinical history, (2) patient's response to factor therapy, and (3) laboratory results such as the inhibitor screen and factor activity assays.

Available Stat:
No

Test Code:
FIT

Test Group:
Factor Inhibitor Titer

Performing Lab:
Parnassus Hematology

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap. Deliver immediately to the laboratory.

For patients with Hct's >= 55% please contact Hematology (Parnassus: 3-1747, Mission Bay 6-1094) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Collect:
Blue top filled to full extent of vacuum x3

Amount to Collect:
8.1 mL blood

Sample Type:
Citrated plasma

Preferred Volume:
3 mL plasma

Minimum Volume:
2 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Specimen Preparation:
Deliver specimen to Hematology section for processing ASAP

Units:
Nijmegen Bethesda units (NBU)

Reference Interval:
< 0.1 NBU

Synonyms:

- F8 inhibitor titer
- Factor 8 inhibitor titer
- FVIII inhibitor titer
- Factor VIII inhibitor titer F9 inhibitor titer
- Factor 9 inhibitor titer
- FIX inhibitor titer

Stability (from collection to initiation):
The plasma for a Factor Inhibitor Titer must be frozen within four hours of specimen collection. The frozen plasma is stable for 2 weeks at -20C or 6 months at -70C.

Reported:
2 weeks

Reflex Testing:
If a Factor VIII, FIX, or FXI level has not been performed within the preceding 24 hours, one will be automatically ordered and charged for before the inhibitor titer is performed. If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

Additional Information:
The inhibitor titer assay, which was originally intended for the measurement of inhibitors occurring in hemophiliacs, can be used with modifications for acquired factor inhibitors from non-hemophiliacs.

Heparin contamination or contamination with other anticoagulants may invalidate results of a factor inhibitor titer.

CPT Codes:
85335 x 6

LDT or Modified FDA:
Yes

LOINC Codes:
13591-3

Factor V (F5) Leiden Mutation

FVR

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Molecular Diagnostics

Performed:
Run once per week, or as needed, day shift only

Methodology:
PCR and allele-specific probes

Reported:
7-10 days

Additional Information:
Mutation: NM_000130.4(F5):c.1601G>A (p.Arg534Gln), also known as R506Q

Incidence: Factor V Leiden is the most common form of inherited thrombophilia, accounting for 40-50% of cases. Heterozygosity for Factor V Leiden occurs in 3-8% of the US and European populations and is rare in Asian and African populations. Frequency of homozygosity for Factor V Leiden in white populations is approximately 1 in 5,000.

Pathogenicity: The Factor V Leiden mutation consists of a G to A nucleotide substitution that leads to the R506Q missense mutation and causes Factor Va to become less susceptible to cleavage by activated Protein C, resulting in increase thrombin generation and an elevated risk for venous thromboembolism (VTE). See Table below for relative risks of VTE.

If this mutation was detected, genetic counseling is recommended.

Thrombosis Risk (odds ratio)**:

Heterozygous

First VTE: 3 - 8
With heterozygosity for the F2 20210G>A mutation: 20
With hyperhomocysteinemia 22 with use of oral contraceptive pills: 30
With hormone replacement therapy (HRT): 7 - 16

Homozygous

First VTE: 10 - 80
With oral contraceptive use: 100
With surgery: 20
With pregnancy: 20- 40
Risk of pregnancy loss: 2 - 3

** Kujovich,Gen. Med. 13:1-16, 2011

This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Synonyms:

- Thrombosis risk mutations
- Hypercoagulability
- APC resistance
- Activated protein C resistance
- FV Q506
- FVM
- Factor V mutation

COLLECTION

Sample Type:
Whole blood

Collect:
Lavender top preferred, Blue top and Yellow (ACD) tops acceptable

Amount to Collect:
3 mL blood (Note this volume is sufficient to perform all thrombosis risk factor mutations)

Preferred Volume:
3 mL blood (Note this volume is sufficient to perform all thrombosis risk factor mutations)

Minimum Volume:
1.5 mL blood

Remarks:
Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Unacceptable Conditions:
Inadequate sample. Samples collected in heparin.

PROCESSING

Test Code:
FVR

Test Group:
Thrombosis risk

Performing Lab:
Medical Genomics - Molecular Diagnostics

Specimen Preparation:
Do not centrifuge the specimen. Store at room temperature. Refrigerated samples are acceptable.

Preferred Volume:
3 mL blood (Note this volume is sufficient to perform all thrombosis risk factor mutations)

Minimum Volume:
1.5 mL blood

Unacceptable Conditions:
Inadequate sample. Samples collected in heparin.

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
Mutation: NM_000130.4(F5):c.1601G>A (p.Arg534Gln), also known as R506Q

Incidence: Factor V Leiden is the most common form of inherited thrombophilia, accounting for 40-50% of cases. Heterozygosity for Factor V Leiden occurs in 3-8% of the US and European populations and is rare in Asian and African populations. Frequency of homozygosity for Factor V Leiden in white populations is approximately 1 in 5,000.

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Thrombosis Risk (odds ratio)**:

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First VTE: 3 - 8
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With hyperhomocysteinemia 22 with use of oral contraceptive pills: 30
With hormone replacement therapy (HRT): 7 - 16

Homozygous

First VTE: 10 - 80
With oral contraceptive use: 100
With surgery: 20
With pregnancy: 20- 40
Risk of pregnancy loss: 2 - 3

** Kujovich,Gen. Med. 13:1-16, 2011

This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

ADMINISTRATIVE

CPT Codes:
81241

LDT or Modified FDA:
Yes

LOINC Codes:
21667-1

COMPLETE VIEW

Available Stat:
No

Test Code:
FVR

Test Group:
Thrombosis risk

Performing Lab:
Medical Genomics - Molecular Diagnostics

Performed:
Run once per week, or as needed, day shift only

Methodology:
PCR and allele-specific probes

Remarks:
Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Collect:
Lavender top preferred, Blue top and Yellow (ACD) tops acceptable

Amount to Collect:
3 mL blood (Note this volume is sufficient to perform all thrombosis risk factor mutations)

Sample Type:
Whole blood

Preferred Volume:
3 mL blood (Note this volume is sufficient to perform all thrombosis risk factor mutations)

Minimum Volume:
1.5 mL blood

Unacceptable Conditions:
Inadequate sample. Samples collected in heparin.

Specimen Preparation:
Do not centrifuge the specimen. Store at room temperature. Refrigerated samples are acceptable.

Reference Interval:
Negative

Synonyms:

- Thrombosis risk mutations
- Hypercoagulability
- APC resistance
- Activated protein C resistance
- FV Q506
- FVM
- Factor V mutation

Reported:
7-10 days

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Additional Information:

Mutation: NM_000130.4(F5):c.1601G>A (p.Arg534Gln), also known as R506Q

Incidence: Factor V Leiden is the most common form of inherited thrombophilia, accounting for 40-50% of cases. Heterozygosity for Factor V Leiden occurs in 3-8% of the US and European populations and is rare in Asian and African populations. Frequency of homozygosity for Factor V Leiden in white populations is approximately 1 in 5,000.

Pathogenicity: The Factor V Leiden mutation consists of a G to A nucleotide substitution that leads to the R506Q missense mutation and causes Factor Va to become less susceptible to cleavage by activated Protein C, resulting in increase thrombin generation and an elevated risk for venous thromboembolism (VTE). See Table below for relative risks of VTE.

If this mutation was detected, genetic counseling is recommended.

Thrombosis Risk (odds ratio)**:

Heterozygous

First VTE: 3 - 8
With heterozygosity for the F2 20210G>A mutation: 20
With hyperhomocysteinemia 22 with use of oral contraceptive pills: 30
With hormone replacement therapy (HRT): 7 - 16

Homozygous

First VTE: 10 - 80
With oral contraceptive use: 100
With surgery: 20
With pregnancy: 20- 40
Risk of pregnancy loss: 2 - 3

** Kujovich,Gen. Med. 13:1-16, 2011

This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

CPT Codes:

81241

LDT or Modified FDA:

Yes

LOINC Codes:

21667-1

Factor VIII Activity, Chromogenic (Bovine)

F8ACB

ORDERING

Ordering Recommendations:
This is the recommended assay for measuring factor VIII (8) activity in patients receiving Hemlibra (emicizumab-kxwh).

Available Stat:
No

Performing Lab:
Machaon

Performed:
Monday-Friday

Methodology:
Chromogenic

Synonyms:

- F8
- Factor VIII
- Factor 8
- chromogenic

COLLECTION

Sample Type:
Plasma

Collect:
Blue-top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL plasma

Minimum Volume:
1 mL plasma

Stability (from collection to initiation):
2 weeks (frozen)

Storage/Transport Temperature:
Frozen

Unacceptable Conditions:
Thawed

PROCESSING

Test Code:
F8ACB

Sendout:
Yes

Performing Lab:
Machaon

Preferred Volume:
1 mL plasma

Minimum Volume:
1 mL plasma

Unacceptable Conditions:
Thawed

Stability (from collection to initiation):
2 weeks (frozen)

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Units:
Percent

Reference Interval:
50-150%

Interpretive Data:
This test can accurately measure factor VIII (8) levels and factor VIII (8) inhibitor titers in the presence of emicizumab (Hemlibra), a common treatment for Hemophilia A. Emicizumab (Hemlibra) interferes with other traditional factor VIII (8) activity and inhibitor test approaches. This assay may be used for patients not on emicizumab (Hemlibra) and when lupus anticoagulants are interfering with traditional, clot-based tests.

ADMINISTRATIVE

CPT Codes:
85240

LOINC Codes:
3210-2

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
This is the recommended assay for measuring factor VIII (8) activity in patients receiving Hemlibra (emicizumab-kxwh).

Test Code:
F8ACB

Performing Lab:
Machaon

Sendout:
Yes

Performed:
Monday-Friday

Methodology:
Chromogenic

Collect:
Blue-top

Amount to Collect:
2 mL blood

Sample Type:
Plasma

Preferred Volume:
1 mL plasma

Minimum Volume:
1 mL plasma

Unacceptable Conditions:
Thawed

Units:
Percent

Reference Interval:
50-150%

Interpretive Data:
This test can accurately measure factor VIII (8) levels and factor VIII (8) inhibitor titers in the presence of emicizumab (Hemlibra), a common treatment for Hemophilia A. Emicizumab (Hemlibra) interferes with other traditional factor VIII (8) activity and inhibitor test approaches. This assay may be used for patients not on emicizumab (Hemlibra) and when lupus anticoagulants are interfering with traditional, clot-based tests.

Synonyms:

- F8
- Factor VIII
- Factor 8
- chromogenic

Storage/Transport Temperature:
Frozen

Stability (from collection to initiation):
2 weeks (frozen)

CPT Codes:
85240

LOINC Codes:
3210-2

Factor VIII Inhibitor, Chromogenic (Bovine)

F8ICB

ORDERING

Available Stat:
No

Performing Lab:
Machaon

Performed:
Monday-Friday

Methodology:
Chromogenic Nijmegen-Bethesda Titer

Synonyms:

- Bethesda titer
- Nijmegen modification
- F8

COLLECTION

Sample Type:
Plasma

Collect:
Blue-top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL plasma

Minimum Volume:
1 mL plasma

Stability (from collection to initiation):
2 weeks (frozen)

Storage/Transport Temperature:
Frozen

Unacceptable Conditions:
Thawed

PROCESSING

Test Code:
F8ICB

Sendout:
Yes

Performing Lab:
Machaon

Preferred Volume:
1 mL plasma

Minimum Volume:
1 mL plasma

Unacceptable Conditions:
Thawed

Stability (from collection to initiation):
2 weeks (frozen)

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Units:
Chromogenic Bethesda Units

Reference Interval:
< 0.5 CBU

Interpretive Data:
This test can accurately measure factor VIII (8) levels and factor VIII (8) inhibitor titers in the presence of emicizumab (Hemlibra), a common treatment for Hemophilia A. Emicizumab (Hemlibra) interferes with other traditional factor VIII (8) activity and inhibitor test approaches. This assay may be used for patients not on emicizumab (Hemlibra) and when lupus anticoagulants are interfering with traditional, clot-based tests.

ADMINISTRATIVE

CPT Codes:
85240, 85335

COMPLETE VIEW

Available Stat:
No

Test Code:
F8ICB

Performing Lab:
Machaon

Sendout:
Yes

Performed:
Monday-Friday

Methodology:
Chromogenic Nijmegen-Bethesda Titer

Collect:
Blue-top

Amount to Collect:
2 mL blood

Sample Type:
Plasma

Preferred Volume:
1 mL plasma

Minimum Volume:
1 mL plasma

Unacceptable Conditions:
Thawed

Units:
Chromogenic Bethesda Units

Reference Interval:
< 0.5 CBU

Interpretive Data:
This test can accurately measure factor VIII (8) levels and factor VIII (8) inhibitor titers in the presence of emicizumab (Hemlibra), a common treatment for Hemophilia A. Emicizumab (Hemlibra) interferes with other traditional factor VIII (8) activity and inhibitor test approaches. This assay may be used for patients not on emicizumab (Hemlibra) and when lupus anticoagulants are interfering with traditional, clot-based tests.

Synonyms:

- Bethesda titer
- Nijmegen modification
- F8

Storage/Transport Temperature:
Frozen

Stability (from collection to initiation):
2 weeks (frozen)

CPT Codes:
85240, 85335

Fanconi's Anemia with DEB

FANC

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Culture, microscopy, karyotyping

Reported:
Test set up daily. Turnaround time: 2-3 weeks.

Additional Information:
An effort will be made to analyze specimens as small as 1 mL, but success can not be assured with so little sample. Specify if there is a need to search for DEB-induced chromosome breaks, which will generate an additional charge.

Synonyms:

- chromosmoe breakage syndromes
- DEB-induced chromosome breaks
- Diepoxybutane

COLLECTION

Sample Type:
Heparinized whole blood

Collect:
Dark Green top (Na-heparin)

Amount to Collect:
5 mL blood

Preferred Volume:
5 mL blood

Minimum Volume:
3 mL blood

Remarks:
Specify LOOK FOR FANCONI'S ANEMIA on the requisition and request DEB-induced chromosomal breakage testing if that is desired.

PROCESSING

Test Code:
FANC

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Keep the specimen at room temperature-DO NOT REFRIGERATE OR FREEZE. Order Quest # 14598Z If a search for the presence of DEB-induced chromosome breaks is also requested, order Quest DEB, code #5016 in addition.

Preferred Volume:
5 mL blood

Minimum Volume:
3 mL blood

RESULT INTERPRETATION

Additional Information:
An effort will be made to analyze specimens as small as 1 mL, but success can not be assured with so little sample. Specify if there is a need to search for DEB-induced chromosome breaks, which will generate an additional charge.

ADMINISTRATIVE

CPT Codes:
88230-90, 88262-90

LOINC Codes:
43191-6

COMPLETE VIEW

Available Stat:
No

Test Code:
FANC

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Culture, microscopy, karyotyping

Remarks:
Specify LOOK FOR FANCONI'S ANEMIA on the requisition and request DEB-induced chromosomal breakage testing if that is desired.

Collect:
Dark Green top (Na-heparin)

Amount to Collect:
5 mL blood

Sample Type:
Heparinized whole blood

Preferred Volume:
5 mL blood

Minimum Volume:
3 mL blood

Specimen Preparation:
Keep the specimen at room temperature-DO NOT REFRIGERATE OR FREEZE. Order Quest # 14598Z If a search for the presence of DEB-induced chromosome breaks is also requested, order Quest DEB, code #5016 in addition.

Synonyms:

- chromosmoe breakage syndromes
- DEB-induced chromosome breaks
- Diepoxybutane

Reported:
Test set up daily. Turnaround time: 2-3 weeks.

Additional Information:
An effort will be made to analyze specimens as small as 1 mL, but success can not be assured with so little sample. Specify if there is a need to search for DEB-induced chromosome breaks, which will generate an additional charge.

CPT Codes:
88230-90, 88262-90

LOINC Codes:
43191-6

Fatty Acid Profile, Essential

EFA

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
Gas Chromatography-Mass Spectrometry (GC-MS) Stable Isotope Dilution Analysis

Reported:
7-9 days

Additional Information:
Fats are important sources of energy for tissues and are important for the function and integrity of cellular membranes. Deficiencies are commonly caused by inadequate dietary intake of lipids due to an unbalanced diet or long-term parenteral nutrition, or by intestinal malabsorption, which is common in conditions such as cystic fibrosis and irritable bowel syndrome. Deficiencies can also be caused by an impairment of biomolecular transformations among fatty acids, such as linoleic acid to arachidonic acid. Linoleic and linolenic acids cannot be made by the body and are essential components of the diet (ie, essential fatty acids).

The major clinical manifestations associated with essential fatty acid deficiency (EFAD) include dermatitis, increased water permeability of the skin, increased susceptibility to infection, lowered resistance to irradiation injury, impaired wound healing, hemolytic anemia, thrombocytopenia, fatty infiltration of the liver, elevated hepatic enzymes, and impaired chylomicron synthesis. Treatment of EFAD depends on the source of the deficiency and may include supplementation of essential fatty acids, linoleic acid and alpha-linolenic acid.

Biochemical abnormalities may be detected before the onset of recognizable clinical manifestations. EFAD can be detected by diminished levels of the essential fatty acids: linoleic acid (C18:2w6) and alpha-linolenic acid (C18:3w3). It can also be detected by increases in the ratio triene/tetraene ratio (Holman index): (eicosatrienoic [mead] acid [C20:3w9]/arachidonic acid [C20:4w6]).

Excess dietary fatty acids have also been linked to the onset of cardiovascular disease. The dietary contents of saturated, monounsaturated, or polyunsaturated fatty acids influence the concentration of cholesterol in low-density and high-density lipoproteins, and consequently the development of atherosclerosis. Regular consumption of, or supplementation with, polyunsaturated fatty acids may have a beneficial effects on long-term cardiovascular prognosis due to their anti-inflammatory and possibly antiarrhythmic effects. Elevated levels of C18:2w6 can contribute to overproduction of the proinflammatory 2-series local hormones.

Synonyms:

- Fatty acid profile of lipids
- Essential Fatty Acid Profile, Triene/Tetraene ratio
- Fatty acids

COLLECTION

Patient Preparation:
Patient must fast for 12-14 hours and should not consume any alcohol for 24 hours before the specimen is drawn.

Sample Type:
Serum

Collect:
Red top or Gold top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Remarks:
Include patient age and information regarding treatment, family history, and tentative diagnosis on requisition.

Transport to laboratory immediately after collection for processing.

Stability (from collection to initiation):
Frozen 3 months

PROCESSING

Test Code:
EFA

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Spin down sample immediately and freeze serum.

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Stability (from collection to initiation):
Frozen 3 months

RESULT INTERPRETATION

Additional Information:

Fats are important sources of energy for tissues and are important for the function and integrity of cellular membranes. Deficiencies are commonly caused by inadequate dietary intake of lipids due to an unbalanced diet or long-term parenteral nutrition, or by intestinal malabsorption, which is common in conditions such as cystic fibrosis and irritable bowel syndrome. Deficiencies can also be caused by an impairment of biomolecular transformations among fatty acids, such as linoleic acid to arachidonic acid. Linoleic and linolenic acids cannot be made by the body and are essential components of the diet (ie, essential fatty acids).

The major clinical manifestations associated with essential fatty acid deficiency (EFAD) include dermatitis, increased water permeability of the skin, increased susceptibility to infection, lowered resistance to irradiation injury, impaired wound healing, hemolytic anemia, thrombocytopenia, fatty infiltration of the liver, elevated hepatic enzymes, and impaired chylomicron synthesis. Treatment of EFAD depends on the source of the deficiency and may include supplementation of essential fatty acids, linoleic acid and alpha-linolenic acid.

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Excess dietary fatty acids have also been linked to the onset of cardiovascular disease. The dietary contents of saturated, monounsaturated, or polyunsaturated fatty acids influence the concentration of cholesterol in low-density and high-density lipoproteins, and consequently the development of atherosclerosis. Regular consumption of, or supplementation with, polyunsaturated fatty acids may have a beneficial effects on long-term cardiovascular prognosis due to their anti-inflammatory and possibly antiarrhythmic effects. Elevated levels of C18:2w6 can contribute to overproduction of the proinflammatory 2-series local hormones.

ADMINISTRATIVE

CPT Codes:
82542

COMPLETE VIEW

Available Stat:
No

Test Code:
EFA

Performing Lab:
Mayo

Sendout:
Yes

Methodology:
Gas Chromatography-Mass Spectrometry (GC-MS) Stable Isotope Dilution Analysis

Patient Preparation:
Patient must fast for 12-14 hours and should not consume any alcohol for 24 hours before the specimen is drawn.

Remarks:
Include patient age and information regarding treatment, family history, and tentative diagnosis on requisition.

Transport to laboratory immediately after collection for processing.

Collect:
Red top or Gold top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Specimen Preparation:
Spin down sample immediately and freeze serum.

Synonyms:

- Fatty acid profile of lipids
- Essential Fatty Acid Profile, Triene/Tetraene ratio
- Fatty acids

Stability (from collection to initiation):
Frozen 3 months

Reported:
7-9 days

Additional Information:
Fats are important sources of energy for tissues and are important for the function and integrity of cellular membranes. Deficiencies are commonly caused by inadequate dietary intake of lipids due to an unbalanced diet or long-term parenteral nutrition, or by intestinal malabsorption, which is common in conditions such as cystic fibrosis and irritable bowel syndrome. Deficiencies can also be caused by an impairment of biomolecular transformations among fatty acids, such as linoleic acid to arachidonic acid. Linoleic and linolenic acids cannot be made by the body and are essential components of the diet (ie, essential fatty acids).

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Biochemical abnormalities may be detected before the onset of recognizable clinical manifestations. EFAD can be detected by diminished levels of the essential fatty acids: linoleic acid (C18:2w6) and alpha-linolenic acid (C18:3w3). It can also be detected by increases in the ratio triene/tetraene ratio (Holman index): (eicosatrienoic [mead] acid [C20:3w9]/arachidonic acid [C20:4w6]).

Excess dietary fatty acids have also been linked to the onset of cardiovascular disease. The dietary contents of saturated, monounsaturated, or polyunsaturated fatty acids influence the concentration of cholesterol in low-density and high-density lipoproteins, and consequently the development of atherosclerosis. Regular consumption of, or supplementation with, polyunsaturated fatty acids may have a beneficial effects on long-term cardiovascular prognosis due to their anti-inflammatory and possibly antiarrhythmic effects. Elevated levels of C18:2w6 can contribute to overproduction of the proinflammatory 2-series local hormones.

CPT Codes:
82542

Fatty Acids, Nonesterified

NEFA

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Spectrophotometric, enzymatic

Reported:
Test run Tuesday-Saturday. Turnaround time: 1-3 days.

Synonyms:

- Free Fatty Acids
- FFA
- unesterified fatty acids

COLLECTION

Sample Type:
Serum or plasma

Collect:
Gold top on ice

Amount to Collect:
4 mL blood

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

Remarks:
Collect ON ICE after an overnight fast; bring IMMEDIATELY to laboratory. Do not use heparin containing vacutainer. Specimens from patients receiving heparin are NOT acceptable.

Stability (from collection to initiation):
Refrigerated 12 hours, frozen at -20C 1 month.

Unacceptable Conditions:
Collected in heparin. Not delivered on ice.

PROCESSING

Test Code:
NEFA

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Separate serum or plasma immediately and freeze at -20C within 2 hours of collection. Order Quest # 22749P

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

Unacceptable Conditions:
Collected in heparin. Not delivered on ice.

Stability (from collection to initiation):
Refrigerated 12 hours, frozen at -20C 1 month.

RESULT INTERPRETATION

Units:
mmol/L

Reference Interval:
Newborn: 0-2.30 mmol/L
1-12 months: 0.50-1.60 mmol/L
1-7 years: 0.60-1.50 mmol/L
8-17 years: 0.20-1.10 mmol/L
>= 18 year old: 0.09-0.82 mmol/L

ADMINISTRATIVE

CPT Codes:
82725-90

LOINC Codes:
15066-4

COMPLETE VIEW

Available Stat:
No

Test Code:
NEFA

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Spectrophotometric, enzymatic

Remarks:
Collect ON ICE after an overnight fast; bring IMMEDIATELY to laboratory. Do not use heparin containing vacutainer. Specimens from patients receiving heparin are NOT acceptable.

Collect:
Gold top on ice

Amount to Collect:
4 mL blood

Sample Type:
Serum or plasma

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

Unacceptable Conditions:
Collected in heparin. Not delivered on ice.

Specimen Preparation:
Separate serum or plasma immediately and freeze at -20C within 2 hours of collection. Order Quest # 22749P

Units:
mmol/L

Reference Interval:
Newborn: 0-2.30 mmol/L
1-12 months: 0.50-1.60 mmol/L
1-7 years: 0.60-1.50 mmol/L
8-17 years: 0.20-1.10 mmol/L
>= 18 year old: 0.09-0.82 mmol/L

Synonyms:

- Free Fatty Acids
- FFA
- unesterified fatty acids

Stability (from collection to initiation):
Refrigerated 12 hours, frozen at -20C 1 month.

Reported:
Test run Tuesday-Saturday. Turnaround time: 1-3 days.

CPT Codes:
82725-90

LOINC Codes:
15066-4

Fc epsilon receptor antibody

CUI

ORDERING

Available Stat:
No

Performing Lab:
IBT Laboratories

Methodology:
Ex vivo challenge, cell culture and histamine analysis

Additional Information:
Patients with a chronic form of urticaria who are positive with this test have an autoimmune basis for the disorder. A positive result does not indicate which autoantibody (anti-IgE, anti-FC epsilon receptor I or anti-Fc epsilon receptor II) is present.

Synonyms:

- Anti-FCe receptor antibody
- Autoimmune chronic urticaria testing
- CU antibody signature

COLLECTION

Patient Preparation:
Patients taking calcineurin inhibitors should stop their medication for 3 days prior to sample collection.

Sample Type:
Serum

Collect:
Red top (Gold top acceptable)

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks. frozen at -20C 1 year.

PROCESSING

Test Code:
CUI

Sendout:
Yes

Performing Lab:
IBT Laboratories

Specimen Preparation:
Send sample at room temperature via overnight shipping to IBT Laboratories, 11274 Renner Blvd, Lenexa, KS, 66219. Ph: 800-637-0370. Order "Chronic Urticaria Testing" test # 2003

If shipping is delayed freeze sample at -20C.

Preferred Volume:
1 mL serum

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks. frozen at -20C 1 year.

RESULT INTERPRETATION

Additional Information:
Patients with a chronic form of urticaria who are positive with this test have an autoimmune basis for the disorder. A positive result does not indicate which autoantibody (anti-IgE, anti-FC epsilon receptor I or anti-Fc epsilon receptor II) is present.

ADMINISTRATIVE

CPT Codes:
86352

COMPLETE VIEW

Available Stat:
No

Test Code:
CUI

Performing Lab:
IBT Laboratories

Sendout:
Yes

Methodology:
Ex vivo challenge, cell culture and histamine analysis

Patient Preparation:
Patients taking calcineurin inhibitors should stop their medication for 3 days prior to sample collection.

Collect:
Red top (Gold top acceptable)

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Specimen Preparation:
Send sample at room temperature via overnight shipping to IBT Laboratories, 11274 Renner Blvd, Lenexa, KS, 66219. Ph: 800-637-0370. Order "Chronic Urticaria Testing" test # 2003

If shipping is delayed freeze sample at -20C.

Synonyms:

- Anti-FCe receptor antibody
- Autoimmune chronic urticaria testing
- CU antibody signature

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks. frozen at -20C 1 year.

Additional Information:
Patients with a chronic form of urticaria who are positive with this test have an autoimmune basis for the disorder. A positive result does not indicate which autoantibody (anti-IgE, anti-FC epsilon receptor I or anti-Fc epsilon receptor II) is present.

CPT Codes:
86352

Fecal Fat, Qualitative

P408

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Monday-Friday, day shift only

Methodology:
Microscopy

Reported:
Same day or next weekday

Additional Information:
In this microscopic screening technique for determining the presence of fat in stool, Sudan IV stain detects the presence of neutral fats and fatty acids. Neutral fats are composed of one or more fatty acids with an alcohol like glycerol. They include the monoglycerides, diglycerides and triglycerides. Fatty acids are carboxylic acids with a long chain of even numbered carbon atoms. They are usually derived from tiglycerides or phospholipids. When they are not attached to other molecules they are known as free" fatty acids. Results are reported as Neutral Fat and Total Fat, which includes neutral fat and fatty acids.

Increased neutral fat suggests pancreatic enzyme deficiency. Increased total fat with normal neutral fat suggests inadequate absorption or impaired bile secretion. This is a qualitative method. Confirmation of steatorrhea is best obtained by a quantitative fecal fat analysis (72 hour stool collection).

Synonyms:

- fat, qualitative
- fecal fat globules
- free fat stain
- sudan black
- stool fat
- stool lipids
- fecal lipids

COLLECTION

Patient Preparation:
Administration of barium, bismuth, Metamucil, castor oil or mineral within 1 week prior to collection of the specimen is contraindicated.

Patient should not be taking any synthetic fat substitutes (eg. Olestra) or fat blocking nutritional substitutes.

Patient should be on a fat controlled diet with at least 100 g fat per day prior to testing.

Sample Type:
Stool

Collect:
Sterile container

Amount to Collect:
2 g or 2 mL liquid stool

Preferred Volume:
2 g or 2 mL liquid stool

Minimum Volume:
1 g or 1 mL liquid stool

Remarks:
Do not submit stool in preservative. Deliver to laboratory within 24 hours of collection. Refrigerate if not delivered to laboratory within 2 hours of collection.

Stability (from collection to initiation):
24 hours refrigerated, 72 hours frozen at -20C

PROCESSING

Test Code:
P408

Performing Lab:
Microbiology

Specimen Preparation:
Freeze sample at -20C upon receipt at China Basin.

Preferred Volume:
2 g or 2 mL liquid stool

Minimum Volume:
1 g or 1 mL liquid stool

Stability (from collection to initiation):
24 hours refrigerated, 72 hours frozen at -20C

RESULT INTERPRETATION

Reference Interval:
Neural fat: Not increased
Total fat: Not increased

Additional Information:
In this microscopic screening technique for determining the presence of fat in stool, Sudan IV stain detects the presence of neutral fats and fatty acids. Neutral fats are composed of one or more fatty acids with an alcohol like glycerol. They include the monoglycerides, diglycerides and triglycerides. Fatty acids are carboxylic acids with a long chain of even numbered carbon atoms. They are usually derived from tiglycerides or phospholipids. When they are not attached to other molecules they are known as free" fatty acids. Results are reported as Neutral Fat and Total Fat, which includes neutral fat and fatty acids.

Increased neutral fat suggests pancreatic enzyme deficiency. Increased total fat with normal neutral fat suggests inadequate absorption or impaired bile secretion. This is a qualitative method. Confirmation of steatorrhea is best obtained by a quantitative fecal fat analysis (72 hour stool collection).

ADMINISTRATIVE

CPT Codes:
89125

LOINC Codes:
10753-2

COMPLETE VIEW

Available Stat:
No

Test Code:
P408

Performing Lab:
Microbiology

Performed:
Monday-Friday, day shift only

Methodology:
Microscopy

Patient Preparation:
Administration of barium, bismuth, Metamucil, castor oil or mineral within 1 week prior to collection of the specimen is contraindicated.

Patient should not be taking any synthetic fat substitutes (eg. Olestra) or fat blocking nutritional substitutes.

Patient should be on a fat controlled diet with at least 100 g fat per day prior to testing.

Remarks:
Do not submit stool in preservative. Deliver to laboratory within 24 hours of collection. Refrigerate if not delivered to laboratory within 2 hours of collection.

Collect:
Sterile container

Amount to Collect:
2 g or 2 mL liquid stool

Sample Type:
Stool

Preferred Volume:
2 g or 2 mL liquid stool

Minimum Volume:
1 g or 1 mL liquid stool

Specimen Preparation:
Freeze sample at -20C upon receipt at China Basin.

Reference Interval:
Neural fat: Not increased
Total fat: Not increased

Synonyms:

- fat, qualitative
- fecal fat globules
- free fat stain
- sudan black
- stool fat
- stool lipids
- fecal lipids

Stability (from collection to initiation):
24 hours refrigerated, 72 hours frozen at -20C

Reported:
Same day or next weekday

Additional Information:
In this microscopic screening technique for determining the presence of fat in stool, Sudan IV stain detects the presence of neutral fats and fatty acids. Neutral fats are composed of one or more fatty acids with an alcohol like glycerol. They include the monoglycerides, diglycerides and triglycerides. Fatty acids are carboxylic acids with a long chain of even numbered carbon atoms. They are usually derived from tiglycerides or phospholipids. When they are not attached to other molecules they are known as free" fatty acids. Results are reported as Neutral Fat and Total Fat, which includes neutral fat and fatty acids.

Increased neutral fat suggests pancreatic enzyme deficiency. Increased total fat with normal neutral fat suggests inadequate absorption or impaired bile secretion. This is a qualitative method. Confirmation of steatorrhea is best obtained by a quantitative fecal fat analysis (72 hour stool collection).

CPT Codes:
89125

LOINC Codes:
10753-2

Fecal Fat, Quantitative

FATF

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Gravimetric (Quest) or Extraction/spectrophotometry (LabCorp)

Reported:
Test performed Monday-Friday. Turnaround time: 7 days.

Additional Information:
Collections of 24 or 48 hours are not recommended since results are subject to greater variability.

Synonyms:

- stool fat
- stool lipids
- fecal lipids

COLLECTION

Patient Preparation:
Patient should be on a diet including 100 grams of fat per day for 3 days prior to collection and during collection period. In children, the amount of fat in the diet should be constant for 1 day before the test and during the test. The patient should not have had mineral oil as a laxative prior to specimencollection.

Sample Type:
Timed stool collection (24, 48 or 72 hour)

Collect:
White plastic 1 gallon container

Amount to Collect:
See preferred volume

Preferred Volume:
20 gm

Minimum Volume:
3 gm

Remarks:
Keep specimen refrigerated during collection. Place collection container on ice if refrigeration is not possible. Collect stool directly into collection containers. Do not fill any container more than 2/3 full. If another container is necessary (i.e. liquid stool), request second identical type of container from the clinical laboratory.

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 6 days, frozen at -20C 2 weeks

Unacceptable Conditions:
Container not refrigerated during collection. Containers receivced > 2/3 full

PROCESSING

Test Code:
FATF

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Record total collection time (24,48 or 72 hours) on test requisition. Request the performing laboratory to report the weight of the stool collection. Freeze entire collection can at -20°C and ship on dry ice to China Basin for sendout.

Order Quest # 455 for non-B&T patients. Order LabCorp test #001354 for B&T patients

Preferred Volume:
20 gm

Minimum Volume:
3 gm

Unacceptable Conditions:
Container not refrigerated during collection. Containers receivced > 2/3 full

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 6 days, frozen at -20C 2 weeks

RESULT INTERPRETATION

Units:
Total g/24 h

Reference Interval:
Breast fed infant: < 1
Child 0-6 years: < 2
>= 18 year old-normal diet: < 7
>= 18 year old-low-fat diet: < 4

Additional Information:
Collections of 24 or 48 hours are not recommended since results are subject to greater variability.

ADMINISTRATIVE

CPT Codes:
82710-90

LOINC Codes:
16142-2

COMPLETE VIEW

Available Stat:
No

Test Code:
FATF

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Gravimetric (Quest) or Extraction/spectrophotometry (LabCorp)

Patient Preparation:
Patient should be on a diet including 100 grams of fat per day for 3 days prior to collection and during collection period. In children, the amount of fat in the diet should be constant for 1 day before the test and during the test. The patient should not have had mineral oil as a laxative prior to specimencollection.

Remarks:
Keep specimen refrigerated during collection. Place collection container on ice if refrigeration is not possible. Collect stool directly into collection containers. Do not fill any container more than 2/3 full. If another container is necessary (i.e. liquid stool), request second identical type of container from the clinical laboratory.

Collect:
White plastic 1 gallon container

Amount to Collect:
See preferred volume

Sample Type:
Timed stool collection (24, 48 or 72 hour)

Preferred Volume:
20 gm

Minimum Volume:
3 gm

Unacceptable Conditions:
Container not refrigerated during collection. Containers receivced > 2/3 full

Specimen Preparation:
Record total collection time (24,48 or 72 hours) on test requisition. Request the performing laboratory to report the weight of the stool collection. Freeze entire collection can at -20°C and ship on dry ice to China Basin for sendout.

Order Quest # 455 for non-B&T patients. Order LabCorp test #001354 for B&T patients

Units:
Total g/24 h

Reference Interval:

Breast fed infant: < 1
Child 0-6 years: < 2
>= 18 year old-normal diet: < 7
>= 18 year old-low-fat diet: < 4

Synonyms:

- stool fat
- stool lipids
- fecal lipids

Stability (from collection to initiation):

Room temperature 4 days, refrigerated 6 days, frozen at -20C 2 weeks

Reported:

Test performed Monday-Friday. Turnaround time: 7 days.

Additional Information:

Collections of 24 or 48 hours are not recommended since results are subject to greater variability.

CPT Codes:

82710-90

LOINC Codes:

16142-2

Fecal Occult Blood Test (FIT)

FOBT

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Twice a week (Monday and Thursday day shift)

Methodology:
Immunologic turbidimetry

Reported:
1-4 days

Additional Information:
This test replaces the prior guaiac card method and offers increased sensitivity and specificity. Screening for colorectal cancer should no longer be performed by the guaiac method and cards submitted for this purpose will be rejected. Due to the increased sensitivity of this test only a single test is usually performed (compared with 3 guaiac cards). If multiple samples are received together, only one sample with be tested.

Samples should be tested within 12 days of collection. If the patient does not enter a collection date, the comment Collection date unknown' will be entered. Samples greater than 12 days old will be rejected by the lab. Repeat testing may be indicated if sample stability is exceeded.

Screening for occult fecal blood is a Medicare benefit for patient > 50 years old at intervals of at least 11 full months and with the written order of a physician. More frequent testing in the absence of a specific relevant diagnosis is not considered screening, is not covered by Medicare and may result in charges to the patient.

Synonyms:

- FIT test
- Immuno-occult blood

COLLECTION

Sample Type:
Stool

Collect:
Stool sampling bottle from kit

Remarks:
Kits are available in some clinics and from the Laboratory collection sites in the ACC and at Mission Bay, 2330 Post St. and the Mount Zion Cancer center.

For inpatient collection kit supply, please order through PMM (McKesson Supply Chain Management).
PMM# 44780 - KIT COLOSCREEN TEST TAKE HOME OCPU-UCSF
20 Kits per PK

Stability (from collection to initiation):
Inoculated sample bottle stable for 12 days at room temperature. Refrigerated 1 month.

Unacceptable Conditions:
Samples must be received by the laboratory within **12 Days** of collection. Samples > 12 days old when received will not be tested.

PROCESSING

Test Code:
FOBT

Performing Lab:
Immunology

Unacceptable Conditions:
Samples must be received by the laboratory within **12 Days** of collection. Samples > 12 days old when received will not be tested.

Stability (from collection to initiation):
Inoculated sample bottle stable for 12 days at room temperature. Refrigerated 1 month.

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
This test replaces the prior guaiac card method and offers increased sensitivity and specificity. Screening for colorectal cancer should no longer be performed by the guaiac method and cards submitted for this purpose will be rejected. Due to the increased sensitivity of this test only a single test is usually performed (compared with 3 guaiac cards). If multiple samples are received together, only one sample with be tested.

Samples should be tested within 12 days of collection. If the patient does not enter a collection date, the comment Collection date unknown' will be entered. Samples greater than 12 days old will be rejected by the lab. Repeat testing may be indicated if sample stability is exceeded.

Screening for occult fecal blood is a Medicare benefit for patient > 50 years old at intervals of at least 11 full months and with the written order of a physician. More frequent testing in the absence of a specific relevant diagnosis is not considered screening, is not covered by Medicare and may result in charges to the patient.

ADMINISTRATIVE

CPT Codes:
82274

LOINC Codes:
29771-3

COMPLETE VIEW

Available Stat:
No

Test Code:
FOBT

Performing Lab:
Immunology

Performed:
Twice a week (Monday and Thursday day shift)

Methodology:
Immunologic turbidimetry

Remarks:
Kits are available in some clinics and from the Laboratory collection sites in the ACC and at Mission Bay, 2330 Post St. and the Mount Zion Cancer center.

For inpatient collection kit supply, please order through PMM (McKesson Supply Chain Management).
PMM# 44780 - KIT COLOSCREEN TEST TAKE HOME OCPU-UCSF
20 Kits per PK

Collect:
Stool sampling bottle from kit

Sample Type:
Stool

Unacceptable Conditions:
Samples must be received by the laboratory within **12 Days** of collection. Samples > 12 days old when received will not be tested.

Reference Interval:
Negative

Synonyms:

- FIT test
- Immuno-occult blood

Stability (from collection to initiation):
Inoculated sample bottle stable for 12 days at room temperature. Refrigerated 1 month.

Reported:
1-4 days

Additional Information:

This test replaces the prior guaiac card method and offers increased sensitivity and specificity. Screening for colorectal cancer should no longer be performed by the guaiac method and cards submitted for this purpose will be rejected. Due to the increased sensitivity of this test only a single test is usually performed (compared with 3 guaiac cards). If multiple samples are received together, only one sample with be tested.

Samples should be tested within 12 days of collection. If the patient does not enter a collection date, the comment Collection date unknown' will be entered. Samples greater than 12 days old will be rejected by the lab. Repeat testing may be indicated if sample stability is exceeded.

Screening for occult fecal blood is a Medicare benefit for patient > 50 years old at intervals of at least 11 full months and with the written order of a physician. More frequent testing in the absence of a specific relevant diagnosis is not considered screening, is not covered by Medicare and may result in charges to the patient.

CPT Codes:

82274

LOINC Codes:

29771-3

Fecal White Blood Cell Exam

P221

ORDERING

Approval Required:
Yes, for samples from inpatients collected > 72 hours after admission, contact Microbiology at 415-353-1268.

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Daily, day and evening shift

Methodology:
Gram stain

Reported:
4 hours

Additional Information:
The presence or absence of fecal leukocytes is of poor sensitivity and specificity in diagnosing hospital-acquired diarrhea, and is no longer offered on hospitalized patients > 72 hours post admission. See also Stool Analysis

Synonyms:

- Fecal leukocytes
- stool analysis

COLLECTION

Sample Type:
Fresh diarrheal stool

Collect:
Clean container

Amount to Collect:
See preferred volume

Preferred Volume:
10 gm

Remarks:
Select a sample of diarrheal stool with an applicator stick, including bloody or mucous discharge if present.

Deliver to lab immediately.

Do not collect samples between 2200 and 0630 hours.

Stability (from collection to initiation):
3 hours

Unacceptable Conditions:
Samples received >3 hours of collection. Stool in preservative.

PROCESSING

Test Code:
P221

Performing Lab:
Microbiology

Specimen Preparation:
Maintain sample at room temperature.

Preferred Volume:
10 gm

Unacceptable Conditions:
Samples received >3 hours of collection. Stool in preservative.

Stability (from collection to initiation):
3 hours

RESULT INTERPRETATION

Reference Interval:
Negative (No cells)

Additional Information:
The presence or absence of fecal leukocytes is of poor sensitivity and specificity in diagnosing hospital-acquired diarrhea, and is no longer offered on hospitalized patients > 72 hours post admission. See also Stool Analysis

ADMINISTRATIVE

CPT Codes:
87205

LOINC Codes:
2755-7

COMPLETE VIEW

Approval Required:
Yes, for samples from inpatients collected > 72 hours after admission, contact Microbiology at 415-353-1268.

Available Stat:
No

Test Code:
P221

Performing Lab:
Microbiology

Performed:
Daily, day and evening shift

Methodology:
Gram stain

Remarks:
Select a sample of diarrheal stool with an applicator stick, including bloody or mucous discharge if present.

Deliver to lab immediately.

Do not collect samples between 2200 and 0630 hours.

Collect:
Clean container

Amount to Collect:
See preferred volume

Sample Type:
Fresh diarrheal stool

Preferred Volume:
10 gm

Unacceptable Conditions:
Samples received >3 hours of collection. Stool in preservative.

Specimen Preparation:
Maintain sample at room temperature.

Reference Interval:
Negative (No cells)

Synonyms:

- Fecal leukocytes
- stool analysis

Stability (from collection to initiation):
3 hours

Reported:
4 hours

Additional Information:
The presence or absence of fecal leukocytes is of poor sensitivity and specificity in diagnosing hospital-acquired diarrhea, and is no longer offered on hospitalized patients > 72 hours post admission. See also Stool Analysis

CPT Codes:
87205

LOINC Codes:
2755-7

Felbamate

FELB

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
HPLC

Reported:
Run 2x per week. Turnaround time 3-6 days

Additional Information:
Felbamate is an anti-epileptic drug used to treat patients with a variety of seizures. Therapeutic monitoring is useful to optimize dose and avoid toxicity.

COLLECTION

Sample Type:
Serum

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Remarks:
Collect level 1 hour prior to next dose when patient is at steady state.

Unacceptable Conditions:
Collected in Gold top

PROCESSING

Test Code:
FELB

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Order Quest test # 68999P

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Collected in Gold top

RESULT INTERPRETATION

Units:
µg/mL (mcg/mL)

Reference Interval:
30-50 µg/mL

Additional Information:
Felbamate is an anti-epileptic drug used to treat patients with a variety of seizures. Therapeutic monitoring is useful to optimize dose and avoid toxicity.

ADMINISTRATIVE

CPT Codes:
80299

LOINC Codes:
6899-9

COMPLETE VIEW

Available Stat:
No

Test Code:
FELB

Performing Lab:
Quest

Sendout:
Yes

Methodology:
HPLC

Remarks:
Collect level 1 hour prior to next dose when patient is at steady state.

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Collected in Gold top

Specimen Preparation:
Order Quest test # 68999P

Units:
µg/mL (mcg/mL)

Reference Interval:
30-50 µg/mL

Reported:
Run 2x per week. Turnaround time 3-6 days

Additional Information:
Felbamate is an anti-epileptic drug used to treat patients with a variety of seizures. Therapeutic monitoring is useful to optimize dose and avoid toxicity.

CPT Codes:
80299

LOINC Codes:
6899-9

Fentanyl Screen, Urine

FEN

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Homogeneous competitive enzyme immunoassay method (ARK Diagnostics Fentanyl II)

Reported:
Stat: 2 hours
Routine: 4 hours

Additional Information:
This assay detects both fentanyl and norfentanyl. Norfentanyl is the major urine metabolite of fentanyl (Smith HS, Mayo Clinic Proc, 2009, 84(7): 613-624). It also detects fentanyl analogues to varying degrees (e.g. acetyl fentanyl, furanyl fentanyl, carfentanil etc).

For a list of cross-reacting substances of this assay click here

A concentration of < 1 µg/L is considered negative by this test. A positive result is >= 1 µg/L and indicates presence of fentanyl and/or norfentanyl and/or a fentanyl analogue. This immunoassay is only a screening test and is not definitive. Results cannot be used for medico-legal purposes.

This is a presumptive screen for possible fentanyl use within the past 1-3 days. False positive results may occur due to other cross reacting substances, however, positive results are NOT routinely confirmed by a second method. If confirmation of the test result is required, it is the responsibility of the physician to separately order a specific confirmatory test for the drug identified. Samples are held for 7 days. Confirmatory testing can be ordered as Fentanyl, Quantitative, Urine in ApeX as an add-on to the urine sample collected for this immunoassay (Test code FENQNT).

Note: Ciprofloxacin, ofloxacin and metabolites can cause false-positive results on this fentanyl immunoassay. (Ref: Fitch B, Clin Chem 2023, 69(3): 222-225).

Synonyms:

- Fentanyl
- Norfentanyl
- Fentanyl analogues (acetyl fentanyl, furanyl fentanyl)
- Abstral
- Actiq
- Duragesic
- Fentora
- Innovar
- Instanyl
- Ionsys
- Lazanda
- Onsolis
- Sublimaze
- Subsys

COLLECTION

Sample Type:
Urine

Collect:
Urine cup

Amount to Collect:
10 mL

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Stability (from collection to initiation):
Refrigerated 1 week, frozen 6 months

PROCESSING

Test Code:
FEN

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Stability (from collection to initiation):
Refrigerated 1 week, frozen 6 months

RESULT INTERPRETATION

Reference Interval:
Negative

(Note: a negative result indicates that fentanyl is not present, or it is present at a concentration below the cut-off concentration of 1 µg/L)

Additional Information:
This assay detects both fentanyl and norfentanyl. Norfentanyl is the major urine metabolite of fentanyl (Smith HS, Mayo Clinic Proc, 2009, 84(7): 613-624). It also detects fentanyl analogues to varying degrees (e.g. acetyl fentanyl, furanyl fentanyl, carfentanil etc).

For a list of cross-reacting substances of this assay click here

A concentration of < 1 µg/L is considered negative by this test. A positive result is >= 1 µg/L and indicates presence of fentanyl and/or norfentanyl and/or a fentanyl analogue. This immunoassay is only a screening test and is not definitive. Results cannot be used for medico-legal purposes.

This is a presumptive screen for possible fentanyl use within the past 1-3 days. False positive results may occur due to other cross reacting substances, however, positive results are NOT routinely confirmed by a second method. If confirmation of the test result is required, it is the responsibility of the physician to separately order a specific confirmatory test for the drug identified. Samples are held for 7 days. Confirmatory testing can be ordered as Fentanyl, Quantitative, Urine in ApeX as an add-on to the urine sample collected for this immunoassay (Test code FENQNT).

Note: Ciprofloxacin, ofloxacin and metabolites can cause false-positive results on this fentanyl immunoassay. (Ref: Fitch B, Clin Chem 2023, 69(3): 222-225).

ADMINISTRATIVE

CPT Codes:
80307

LOINC Codes:
59673-4

COMPLETE VIEW

Available Stat:
Yes

Test Code:
FEN

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Homogeneous competitive enzyme immunoassay method (ARK Diagnostics Fentanyl II)

Collect:
Urine cup

Amount to Collect:
10 mL

Sample Type:
Urine

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Reference Interval:
Negative

(Note: a negative result indicates that fentanyl is not present, or it is present at a concentration below the cut-off concentration of 1 µg/L)

Synonyms:

- Fentanyl
- Norfentanyl
- Fentanyl analogues (acetyl fentanyl, furanyl fentanyl)
- Abstral
- Actiq
- Duragesic
- Fentora
- Innovar
- Instanyl
- Ionsys
- Lazanda
- Onsolis
- Sublimaze
- Subsys

Stability (from collection to initiation):
Refrigerated 1 week, frozen 6 months

Reported:
Stat: 2 hours
Routine: 4 hours

Additional Information:
This assay detects both fentanyl and norfentanyl. Norfentanyl is the major urine metabolite of fentanyl (Smith HS, Mayo Clinic Proc, 2009, 84(7): 613-624). It also detects fentanyl analogues to varying degrees (e.g. acetyl fentanyl, furanyl fentanyl, carfentanil etc).

For a list of cross-reacting substances of this assay click here

A concentration of < 1 µg/L is considered negative by this test. A positive result is >= 1 µg/L and indicates presence of fentanyl and/or norfentanyl and/or a fentanyl analogue. This immunoassay is only a screening test and is not definitive. Results cannot be used for medico-legal purposes.

This is a presumptive screen for possible fentanyl use within the past 1-3 days. False positive results may occur due to other cross reacting substances, however, positive results are NOT routinely confirmed by a second method. If confirmation of the test result is required, it is the responsibility of the physician to separately order a specific confirmatory test for the drug identified. Samples are held for 7 days. Confirmatory testing can be ordered as Fentanyl, Quantitative, Urine in ApeX as an add-on to the urine sample collected for this immunoassay (Test code FENQNT).

Note: Ciprofloxacin, ofloxacin and metabolites can cause false-positive results on this fentanyl immunoassay. (Ref: Fitch B, Clin Chem 2023, 69(3): 222-225).

CPT Codes:
80307

LOINC Codes:
59673-4

Fentanyl, Urine, Quantitative

FENQNT

ORDERING

Available Stat:
No

Performing Lab:
Quest

Performed:
Mon-Sat

Methodology:
Mass Spectrometry

Reported:
2-3 days

Synonyms:

- Fentanyl confirmation

COLLECTION

Sample Type:
Urine

Collect:
Clean container

Amount to Collect:
20 mL

Preferred Volume:
20 mL

Minimum Volume:
7 mL

Stability (from collection to initiation):
Room temperature: 5 days
Refrigerated: 7 days
Frozen: 30 days

Storage/Transport Temperature:
Frozen

Unacceptable Conditions:
Preserved samples

PROCESSING

Test Code:
FENQNT

Sendout:
Yes

Performing Lab:
Quest

Preferred Volume:
20 mL

Minimum Volume:
7 mL

Unacceptable Conditions:
Preserved samples

Stability (from collection to initiation):
Room temperature: 5 days
Refrigerated: 7 days
Frozen: 30 days

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Units:
ng/mL

Reference Interval:
Fentanyl <0.50 ng/mL
Norfentanyl <0.50 ng/mL

Interpretive Data:
Drug Monitoring, Fentanyl, Quantitative, Urine - Fentanyl is an opioid analgesic with a potency approximately 80 times that of morphine. The test is a definitive assay using liquid chromatography mass spectroscopy (LC/MS/MS) methodology. Therapeutic urine drug monitoring of fentanyl is important for ensuring compliance to treatment strategies, as well as ensuring non-diversion for illicit purposes. Urine or oral fluid are the specimens of choice for routine monitoring of patients taking prescription drugs. Use of serum/plasma should be limited to anuretic patients, or where a patient's clinical appearance does not coincide with their prescribed medications. No single monitoring approach provides adequate information about the pattern or dose of patient drug use. Safest prescribing habits should include a combination of tools and laboratory test results to correctly detect drug use patterns. Quantitative values cannot be used to assess the drug dose, because the drug is extensively metabolized and excreted in the urine.

ADMINISTRATIVE

CPT Codes:
80354

LOINC Codes:
3637-6, 11075-9, 54247-2

COMPLETE VIEW

Available Stat:
No

Test Code:
FENQNT

Performing Lab:
Quest

Sendout:
Yes

Performed:
Mon-Sat

Methodology:
Mass Spectrometry

Collect:
Clean container

Amount to Collect:
20 mL

Sample Type:
Urine

Preferred Volume:
20 mL

Minimum Volume:
7 mL

Unacceptable Conditions:
Preserved samples

Units:
ng/mL

Reference Interval:
Fentanyl <0.50 ng/mL
Norfentanyl <0.50 ng/mL

Interpretive Data:
Drug Monitoring, Fentanyl, Quantitative, Urine - Fentanyl is an opioid analgesic with a potency approximately 80 times that of morphine. The test is a definitive assay using liquid chromatography mass spectroscopy (LC/MS/MS) methodology. Therapeutic urine drug monitoring of fentanyl is important for ensuring compliance to treatment strategies, as well as ensuring non-diversion for illicit purposes. Urine or oral fluid are the specimens of choice for routine monitoring of patients taking prescription drugs. Use of serum/plasma should be limited to anuretic patients, or where a patient's clinical appearance does not coincide with their prescribed medications. No single monitoring approach provides adequate information about the pattern or dose of patient drug use. Safest prescribing habits should include a combination of tools and laboratory test results to correctly detect drug use patterns. Quantitative values cannot be used to assess the drug dose, because the drug is extensively metabolized and excreted in the urine.

Synonyms:

- Fentanyl confirmation

Storage/Transport Temperature:
Frozen

Stability (from collection to initiation):
Room temperature: 5 days
Refrigerated: 7 days
Frozen: 30 days

Reported:
2-3 days

CPT Codes:
80354

LOINC Codes:
3637-6, 11075-9, 54247-2

Ferritin

FERR

ORDERING

Available Stat:
No

Performing Lab:
Parnassus, Mission Bay & Mount Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week.

Methodology:
Parnassus and Mission Bay: Chemiluminescent Microparticle Immunoassay (Abbott Architect i2000SR)
Mount Zion: Chemiluminescent Microparticle Immunoassay (Abbott Architect ci4100)

Reported:
1 day

Additional Information:
Ferritin is a more sensitive test of iron stores than serum iron, transferrin saturation (saturation of iron-binding capacity) or RBC indices. Iron-deficient erythropoiesis begins at ferritin levels of 25-40 µg/L, within the reference range; a cutoff level of 16 yields a sensitivity of 75% and a specificity of 98% (Hallberg L et al. Br J Haematol 1993;85:787).

Markedly elevated levels may be seen in some infections, in hemochromatosis, in patients with repeated red cell transfusions (e.g. thalassemia) and in Hemophagocytic Lymphohistiocytosis (HLH)

Grossly hemolyzed samples may give falsely elevated results by as much as 60% due to the release of intracellular ferritin.

If a sample is found to be grossly hemolyzed (>200 mg/dL hemogloin, (hemolytic index >5)), add an ETC comment "HEMIN" (hemolysis present, may tend to increase result)."

If a sample is found to be grossly icteric (bilirubin > 20 mg/dL, icteric index >20) add an ETC comment “ICTUNK" (Specimen grossly icteric or discolored, effect on most assay results is unknown).

COLLECTION

Sample Type:
Heparinized plasma (preferred) or Serum.

Collect:
Light green top preferred. Gold or Red top acceptable.

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.25 mL serum or plasma

Stability (from collection to initiation):
Room temperature: 24 hours
Refrigerated (2-8°C): 7 days
Freezer (-10°C or colder): 12 months

PROCESSING

Test Code:
FERR

Performing Lab:
Parnassus, Mission Bay & Mount Zion Chemistry

Specimen Preparation:
Refrigerate

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.25 mL serum or plasma

Stability (from collection to initiation):
Room temperature: 24 hours
Refrigerated (2-8°C): 7 days
Freezer (-10°C or colder): 12 months

RESULT INTERPRETATION

Units:
µg/L

Reference Interval:
PEDIATRIC

AGE	MALE (µg/L)	FEMALE (µg/L)
4 - 14 days	100 - 717	100 - 717
15 days - < 6 months	14 - 647	14 - 647
6 months - < 1 year	8 - 182	8 - 182
1 - < 5 years	5 - 100	5 - 100
5 - < 14 years	14 - 79	14 - 79
14 - < 16 years	13 - 83	5 - 67
16 - < 19 years	11 - 172	5 - 67

Pediatric reference intervals adopted from UCSF Clinical Laboratories at China Basin based on the Abbott Architect method. China Basin reference intervals originally adopted in 2017 from CALIPER Pediatric Reference Intervals based on method comparison studies performed in 2016 using patient samples run on the Abbott Architect Ferritin assay.

ADULT

AGE	MALE (µg/L)	FEMALE (µg/L)
19 - 29 years	38 - 270	12 - 114
30 - 39 years	48 - 420	12 - 160
40 - 49 years	30 - 490	12 - 240
50 years and older	30 - 530	18 - 340

Adult reference intervals adopted from UCSF Clinical Laboratories at China Basin based on the Abbott Architect method. China Basin reference intervals originally adopted in 2017 from ARUP Laboratories based on method comparison studies performed in 2016 using patient samples run on the Abbott Architect Ferritin assay.

Additional Information:
Ferritin is a more sensitive test of iron stores than serum iron, transferrin saturation (saturation of iron-binding capacity) or RBC indices. Iron-deficient erythropoiesis begins at ferritin levels of 25-40 µg/L, within the reference range; a cutoff level of 16 yields a sensitivity of 75% and a specificity of 98% (Hallberg L et al. Br J Haematol 1993;85:787).

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If a sample is found to be grossly icteric (bilirubin > 20 mg/dL, icteric index >20) add an ETC comment “ICTUNK" (Specimen grossly icteric or discolored, effect on most assay results is unknown).

Interpretive Data:
Ferritin is a more sensitive test of iron stores than serum iron, transferrin saturation (saturation of iron-binding capacity) or RBC indices. Iron-deficient erythropoiesis begins at ferritin levels of 25-40 µg/L, within the reference range; a cutoff level of 16 yields a sensitivity of 75% and a specificity of 98% (Hallberg L et al. Br J Haematol 1993;85:787).

Markedly elevated levels may be seen in some infections, in hemochromatosis, in patients with repeated red cell transfusions (e.g. thalassemia) and in Hemophagocytic Lymphohistiocytosis (HLH)

Grossly hemolyzed samples may give falsely elevated results by as much as 60% due to the release of intracellular ferritin.

If a sample is found to be grossly hemolyzed (>200 mg/dL hemoglobin, (hemolytic index >200)), add an ETC comment "HEMIN" (hemolysis present, may tend to increase result).
If a sample is found to be grossly icteric (bilirubin > 20 mg/dL, icteric index >20) add an ETC comment ICTUNK" (Specimen grossly icteric or discolored, effect on most assay results is unknown).

ADMINISTRATIVE

CPT Codes:
82728

LOINC Codes:
2276-4

COMPLETE VIEW

Available Stat:
No

Test Code:
FERR

Performing Lab:
Parnassus, Mission Bay & Mount Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week.

Methodology:
Parnassus and Mission Bay: Chemiluminescent Microparticle Immunoassay (Abbott Architect i2000SR)
Mount Zion: Chemiluminescent Microparticle Immunoassay (Abbott Architect ci4100)

Collect:
Light green top preferred. Gold or Red top acceptable.

Amount to Collect:
1 mL blood

Sample Type:
Heparinized plasma (preferred) or Serum.

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.25 mL serum or plasma

Specimen Preparation:
Refrigerate

Units:
µg/L

Reference Interval:
PEDIATRIC

AGE	MALE (µg/L)	FEMALE (µg/L)
4 - 14 days	100 - 717	100 - 717
15 days - < 6 months	14 - 647	14 - 647
6 months - < 1 year	8 - 182	8 - 182
1 - < 5 years	5 - 100	5 - 100
5 - < 14 years	14 - 79	14 - 79
14 - < 16 years	13 - 83	5 - 67
16 - < 19 years	11 - 172	5 - 67

Pediatric reference intervals adopted from UCSF Clinical Laboratories at China Basin based on the Abbott Architect method. China Basin reference intervals originally adopted in 2017 from CALIPER Pediatric Reference Intervals based on method comparison studies performed in 2016 using patient samples run on the Abbott Architect Ferritin assay.

ADULT

AGE	MALE (µg/L)	FEMALE (µg/L)
19 - 29 years	38 - 270	12 - 114
30 - 39 years	48 - 420	12 - 160
40 - 49 years	30 - 490	12 - 240
50 years and older	30 - 530	18 - 340

Adult reference intervals adopted from UCSF Clinical Laboratories at China Basin based on the Abbott Architect method. China Basin reference intervals originally adopted in 2017 from ARUP Laboratories based on method comparison studies performed in 2016 using patient samples run on the Abbott Architect Ferritin assay.

Interpretive Data:

Ferritin is a more sensitive test of iron stores than serum iron, transferrin saturation (saturation of iron-binding capacity) or RBC indices. Iron-deficient erythropoiesis begins at ferritin levels of 25-40 µg/L, within the reference range; a cutoff level of 16 yields a sensitivity of 75% and a specificity of 98% (Hallberg L et al. Br J Haematol 1993;85:787).

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If a sample is found to be grossly hemolyzed (>200 mg/dL hemoglobin, (hemolytic index >200)), add an ETC comment "HEMIN" (hemolysis present, may tend to increase result).
If a sample is found to be grossly icteric (bilirubin > 20 mg/dL, icteric index >20) add an ETC comment ICTUNK" (Specimen grossly icteric or discolored, effect on most assay results is unknown).

Stability (from collection to initiation):

Room temperature: 24 hours
Refrigerated (2-8°C): 7 days
Freezer (-10°C or colder): 12 months

Reported:

1 day

Additional Information:

Ferritin is a more sensitive test of iron stores than serum iron, transferrin saturation (saturation of iron-binding capacity) or RBC indices. Iron-deficient erythropoiesis begins at ferritin levels of 25-40 µg/L, within the reference range; a cutoff level of 16 yields a sensitivity of 75% and a specificity of 98% (Hallberg L et al. Br J Haematol 1993;85:787).

Markedly elevated levels may be seen in some infections, in hemochromatosis, in patients with repeated red cell transfusions (e.g. thalassemia) and in Hemophagocytic Lymphohistiocytosis (HLH)

Grossly hemolyzed samples may give falsely elevated results by as much as 60% due to the release of intracellular ferritin.

If a sample is found to be grossly hemolyzed (>200 mg/dL hemogloin, (hemolytic index >5)), add an ETC comment "HEMIN" (hemolysis present, may tend to increase result)."

If a sample is found to be grossly icteric (bilirubin > 20 mg/dL, icteric index >20) add an ETC comment “ICTUNK" (Specimen grossly icteric or discolored, effect on most assay results is unknown).

CPT Codes:

82728

LOINC Codes:

2276-4

Fetal Bleed Screen

FBLD

ORDERING

Available Stat:
No

Performing Lab:
Parnassus & Mission Bay Parnassus & Mission Bay Blood Bankss

Additional Information:
A qualitative screening test for **Rh positive** fetal red blood cells in an **Rh negative** mother's circulation. This test is performed automatically by the Blood Bank when Rh Immune Globulin (Rhogam) is ordered.

This test is primarily used to determine the need for additional Rhogan doses and if positive the "Fetal cells, Quantitative" (Kleihauer-Betke) test should be performed in order to calculate the additional Rhogam needed.

This test cannot be used to determine the extent of a fetal-maternal hemorrhage in an Rh positive woman. In that setting the Fetal Cells, Quantitative test should be ordered.

Reflex Testing:
If positive, the sample is referred to hematology for Kleihauer-Betke testing to determine the extent of the bleed and to calculate the Rhogam dosage. The Kleihauer-Betke test is billed separately.

Synonyms:

- Rosettings test
- Rh positive fetal red cells
- Rh positive fetal RBC's

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top (6 mL size preferred)

Amount to Collect:
6 mL blood

Preferred Volume:
6 mL blood

Minimum Volume:
3 mL blood

Unacceptable Conditions:
Unsigned, mislabeled or unlabeled sample

PROCESSING

Test Code:
FBLD

Performing Lab:
Parnassus & Mission Bay Parnassus & Mission Bay Blood Bankss

Preferred Volume:
6 mL blood

Minimum Volume:
3 mL blood

Unacceptable Conditions:
Unsigned, mislabeled or unlabeled sample

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:

A qualitative screening test for **Rh positive** fetal red blood cells in an **Rh negative** mother's circulation. This test is performed automatically by the Blood Bank when Rh Immune Globulin (Rhogam) is ordered.

This test is primarily used to determine the need for additional Rhogan doses and if positive the "Fetal cells, Quantitative" (Kleihauer-Betke) test should be performed in order to calculate the additional Rhogam needed.

This test cannot be used to determine the extent of a fetal-maternal hemorrhage in an Rh positive woman. In that setting the Fetal Cells, Quantitative test should be ordered.

ADMINISTRATIVE

CPT Codes:
85461

LOINC Codes:
33900-2

COMPLETE VIEW

Available Stat:
No

Test Code:
FBLD

Performing Lab:
Parnassus & Mission Bay Parnassus & Mission Bay Blood Bankss

Collect:
Lavender top (6 mL size preferred)

Amount to Collect:
6 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
6 mL blood

Minimum Volume:
3 mL blood

Unacceptable Conditions:
Unsigned, mislabeled or unlabeled sample

Reference Interval:
Negative

Synonyms:

- Rosettings test
- Rh positive fetal red cells
- Rh positive fetal RBC's

Reflex Testing:

If positive, the sample is referred to hematology for Kleihauer-Betke testing to determine the extent of the bleed and to calculate the Rhogam dosage. The Kleihauer-Betke test is billed separately.

Additional Information:

A qualitative screening test for **Rh positive** fetal red blood cells in an **Rh negative** mother's circulation. This test is performed automatically by the Blood Bank when Rh Immune Globulin (Rhogam) is ordered.

This test is primarily used to determine the need for additional Rhogan doses and if positive the "Fetal cells, Quantitative" (Kleihauer-Betke) test should be performed in order to calculate the additional Rhogam needed.

This test cannot be used to determine the extent of a fetal-maternal hemorrhage in an Rh positive woman. In that setting the Fetal Cells, Quantitative test should be ordered.

CPT Codes:
85461

LOINC Codes:
33900-2

Fetal Cells, Quantitative

FETC

ORDERING

Available Stat:
No

Performing Lab:
Mission Bay Hematology

Performed:
Test run 0800-1500 Monday-Friday

Methodology:
Modified Acid Elution as described by Kleihauer-Betke and modified by Clayton.

Reported:
Same day or next weekday.

Additional Information:
Testing for a feto-maternal bleed will NOT be done in the case of an Rh+ infant born to an Rh- mother if the more sensitive Fetal Bleed Screen (rosetting test) run by the Blood Bank is negative.

Other anticoagulants or clotted blood may be used if necessary. A blood sample must be submitted at the same time and tested in parallel with CSF or BF. Each specimen examined is charged separately.

References:
Brecher M, ed. Technical Manual, 15th ed. Bethesda, Maryland: American Association of Blood Banks, 2005.
Petrides, M. Practical Guide to Transfusion Medicine, 2nd. Bethesda, Maryland: AABB Press, 2007

Synonyms:

- Kleihauer-Betke Test
- Acid elution test
- Alkali Denaturation
- Betke test
- fetal RBC's
- Kleihauer test

COLLECTION

Sample Type:
EDTA whole blood, Body Fluid, CSF

Collect:
Lavender top, CSF tube or sterile collection tube

Amount to Collect:
1 mL blood

Preferred Volume:
1 mL blood, Body fluid or CSF

Remarks:
Complete appropriate requisition and request "Fetal cells, Quantitative"

Stability (from collection to initiation):
Blood refrigerated 48 hours. CSF and Body fluids refrigerated 4-6 hours.

PROCESSING

Test Code:
FETC

Performing Lab:
Mission Bay Hematology

Specimen Preparation:
If test cannot be performed immediately refrigerate sample.

Preferred Volume:
1 mL blood, Body fluid or CSF

Stability (from collection to initiation):
Blood refrigerated 48 hours. CSF and Body fluids refrigerated 4-6 hours.

RESULT INTERPRETATION

Reference Interval:
Pregnant women: < 0.1% Fetal cells

Additional Information:
Testing for a feto-maternal bleed will NOT be done in the case of an Rh+ infant born to an Rh- mother if the more sensitive Fetal Bleed Screen (rosetting test) run by the Blood Bank is negative.

Other anticoagulants or clotted blood may be used if necessary. A blood sample must be submitted at the same time and tested in parallel with CSF or BF. Each specimen examined is charged separately.

References:
Brecher M, ed. Technical Manual, 15th ed. Bethesda, Maryland: American Association of Blood Banks, 2005.
Petrides, M. Practical Guide to Transfusion Medicine, 2nd. Bethesda, Maryland: AABB Press, 2007

ADMINISTRATIVE

CPT Codes:
85460

LOINC Codes:
48556-5

COMPLETE VIEW

Available Stat:
No

Test Code:
FETC

Performing Lab:
Mission Bay Hematology

Performed:
Test run 0800-1500 Monday-Friday

Methodology:
Modified Acid Elution as described by Kleihauer-Betke and modified by Clayton.

Remarks:
Complete appropriate requisition and request "Fetal cells, Quantitative"

Collect:
Lavender top, CSF tube or sterile collection tube

Amount to Collect:
1 mL blood

Sample Type:
EDTA whole blood, Body Fluid, CSF

Preferred Volume:
1 mL blood, Body fluid or CSF

Specimen Preparation:
If test cannot be performed immediately refrigerate sample.

Reference Interval:
Pregnant women: < 0.1% Fetal cells

Synonyms:

- Kleihauer-Betke Test
- Acid elution test
- Alkali Denaturation
- Betke test
- fetal RBC's
- Kleihauer test

Stability (from collection to initiation):
Blood refrigerated 48 hours. CSF and Body fluids refrigerated 4-6 hours.

Reported:
Same day or next weekday.

Additional Information:

Testing for a feto-maternal bleed will NOT be done in the case of an Rh+ infant born to an Rh- mother if the more sensitive Fetal Bleed Screen (rosetting test) run by the Blood Bank is negative.

Other anticoagulants or clotted blood may be used if necessary. A blood sample must be submitted at the same time and tested in parallel with CSF or BF. Each specimen examined is charged separately.

References:

Brecher M, ed. Technical Manual, 15th ed. Bethesda, Maryland: American Association of Blood Banks, 2005.
Petrides, M. Practical Guide to Transfusion Medicine, 2nd. Bethesda, Maryland: AABB Press, 2007

CPT Codes:

85460

LOINC Codes:

48556-5

Fetal Fibronectin

FFN

ORDERING

Available Stat:
Yes

Performing Lab:
Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Immunoassay (Adeza TLi)

Reported:
4 hours

Additional Information:
Detection of fetal fibronectin in cervico-vaginal secretions is associated with preterm delivery in symptomatic pregnant women between 24 weeks and 34 weeks, 6 days gestation and in assymptomatic pregnant women 22 weeks to 30 weeks, 6 days gestation.

Specimens should be obtained prior to collection of culture specimens, digital cervical examination or vaginal probe by ultrasound examination, as manipulation of the cervix may cause the release of fetal fibronectin.

Fetal fibronectin tests are not intended for use in women with moderate or gross vaginal bleeding, known placental abruption, or placental previa.

Call x3-1501 when more collection tubes and swabs are needed; allow at least 24 hours for delivery of collection kits.

Synonyms:

- FFN
- fibronectin, fetal

COLLECTION

Patient Preparation:
Patient specimens should not be tested if the patient has had sexual intercourse within 24 hours prior to sampling time.

Sample Type:
Vaginal fluid

Collect:
Special container with holding medium for dacron swab (available from lab x3-1501). The collection tube and swab should be stored at room temperature.

Remarks:
Specimens should be obtained prior to collection of culture specimens, digital cervical examination or vaginal probe by ultrasound examination,as manipulation of the cervix may cause the release of fetal fibronectin.

Care must be taken not to contaminate the Dacron collection swab or cervicovaginal secretions with lubricants, soaps, disinfectants or creams.

Fetal fibronectin tests are not intended for use in women with moderate or gross vaginal bleeding, known placental abruption, or placental previa.

Once the specimen is collected, store the collection tube and sample at 4C and transport to laboratory within 24 hours of collection.

Stability (from collection to initiation):
Specimens that are not tested within eight (8) hours of collection must be stored refrigerated at 2-8°C
Room Temperature 8 hours, Refrigerated 3 days, frozen at -20C 3 months

Unacceptable Conditions:
Delivered to lab > 24 hours after collection.
Sample not refrigerated at 2 to 8 °C within 8 hours of collection.

PROCESSING

Test Code:
FFN

Performing Lab:
Mission Bay Chemistry

Specimen Preparation:
The collection tube and swab should be stored at room temperature.

Unacceptable Conditions:
Delivered to lab > 24 hours after collection.
Sample not refrigerated at 2 to 8 °C within 8 hours of collection.

Stability (from collection to initiation):
Specimens that are not tested within eight (8) hours of collection must be stored refrigerated at 2-8°C
Room Temperature 8 hours, Refrigerated 3 days, frozen at -20C 3 months

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
Detection of fetal fibronectin in cervico-vaginal secretions is associated with preterm delivery in symptomatic pregnant women between 24 weeks and 34 weeks, 6 days gestation and in assymptomatic pregnant women 22 weeks to 30 weeks, 6 days gestation.

Specimens should be obtained prior to collection of culture specimens, digital cervical examination or vaginal probe by ultrasound examination, as manipulation of the cervix may cause the release of fetal fibronectin.

Fetal fibronectin tests are not intended for use in women with moderate or gross vaginal bleeding, known placental abruption, or placental previa.

Call x3-1501 when more collection tubes and swabs are needed; allow at least 24 hours for delivery of collection kits.

ADMINISTRATIVE

CPT Codes:
82731

LOINC Codes:
20404-0

COMPLETE VIEW

Available Stat:
Yes

Test Code:
FFN

Performing Lab:
Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Immunoassay (Adeza TLi)

Patient Preparation:
Patient specimens should not be tested if the patient has had sexual intercourse within 24 hours prior to sampling time.

Remarks:
Specimens should be obtained prior to collection of culture specimens, digital cervical examination or vaginal probe by ultrasound examination,as manipulation of the cervix may cause the release of fetal fibronectin.

Care must be taken not to contaminate the Dacron collection swab or cervicovaginal secretions with lubricants, soaps, disinfectants or creams.

Fetal fibronectin tests are not intended for use in women with moderate or gross vaginal bleeding, known placental abruption, or placental previa.

Once the specimen is collected, store the collection tube and sample at 4C and transport to laboratory within 24 hours of collection.

Collect:
Special container with holding medium for dacron swab (available from lab x3-1501). The collection tube and swab should be stored at room temperature.

Sample Type:
Vaginal fluid

Unacceptable Conditions:
Delivered to lab > 24 hours after collection.
Sample not refrigerated at 2 to 8 °C within 8 hours of collection.

Specimen Preparation:
The collection tube and swab should be stored at room temperature.

Reference Interval:
Negative

Synonyms:

- FFN
- fibronectin, fetal

Stability (from collection to initiation):
Specimens that are not tested within eight (8) hours of collection must be stored refrigerated at 2-8°C
Room Temperature 8 hours, Refrigerated 3 days, frozen at -20C 3 months

Reported:
4 hours

Additional Information:
Detection of fetal fibronectin in cervico-vaginal secretions is associated with preterm delivery in symptomatic pregnant women between 24 weeks and 34 weeks, 6 days gestation and in assymptomatic pregnant women 22 weeks to 30 weeks, 6 days gestation.

Specimens should be obtained prior to collection of culture specimens, digital cervical examination or vaginal probe by ultrasound examination, as manipulation of the cervix may cause the release of fetal fibronectin.

Fetal fibronectin tests are not intended for use in women with moderate or gross vaginal bleeding, known placental abruption, or placental previa.

Call x3-1501 when more collection tubes and swabs are needed; allow at least 24 hours for delivery of collection kits.

CPT Codes:
82731

LOINC Codes:
20404-0

FGFR1 8p11 Break Apart FISH

FGFR1, BFGFR1

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Fluorescent in-Situ Hybridization

Reported:
1-2 weeks

Synonyms:

- FGFR1 8p Break apart rearrangement FISH
- FGFR1
- BFGFR1

COLLECTION

Sample Type:
Heparinized blood or bone marrow aspirateBone biopsy

Collect:
Blood or marrow aspirate: Dark Green top

Amount to Collect:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow core: 1 cm

Remarks:
Mix blood and marrow aspirates well

Stability (from collection to initiation):
2 days at room temperature

Unacceptable Conditions:
Insufficient sample or not collected in heparin

PROCESSING

Test Code:
BFGFR1: Blood
FGFR1: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Specimen Preparation:
Maintain sample at room temperature; Do Not Refrigerate or freeze. Do Not centrifuge.

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow core: 1 cm

Unacceptable Conditions:
Insufficient sample or not collected in heparin

Stability (from collection to initiation):
2 days at room temperature

ADMINISTRATIVE

CPT Codes:
88271 x2, 88275

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BFGFR1: Blood
FGFR1: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Fluorescent in-Situ Hybridization

Remarks:
Mix blood and marrow aspirates well

Collect:
Blood or marrow aspirate: Dark Green top

Amount to Collect:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Sample Type:
Heparinized blood or bone marrow aspirateBone biopsy

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow core: 1 cm

Unacceptable Conditions:
Insufficient sample or not collected in heparin

Specimen Preparation:
Maintain sample at room temperature; Do Not Refrigerate or freeze. Do Not centrifuge.

Synonyms:

- FGFR1 8p Break apart rearrangement FISH
- FGFR1
- BFGFR1

Stability (from collection to initiation):
2 days at room temperature

Reported:
1-2 weeks

CPT Codes:
88271 x2, 88275

LDT or Modified FDA:
Yes

Fibrin D-Dimers

FDD

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Hematology

Performed:
24 hours, 7 days per week

Methodology:
Immunoturbimetric (Liatest)

Reported:
1 hour

Additional Information:

Reference Interval
The fibrin D-dimer (FDD) levels in 113 normal blood donors were used to calculate a reference interval using a transformed parametric method. This analysis yielded an upper limit of normal of 664 ng/mL with approximately 8% of FDD values >500 ng/mL (1).In APeX, the upper limit of normal has been set at 500 ng/mL in order to alert clinicians to the cutoff value for exclusion of venous thromboembolism (VTE; see below) (2)

Evaluation for VTE, including pulmonary embolism (PE) and deep venous thrombosis (DVT)
In December 2016, Stago received approval from the US FDA for the reagent STA-Liatest D-Di to be used in the exclusion of pulmonary embolism (PE) and deep venous thrombosis (DVT) in patients with low or moderate risk, presenting at an emergency unit. In patients at a low-to-intermediate clinical probability for PE and for whom imaging studies are under consideration, an FDD <500 ng/mL may permit diagnostic imaging (e.g., helical contrast computed tomography or ventilation/perfusion scan) to be avoided. Clinical correlation is advised in these settings. The FDD should only be ordered when there is reasonably substantive clinical suspicion for VTE/PE, as an elevated FDD is a nonspecific finding and can be elevated in the setting of recent fibrinolytic therapy, recent trauma or surgery, large hematoma, malignancy, sepsis or severe infection, cirrhosis, pregnancy, atherosclerosis, hemoglobinopathy, and age >60 years.

Age-adjusted Fibrin D-dimer
For adults >50 years old, clinically assessed as non-high risk for VTE, current practice guidelines suggest that an age adjusted fibrin D-dimer value may be useful as a clinical decision point for avoiding imaging studies. (Ref 3, 4).

Some settings in which the FDD may not be appropriate to exclude VTE/PE include (2):
1. Children
2. High probability for VTE/PE by clinical criteria
3. Current anticoagulation therapy
4. Suspected upper extremity thrombosis or thrombosis distal to knee
5. Substantial time elapsed between onset of thrombosis and laboratory testing (FDD has a half-life of approximately 7 hours and may be cleared from circulation following thrombosis)
6. Deficiency of fibrinolytic enzymes

Evaluation for disseminated intravascular coagulation (DIC)
Obtain a current prothrombin time (PT), activated partial thromboplastin time (aPTT), platelet count, and fibrinogen prior to ordering FDD. In an appropriate clinical context, an FDD >8200 ng/mL is suggestive of DIC. Serial studies following the demonstration of a positive result are not generally useful.

Ordering interval
An acceptable ordering interval for the FDD is (1) 48 hours after last FDD or (2) 24-48 hours after last FDD with the most recent result <6000 ng/mL. If neither of these criteria are met, the FDD will be automatically canceled. Please contact the Hematology Lab Medicine Resident at 353-1747 if the clinical situation warrants more frequent re-evaluation of the FDD.

Limitations
Cloudy specimens (e.g., lipemic specimens) may yield artifactually low values. In some cases, such specimens cannot yield interpretable results.
The presence of rheumatoid factor at a level greater than 50 IU/mL may lead to an over-estimation of the FDD.

References
1. UCSF in-house studies, 2004 and 2009.
2. Clinical Laboratory Standard Institute (CLSI). Document H59-A: Quantitative D-Dimer for the Exclusion of Venous Thromboembolic Disease. Approved Guideline
3. An Age-Adjusted D-dimer Threshold for Emergency Department Patients With Suspected Pulmonary Embolus: Accuracy and Clinical Implications. Ann Emerg Med. 2016 Feb;67(2):249-57. PMID: 26320520.
4. Diagnostic accuracy of conventional or age adjusted D-dimer cut-off values in older patients with suspected venous thromboembolism: systematic review and meta-analysis. BMJ. 2013 May 3;346:f2492. PMID: 23645857.

Synonyms:

- FDD
- Fibrin D-Dimers

COLLECTION

Sample Type:
Citrated plasma

Collect:
Blue top tube filled to full extent of vacuum

Amount to Collect:
2.7 mL

Preferred Volume:
1.0 mL plasma

Minimum Volume:
0.5 mL plasma

Remarks:
Blue top filled to full extent of vacuum

Stability (from collection to initiation):
Room temperature 4 hours

Unacceptable Conditions:
Hemolyzed, Icteric, Lipemic or Turbid samples

PROCESSING

Test Code:
FDD

Performing Lab:
Parnassus & Mission Bay Hematology

Specimen Preparation:
Deliver specimen immediately to Hematology

Preferred Volume:
1.0 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Hemolyzed, Icteric, Lipemic or Turbid samples

Stability (from collection to initiation):
Room temperature 4 hours

RESULT INTERPRETATION

Units:
ng/mL FEU

Reference Interval:
<500 ng/mL

Additional Information:

Reference Interval
The fibrin D-dimer (FDD) levels in 113 normal blood donors were used to calculate a reference interval using a transformed parametric method. This analysis yielded an upper limit of normal of 664 ng/mL with approximately 8% of FDD values >500 ng/mL (1).In APeX, the upper limit of normal has been set at 500 ng/mL in order to alert clinicians to the cutoff value for exclusion of venous thromboembolism (VTE; see below) (2)

Evaluation for VTE, including pulmonary embolism (PE) and deep venous thrombosis (DVT)
In December 2016, Stago received approval from the US FDA for the reagent STA-Liatest D-Di to be used in the exclusion of pulmonary embolism (PE) and deep venous thrombosis (DVT) in patients with low or moderate risk, presenting at an emergency unit. In patients at a low-to-intermediate clinical probability for PE and for whom imaging studies are under consideration, an FDD <500 ng/mL may permit diagnostic imaging (e.g., helical contrast computed tomography or ventilation/perfusion scan) to be avoided. Clinical correlation is advised in these settings. The FDD should only be ordered when there is reasonably substantive clinical suspicion for VTE/PE, as an elevated FDD is a nonspecific finding and can be elevated in the setting of recent fibrinolytic therapy, recent trauma or surgery, large hematoma, malignancy, sepsis or severe infection, cirrhosis, pregnancy, atherosclerosis, hemoglobinopathy, and age >60 years.

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For adults >50 years old, clinically assessed as non-high risk for VTE, current practice guidelines suggest that an age adjusted fibrin D-dimer value may be useful as a clinical decision point for avoiding imaging studies. (Ref 3, 4).

Some settings in which the FDD may not be appropriate to exclude VTE/PE include (2):
1. Children
2. High probability for VTE/PE by clinical criteria
3. Current anticoagulation therapy
4. Suspected upper extremity thrombosis or thrombosis distal to knee
5. Substantial time elapsed between onset of thrombosis and laboratory testing (FDD has a half-life of approximately 7 hours and may be cleared from circulation following thrombosis)
6. Deficiency of fibrinolytic enzymes

Evaluation for disseminated intravascular coagulation (DIC)
Obtain a current prothrombin time (PT), activated partial thromboplastin time (aPTT), platelet count, and fibrinogen prior to ordering FDD. In an appropriate clinical context, an FDD >8200 ng/mL is suggestive of DIC. Serial studies following the demonstration of a positive result are not generally useful.

Ordering interval
An acceptable ordering interval for the FDD is (1) 48 hours after last FDD or (2) 24-48 hours after last FDD with the most recent result <6000 ng/mL. If neither of these criteria are met, the FDD will be automatically canceled. Please contact the Hematology Lab Medicine Resident at 353-1747 if the clinical situation warrants more frequent re-evaluation of the FDD.

Limitations
Cloudy specimens (e.g., lipemic specimens) may yield artifactually low values. In some cases, such specimens cannot yield interpretable results.
The presence of rheumatoid factor at a level greater than 50 IU/mL may lead to an over-estimation of the FDD.

References
1. UCSF in-house studies, 2004 and 2009.
2. Clinical Laboratory Standard Institute (CLSI). Document H59-A: Quantitative D-Dimer for the Exclusion of Venous Thromboembolic Disease. Approved Guideline
3. An Age-Adjusted D-dimer Threshold for Emergency Department Patients With Suspected Pulmonary Embolus: Accuracy and Clinical Implications. Ann Emerg Med. 2016 Feb;67(2):249-57. PMID: 26320520.
4. Diagnostic accuracy of conventional or age adjusted D-dimer cut-off values in older patients with suspected venous thromboembolism: systematic review and meta-analysis. BMJ. 2013 May 3;346:f2492. PMID: 23645857.

ADMINISTRATIVE

CPT Codes:
85379

LOINC Codes:
48065-7

COMPLETE VIEW

Available Stat:
Yes

Test Code:
FDD

Performing Lab:
Parnassus & Mission Bay Hematology

Performed:
24 hours, 7 days per week

Methodology:
Immunoturbimetric (Liatest)

Remarks:
Blue top filled to full extent of vacuum

Collect:
Blue top tube filled to full extent of vacuum

Amount to Collect:
2.7 mL

Sample Type:
Citrated plasma

Preferred Volume:
1.0 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Hemolyzed, Icteric, Lipemic or Turbid samples

Specimen Preparation:
Deliver specimen immediately to Hematology

Units:
ng/mL FEU

Reference Interval:
<500 ng/mL

Synonyms:

- FDD
- Fibrin D-Dimers

Stability (from collection to initiation):
Room temperature 4 hours

Reported:
1 hour

Additional Information:

Reference Interval
The fibrin D-dimer (FDD) levels in 113 normal blood donors were used to calculate a reference interval using a transformed parametric method. This analysis yielded an upper limit of normal of 664 ng/mL with approximately 8% of FDD values >500 ng/mL (1).In APeX, the upper limit of normal has been set at 500 ng/mL in order to alert clinicians to the cutoff value for exclusion of venous thromboembolism (VTE; see below) (2)

Evaluation for VTE, including pulmonary embolism (PE) and deep venous thrombosis (DVT)
In December 2016, Stago received approval from the US FDA for the reagent STA-Liatest D-Di to be used in the exclusion of pulmonary embolism (PE) and deep venous thrombosis (DVT) in patients with low or moderate risk, presenting at an emergency unit. In patients at a low-to-intermediate clinical probability for PE and for whom imaging studies are under consideration, an FDD <500 ng/mL may permit diagnostic imaging (e.g., helical contrast computed tomography or ventilation/perfusion scan) to be avoided. Clinical correlation is advised in these settings. The FDD should only be ordered when there is reasonably substantive clinical suspicion for VTE/PE, as an elevated FDD is a nonspecific finding and can be elevated in the setting of recent fibrinolytic therapy, recent trauma or surgery, large hematoma, malignancy, sepsis or severe infection, cirrhosis, pregnancy, atherosclerosis, hemoglobinopathy, and age >60 years.

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For adults >50 years old, clinically assessed as non-high risk for VTE, current practice guidelines suggest that an age adjusted fibrin D-dimer value may be useful as a clinical decision point for avoiding imaging studies. (Ref 3, 4).

Some settings in which the FDD may not be appropriate to exclude VTE/PE include (2):
1. Children
2. High probability for VTE/PE by clinical criteria
3. Current anticoagulation therapy
4. Suspected upper extremity thrombosis or thrombosis distal to knee
5. Substantial time elapsed between onset of thrombosis and laboratory testing (FDD has a half-life of approximately 7 hours and may be cleared from circulation following thrombosis)
6. Deficiency of fibrinolytic enzymes

Evaluation for disseminated intravascular coagulation (DIC)
Obtain a current prothrombin time (PT), activated partial thromboplastin time (aPTT), platelet count, and fibrinogen prior to ordering FDD. In an appropriate clinical context, an FDD >8200 ng/mL is suggestive of DIC. Serial studies following the demonstration of a positive result are not generally useful.

Ordering interval
An acceptable ordering interval for the FDD is (1) 48 hours after last FDD or (2) 24-48 hours after last FDD with the most recent result <6000 ng/mL. If neither of these criteria are met, the FDD will be automatically canceled. Please contact the Hematology Lab Medicine Resident at 353-1747 if the clinical situation warrants more frequent re-evaluation of the FDD.

Limitations
Cloudy specimens (e.g., lipemic specimens) may yield artifactually low values. In some cases, such specimens cannot yield interpretable results.
The presence of rheumatoid factor at a level greater than 50 IU/mL may lead to an over-estimation of the FDD.

References
1. UCSF in-house studies, 2004 and 2009.
2. Clinical Laboratory Standard Institute (CLSI). Document H59-A: Quantitative D-Dimer for the Exclusion of Venous Thromboembolic Disease. Approved Guideline
3. An Age-Adjusted D-dimer Threshold for Emergency Department Patients With Suspected Pulmonary Embolus: Accuracy and Clinical Implications. Ann Emerg Med. 2016 Feb;67(2):249-57. PMID: 26320520.
4. Diagnostic accuracy of conventional or age adjusted D-dimer cut-off values in older patients with suspected venous thromboembolism: systematic review and meta-analysis. BMJ. 2013 May 3;346:f2492. PMID: 23645857.

CPT Codes:

85379

LOINC Codes:

48065-7

Fibrinogen, Antigenic

FIBAG

ORDERING

Ordering Recommendations:
Should only be ordered in patients with low levels of fibrinogen by functional assay.

Approval Required:
No, however antigenic fibrinogen will only be performed if the functional fibrinogen is low.

Available Stat:
No

Performing Lab:
Quest

Methodology:
Nephelometry

Reported:
Test is run Tuesday and Friday. Turnaround time: 7-10 days

Additional Information:
Use only to evaluate suspected abnormal fibrinogen.

Rare individuals have a bleeding diathesis or a thrombotic tendency due to the presence of an abnormal fibrinogen (dysfibrinogenemia). This is most commonly hereditary, but dysfibrinogenemia with a bleeding tendency can be acquired in liver disease. In addition to functional fibrinogen and immunologic fibrinogen, thrombin time and reptilase time may be useful in evaluation for hereditary dysfibrinogenemia.

Reflex Testing:
If an abnormal fibrinogen is suspected, a functional fibrinogen and immunologic fibrinogen (fibrinogen, antigenic) must be run on the same sample. Therefore, if only a fibrinogen antigen is ordered, a functional fibrinogen will be automatically added and separately charged. The Fibrinogen antigen will only be performed if the Functional Fibrinogen is low. If the Functional Fibrinogen is normal, then the Fibrinogen antigen will be cancelled with the notation: Test Not Indicated. In the rare circumstance in which the functional fibrinogen is normal and an assessment for dysfibrinogenemia is nevertheless essential, please contact the hematology laboratory (Parnassus: 3-1747, Mission Bay: call 6-0194) to request that the immunologic fibrinogen be performed.

Synonyms:

- Factor I
- Fibrinogen antigen
- Immunologic fibrinogen
- Quantitative fibrinogen

COLLECTION

Patient Preparation:
Overnight fasting is required

Sample Type:
Citrated plasma

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma (1.0 mL for LabCorp)

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

Stability (from collection to initiation):
Refrigerated 3 days, frozen at -20C 3 months.

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected Hemolyzed sample.

Rejection Criteria:
Sample received unfrozen

PROCESSING

Test Code:
FIBAG

Test Group:
Fibrinogen

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Central Processing: Deliver whole blood sample to Hematology Lab ASAP.

Hematology: Freeze plasma at -20C. If approved, ship frozen to Quest Nichols, test code #37801X.

For Brown & Toland patient, order BTMOLT. Ship frozen to LabCorp, test # 117052

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma (1.0 mL for LabCorp)

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected Hemolyzed sample.

Rejection Criteria:
Sample received unfrozen

Stability (from collection to initiation):
Refrigerated 3 days, frozen at -20C 3 months.

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:
180-350 mg/dL

Additional Information:
Use only to evaluate suspected abnormal fibrinogen.

Rare individuals have a bleeding diathesis or a thrombotic tendency due to the presence of an abnormal fibrinogen (dysfibrinogenemia). This is most commonly hereditary, but dysfibrinogenemia with a bleeding tendency can be acquired in liver disease. In addition to functional fibrinogen and immunologic fibrinogen, thrombin time and reptilase time may be useful in evaluation for hereditary dysfibrinogenemia.

ADMINISTRATIVE

CPT Codes:
85385-90

LOINC Codes:
42772-4

COMPLETE VIEW

Approval Required:
No, however antigenic fibrinogen will only be performed if the functional fibrinogen is low.

Available Stat:
No

Ordering Recommendations:
Should only be ordered in patients with low levels of fibrinogen by functional assay.

Test Code:
FIBAG

Test Group:
Fibrinogen

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Nephelometry

Patient Preparation:
Overnight fasting is required

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Sample Type:
Citrated plasma

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma (1.0 mL for LabCorp)

Rejection Criteria:
Sample received unfrozen

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected Hemolyzed sample.

Specimen Preparation:
Central Processing: Deliver whole blood sample to Hematology Lab ASAP.

Hematology: Freeze plasma at -20C. If approved, ship frozen to Quest Nichols, test code #37801X.

For Brown & Toland patient, order BTMOLT. Ship frozen to LabCorp, test # 117052

Units:
mg/dL

Reference Interval:
180-350 mg/dL

Synonyms:

- Factor I
- Fibrinogen antigen
- Immunologic fibrinogen
- Quantitative fibrinogen

Stability (from collection to initiation):
Refrigerated 3 days, frozen at -20C 3 months.

Reported:
Test is run Tuesday and Friday. Turnaround time: 7-10 days

Reflex Testing:
If an abnormal fibrinogen is suspected, a functional fibrinogen and immunologic fibrinogen (fibrinogen, antigenic) must be run on the same sample. Therefore, if only a fibrinogen antigen is ordered, a functional fibrinogen will be automatically added and separately charged. The Fibrinogen antigen will only be performed if the Functional Fibrinogen is low. If the Functional Fibrinogen is normal, then the Fibrinogen antigen will be cancelled with the notation: Test Not Indicated. In the rare circumstance in which the functional fibrinogen is normal and an assessment for dysfibrinogenemia is nevertheless essential, please contact the hematology laboratory (Parnassus: 3-1747, Mission Bay: call 6-0194) to request that the immunologic fibrinogen be performed.

Additional Information:
Use only to evaluate suspected abnormal fibrinogen.

Rare individuals have a bleeding diathesis or a thrombotic tendency due to the presence of an abnormal fibrinogen (dysfibrinogenemia). This is most commonly hereditary, but dysfibrinogenemia with a bleeding tendency can be acquired in liver disease. In addition to functional fibrinogen and immunologic fibrinogen, thrombin time and reptilase time may be useful in evaluation for hereditary dysfibrinogenemia.

CPT Codes:
85385-90

LOINC Codes:
42772-4

Fibrinogen, Functional

FIB

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Hematology: 24-hours per day, 7-days per week
Berkeley Outpatient Center: Test available Mon-Fri (0800-1630)

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
Fibrinogen results may be inaccurate in patients who have recently received fibrinolytic therapy: 1. Running additional assays can help clarify whether a low functional fibrinogen is due to hypofibrinogenemia, dysfibrinogenemia (abnormal fibrinogen), an unusually high level of heparin contamination, or other problem such as DIC with high fibrin split products. a. If a dysfibrinogenemia is suspected, an immunologic fibrinogen (Fibrinogen, Antigenic) may be added to the same sample if requested within stability period (4 hours after collection). b. If DIC is suspected, FDD (Fibrin D-Dimer) may be added to the same sample if requested within stability period (4 hours after collection). c. Thrombin Time and/or Reptilase Assay may also be useful in evaluation of a low functional fibrinogen.
2. Direct thrombin inhibitors may interfere with fibrinogen measurement when fibrinogen levels are less than 150 mg/dL. In this setting, the reported fibrinogen may be inaccurately decreased relative to the true value. (As an example: in a patient receiving argatroban, a reported level of 70 mg/dL would indicate that the true fibrinogen level is between 70 and 150 mg/dL). In this setting, an accurate value cannot be determined.
3. Fibrinogen results may be inaccurate in patients who have recently received fibrinolytic therapy.

Synonyms:

- Factor I
- Quantitative fibrinogen
- functional fibrinogen

COLLECTION

Sample Type:
Citrated plasma

Collect:
Blue (2.7 mL) or Lt. Blue (1.8 mL) top filled to full extent of vacuum

Amount to Collect:
Blue top: 2.7 mL blood
Lt. Blue top: 1.8 mL blood

Note: If hepabsorption is required draw a full Blue top (2.7 mL)

Preferred Volume:
1.5 mL plasma

Minimum Volume:
1 mL plasma

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap..

For patients with Hct's >= 55% please contact Hematology (For Parnassus patients call 3-1747, for Mission Bay patients call 6-0194) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Stability (from collection to initiation):
Specimen is stable for up to 24 hours at room temperature.

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

PROCESSING

Test Code:
FIB

Test Group:
Fibrinogen

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center

Preferred Volume:
1.5 mL plasma

Minimum Volume:
1 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Stability (from collection to initiation):
Specimen is stable for up to 24 hours at room temperature.

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:
202-430 mg/dL

Note:: Fibrinogen results may be inaccurate in patients who have recently received fibrinolytic therapy.

Critical Values:
<= 100 mg/dL if new finding within previous 24 hours. A value <= 50 mg/dL is always phoned.

Additional Information:
Fibrinogen results may be inaccurate in patients who have recently received fibrinolytic therapy: 1. Running additional assays can help clarify whether a low functional fibrinogen is due to hypofibrinogenemia, dysfibrinogenemia (abnormal fibrinogen), an unusually high level of heparin contamination, or other problem such as DIC with high fibrin split products. a. If a dysfibrinogenemia is suspected, an immunologic fibrinogen (Fibrinogen, Antigenic) may be added to the same sample if requested within stability period (4 hours after collection). b. If DIC is suspected, FDD (Fibrin D-Dimer) may be added to the same sample if requested within stability period (4 hours after collection). c. Thrombin Time and/or Reptilase Assay may also be useful in evaluation of a low functional fibrinogen.
2. Direct thrombin inhibitors may interfere with fibrinogen measurement when fibrinogen levels are less than 150 mg/dL. In this setting, the reported fibrinogen may be inaccurately decreased relative to the true value. (As an example: in a patient receiving argatroban, a reported level of 70 mg/dL would indicate that the true fibrinogen level is between 70 and 150 mg/dL). In this setting, an accurate value cannot be determined.
3. Fibrinogen results may be inaccurate in patients who have recently received fibrinolytic therapy.

ADMINISTRATIVE

CPT Codes:
85384

LOINC Codes:
3255-7

COMPLETE VIEW

Available Stat:
Yes

Test Code:
FIB

Test Group:
Fibrinogen

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Hematology: 24-hours per day, 7-days per week
Berkeley Outpatient Center: Test available Mon-Fri (0800-1630)

Remarks:

1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap..

For patients with Hct's >= 55% please contact Hematology (For Parnassus patients call 3-1747, for Mission Bay patients call 6-0194) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Collect:

Blue (2.7 mL) or Lt. Blue (1.8 mL) top filled to full extent of vacuum

Amount to Collect:

Blue top: 2.7 mL blood
Lt. Blue top: 1.8 mL blood

Note: If hepabsorption is required draw a full Blue top (2.7 mL)

Sample Type:

Citrated plasma

Preferred Volume:

1.5 mL plasma

Minimum Volume:

1 mL plasma

Unacceptable Conditions:

Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Units:

mg/dL

Reference Interval:

202-430 mg/dL

Note:: Fibrinogen results may be inaccurate in patients who have recently received fibrinolytic therapy.

Critical Values:

<= 100 mg/dL if new finding within previous 24 hours. A value <= 50 mg/dL is always phoned.

Synonyms:

- Factor I
- Quantitative fibrinogen
- functional fibrinogen

Stability (from collection to initiation):

Specimen is stable for up to 24 hours at room temperature.

Reported:

STAT 1 hour, Routine 4 hours

Additional Information:

Fibrinogen results may be inaccurate in patients who have recently received fibrinolytic therapy: 1. Running additional assays can help clarify whether a low functional fibrinogen is due to hypofibrinogenemia, dysfibrinogenemia (abnormal fibrinogen), an unusually high level of heparin contamination, or other problem such as DIC with high fibrin split products. a. If a dysfibrinogenemia is suspected, an immunologic fibrinogen (Fibrinogen, Antigenic) may be added to the same sample if requested within stability period (4 hours after collection). b. If DIC is suspected, FDD (Fibrin D-Dimer) may be added to the same sample if requested within stability period (4 hours after collection). c. Thrombin Time and/or Reptilase Assay may also be useful in evaluation of a low functional fibrinogen.
2. Direct thrombin inhibitors may interfere with fibrinogen measurement when fibrinogen levels are less than 150 mg/dL. In this setting, the reported fibrinogen may be inaccurately decreased relative to the true value. (As an example: in a patient receiving argatroban, a reported level of 70 mg/dL would indicate that the true fibrinogen level is between 70 and 150 mg/dL). In this setting, an accurate value cannot be determined.
3. Fibrinogen results may be inaccurate in patients who have recently received fibrinolytic therapy.

CPT Codes:

85384

LOINC Codes:

3255-7

Fibrinogen/Fibrin Degradation Products

FFDP

ORDERING

Approval Required:
Yes, contact Hematology (Parnassus: 3-1747, Mission Bay: call 6-0194)

Available Stat:
No

Performing Lab:
Quest

Methodology:
Latex agglutination

Reported:
Test run Tuesday and Thursday evenings. Turnaround time: 1-4 days.

Additional Information:
For evaluation of primary fibrinogenolysis only. This test is commonly ordered in error. Fibrin D-Dimers will be performed instead. If a patient is being evaluated for primary fibrinogenolysis, please contact hematology (Parnassus: 3-1747, Mission Bay: call 6-0194) for pre-approval of Fibrin Degradation Products testing.

Synonyms:

- Fibrinogen degradation products
- FDP

COLLECTION

Sample Type:
Citrated plasma

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Preferred Volume:
1 mL plasma

Minimum Volume:
1 mL plasma

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

Obtain a current PT, PTT, Platelet Count, D-dimers for DIC (Test code FDDQ) and Fibrinogen before ordering FFDP.

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

PROCESSING

Test Code:
FFDP

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Separate plasma at 2500 rpm for at least 10 minutes. FREEZE AT LEAST 1 mL of plasma in a plastic tube at -20C. Order QUEST Test Code #32524P

For Brown and Toland patients, this test will be sent to LabCorp.

Preferred Volume:
1 mL plasma

Minimum Volume:
1 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

RESULT INTERPRETATION

Units:
µg/mL (mcg/mL)

Reference Interval:
< 5 mcg/mL

Additional Information:
For evaluation of primary fibrinogenolysis only. This test is commonly ordered in error. Fibrin D-Dimers will be performed instead. If a patient is being evaluated for primary fibrinogenolysis, please contact hematology (Parnassus: 3-1747, Mission Bay: call 6-0194) for pre-approval of Fibrin Degradation Products testing.

ADMINISTRATIVE

CPT Codes:
85362-90

LOINC Codes:
3251-6

COMPLETE VIEW

Approval Required:
Yes, contact Hematology (Parnassus: 3-1747, Mission Bay: call 6-0194)

Available Stat:
No

Test Code:
FFDP

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Latex agglutination

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

Obtain a current PT, PTT, Platelet Count, D-dimers for DIC (Test code FDDQ) and Fibrinogen before ordering FFDP.

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Sample Type:
Citrated plasma

Preferred Volume:
1 mL plasma

Minimum Volume:
1 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Specimen Preparation:
Separate plasma at 2500 rpm for at least 10 minutes. FREEZE AT LEAST 1 mL of plasma in a plastic tube at -20C. Order QUEST Test Code #32524P

For Brown and Toland patients, this test will be sent to LabCorp.

Units:
µg/mL (mcg/mL)

Reference Interval:
< 5 mcg/mL

Synonyms:

- Fibrinogen degradation products
- FDP

Reported:

Test run Tuesday and Thursday evenings. Turnaround time: 1-4 days.

Additional Information:

For evaluation of primary fibrinogenolysis only. This test is commonly ordered in error. Fibrin D-Dimers will be performed instead. If a patient is being evaluated for primary fibrinogenolysis, please contact hematology (Parnassus: 3-1747, Mission Bay: call 6-0194) for pre-approval of Fibrin Degradation Products testing.

CPT Codes:

85362-90

LOINC Codes:

3251-6

FibroTest-ActiTest Panel

HCVFT

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Nephelometry & Spectrophotometry

Reported:
3-5 days

Additional Information:

FibroTest and ActiTest permit the non-invasive evaluation of Hepatitis C (or B) individuals for the presence of liver fibrosis and liver inflammation, respectively. The FibroTest and ActiTest scores are calculated based on patient age, gender and concentrations of serum of y-glutamyl transferase (GGT), total bilirubin (TB), a-2 macroglobulin, haptoglobin, apolipoprotein A1 and alanine aminotransferase (ActiTest). Fibrotest and ActiTest Scores, on a scale of 0.0 to 1.0, are assigned a Metavir scale indicating the level of fibrosis or inflammation present.

The FibroTest uses the same methodology and algorithm as the FibroSure test previously sent to LabCorp.

In a comparison study, 80 samples, previously sent to LabCorp for analysis in their FibroSure assay, were used to calculate the scores through both the Quest Diagnostics server and via a secure interface on the BioPredictive server in France. The same demographic and six analyte data reported by LabCorp was entered into the calculators to determine the FibroTest[a] and ActiTest[a] scores. The scores were compared to those reported by LabCorp to determine agreement and accurate performance.

In addition, for FibroTest[a] an equation was available on-line (http://hepcbc.ca/fibrotest-fibrosure-in-usa/ accessed 5/30/2014) and this equation (see below) was also used to calculate a FibroTest[a] score. No equation was available for ActiTest[a].

A total of 80 patient results were recalculated through the BioPredictive portal (http://tests.sandbox.biopredictive.com/). The data was also used to calculate the FibroTest[a] score using the FibroTest[a] equation obtained from http://hepcbc.ca/fibrotest-fibrosure-in-usa/ .

The Data demonstrated that of the 80 samples referred to Labcorp, a fibrosis score could be generated for 76 samples. FibroSure (FibroTest[a]) agreed with the BioPredictive server, Quest Diagnostics server and the published equation in 75, 74 and 76 samples, respectively. (Note, for 4 of the 80 samples results, the fibrosis score could not be generated because analytes fell outside acceptable parameters for the algorithm.) In the samples that showed a difference, the scores were within 0.01 of the Labcorp score and in only one case (0.72 vs. 0.73) did this difference cause a categorical change in the Metavir score, namely F3 to F3-F4. Of the 73 samples with a Labcorp Necroinflammatory Activity (ActiTest[a]) Score (of the 80 TSO samples 5 were not calculated and 2 were not ordered), 72 and 73 , respectively, agreed with the scores calculated by BioPredictive and Quest Diagnostics. The one sample that differed in the BioPredictive calculation was lower by 0.01, but did not change the Metavir activity score.

Between BioPredictive and Quest Diagnostics there was a 97% (77/80) and 99% (79/80) agreement between the FibroTest[a] and ActiTest[a] scores, respectively. Differences were all 0.01 and in only one patient did this result in a different Metavir score, F3 (0.72) vs F3-F4 (0.73), respectively. The slight difference in scores is most likely a reflection of rounding that occurs in the conversion of units for the total bilirubin analyte from mg/dL to umol/L in the algorithm.

Source: Dr. Stanley Naides, Quest, Inc.

Synonyms:

- HCV Fibrosure
- Cirrhosis
- Hepatitis C
- HCV
- Hepatic fibrosis

COLLECTION

Patient Preparation:
Overnight fasting is preferred

Sample Type:
Serum

Collect:
Gold top or Red top

Amount to Collect:
7 mL blood

Preferred Volume:
3.5 mL serum

Minimum Volume:
2 mL serum

Stability (from collection to initiation):
Room temperature 1 day, refrigerated 5 days, frozen at -20C 5 days, frozen at -70C 28 days

Unacceptable Conditions:
Patient < 2 years old, gross hemolysis or lipemia, QNS for one or more analysis

Rejection Criteria:
Patient < 2 years old, gross hemolysis or lipemia, QNS for one or more analysis

PROCESSING

Test Code:
HCVFT

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot and freeze serum, ship frozen to China basin. Order Quest test code 92688.

Preferred Volume:
3.5 mL serum

Minimum Volume:
2 mL serum

Unacceptable Conditions:
Patient < 2 years old, gross hemolysis or lipemia, QNS for one or more analysis

Rejection Criteria:
Patient < 2 years old, gross hemolysis or lipemia, QNS for one or more analysis

Stability (from collection to initiation):
Room temperature 1 day, refrigerated 5 days, frozen at -20C 5 days, frozen at -70C 28 days

RESULT INTERPRETATION

Units:
See normal ranges

Reference Interval:

Alpha-2-Macroglobulin

Age	Normal
< 18 years	Not established
>= 18 years	106-279 mg/dL

Haptoglobin

Age	Normal range
< 18 years	Not established
>= 18 years	94-176 mg/dL

Apolipoprotein A1

Sex/age	Normal range
< 18 years	Not established
Male >= 18 years	94-176 mg/dL
Female >= 18 years	101-198 mg/dL

Female >= 18 years	101-198 mg/dL

Total Bilirubin

Age	Normal range
2-9 years	0.2-0.8 mg/dL
10-19 years	0.2-1.1 mg/dL
>= 20 years	0.2-1.2 mg/dL

Gamma Glutamyl Transpeptidase (GGT)

Sex	Age	Normal range
Male 2-12 years	3-22 U/L	
Male 13-15 years	8-32 U/L	
Male 16-19 years	9-31 U/L	
Male 20-29 years	3-70 U/L	
Male 30-39 years	3-90 U/L	
Male 40-54 years	3-95 U/L	
Male 55-59 years	3-85 U/L	
Male >= 60 years	3-65 U/L	
Female 2-12 years	3-22 U/L	
Female 13-15 years	7-18 U/L	
Female 16-19 years	6-26 U/L	
Female 20-29 years	3-40 U/L	
Female 30-39 years	3-50 U/L	
Female 40-49 years	3-55 U/L	
Female 50-59 years	3-70 U/L	
Female >= 60 years	3-65 U/L	

Alanine Aminotransferase (ALT)

Age	Male	Female
2-3 years	5-30 U/L	5-30 U/L
4-12 years	8-30 U/L	8-24 U/L
13-15 years	7-32 U/L	6-19 U/L
16-19 years	8-46 U/L	5-32 U/L
>= 20 years	9-46 U/L	6-29 U/L

Additional Information:

FibroTest and ActiTest permit the non-invasive evaluation of Hepatitis C (or B) individuals for the presence of liver fibrosis and liver inflammation, respectively. The FibroTest and ActiTest scores are calculated based on patient age, gender and concentrations of serum of y-glutamyl transferase (GGT), total bilirubin (TB), a-2 macroglobulin, haptoglobin, apolipoprotein A1 and alanine aminotransferase (ActiTest). Fibrotest and ActiTest Scores, on a scale of 0.0 to 1.0, are assigned a Metavir scale indicating the level of fibrosis or inflammation present.

The FibroTest uses the same methodology and algorithm as the FibroSure test previously sent to LabCorp.

In a comparison study, 80 samples, previously sent to LabCorp for analysis in their FibroSure assay, were used to calculate the scores through both the Quest Diagnostics server and via a secure interface on the BioPredictive server in France. The same demographic and six analyte data reported by LabCorp was entered into the calculators to determine the FibroTest[a] and ActiTest[a] scores. The scores were compared to those reported by LabCorp to determine agreement and accurate performance.

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Source: Dr. Stanley Naides, Quest, Inc.

ADMINISTRATIVE

CPT Codes:
81599-90

COMPLETE VIEW

Available Stat:
No

Test Code:
HCVFT

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Nephelometry & Spectrophotometry

Patient Preparation:
Overnight fasting is preferred

Collect:
Gold top or Red top

Amount to Collect:
7 mL blood

Sample Type:
Serum

Preferred Volume:
3.5 mL serum

Minimum Volume:
2 mL serum

Rejection Criteria:
Patient < 2 years old, gross hemolysis or lipemia, QNS for one or more analysis

Unacceptable Conditions:
Patient < 2 years old, gross hemolysis or lipemia, QNS for one or more analysis

Specimen Preparation:
Aliquot and freeze serum, ship frozen to China basin. Order Quest test code 92688.

Units:
See normal ranges

Reference Interval:

Alpha-2-Macroglobulin

Age	Normal
< 18 years	Not established
>= 18 years	106-279 mg/dL

Haptoglobin

Age	Normal range
< 18 years	Not established
>= 18 years	94-176 mg/dL

Apolipoprotein A1

Sex/age	Normal range
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Sex	Age	Normal range
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Male 16-19 years	9-31 U/L	
Male 20-29 years	3-70 U/L	
Male 30-39 years	3-90 U/L	
Male 40-54 years	3-95 U/L	
Male 55-59 years	3-85 U/L	
Male >= 60 years	3-65 U/L	
Female 2-12 years	3-22 U/L	
Female 13-15 years	7-18 U/L	
Female 16-19 years	6-26 U/L	
Female 20-29 years	3-40 U/L	

Female 30-39 years	3-50 U/L
Female 40-49 years	3-55 U/L
Female 50-59 years	3-70 U/L
Female >= 60 years	3-65 U/L

Alanine Aminotransferase (ALT)

Age	Male	Female
2-3 years	5-30 U/L	5-30 U/L
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>= 20 years	9-46 U/L	6-29 U/L

Synonyms:

- HCV Fibrosure
- Cirrhosis
- Hepatitis C
- HCV
- Hepatic fibrosis

Stability (from collection to initiation):

Room temperature 1 day, refrigerated 5 days, frozen at -20C 5 days, frozen at -70C 28 days

Reported:

3-5 days

Additional Information:

FibroTest and ActiTest permit the non-invasive evaluation of Hepatitis C (or B) individuals for the presence of liver fibrosis and liver inflammation, respectively. The FibroTest and ActiTest scores are calculated based on patient age, gender and concentrations of serum of y-glutamyl transferase (GGT), total bilirubin (TB), a-2 macroglobulin, haptoglobin, apolipoprotein A1 and alanine aminotransferase (ActiTest). Fibrotest and ActiTest Scores, on a scale of 0.0 to 1.0, are assigned a Metavir scale indicating the level of fibrosis or inflammation present.

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Source: Dr. Stanley Naides, Quest, Inc.

CPT Codes:

81599-90

Filaria IgG4 Antibody

MOLT

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
ELISA

Reported:
Set up once per week. Turnaround 7-12 days

COLLECTION

Sample Type:
Serum

Collect:
Red top (Gold top acceptable)

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.8 mL serum

Stability (from collection to initiation):
Room temperature 5 days, refrigerated 2 weeks, frozen at -20C 1 month.

PROCESSING

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate sample. Order Quest # 34168X.

Preferred Volume:
1 mL serum

Minimum Volume:
0.8 mL serum

Stability (from collection to initiation):
Room temperature 5 days, refrigerated 2 weeks, frozen at -20C 1 month.

RESULT INTERPRETATION

Reference Interval:
< 1.00

ADMINISTRATIVE

CPT Codes:
86682-90

COMPLETE VIEW

Available Stat:
No

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Performing Lab:
Quest

Sendout:
Yes

Methodology:
ELISA

Collect:
Red top (Gold top acceptable)

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.8 mL serum

Specimen Preparation:
Refrigerate sample. Order Quest # 34168X.

Reference Interval:
< 1.00

Stability (from collection to initiation):
Room temperature 5 days, refrigerated 2 weeks, frozen at -20C 1 month.

Reported:
Set up once per week. Turnaround 7-12 days

CPT Codes:
86682-90

First Trimester Screen

FTS

ORDERING

Available Stat:
No

Performing Lab:
Western Clinical Laboratory, Inc

Reported:
10 days from time of receipt at Western Clinical laboratories

Additional Information:
For questions, call the California Prenatal Screening Program at (866) 718-7915 Toll Free.

Synonyms:

- Triple screen
- Obstetrical screen
- Down's syndrome screen
- Neural tube defect screen
- Alpha-fetoprotein
- alpha-fetoglobulin
- AFP3
- E3
- Expanded AFP screening
- Maternal serum screen
- MSS3
- Maternal tests
- Prenatal screening

Supplemental Test Request Form Required:
Yes

COLLECTION

Patient Preparation:
Have the patient read the Program booklet and sign the consent form. The consent is to remain with the clinic.

Sample Type:
Serum is used for testing but the entire unopened tube must be sent.

Collect:
Special SST supplied in Prenatal Screening test kit.

Amount to Collect:
3.5 mL blood

Preferred Volume:
3.5 mL blood (1.5 mL serum)

Minimum Volume:
3.5 mL blood (1.5 mL serum)

Remarks:

Prior to collection:
Send the remainder of the Program form with the patient to have the sample collected between 10 weeks to 13 weeks 6 days of pregnancy (First Trimester). Include a completed Routine Laboratory requisition listing 'First Trimester Screen' in the lower right corner of the form.

To allow correct billing, provide Medi-Cal information, if applicable. Otherwise, enclose a copy of insurance card.

At the time of collection:
Complete Part B (green) at the bottom of form.

Draw the patient's blood using the 3.5 mL serum separator tube supplied in the program kit.

Apply the white collection label from the top of this page to the tube with the patient's name and collection date.

Rejection Criteria:

1. No information on tube or in package containing the tube
2. Specimen arrives with no test request form (TRF)
3. Tube arrives damaged or broken
4. Quantity of serum is insufficient for analysis
5. Specimen arrives hemolyzed
6. Specimen arrives over 30 days (1st trimester) or 10 days (2nd trimester) after blood collection date (1st trimester)
7. EDTA contamination in tube
8. 1st trimester specimen is not properly centrifuged
- Let whole blood stand 1/h hr to 1 hr before centrifuging to aid clot formation.
- Centrifuge at 1000 x g for minimum of 10 minutes.
9. TRF number on TRF does not match TRF number on tube
10. Patient last name on tube does not match spelling of patient last name on TRF
11. Patient last name or TRF number is absent from either tube or TRF 12. Different middle initials on tube vs TRF

PROCESSING

Test Code:
FTS

Test Group:
Prenatal screening

Sendout:
Yes

Performing Lab:
Western Clinical Laboratory, Inc

Specimen Preparation:
Let whole blood stand for 1/2 hour to 1 hour after time of collection before centrifuging to aid clot formation. Centrifuge tube and place the centrifuged tube in the blue plastic tray. Place plastic tray in the absorbent pouch. Seal the pouch.

Place the white copy of the completed form, the insurance information in the red mailing box.

Remove the Business Reply label from the top of the form and place it on the red box, mail the same day, if possible.

If specimen is sent by courier, follow the courier's instructions for packaging.

Preferred Volume:
3.5 mL blood (1.5 mL serum)

Minimum Volume:
3.5 mL blood (1.5 mL serum)

Rejection Criteria:

1. No information on tube or in package containing the tube
2. Specimen arrives with no test request form (TRF)
3. Tube arrives damaged or broken
4. Quantity of serum is insufficient for analysis
5. Specimen arrives hemolyzed
6. Specimen arrives over 30 days (1st trimester) or 10 days (2nd trimester) after blood collection date (1st trimester)
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10. Patient last name on tube does not match spelling of patient last name on TRF
11. Patient last name or TRF number is absent from either tube or TRF 12. Different middle initials on tube vs TRF

RESULT INTERPRETATION

Additional Information:
For questions, call the California Prenatal Screening Program at (866) 718-7915 Toll Free.

ADMINISTRATIVE

CPT Codes:
The Prenatal Screening Billing Code is assigned by the Program upon request.

COMPLETE VIEW

Available Stat:
No

Test Code:
FTS

Test Group:
Prenatal screening

Performing Lab:
Western Clinical Laboratory, Inc

Sendout:
Yes

Patient Preparation:
Have the patient read the Program booklet and sign the consent form. The consent is to remain with the clinic.

Remarks:

Prior to collection:
Send the remainder of the Program form with the patient to have the sample collected between 10 weeks to 13 weeks 6 days of pregnancy (First Trimester). Include a completed Routine Laboratory requisition listing 'First Trimester Screen' in the lower right corner of the form.

To allow correct billing, provide Medi-Cal information, if applicable. Otherwise, enclose a copy of insurance card.

At the time of collection:
Complete Part B (green) at the bottom of form.

Draw the patient's blood using the 3.5 mL serum separator tube supplied in the program kit.

Apply the white collection label from the top of this page to the tube with the patient's name and collection date.

Collect:
Special SST supplied in Prenatal Screening test kit.

Amount to Collect:
3.5 mL blood

Sample Type:
Serum is used for testing but the entire unopened tube must be sent.

Preferred Volume:
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Minimum Volume:
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10. Patient last name on tube does not match spelling of patient last name on TRF
11. Patient last name or TRF number is absent from either tube or TRF 12. Different middle initials on tube vs TRF

Specimen Preparation:
Let whole blood stand for 1/2 hour to 1 hour after time of collection before centrifuging to aid clot formation. Centrifuge tube and place the centrifuged tube in the blue plastic tray. Place plastic tray in the absorbent pouch. Seal the pouch.

Place the white copy of the completed form, the insurance information in the red mailing box.

Remove the Business Reply label from the top of the form and place it on the red box, mail the same day, if possible.

If specimen is sent by courier, follow the courier's instructions for packaging.

Synonyms:

- Triple screen
- Obstetrical screen
- Down's syndrome screen
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- Alpha-fetoprotein
- alpha-fetoglobulin
- AFP3
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- Expanded AFP screening
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- MSS3
- Maternal tests
- Prenatal screening

Reported:
10 days from time of receipt at Western Clinical laboratories

Additional Information:
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CPT Codes:
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Supplemental Test Request Form Required:
Yes

Flecainide

FLEC

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
LC/MS/MS

Reported:
Test run Tuesday, Thursday, Saturday. Turnaround time: 2-5 days.

Synonyms:

- Tambocor

COLLECTION

Sample Type:
Serum

Collect:
Red top

Amount to Collect:
8 mL blood

Preferred Volume:
4 mL serum

Minimum Volume:
1.5 mL serum

Remarks:
Do not use serum separator tube

Unacceptable Conditions:
Collected in Gold top

PROCESSING

Test Code:
FLEC

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate. Order Quest # 36384P.

Preferred Volume:
4 mL serum

Minimum Volume:
1.5 mL serum

Unacceptable Conditions:
Collected in Gold top

RESULT INTERPRETATION

Units:
mg/L

Reference Interval:
Therapeutic: 0.20-1.00 mg/L
Toxic: > 1.00 mg/L

Critical Values:
Quest Priority-1: >= 1.0 mg/L

ADMINISTRATIVE

CPT Codes:
80299-90

LOINC Codes:
3638-4

COMPLETE VIEW

Available Stat:
No

Test Code:
FLEC

Performing Lab:
Quest

Sendout:
Yes

Methodology:
LC/MS/MS

Remarks:
Do not use serum separator tube

Collect:
Red top

Amount to Collect:
8 mL blood

Sample Type:
Serum

Preferred Volume:
4 mL serum

Minimum Volume:
1.5 mL serum

Unacceptable Conditions:
Collected in Gold top

Specimen Preparation:
Refrigerate. Order Quest # 36384P.

Units:
mg/L

Reference Interval:
Therapeutic: 0.20-1.00 mg/L
Toxic: > 1.00 mg/L

Critical Values:
Quest Priority-1: >= 1.0 mg/L

Synonyms:

- Tambocor

Reported:
Test run Tuesday, Thursday, Saturday. Turnaround time: 2-5 days.

CPT Codes:
80299-90

LOINC Codes:
3638-4

FLT3 Mutations

FLT3

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Molecular Diagnostics

Performed:
Once per week, or as needed

Methodology:
Fluorescent PCR, retriction enzyme digestion, capillary electrophoresis, peak integration to determine mutant-to-normal ITD ratios.

Reported:
Routine cases reported within 10-14 days. Expedited cases will be reported within 7 days upon request.

Additional Information:
FLT3 is a receptor tyrosine kinase expressed on the surface of many types of hematopoietic stem and progenitor cells. It is mutated in approximately one-third of AML patients. Internal tandem in frame duplications (ITD) within its cytoplasmic domain lead to its constitutive activation. ITD mutations represent the most common type of FLT3 mutations and occur in approximately 23% of adult AML cases. Another FLT3 mutation, termed D835, consists of an amino acid substitution in the FLT3 kinase domain and is found in approximately 12% of AML cases. Cytogenetically normal AML without the FLT3-ITD mutation constitutes a more favorable outcome than cytogenetically normal AML with a FLT3-ITD mutation.

This test will determine the presence or absence of the FLT3 ITD and D835 mutations. In addition, it will report the ratio of mutant to normal ITD alleles, which can be used as a guide for the combination treatment of FLT3-positive AML with chemotherapy and the multikinase inhibitor midostaurin.

This test was developed and its performance characteristics determined by the UCSF Clinical Laboratories. It has not been cleared or approved by the Food and Drug Administration. The FDA has determined that such clearance or approval is not necessary. This test is used for clinical purposes. It should not be regarded as investigational or for research. This laboratory is certified under the Clinical Laboratory Improvement Amendments of 1988 (CLIA-88) as qualified to perform high complexity clinical laboratory testing.

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Synonyms:

- FLT-3
- fms-related tyrosine kinase 3
- fetal liver kinase-2
- FLT3-ITD
- FLT3-D835

COLLECTION

Sample Type:
Blood, bone marrow aspirate, FFPE sections

Collect:
Lavender top (EDTA)

Amount to Collect:
See Preferred Volume

Preferred Volume:
Blood: 5 mL
Bone marrow aspirate: 3 mL
?FFPE: 10 micron sections x5 on uncharged, unstained, glass slides plus one H&E stained section

Minimum Volume:
Blood: 2 mL
Bone marrow aspirate: 3 mL
?FFPE: 10 micron sections x3 on uncharged, unstained, glass slides plus one H&E stained section

Remarks:
Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 1 week, frozen unacceptable.

PROCESSING

Test Code:
FLT3

Test Group:
AML molecular markers

Performing Lab:
Medical Genomics - Molecular Diagnostics

Specimen Preparation:
Do not freeze blood or bone marrow samples. Ship to CB as soon as possible.

Preferred Volume:
Blood: 5 mL
Bone marrow aspirate: 3 mL
?FFPE: 10 micron sections x5 on uncharged, unstained, glass slides plus one H&E stained section

Minimum Volume:
Blood: 2 mL
Bone marrow aspirate: 3 mL
?FFPE: 10 micron sections x3 on uncharged, unstained, glass slides plus one H&E stained section

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 1 week, frozen unacceptable.

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
FLT3 is a receptor tyrosine kinase expressed on the surface of many types of hematopoietic stem and progenitor cells. It is mutated in approximately one-third of AML patients. Internal tandem in frame duplications (ITD) within its cytoplasmic domain lead to its constitutive activation. ITD mutations represent the most common type of FLT3 mutations and occur in approximately 23% of adult AML cases. Another FLT3 mutation, termed D835, consists of an amino acid substitution in the FLT3 kinase domain and is found in approximately 12% of AML cases. Cytogenetically normal AML without the FLT3-ITD mutation constitutes a more favorable outcome than cytogenetically normal AML with a FLT3-ITD mutation.

This test will determine the presence or absence of the FLT3 ITD and D835 mutations. In addition, it will report the ratio of mutant to normal ITD alleles, which can be used as a guide for the combination treatment of FLT3-positive AML with chemotherapy and the multikinase inhibitor midostaurin.

This test was developed and its performance characteristics determined by the UCSF Clinical Laboratories. It has not been cleared or approved by the Food and Drug Administration. The FDA has determined that such clearance or approval is not necessary. This test is used for clinical purposes. It should not be regarded as investigational or for research. This laboratory is certified under the Clinical Laboratory Improvement Amendments of 1988 (CLIA-88) as qualified to perform high complexity clinical laboratory testing.

ADMINISTRATIVE

CPT Codes:
81245, 81246

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
FLT3

Test Group:
AML molecular markers

Performing Lab:
Medical Genomics - Molecular Diagnostics

Performed:
Once per week, or as needed

Methodology:
Fluorescent PCR, retriction enzyme digestion, capillary electrophoresis, peak integration to determine mutant-to-normal ITD ratios.

Remarks:
Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Collect:
Lavender top (EDTA)

Amount to Collect:
See Preferred Volume

Sample Type:
Blood, bone marrow aspirate, FFPE sections

Preferred Volume:
Blood: 5 mL
Bone marrow aspirate: 3 mL
?FFPE: 10 micron sections x5 on uncharged, unstained, glass slides plus one H&E stained section

Minimum Volume:
Blood: 2 mL
Bone marrow aspirate: 3 mL
?FFPE: 10 micron sections x3 on uncharged, unstained, glass slides plus one H&E stained section

Specimen Preparation:
Do not freeze blood or bone marrow samples. Ship to CB as soon as possible.

Reference Interval:
Negative

Synonyms:

- FLT-3
- fms-related tyrosine kinase 3
- fetal liver kinase-2
- FLT3-ITD
- FLT3-D835

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 1 week, frozen unacceptable.

Reported:
Routine cases reported within 10-14 days. Expedited cases will be reported within 7 days upon request.

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Additional Information:
FLT3 is a receptor tyrosine kinase expressed on the surface of many types of hematopoietic stem and progenitor cells. It is mutated in approximately one-third of AML patients. Internal tandem in frame duplications (ITD) within its cytoplasmic domain lead to its constitutive activation. ITD mutations represent the most common type of FLT3 mutations and occur in approximately 23% of adult AML cases. Another FLT3 mutation, termed D835, consists of an amino acid substitution in the FLT3 kinase domain and is found in approximately 12% of AML cases. Cytogenetically normal AML without the FLT3-ITD mutation constitutes a more favorable outcome than cytogenetically normal AML with a FLT3-ITD mutation.

This test will determine the presence or absence of the FLT3 ITD and D835 mutations. In addition, it will report the ratio of mutant to normal ITD alleles, which can be used as a guide for the combination treatment of FLT3-positive AML with chemotherapy and the multikinase inhibitor midostaurin.

This test was developed and its performance characteristics determined by the UCSF Clinical Laboratories. It has not been cleared or approved by the Food and Drug Administration. The FDA has determined that such clearance or approval is not necessary. This test is used for clinical purposes. It should not be regarded as investigational or for research. This laboratory is certified under the Clinical Laboratory Improvement Amendments of 1988 (CLIA-88) as qualified to perform high complexity clinical laboratory testing.

CPT Codes:
81245, 81246

LDT or Modified FDA:
Yes

Fluconazole

FLUC

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
High Performance Liquid Chromatography (HPLC)

Reported:
4-6 days

Additional Information:
Fluconazole is commonly used in the treatment of various types of fungal infections. Due to the fact it is readily soluble in water it can be administered in relatively large amounts to patients. Measurement of serum drug levels may be helpful to optimize drug dosing regimens, particularly where there is non-compliance, concern about drug interactions, pharmacokinetic variability, or suspected toxicity.

COLLECTION

Sample Type:
Serum

Collect:
Red-top

Amount to Collect:
4 mL (blood)

Preferred Volume:
2 mL (serum)

Minimum Volume:
1 mL (serum)

Stability (from collection to initiation):
Room temperature: 7 days
Refrigerated: 7 days
Frozen: 30 days

Rejection Criteria:
Serum Separator Tubes (SST®) • Other body fluids • Other specimen types

PROCESSING

Test Code:
FLUC

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot and freeze. Send sample to CB frozen. Order Quest test code 34882

Preferred Volume:
2 mL (serum)

Minimum Volume:
1 mL (serum)

Rejection Criteria:
Serum Separator Tubes (SST®) • Other body fluids • Other specimen types

Stability (from collection to initiation):
Room temperature: 7 days
Refrigerated: 7 days
Frozen: 30 days

RESULT INTERPRETATION

Units:
mcg/mL

Reference Interval:
<0.5 mcg/mL

Additional Information:
Fluconazole is commonly used in the treatment of various types of fungal infections. Due to the fact it is readily soluble in water it can be administered in relatively large amounts to patients. Measurement of serum drug levels may be helpful to optimize drug dosing regimens, particularly where there is non-compliance, concern about drug interactions, pharmacokinetic variability, or suspected toxicity.

ADMINISTRATIVE

CPT Codes:
80299-90

LOINC Codes:
10987-6

COMPLETE VIEW

Available Stat:
No

Test Code:
FLUC

Performing Lab:
Quest

Sendout:
Yes

Methodology:
High Performance Liquid Chromatography (HPLC)

Collect:
Red-top

Amount to Collect:
4 mL (blood)

Sample Type:
Serum

Preferred Volume:
2 mL (serum)

Minimum Volume:
1 mL (serum)

Rejection Criteria:
Serum Separator Tubes (SST®) • Other body fluids • Other specimen types

Specimen Preparation:
Aliquot and freeze. Send sample to CB frozen. Order Quest test code 34882

Units:
mcg/mL

Reference Interval:
<0.5 mcg/mL

Stability (from collection to initiation):
Room temperature: 7 days
Refrigerated: 7 days
Frozen: 30 days

Reported:
4-6 days

Additional Information:
Fluconazole is commonly used in the treatment of various types of fungal infections. Due to the fact it is readily soluble in water it can be administered in relatively large amounts to patients. Measurement of serum drug levels may be helpful to optimize drug dosing regimens, particularly where there is non-compliance, concern about drug interactions, pharmacokinetic variability, or suspected toxicity.

CPT Codes:
80299-90

LOINC Codes:
10987-6

Folate, RBC

MOLT, RBCFB

ORDERING

Ordering Recommendations:
Aids in the detection of folate deficiency.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative Chemiluminescent Immunoassay

Reported:
Within 24 hours

Additional Information:
In order to obtain the hematocrit needed to calculate the result of the assay, the lab will order a hematocrit if it's not available on the same sample or a sample collected within ±24 hours.

Serum test offered in-house (see test SFOL).

Synonyms:

- Folate, Red Blood Cell
- Folate, Red Cell
- Folic Acid
- RBC Folate
- Vitamin B9
- RBCFB

COLLECTION

Sample Type:
Whole blood

Collect:
Lavender (EDTA) or pink (K_2EDTA).

Amount to Collect:
1 mL

Protect from light during collection, storage, and shipment.

Minimum Volume:
1 mL

Protect from light during collection, storage, and shipment.

Remarks:
Hematocrit must be performed and indicated on the test request form. If the patient has not received a transfusion or experienced excessive bleeding between the RBC folate draw and the hematocrit draw, any hematocrit drawn within 24 hours of the RBC folate draw is acceptable.

Stability (from collection to initiation):
Ambient: 2 hours; Refrigerated: 4 hours; Frozen: 2 months

Storage/Transport Temperature:
CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

Unacceptable Conditions:
Non-frozen specimens. Clotted specimens.

PROCESSING

Test Code:
MOLT (APeX)
RBCFB (SunQuest)

ARUP Test Code:
0070385

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Protect from light during collection, storage, and shipment. Mix specimen well. Transfer 1 mL whole blood to an ARUP Amber Transport Tube.

Additional Processing Instructions:
Order test code RBCFB in Sunquest. Mix specimen well. Transfer 1 mL whole blood to an ARUP Amber Transport Tube and freeze at -20C, then send aliquot with RBCF label to China Basin Sendouts (Order ARUP test code 0070385). Store primary tube in refrigerator. Check for hematocrit (if needed, order HCTF and give primary tube to Hematology).

Minimum Volume:
1 mL

Protect from light during collection, storage, and shipment.

Unacceptable Conditions:
Non-frozen specimens. Clotted specimens.

Stability (from collection to initiation):
Ambient: 2 hours; Refrigerated: 4 hours; Frozen: 2 months

Storage/Transport Temperature:
CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

RESULT INTERPRETATION

Reference Interval:
Greater than or equal to 366 ng/mL

Additional Information:
In order to obtain the hematocrit needed to calculate the result of the assay, the lab will order a hematocrit if it's not available on the same sample or a sample collected within ±24 hours.

Serum test offered in-house (see test SFOL).

ADMINISTRATIVE

CPT Codes:
82747

LOINC:

- 20570-8
- 2283-0

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Aids in the detection of folate deficiency.

Test Code:
MOLT (APeX)
RBCFB (SunQuest)

ARUP Test Code:
0070385

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative Chemiluminescent Immunoassay

Remarks:
Hematocrit must be performed and indicated on the test request form. If the patient has not received a transfusion or experienced excessive bleeding between the RBC folate draw and the hematocrit draw, any hematocrit drawn within 24 hours of the RBC folate draw is acceptable.

Collect:
Lavender (EDTA) or pink (K_2EDTA).

Amount to Collect:
1 mL

Protect from light during collection, storage, and shipment.

Sample Type:
Whole blood

Minimum Volume:
1 mL

Protect from light during collection, storage, and shipment.

Unacceptable Conditions:
Non-frozen specimens. Clotted specimens.

Specimen Preparation:
Protect from light during collection, storage, and shipment. Mix specimen well. Transfer 1 mL whole blood to an ARUP Amber Transport Tube.

Additional Processing Instructions:
Order test code RBCFB in Sunquest. Mix specimen well. Transfer 1 mL whole blood to an ARUP Amber Transport Tube and freeze at -20C, then send aliquot with RBCF label to China Basin Sendouts (Order ARUP test code 0070385). Store primary tube in refrigerator. Check for hematocrit (if needed, order HCTF and give primary tube to Hematology).

Reference Interval:
Greater than or equal to 366 ng/mL

Synonyms:

- Folate, Red Blood Cell
- Folate, Red Cell
- Folic Acid
- RBC Folate
- Vitamin B9
- RBCFB

Storage/Transport Temperature:
CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

Stability (from collection to initiation):
Ambient: 2 hours; Refrigerated: 4 hours; Frozen: 2 months

Reported:
Within 24 hours

Additional Information:
In order to obtain the hematocrit needed to calculate the result of the assay, the lab will order a hematocrit if it's not available on the same sample or a sample collected within ±24 hours.

Serum test offered in-house (see test SFOL).

CPT Codes:
82747

LOINC:

- 20570-8
- 2283-0

Folate, serum

SFOL

ORDERING

Ordering Recommendations:

Effective 1/10/18, Serum Folate will be the routine test available for diagnosing folate deficiency instead of RBC Folate. If RBC Folate is required, order as MOLT for sendout testing to ARUP Lab (Collect Lavender (EDTA) or pink (K2EDTA)).

Available Stat:

No

Performing Lab:

China Basin Chemistry

Performed:

Monday and Thursday (day shift)

Methodology:

Chemiluminescent Microparticle Immunoassay (Abbott Architect i2000)

Reported:

1 - 5 days

Additional Information:

To convert ng/mL to nmol/L (SI units) multiply by 2.265.

The ARCHITECT Folate assay is standardized to the World Health Organization (WHO) Serum Folate International Standard 03/178.

Serum specimens from patients with renal impairment or failure (including dialysis patients) may exhibit varying degrees of falsely depressed folate values. Therefore to evaluate patients with renal impairment or failure who also exhibit low folate levels, it is recommended that low ARCHITECT Folate values be confirmed by an alternate folate method.

Methotrexate, aminopterin, and folinic acid (Leucovorin) are chemotherapeutic agents whose molecular structures are similar to folate. These agents cross react with folate binding protein in folate assays. Do not use the ARCHITECT Folate assay or other assays employing folate binding proteins for patients using these drugs.

If RBC Folate is required, order as MOLT for sendout testing to ARUP Lab (Collect Lavender (EDTA) or pink (K2EDTA).

Synonyms:

- Folic acid

COLLECTION

Patient Preparation:

An overnight fast is recommended prior to specimen collection for reference ranges to apply.

Sample Type:

Serum

Collect:

Gold top or Red top

Amount to Collect:

1 mL blood

Preferred Volume:

0.3 mL serum

Minimum Volume:

0.15 mL serum

Stability (from collection to initiation):

Refrigerated (2-8°C): 7 days
Frozen (-10°C or colder): 30 days

Avoid more than 3 freeze/thaw cycles.

PROCESSING

Test Code:

SFOL

Performing Lab:

China Basin Chemistry

Specimen Preparation:

Aliquot and freeze serum at -20°C.

Preferred Volume:
0.3 mL serum

Minimum Volume:
0.15 mL serum

Stability (from collection to initiation):
Refrigerated (2-8°C): 7 days
Frozen (-10°C or colder): 30 days

Avoid more than 3 freeze/thaw cycles.

RESULT INTERPRETATION

Units:
ng/mL

Reference Interval:

RESULT	INTERPRETATION
< 2 ng/mL	LOW. Consistent with folate deficiency
2 -4 ng/mL	BORDERLINE. Additional testing may be indicated depending on the clinical circumstances.
> 4 ng/mL	NORMAL. Suggests folate is not deficient, unless the individual has recently consumed a folate-containing meal or supplement. In such cases, RBC folate can be obtained. The RBC folate level is not needed in routine testing because it does not provide additional information and is more costly to obtain.

If patient was not fasting, the normal ranges may not apply.

Reference range adopted from https://www.uptodate.com and verified in-house with lab donor samples.

Additional Information:
To convert ng/mL to nmol/L (SI units) multiply by 2.265.

The ARCHITECT Folate assay is standardized to the World Health Organization (WHO) Serum Folate International Standard 03/178.

Serum specimens from patients with renal impairment or failure (including dialysis patients) may exhibit varying degrees of falsely depressed folate values. Therefore to evaluate patients with renal impairment or failure who also exhibit low folate levels, it is recommended that low ARCHITECT Folate values be confirmed by an alternate folate method.

Methotrexate, aminopterin, and folinic acid (Leucovorin) are chemotherapeutic agents whose molecular structures are similar to folate. These agents cross react with folate binding protein in folate assays. Do not use the ARCHITECT Folate assay or other assays employing folate binding proteins for patients using these drugs.

If RBC Folate is required, order as MOLT for sendout testing to ARUP Lab (Collect Lavender (EDTA) or pink (K2EDTA).

ADMINISTRATIVE

CPT Codes:
82746

LDT or Modified FDA:
2284-8

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Effective 1/10/18, Serum Folate will be the routine test available for diagnosing folate deficiency instead of RBC Folate. If RBC Folate is required, order as MOLT for sendout testing to ARUP Lab (Collect Lavender (EDTA) or pink (K2EDTA)).

Test Code:
SFOL

Performing Lab:
China Basin Chemistry

Performed:
Monday and Thursday (day shift)

Methodology:
Chemiluminescent Microparticle Immunoassay (Abbott Architect i2000)

Patient Preparation:
An overnight fast is recommended prior to specimen collection for reference ranges to apply.

Collect:
Gold top or Red top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.3 mL serum

Minimum Volume:
0.15 mL serum

Specimen Preparation:
Aliquot and freeze serum at -20°C.

Units:
ng/mL

Reference Interval:

RESULT	INTERPRETATION
< 2 ng/mL	LOW. Consistent with folate deficiency
2 -4 ng/mL	BORDERLINE. Additional testing may be indicated depending on the clinical circumstances.
> 4 ng/mL	NORMAL. Suggests folate is not deficient, unless the individual has recently consumed a folate-containing meal or supplement. In such cases, RBC folate can be obtained. The RBC folate level is not needed in routine testing because it does not provide additional information and is more costly to obtain.

If patient was not fasting, the normal ranges may not apply.

Reference range adopted from https://www.uptodate.com and verified in-house with lab donor samples.

Synonyms:

- Folic acid

Stability (from collection to initiation):
Refrigerated (2-8°C): 7 days
Frozen (-10°C or colder): 30 days

Avoid more than 3 freeze/thaw cycles.

Reported:
1 - 5 days

Additional Information:
To convert ng/mL to nmol/L (SI units) multiply by 2.265.

The ARCHITECT Folate assay is standardized to the World Health Organization (WHO) Serum Folate International Standard 03/178.

Serum specimens from patients with renal impairment or failure (including dialysis patients) may exhibit varying degrees of falsely depressed folate values. Therefore to evaluate patients with renal impairment or failure who also exhibit low folate levels, it is recommended that low ARCHITECT Folate values be confirmed by an alternate folate method.

Methotrexate, aminopterin, and folinic acid (Leucovorin) are chemotherapeutic agents whose molecular structures are similar to folate. These agents cross react with folate binding protein in folate assays. Do not use the ARCHITECT Folate assay or other assays employing folate binding proteins for patients using these drugs.

If RBC Folate is required, order as MOLT for sendout testing to ARUP Lab (Collect Lavender (EDTA) or pink (K2EDTA).

CPT Codes:
82746

LDT or Modified FDA:
2284-8

Follicle Stimulating Hormone

FSH

ORDERING

Ordering Recommendations:

This assay is suitable for use in adult patients to assess general endocrine function. Samples from younger patients are referred to a reference laboratory employing a more sensitive assay (see entry for FSH, Ultrasensitive).

Available Stat:

No

Performing Lab:

China Basin Chemistry

Performed:

Thursday, Sunday (day shift)

Methodology:

Chemiluminescent Microparticle Immunoassay (Abbott Architect i2000)

Reported:

1-3 days

Additional Information:

Method changed from Siemens Centaur XP platform to Abbott Architect i2000 platform on 11/27/17. The Abbott Architect method reads approximately 26% lower than the Centaur method. Please note that the reference ranges have changed.

This assay standardization is traceable to the World Health Organization (WHO) FSH 1st International Standard, (92/510).

Medi-Cal Medical Necessity Policy applies.

Synonyms:

- FSH
- follitropin
- gonadotropin tests

COLLECTION

Sample Type:

Serum

Collect:

Gold or Red top

Amount to Collect:

1 mL blood

Preferred Volume:

0.3 mL serum

Minimum Volume:

0.15 mL serum

Stability (from collection to initiation):

Refrigerated (2-8°C): 7 days
Frozen (-10°C or colder): 12 months

If testing will be delayed more than 24 hours, remove serum from clot, red blood cells, or serum separator gel.

Avoid multiple freeze-thaw cycles.

PROCESSING

Test Code:

FSH

Test Group:

FSH

Performing Lab:

China Basin Chemistry

Specimen Preparation:

Aliquot and freeze serum at -20C.

Preferred Volume:

0.3 mL serum

Minimum Volume:

0.15 mL serum

Stability (from collection to initiation):
Refrigerated (2-8°C): 7 days
Frozen (-10°C or colder): 12 months

If testing will be delayed more than 24 hours, remove serum from clot, red blood cells, or serum separator gel.

Avoid multiple freeze-thaw cycles.

RESULT INTERPRETATION

Units:
IU/L

Reference Interval:
Adult males (>= 18 years): 1.0 - 12.0 IU/L

Adult females (>= 18 years):

Follicular Phase	3.0 - 8.1 IU/L
Mid-Cycle Peak	2.6 - 16.7 IU/L
Luteal Phase	1.4 - 5.5 IU/L
Post-menopausal	26.7 -133.4 IU/L

Reference range adopted from Abbott (vendor) based on in-house verification study of 23 male (18 years old) normal volunteers in the UCSF Laboratory and 20 split female sample comparisons with ARUP.

Additional Information:
Method changed from Siemens Centaur XP platform to Abbott Architect i2000 platform on 11/27/17. The Abbott Architect method reads approximately 26% lower than the Centaur method. Please note that the reference ranges have changed.

This assay standardization is traceable to the World Health Organization (WHO) FSH 1st International Standard, (92/510).

Medi-Cal Medical Necessity Policy applies.

ADMINISTRATIVE

CPT Codes:
83001

LOINC Codes:
15067-2

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
This assay is suitable for use in adult patients to assess general endocrine function. Samples from younger patients are referred to a reference laboratory employing a more sensitive assay (see entry for FSH, Ultrasensitive).

Test Code:
FSH

Test Group:
FSH

Performing Lab:
China Basin Chemistry

Performed:
Thursday, Sunday (day shift)

Methodology:
Chemiluminescent Microparticle Immunoassay (Abbott Architect i2000)

Collect:
Gold or Red top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.3 mL serum

Minimum Volume:
0.15 mL serum

Specimen Preparation:
Aliquot and freeze serum at -20C.

Units:
IU/L

Reference Interval:
Adult males (>= 18 years): 1.0 - 12.0 IU/L

Adult females (>= 18 years):

Follicular Phase	3.0 - 8.1 IU/L
Mid-Cycle Peak	2.6 - 16.7 IU/L
Luteal Phase	1.4 - 5.5 IU/L
Post-menopausal	26.7 -133.4 IU/L

Reference range adopted from Abbott (vendor) based on in-house verification study of 23 male (18 years old) normal volunteers in the UCSF Laboratory and 20 split female sample comparisons with ARUP.

Synonyms:

- FSH
- follitropin
- gonadotropin tests

Stability (from collection to initiation):
Refrigerated (2-8°C): 7 days
Frozen (-10°C or colder): 12 months

If testing will be delayed more than 24 hours, remove serum from clot, red blood cells, or serum separator gel.

Avoid multiple freeze-thaw cycles.

Reported:
1-3 days

Additional Information:
Method changed from Siemens Centaur XP platform to Abbott Architect i2000 platform on 11/27/17. The Abbott Architect method reads approximately 26% lower than the Centaur method. Please note that the reference ranges have changed.

This assay standardization is traceable to the World Health Organization (WHO) FSH 1st International Standard, (92/510).

Medi-Cal Medical Necessity Policy applies.

CPT Codes:
83001

LOINC Codes:
15067-2

Follicle Stimulating Hormone, Pediatric

PFSH

ORDERING

Approval Required:
Yes, contact Chemistry at x3-1501 if ordered in patients over the age of 20.

Available Stat:
No

Performing Lab:
Quest

Methodology:
Immunoassay

Reported:
Test performed Tuesday and Friday. Turnaround time: 2-6 days.

Additional Information:
This send-out assay is primarily reserved for testing in pediatric patients with suspected or complex endocrine abnormalities. For adult patients see "Follicle stimulating hormone" (test code FSH). It requires approval if ordered in patients over the age of 20.

Medi-Cal Medical Necessity Policy applies.

FSH peaks (typically 3.00-6.00 mIU/mL for this assay) in male infants at 4 months of age, falling to prepubertal levels by 1 year of age.

FSH peaks (as high as 30.00 mIU/mL for this assay) in female infants at 3 months of age, falling slowly to prepubertal levels by 1-2 years of age.

(Forest MG, Ducharme JR, Gonadotropic and gonadal hormones, Ch 8, in: Bertrand et al, eds. Pediatric Endocrinology, 2ND Ed. Baltimore: Williams & Wilkins, 1993).

Synonyms:

- FSH ultrasensitive
- FSH Pediatric

COLLECTION

Sample Type:
Serum

Collect:
Red top or gold top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

PROCESSING

Test Code:
PFSH

Test Group:
FSH

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze at -20C. Specify age and sex on request form. Order Quest #36087.

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

RESULT INTERPRETATION

Units:
mIU/mL

Reference Interval:

Males	
0-4 years	Not established
5-9 years	0.21-4.33 mIU/mL
10-13 years	0.53-4.92 mIU/mL
14-17 years	0.84-8.74 mIU/mL

Females	
0-4 years	Not established
5-9 years	0.72-5.33 mIU/mL
10-13 years	0.87-9.16 mIU/mL
14-17 years	0.64-10.98 mIU/mL

*See Additional Information

Additional Information:
This send-out assay is primarily reserved for testing in pediatric patients with suspected or complex endocrine abnormalities. For adult patients see "Follicle stimulating hormone" (test code FSH). It requires approval if ordered in patients over the age of 20.

Medi-Cal Medical Necessity Policy applies.

FSH peaks (typically 3.00-6.00 mIU/mL for this assay) in male infants at 4 months of age, falling to prepubertal levels by 1 year of age.

FSH peaks (as high as 30.00 mIU/mL for this assay) in female infants at 3 months of age, falling slowly to prepubertal levels by 1-2 years of age.

(Forest MG, Ducharme JR, Gonadotropic and gonadal hormones, Ch 8, in: Bertrand et al, eds. Pediatric Endocrinology, 2ND Ed. Baltimore: Williams & Wilkins, 1993).

ADMINISTRATIVE

CPT Codes:
83001-90

LOINC Codes:
15067-2

COMPLETE VIEW

Approval Required:
Yes, contact Chemistry at x3-1501 if ordered in patients over the age of 20.

Available Stat:
No

Test Code:
PFSH

Test Group:
FSH

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Immunoassay

Collect:
Red top or gold top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Specimen Preparation:
Freeze at -20C. Specify age and sex on request form. Order Quest #36087.

Units:
mIU/mL

Reference Interval:

Males	
0-4 years	Not established
5-9 years	0.21-4.33 mIU/mL
10-13 years	0.53-4.92 mIU/mL
14-17 years	0.84-8.74 mIU/mL
Females	
0-4 years	Not established
5-9 years	0.72-5.33 mIU/mL
10-13 years	0.87-9.16 mIU/mL
14-17 years	0.64-10.98 mIU/mL

*See Additional Information

Synonyms:

- FSH ultrasensitive
- FSH Pediatric

Reported:
Test performed Tuesday and Friday. Turnaround time: 2-6 days.

Additional Information:
This send-out assay is primarily reserved for testing in pediatric patients with suspected or complex endocrine abnormalities. For adult patients see "Follicle stimulating hormone" (test code FSH). It requires approval if ordered in patients over the age of 20.

Medi-Cal Medical Necessity Policy applies.

FSH peaks (typically 3.00-6.00 mIU/mL for this assay) in male infants at 4 months of age, falling to prepubertal levels by 1 year of age.

FSH peaks (as high as 30.00 mIU/mL for this assay) in female infants at 3 months of age, falling slowly to prepubertal levels by 1-2 years of age.

(Forest MG, Ducharme JR, Gonadotropic and gonadal hormones, Ch 8, in: Bertrand et al, eds. Pediatric Endocrinology, 2ND Ed. Baltimore: Williams & Wilkins, 1993).

CPT Codes:
83001-90

LOINC Codes:
15067-2

Free Catecholamines, Fractionated, plasma

CATP

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
HPLC w/ electrochemical detection

Reported:
Test run Monday-Friday. Turnaround time: 2-5 days.

Additional Information:
Generally recommended ONLY for tumor localization or for special evaluations such as clonidine suppression or glucagon stimulation.

To convert ng/L of Epinephrine or Norepinephrine to pmol/L (SI units) multiply by 5.45 or 5.91, respectively.

Due to the effects of stress, plasma levels are generally unreliable in infants and children, for whom urinary assays are recommended.

Synonyms:

- Adrenaline
- catechols
- dopamine
- noradrenaline
- norepinephrine
- epinephrine

COLLECTION

Patient Preparation:
An 8 hour fast before specimen collection is preferred. Patient should avoid alcohol, coffee, tea, tobacco and strenuous exercise prior to collection. Patients should be relaxed in a supine (recommended) or upright position before blood is drawn. States of anxiety and stress can cause fluctuations in the catecholamine levels.

Sample Type:
Heparinized plasma

Collect:
Dark Green top (on ice) (Light green top acceptable)

Amount to Collect:
8 mL blood

Preferred Volume:
4 mL plasma

Minimum Volume:
2.5 mL plasma

Remarks:
Pre-chill tube. Bring all samples to the laboratory on wet ice immediately for separation and freezing of plasma within 15 minutes of collection. Indicate if patient was supine or upright during collection on the requisition.

Stability (from collection to initiation):
Room temperature 6 hours, refrigerated 6 hours, frozen at -20C 1 month.

Unacceptable Conditions:
Not delivered on ice or delivered > 15 minutes after collection

PROCESSING

Test Code:
CATP

Test Group:
Catecholamines

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Process immediately. Plasma should be separated in a refrigerated centrifuge within 30 minutes of collection and then frozen immediately at -20C in plastic vials. Plasma MUST be RBC free. Order Quest # 8193N. Enter supine or upright information into Misys

Preferred Volume:
4 mL plasma

Minimum Volume:
2.5 mL plasma

Unacceptable Conditions:
Not delivered on ice or delivered > 15 minutes after collection

Stability (from collection to initiation):
Room temperature 6 hours, refrigerated 6 hours, frozen at -20C 1 month.

RESULT INTERPRETATION

Units:
pg/mL

Reference Interval:

Pediatric patient supine:
Children age 3-15 years:

Epinephrine	<= 464 pg/mL
Norepinephrine	<= 1251 pg/mL
Dopamine	< 60 pg/mL

>= 18 year olds patient supine:

Epinephrine	< 50 pg/mL
Norepinephrine	112-658 pg/mL
Dopamine	< 10 pg/mL
Total	123-671 pg/mL

>= 18 year old patient upright (not recommended):

Epinephrine	< 95 pg/mL
Norepinephrine	217-1109 pg/mL
Dopamine	< 20 pg/mL
Total	242-1125 pg/mL

Pediatric normals from: J Chromatogr 1993 617:304-307

Additional Information:
Generally recommended ONLY for tumor localization or for special evaluations such as clonidine suppression or glucagon stimulation.

To convert ng/L of Epinephrine or Norepinephrine to pmol/L (SI units) multiply by 5.45 or 5.91, respectively.

Due to the effects of stress, plasma levels are generally unreliable in infants and children, for whom urinary assays are recommended.

ADMINISTRATIVE

CPT Codes:
82384-90

LOINC Codes:
42493-7

COMPLETE VIEW

Available Stat:
No

Test Code:
CATP

Test Group:
Catecholamines

Performing Lab:
Quest

Sendout:
Yes

Methodology:
HPLC w/ electrochemical detection

Patient Preparation:
An 8 hour fast before specimen collection is preferred. Patient should avoid alcohol, coffee, tea, tobacco and strenuous exercise prior to collection. Patients should be relaxed in a supine (recommended) or upright position before blood is drawn. States of anxiety and stress can cause fluctuations in the catecholamine levels.

Remarks:
Pre-chill tube. Bring all samples to the laboratory on wet ice immediately for separation and freezing of plasma within 15 minutes of collection. Indicate if patient was supine or upright during collection on the requisition.

Collect:
Dark Green top (on ice) (Light green top acceptable)

Amount to Collect:
8 mL blood

Sample Type:
Heparinized plasma

Preferred Volume:
4 mL plasma

Minimum Volume:
2.5 mL plasma

Unacceptable Conditions:
Not delivered on ice or delivered > 15 minutes after collection

Specimen Preparation:
Process immediately. Plasma should be separated in a refrigerated centrifuge within 30 minutes of collection and then frozen immediately at -20C in plastic vials. Plasma MUST be RBC free. Order Quest # 8193N. Enter supine or upright information into Misys

Units:
pg/mL

Reference Interval:

Pediatric patient supine:
Children age 3-15 years:

Epinephrine	<= 464 pg/mL
Norepinephrine	<= 1251 pg/mL
Dopamine	< 60 pg/mL

>= 18 year olds patient supine:

Epinephrine	< 50 pg/mL
Norepinephrine	112-658 pg/mL
Dopamine	< 10 pg/mL
Total	123-671 pg/mL

>= 18 year old patient upright (not recommended):

Epinephrine	< 95 pg/mL
Norepinephrine	217-1109 pg/mL
Dopamine	< 20 pg/mL
Total	242-1125 pg/mL

Pediatric normals from: J Chromatogr 1993 617:304-307

Synonyms:

- Adrenaline
- catechols
- dopamine
- noradrenaline
- norepinephrine
- epinephrine

Stability (from collection to initiation):
Room temperature 6 hours, refrigerated 6 hours, frozen at -20C 1 month.

Reported:
Test run Monday-Friday. Turnaround time: 2-5 days.

Additional Information:
Generally recommended ONLY for tumor localization or for special evaluations such as clonidine suppression or glucagon stimulation.

To convert ng/L of Epinephrine or Norepinephrine to pmol/L (SI units) multiply by 5.45 or 5.91, respectively.

Due to the effects of stress, plasma levels are generally unreliable in infants and children, for whom urinary assays are recommended.

CPT Codes:
82384-90

LOINC Codes:
42493-7

Free Sialic Acid, urine

MOLT

ORDERING

Available Stat:
No

Performing Lab:
JMC

Reported:
Turnaround: 2-4 weeks.

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
See preferred volume

Preferred Volume:
5 mL urine

Remarks:
A detailed clinical history must accompany the test request or be sent by fax to (215) 955-9554.

PROCESSING

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Test Group:
Sialic acid

Sendout:
Yes

Performing Lab:
JMC

Specimen Preparation:
Ship by Federal Express at room temperature: Dr. David A. Wenger, Jefferson Medical College, Jefferson Alumni Hall, Rm. 394, 1024 Locust St., Philadelphia, PA 19107, ph: (215) 955-4923, fax: 955-9554, david.wenger@mail.tju.edu

Preferred Volume:
5 mL urine

RESULT INTERPRETATION

Reference Interval:
Negative

COMPLETE VIEW

Available Stat:
No

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Test Group:
Sialic acid

Performing Lab:
JMC

Sendout:
Yes

Remarks:
A detailed clinical history must accompany the test request or be sent by fax to (215) 955-9554.

Collect:
Urine cup

Amount to Collect:
See preferred volume

Sample Type:
Random urine

Preferred Volume:
5 mL urine

Specimen Preparation:
Ship by Federal Express at room temperature: Dr. David A. Wenger, Jefferson Medical College, Jefferson Alumni Hall, Rm. 394, 1024 Locust St., Philadelphia, PA 19107, ph: (215) 955-4923, fax: 955-9554, david.wenger@mail.tju.edu

Reference Interval:
Negative

Reported:
Turnaround: 2-4 weeks.

Free T3, Adult

FT3

ORDERING

Available Stat:
No

Performing Lab:
Parnassus and Mission Bay and Mt Zion Chemistry

Performed:
Parnassus and Mission Bay: 24 hours per day, 7 days per week
Mt Zion: Monday - Friday

Methodology:
Two step chemiluminescent Microparticle Immunoassay (Abbott Architect i2000 and ci4100)

Reported:
0 to 2 days

Additional Information:
T3 circulates in the blood as an equilibrium mixture of free and protein bound hormone. T3 is bound to thyroxine binding globulin (TBG), prealbumin, and albumin. The binding of these proteins is such that only 0.2-0.4% of the total T3 is present in solution as unbound or free T3. This free fraction represents the physiologically active thyroid hormone. Occasionally, FT3 alone is elevated (T3 thyrotoxicosis) in about 5% of the hyperthyroid population. FT3 may also be important in monitoring patients on antithyroid therapy where treatment is focused on reducing the T3 production and the T4 conversion to T3. Serum FT3 may also be useful in assessing the severity of the thyrotoxic state.

Synonyms:

- Triiodothyronine

COLLECTION

Sample Type:
Plasma

Collect:
Light Green top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

PROCESSING

Test Code:
FT3

Test Group:
Thyroid tests

Performing Lab:
Parnassus and Mission Bay and Mt Zion Chemistry

Specimen Preparation:
Refrigerate

Gold top and red top tubes should not be rejected. Gold top and red top tubes are acceptable tube types as long as the tube has been allowed to sit for at least 30 minutes before centrifugation.

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

RESULT INTERPRETATION

Units:
pmol/L

Reference Interval:
Adults (18 years and older): 2.6-5.7 pmol/L

For children, order test Free T3, Pediatric (code PFT3)

Adult reference ranges adopted from manufacturer reference range studies (95% CI) and verified in-house using blood donor (N=124) (excluding autologous donors) on no medications and negative for anti-Tg and TPO antibodies.

Additional Information:
T3 circulates in the blood as an equilibrium mixture of free and protein bound hormone. T3 is bound to thyroxine binding globulin (TBG), prealbumin, and albumin. The binding of these proteins is such that only 0.2-0.4% of the total T3 is present in solution as unbound or free T3. This free fraction represents the physiologically active thyroid hormone. Occasionally, FT3 alone is elevated (T3 thyrotoxicosis) in about 5% of the hyperthyroid population. FT3 may also be important in monitoring patients on antithyroid therapy where treatment is focused on reducing the T3 production and the T4 conversion to T3. Serum FT3 may also be useful in assessing the severity of the thyrotoxic state.

ADMINISTRATIVE

CPT Codes:
84481

LOINC Codes:
3051-0

COMPLETE VIEW

Available Stat:
No

Test Code:
FT3

Test Group:
Thyroid tests

Performing Lab:
Parnassus and Mission Bay and Mt Zion Chemistry

Performed:
Parnassus and Mission Bay: 24 hours per day, 7 days per week
Mt Zion: Monday - Friday

Methodology:
Two step chemiluminescent Microparticle Immunoassay (Abbott Architect i2000 and ci4100)

Collect:
Light Green top

Amount to Collect:
2 mL blood

Sample Type:
Plasma

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Specimen Preparation:
Refrigerate

Gold top and red top tubes should not be rejected. Gold top and red top tubes are acceptable tube types as long as the tube has been allowed to sit for at least 30 minutes before centrifugation.

Units:
pmol/L

Reference Interval:
Adults (18 years and older): 2.6-5.7 pmol/L

For children, order test Free T3, Pediatric (code PFT3)

Adult reference ranges adopted from manufacturer reference range studies (95% CI) and verified in-house using blood donor (N=124) (excluding autologous donors) on no medications and negative for anti-Tg and TPO antibodies.

Synonyms:

- Triiodothyronine

Reported:

0 to 2 days

Additional Information:

T3 circulates in the blood as an equilibrium mixture of free and protein bound hormone. T3 is bound to thyroxine binding globulin (TBG), prealbumin, and albumin. The binding of these proteins is such that only 0.2-0.4% of the total T3 is present in solution as unbound or free T3. This free fraction represents the physiologically active thyroid hormone. Occasionally, FT3 alone is elevated (T3 thyrotoxicosis) in about 5% of the hyperthyroid population. FT3 may also be important in monitoring patients on antithyroid therapy where treatment is focused on reducing the T3 production and the T4 conversion to T3. Serum FT3 may also be useful in assessing the severity of the thyrotoxic state.

CPT Codes:

84481

LOINC Codes:

3051-0

Free T3, Pediatric

PFT3

ORDERING

Approval Required:
Yes, contact Chemistry/Immunology Resident at x3-1438. for patients > 20 years old.

Available Stat:
No

Performing Lab:
Quest

Methodology:
ICMA

Reported:
4 days.

Additional Information:
This send-out assay is primarily reserved for testing in pediatric patients with suspected or complex endocrine abnormalities. For adult patients see "Free T3, Adult" (test code FT3). It requires approval if ordered in patients over the age of 20.

Synonyms:

- Triiodothyronine

COLLECTION

Sample Type:
Serum

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

PROCESSING

Test Code:
PFT3

Test Group:
Thyroid tests

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze serum. Order Quest test #34429X

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

RESULT INTERPRETATION

Units:
pg/dL

Reference Interval:
< 1 year: Not Established
1-9 years: 337-506 pg/dL
10-13 years: 335-480 pg/dL
14-18 years: 287-455 pg/dL

Additional Information:
This send-out assay is primarily reserved for testing in pediatric patients with suspected or complex endocrine abnormalities. For adult patients see "Free T3, Adult" (test code FT3). It requires approval if ordered in patients over the age of 20.

ADMINISTRATIVE

CPT Codes:
84481-90

LOINC Codes:
3051-0

COMPLETE VIEW

Approval Required:
Yes, contact Chemistry/Immunology Resident at x3-1438. for patients > 20 years old.

Available Stat:
No

Test Code:
PFT3

Test Group:
Thyroid tests

Performing Lab:
Quest

Sendout:
Yes

Methodology:
ICMA

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Specimen Preparation:
Freeze serum. Order Quest test #34429X

Units:
pg/dL

Reference Interval:
< 1 year: Not Established
1-9 years: 337-506 pg/dL
10-13 years: 335-480 pg/dL
14-18 years: 287-455 pg/dL

Synonyms:

- Triiodothyronine

Reported:
4 days.

Additional Information:
This send-out assay is primarily reserved for testing in pediatric patients with suspected or complex endocrine abnormalities. For adult patients see "Free T3, Adult" (test code FT3). It requires approval if ordered in patients over the age of 20.

CPT Codes:
84481-90

LOINC Codes:
3051-0

Free T4

FT4

ORDERING

Available Stat:
No

Performing Lab:
Parnassus, Mission Bay and Mt Zion Chemistry

Performed:
Parnassus and Mission Bay: 24 hours per day, 7 days per week
Mt Zion: Monday - Friday

Methodology:
Two step chemiluminescent Microparticle Immunoassay (Abbott Architect i2000 and ci4100)

Reported:
0 to 2 days

Synonyms:

- tetraiodothyronine
- free thyroxine

COLLECTION

Sample Type:
Plasma

Collect:
Light Green top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL plasma

Minimum Volume:
0.25 mL plasma

PROCESSING

Test Code:
FT4

Test Group:
Thyroid tests

Performing Lab:
Parnassus, Mission Bay and Mt Zion Chemistry

Specimen Preparation:
Refrigerate

Gold top and red top tubes should not be rejected. Gold top and red top tubes are acceptable tube types as long as the tube has been allowed to sit for at least 30 minutes before centrifugation.

Preferred Volume:
0.5 mL plasma

Minimum Volume:
0.25 mL plasma

RESULT INTERPRETATION

Units:
pmol/L

Reference Interval:

Age	Male (pmol/L)	Female (pmol/L)
1-3 days	10-36	11-25
4-30 days	6-30	8-25
1-12 months	10-26	11-24
1-5 years	11-21	12-19
6-10 years	11-19	11-19
>10 years	10-18	10-18

Pediatric reference ranges adopted from Pediatric Reference Intervals seventh edition (Soldin, Steven J. et al) and Canadian Laboratory Initiative on Reference Interval Database (CALIPER) Clin Biochem 2009;42:885-991

Adult 95% reference range from the manufacturer (personal communication, Abbott Labs) was verified by running 148 non-autologous donor samples from subjects on no medications and neg. for TgAb and TPO Ab

ADMINISTRATIVE

CPT Codes:
84439

LOINC Codes:
3024-7

COMPLETE VIEW

Available Stat:
No

Test Code:
FT4

Test Group:
Thyroid tests

Performing Lab:
Parnassus, Mission Bay and Mt Zion Chemistry

Performed:
Parnassus and Mission Bay: 24 hours per day, 7 days per week
Mt Zion: Monday - Friday

Methodology:
Two step chemiluminescent Microparticle Immunoassay (Abbott Architect i2000 and ci4100)

Collect:
Light Green top

Amount to Collect:
1 mL blood

Sample Type:
Plasma

Preferred Volume:
0.5 mL plasma

Minimum Volume:
0.25 mL plasma

Specimen Preparation:
Refrigerate

Gold top and red top tubes should not be rejected. Gold top and red top tubes are acceptable tube types as long as the tube has been allowed to sit for at least 30 minutes before centrifugation.

Units:
pmol/L

Reference Interval:

Age	Male (pmol/L)	Female (pmol/L)
1-3 days	10-36	11-25
4-30 days	6-30	8-25
1-12 months	10-26	11-24
1-5 years	11-21	12-19
6-10 years	11-19	11-19
>10 years	10-18	10-18

Pediatric reference ranges adopted from Pediatric Reference Intervals seventh edition (Soldin, Steven J. et al) and Canadian Laboratory Initiative on Reference Interval Database (CALIPER) Clin Biochem 2009;42:885-991

Adult 95% reference range from the manufacturer (personal communication, Abbott Labs) was verified by running 148 non-autologous donor samples from subjects on no medications and neg. for TgAb and TPO Ab

Synonyms:

- tetraiodothyronine
- free thyroxine

Reported:
0 to 2 days

CPT Codes:
84439

LOINC Codes:
3024-7

Fructosamine

FRUT

ORDERING

Ordering Recommendations:
Test should be ordered only on patients whose diabetic control cannot be monitored with Glycohemoglobin.

Available Stat:
No

Performing Lab:
Quest

Methodology:
Colorimetric

Reported:
Test run Monday-Saturday. Turnaround time: 2-4 days.

Synonyms:

- glycalbumin
- glycated albumin
- glycosylated albumin

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
4 mL blood

Preferred Volume:
2 ml serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen at -20C 1 month.

Unacceptable Conditions:
Hemolysis, moderate or gross icterus

Rejection Criteria:
Hemolysis, moderate or gross icterus

PROCESSING

Test Code:
FRUT

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate. Order Quest # 8340

Preferred Volume:
2 ml serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Hemolysis, moderate or gross icterus

Rejection Criteria:
Hemolysis, moderate or gross icterus

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen at -20C 1 month.

RESULT INTERPRETATION

Units:
µmol/L

Reference Interval:
190-270 µmol/L

ADMINISTRATIVE

CPT Codes:
82985-90

LOINC Codes:
15069-8

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Test should be ordered only on patients whose diabetic control cannot be monitored with Glycohemoglobin.

Test Code:
FRUT

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Colorimetric

Collect:
Gold top

Amount to Collect:
4 mL blood

Sample Type:
Serum

Preferred Volume:
2 ml serum

Minimum Volume:
0.5 mL serum

Rejection Criteria:
Hemolysis, moderate or gross icterus

Unacceptable Conditions:
Hemolysis, moderate or gross icterus

Specimen Preparation:
Refrigerate. Order Quest # 8340

Units:
µmol/L

Reference Interval:
190-270 µmol/L

Synonyms:

- glycalbumin
- glycated albumin
- glycosylated albumin

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen at -20C 1 month.

Reported:
Test run Monday-Saturday. Turnaround time: 2-4 days.

CPT Codes:
82985-90

LOINC Codes:
15069-8

FTA-ABS

FTAC

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Indirect Fluorescence Assay

Reported:
Test performed Monday-Friday, turnaround time: 1-4 days

Additional Information:
The VDRL test is the only serological assay which is approved for use in CSF. In patients suspected of neurosyphilis but with a non-reactive VDRL result, the FTA-ABS test may be useful in some cases. The FTA-ABS test has high sensitivity but is nonspecific with a high rate of false positive results in CSF.

References:
Birnbaum NR, Goldschmidt RH and Buffett WO. 1999. Resolving the common clinical dilemmas of syphilis. Amer. Fam. Physician 59(8):2230-2240, 2245-2246. Sexually transmitted diseases treatment guidelines 2002. MMWR May 10, 2002, Vol. 51, No. RR-6,Center for Disease Control and Prevention.

Synonyms:

- Fluorescent Treponemal Antibody Adsorption

COLLECTION

Sample Type:
CSF

Collect:
CSF tube or sterile collection tube

Amount to Collect:
See preferred volume

Preferred Volume:
1 mL CSF

Minimum Volume:
0.3 mL CSF

PROCESSING

Test Code:
FTAC

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate. Order test Quest test # 17088X

Preferred Volume:
1 mL CSF

Minimum Volume:
0.3 mL CSF

RESULT INTERPRETATION

Reference Interval:
Nonreactive

Additional Information:

The VDRL test is the only serological assay which is approved for use in CSF. In patients suspected of neurosyphilis but with a non-reactive VDRL result, the FTA-ABS test may be useful in some cases. The FTA-ABS test has high sensitivity but is nonspecific with a high rate of false positive results in CSF.

References:

Birnbaum NR, Goldschmidt RH and Buffett WO. 1999. Resolving the common clinical dilemmas of syphilis.
Amer. Fam. Physician 59(8):2230-2240, 2245-2246. Sexually transmitted diseases treatment guidelines 2002.
MMWR May 10, 2002, Vol. 51, No. RR-6,Center for Disease Control and Prevention.

ADMINISTRATIVE

CPT Codes:
86592-90

LOINC Codes:
9826-9

COMPLETE VIEW

Available Stat:
No

Test Code:
FTAC

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Indirect Fluorescence Assay

Collect:
CSF tube or sterile collection tube

Amount to Collect:
See preferred volume

Sample Type:
CSF

Preferred Volume:
1 mL CSF

Minimum Volume:
0.3 mL CSF

Specimen Preparation:
Refrigerate. Order test Quest test # 17088X

Reference Interval:
Nonreactive

Synonyms:

- Fluorescent Treponemal Antibody Adsorption

Reported:
Test performed Monday-Friday, turnaround time: 1-4 days

Additional Information:

The VDRL test is the only serological assay which is approved for use in CSF. In patients suspected of neurosyphilis but with a non-reactive VDRL result, the FTA-ABS test may be useful in some cases. The FTA-ABS test has high sensitivity but is nonspecific with a high rate of false positive results in CSF.

References:

Birnbaum NR, Goldschmidt RH and Buffett WO. 1999. Resolving the common clinical dilemmas of syphilis.
Amer. Fam. Physician 59(8):2230-2240, 2245-2246. Sexually transmitted diseases treatment guidelines 2002.
MMWR May 10, 2002, Vol. 51, No. RR-6,Center for Disease Control and Prevention.

CPT Codes:
86592-90

LOINC Codes:
9826-9

Fungal Culture, Blood

P258

ORDERING

Ordering Recommendations:

Fungal blood cultures are indicated primarily for Histoplasma capsulatum; however, bone marrow is the preferred specimen for this organism. On rare occasions in very advanced infections,invasive molds including Histoplasma, Fusarium and Scedosporium grow in blood fungal cultures. For these organisms, a tissue specimen is highly recommended and negative blood fungal culture results do not exclude the possibility disseminated infection. Infectious disease consult is recommended to guide appropriate ordering of additional serology and antigen tests.

For patients on total parenteral nutrition (TPN) with suspicion for lipophilic yeasts (Malassezia species) notify the lab to set up appropriate culture media. Other yeasts such as Candida and Cryptococcus species grow well in routine blood cultures and a specific 'fungal culture' order is unnecessary.

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Set up daily, all shifts

Reported:
Up to 4 weeks

Additional Information:
Routine blood cultures are incubated for 5 days, sufficient to detect yeast.

Synonyms:

- H. capsulatum
- Histoplasma capsulatum

COLLECTION

Sample Type:
Heparinized blood

Collect:
Dark green top x 2 (DO NOT use Lithium heparin i.e. Light Green top tube.)

Amount to Collect:
8 mL blood

Preferred Volume:
8 mL blood

Minimum Volume:
4 mL blood

Stability (from collection to initiation):
Refrigerated 24 hours

Unacceptable Conditions:
Blood submitted in Lithium heparin (Lt. Green top) vacutainer.

PROCESSING

Test Code:
P258

Test Group:
Fungal Culture

Performing Lab:
Microbiology

Preferred Volume:
8 mL blood

Minimum Volume:
4 mL blood

Unacceptable Conditions:
Blood submitted in Lithium heparin (Lt. Green top) vacutainer.

Stability (from collection to initiation):
Refrigerated 24 hours

RESULT INTERPRETATION

Critical Values:
Biphasic fungus (e.g. Coccidiodes immitis) or zygomycetes (e.g. mucromycosis) isolated.

Additional Information:
Routine blood cultures are incubated for 5 days, sufficient to detect yeast.

ADMINISTRATIVE

CPT Codes:
87103

LOINC Codes:
572-8

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:

Fungal blood cultures are indicated primarily for Histoplasma capsulatum; however, bone marrow is the preferred specimen for this organism. On rare occasions in very advanced infections,invasive molds including Histoplasma, Fusarium and Scedosporium grow in blood fungal cultures. For these organisms, a tissue specimen is highly recommended and negative blood fungal culture results do not exclude the possibility disseminated infection. Infectious disease consult is recommended to guide appropriate ordering of additional serology and antigen tests.

For patients on total parenteral nutrition (TPN) with suspicion for lipophilic yeasts (Malassezia species) notify the lab to set up appropriate culture media. Other yeasts such as Candida and Cryptococcus species grow well in routine blood cultures and a specific 'fungal culture' order is unnecessary.

Test Code:
P258

Test Group:
Fungal Culture

Performing Lab:
Microbiology

Performed:
Set up daily, all shifts

Collect:
Dark green top x 2 (DO NOT use Lithium heparin i.e. Light Green top tube.)

Amount to Collect:
8 mL blood

Sample Type:
Heparinized blood

Preferred Volume:
8 mL blood

Minimum Volume:
4 mL blood

Unacceptable Conditions:
Blood submitted in Lithium heparin (Lt. Green top) vacutainer.

Critical Values:
Biphasic fungus (e.g. Coccidiodes immitis) or zygomycetes (e.g. mucromycosis) isolated.

Synonyms:

- H. capsulatum
- Histoplasma capsulatum

Stability (from collection to initiation):
Refrigerated 24 hours

Reported:
Up to 4 weeks

Additional Information:
Routine blood cultures are incubated for 5 days, sufficient to detect yeast.

CPT Codes:
87103

LOINC Codes:

572-8

Fungal Culture, dermatophytes with KOH

P257

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Set up daily, day and evening shifts

Additional Information:
Includes culture for dermatophytes and KOH-Calcofluor white stain. See also Mycology section in text at front of Lab Manual.

COLLECTION

Sample Type:
Skin

Collect:
Sterile container or Red top vacuatiner

Stability (from collection to initiation):
Refrigerated 24 hours

Unacceptable Conditions:
Samples on swabs

PROCESSING

Test Code:
P257

Test Group:
Fungal Culture

Performing Lab:
Microbiology

Unacceptable Conditions:
Samples on swabs

Stability (from collection to initiation):
Refrigerated 24 hours

RESULT INTERPRETATION

Additional Information:
Includes culture for dermatophytes and KOH-Calcofluor white stain. See also Mycology section in text at front of Lab Manual.

ADMINISTRATIVE

CPT Codes:
87101, 87206

LOINC Codes:
575-1

COMPLETE VIEW

Available Stat:
No

Test Code:
P257

Test Group:
Fungal Culture

Performing Lab:
Microbiology

Performed:
Set up daily, day and evening shifts

Collect:
Sterile container or Red top vacuatiner

Sample Type:
Skin

Unacceptable Conditions:
Samples on swabs

Stability (from collection to initiation):
Refrigerated 24 hours

Additional Information:
Includes culture for dermatophytes and KOH-Calcofluor white stain. See also Mycology section in text at front of Lab Manual.

CPT Codes:
87101, 87206

LOINC Codes:
575-1

Fungal Culture, other fungi

P256

ORDERING

Approval Required:
Approval required for joint fluid.

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Set up daily, all shifts

Methodology:
Culture

Reported:
Up to 30 days

Additional Information:
Includes KOH-Calcofluor White Stain, except on urine and bone marrow.

For diagnosis of yeast and Cryptococcal meningitis, recommended tests are: CSF bacterial culture (yeast, including Cryptococcus neoformans grow well on routine bacterial culture) CSF and serum Cryptococcal Antigen (CrAg).

The yield of CSF cultures for other dimorphic fungi and invasive molds, including Aspergillus, Blastomyces, Histoplasma and the Zygomycetes (Mucor and Rhizopus) is extremely low. Tissue biopsy, if possible, is the recommended specimen for fungal diagnosis by culture.

Synonyms:

- H. capsulatum
- Histoplasma capsulatum

COLLECTION

Sample Type:
Unfixed tissue, BAL, Sputum, Body fluid, Urine, Bone marrow

Collect:
Body fluid, Tissue, BAL: Sterile container
Sputum: Clean container (urine cup)
Bone marrow: SPS tube (available from Hematology laboratory)

Amount to Collect:
See Preferred Volume

Preferred Volume:
BAL: 10-20 mL
Tissue: 5 mm3
Urine: 10-20 mL
Body fluid: 5-10 mL
Sputum: > 1 mL
Bone marrow: 1 mL

Minimum Volume:
Tissue: 1-2 cu mm
BAL, Urine, Body fluid: 2 mL
Sputum: 1 mL
Bone marrow: 0.5 mL

Remarks:
Swab specimens are not acceptable as they have very low fungal yields.

Stability (from collection to initiation):
Refrigerated 24 hours

Unacceptable Conditions:
Samples on swabs, stool samples

PROCESSING

Test Code:
P256

Test Group:
Fungal Culture

Performing Lab:
Microbiology

Preferred Volume:
BAL: 10-20 mL
Tissue: 5 mm3
Urine: 10-20 mL
Body fluid: 5-10 mL
Sputum: > 1 mL
Bone marrow: 1 mL

Minimum Volume:
Tissue: 1-2 cu mm
BAL, Urine, Body fluid: 2 mL
Sputum: 1 mL
Bone marrow: 0.5 mL

Unacceptable Conditions:
Samples on swabs, stool samples

Stability (from collection to initiation):
Refrigerated 24 hours

RESULT INTERPRETATION

Reference Interval:
No fungus isolated

Critical Values:
KOH if C. immitis spherules present or non-septate hyphae suggestive of Zygomecetes; Biphasic fungus (e.g. Coccidiodes immitis) isolated. Zygomycete (e.g. mucormycosis) isolated. Positive cultures from CSF. Positive culture from a sample submitted for sterility testing

Additional Information:
Includes KOH-Calcofluor White Stain, except on urine and bone marrow.

For diagnosis of yeast and Cryptococcal meningitis, recommended tests are: CSF bacterial culture (yeast, including Cryptococcus neoformans grow well on routine bacterial culture) CSF and serum Cryptococcal Antigen (CrAg).

The yield of CSF cultures for other dimorphic fungi and invasive molds, including Aspergillus, Blastomyces, Histoplasma and the Zygomycetes (Mucor and Rhizopus) is extremely low. Tissue biopsy, if possible, is the recommended specimen for fungal diagnosis by culture.

ADMINISTRATIVE

CPT Codes:
Fungal culture 87102
KOH (If performed) 87206

LOINC Codes:
580-1

COMPLETE VIEW

Approval Required:
Approval required for joint fluid.

Available Stat:
No

Test Code:
P256

Test Group:
Fungal Culture

Performing Lab:
Microbiology

Performed:
Set up daily, all shifts

Methodology:
Culture

Remarks:
Swab specimens are not acceptable as they have very low fungal yields.

Collect:
Body fluid, Tissue, BAL: Sterile container
Sputum: Clean container (urine cup)
Bone marrow: SPS tube (available from Hematology laboratory)

Amount to Collect:
See Preferred Volume

Sample Type:
Unfixed tissue, BAL, Sputum, Body fluid, Urine, Bone marrow

Preferred Volume:
BAL: 10-20 mL
Tissue: 5 mm3
Urine: 10-20 mL
Body fluid: 5-10 mL
Sputum: > 1 mL
Bone marrow: 1 mL

Minimum Volume:
Tissue: 1-2 cu mm
BAL, Urine, Body fluid: 2 mL
Sputum: 1 mL
Bone marrow: 0.5 mL

Unacceptable Conditions:
Samples on swabs, stool samples

Reference Interval:
No fungus isolated

Critical Values:
KOH if C. immitis spherules present or non-septate hyphae suggestive of Zygomecetes; Biphasic fungus (e.g. Coccidiodes immitis) isolated. Zygomycete (e.g. mucormycosis) isolated. Positive cultures from CSF. Positive culture from a sample submitted for sterility testing

Synonyms:

- H. capsulatum
- Histoplasma capsulatum

Stability (from collection to initiation):
Refrigerated 24 hours

Reported:
Up to 30 days

Additional Information:
Includes KOH-Calcofluor White Stain, except on urine and bone marrow.

For diagnosis of yeast and Cryptococcal meningitis, recommended tests are: CSF bacterial culture (yeast, including Cryptococcus neoformans grow well on routine bacterial culture) CSF and serum Cryptococcal Antigen (CrAg).

The yield of CSF cultures for other dimorphic fungi and invasive molds, including Aspergillus, Blastomyces, Histoplasma and the Zygomycetes (Mucor and Rhizopus) is extremely low. Tissue biopsy, if possible, is the recommended specimen for fungal diagnosis by culture.

CPT Codes:
Fungal culture 87102
KOH (If performed) 87206

LOINC Codes:
580-1

Fungal Culture, yeast

P259Y

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Set up daily

Additional Information:
This test is indicated when Candida species are the only fungi of concern. Separate fungal culture of blood or urine for yeast is unnecessary, as Candida will be detected by the routine bacterial culture if ordered. For vaginal yeast infections order Vaginal smear for Bacterial vaginosis/Yeast.

Synonyms:

- Fungal culture
- Candida
- Thrush

COLLECTION

Sample Type:
Vaginal fluid, Wound, Oral

Collect:
E-swab (liquid Amies elution medium) or Amies transport medium with charcoal. Amies Gel and Amies/Stuart Liquid Swab Transport Systems have also been validated for culture.

Stability (from collection to initiation):
Refrigerated 24 hours

PROCESSING

Test Code:
P259Y

Test Group:
Fungal Culture

Performing Lab:
Microbiology

Stability (from collection to initiation):
Refrigerated 24 hours

RESULT INTERPRETATION

Additional Information:
This test is indicated when Candida species are the only fungi of concern. Separate fungal culture of blood or urine for yeast is unnecessary, as Candida will be detected by the routine bacterial culture if ordered. For vaginal yeast infections order Vaginal smear for Bacterial vaginosis/Yeast.

ADMINISTRATIVE

CPT Codes:
87102

LOINC Codes:
18482-0

COMPLETE VIEW

Available Stat:
No

Test Code:
P259Y

Test Group:
Fungal Culture

Performing Lab:
Microbiology

Performed:
Set up daily

Collect:
E-swab (liquid Amies elution medium) or Amies transport medium with charcoal. Amies Gel and Amies/Stuart Liquid Swab Transport Systems have also been validated for culture.

Sample Type:
Vaginal fluid, Wound, Oral

Synonyms:

- Fungal culture
- Candida
- Thrush

Stability (from collection to initiation):
Refrigerated 24 hours

Additional Information:
This test is indicated when Candida species are the only fungi of concern. Separate fungal culture of blood or urine for yeast is unnecessary, as Candida will be detected by the routine bacterial culture if ordered. For vaginal yeast infections order Vaginal smear for Bacterial vaginosis/Yeast.

CPT Codes:
87102

LOINC Codes:
18482-0

GAD-65 Autoantibodies

GAD

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Radio Binding

Reported:
Test performed Wednesday and Friday. Turnaround 3-6 days

Synonyms:

- Glutamic acid decarboxylase
- GAD 65 AB
- anti-GAD65 antibody
- GADA

COLLECTION

Sample Type:
Serum

Collect:
Red top or Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

PROCESSING

Test Code:
GAD

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze sample. Quest test # 139261P

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

RESULT INTERPRETATION

Units:
U/mL

Reference Interval:
<= 1.0 U/mL

ADMINISTRATIVE

CPT Codes:
86341

LOINC Codes:
13926-1

COMPLETE VIEW

Available Stat:
No

Test Code:
GAD

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Radio Binding

Collect:
Red top or Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Specimen Preparation:
Freeze sample. Quest test # 139261P

Units:
U/mL

Reference Interval:
<= 1.0 U/mL

Synonyms:

- Glutamic acid decarboxylase
- GAD 65 AB
- anti-GAD65 antibody
- GADA

Reported:
Test performed Wednesday and Friday. Turnaround 3-6 days

CPT Codes:
86341

LOINC Codes:
13926-1

Galactomannan Antigen

GMAN

ORDERING

Available Stat:
No

Performing Lab:
Viracor

Methodology:
EIA

Reported:
Set up 6x per week. Turnaround 3-5 days

Additional Information:
This assay detects a cell wall antigen of Aspergillus species and other fungi. it may be helpful in identifying patients with disseminated Aspergillosis. Sensitivity 67-100%, Specificity 81-99%. However, given low incidence of disseminated aspergillosis, the positive predictive value is low unless the pre-test probability is relatively high. Should be limited to febrile, neutropenic patients with pulmonary infiltrates in whom no other cause for fever can be found.

Synonyms:

- Aspergillus Ag

COLLECTION

Sample Type:
Serum, Bronchalveolar lavage (BAL)
CSF by approval only, call x31268
Sputum samples are not acceptable.

Collect:
Blood: Gold top (Must be separate tube)
BAL: Capped Plastic tube
CSF: CSF tube or sterile collection tube (By approval only)

Amount to Collect:
Blood: 3 mL
BAL: 3 mL
CSF: 2 mL

Preferred Volume:
Serum: 1 mL
BAL: 3 mL
CSF: 2 mL

Minimum Volume:
Serum: 0.5 mL
BAL: 1 mL
CSF: 2 mL

Remarks:
To avoid environmental contamination cap tube immediately after collection and do not re-open. Bring samples to lab for processing asap

Unacceptable Conditions:
Sputum received

PROCESSING

Test Code:
GMAN

Sendout:
Yes

Performing Lab:
Viracor

Specimen Preparation:
Serum: Do not open primary tube. Centrifuge sample within 2 hours of collection to pellet cells under gel and freeze entire tube at -20C until shipped. Sample is shipped frozen

BAL: Do not open collection container except in Biosafety cabinet. Freeze sample at -20C upon receipt. Sample is shipped frozen

Order Viracor test #1600

Preferred Volume:
Serum: 1 mL
BAL: 3 mL
CSF: 2 mL

Minimum Volume:
Serum: 0.5 mL
BAL: 1 mL
CSF: 2 mL

Unacceptable Conditions:
Sputum received

RESULT INTERPRETATION

Units:
Index

Reference Interval:
Negative: < 0.5 Index
Positive: >= 0.5 Index

Additional Information:
This assay detects a cell wall antigen of Aspergillus species and other fungi. it may be helpful in identifying patients with disseminated Aspergillosis. Sensitivity 67-100%, Specificity 81-99%. However, given low incidence of disseminated aspergillosis, the positive predictive value is low unless the pre-test probability is relatively high. Should be limited to febrile, neutropenic patients with pulmonary infiltrates in whom no other cause for fever can be found.

ADMINISTRATIVE

CPT Codes:
87305-90

LOINC Codes:
35383-9

COMPLETE VIEW

Available Stat:
No

Test Code:
GMAN

Performing Lab:
Viracor

Sendout:
Yes

Methodology:
EIA

Remarks:
To avoid environmental contamination cap tube immediately after collection and do not re-open. Bring samples to lab for processing asap

Collect:
Blood: Gold top (Must be separate tube)
BAL: Capped Plastic tube
CSF: CSF tube or sterile collection tube (By approval only)

Amount to Collect:
Blood: 3 mL
BAL: 3 mL
CSF: 2 mL

Sample Type:
Serum, Bronchalveolar lavage (BAL)
CSF by approval only, call x31268
Sputum samples are not acceptable.

Preferred Volume:
Serum: 1 mL
BAL: 3 mL
CSF: 2 mL

Minimum Volume:
Serum: 0.5 mL
BAL: 1 mL
CSF: 2 mL

Unacceptable Conditions:
Sputum received

Specimen Preparation:
Serum: Do not open primary tube. Centrifuge sample within 2 hours of collection to pellet cells under gel and freeze entire tube at -20C until shipped. Sample is shipped frozen

BAL: Do not open collection container except in Biosafety cabinet. Freeze sample at -20C upon receipt. Sample is shipped frozen

Order Viracor test #1600

Units:
Index

Reference Interval:
Negative: < 0.5 Index
Positive: >= 0.5 Index

Synonyms:

- Aspergillus Ag

Reported:
Set up 6x per week. Turnaround 3-5 days

Additional Information:
This assay detects a cell wall antigen of Aspergillus species and other fungi. it may be helpful in identifying patients with disseminated Aspergillosis. Sensitivity 67-100%, Specificity 81-99%. However, given low incidence of disseminated aspergillosis, the positive predictive value is low unless the pre-test probability is relatively high. Should be limited to febrile, neutropenic patients with pulmonary infiltrates in whom no other cause for fever can be found.

CPT Codes:
87305-90

LOINC Codes:
35383-9

Galactose

GALAC

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
Spectrophotometric, kinetic

Reported:
8-15 days

Additional Information:
Galactosemia is an autosomal recessive disorder that results from a deficiency of 1 of the 3 enzymes catalyzing the conversion of galactose to glucose: galactose-1-phosphate uridyltransferase (GALT), galactokinase (GALK), and uridine diphosphate galactose-4-epimerase (GALE). GALT deficiency is the most common cause of galactosemia and is often referred to as classic galactosemia. The complete or near-complete deficiency of GALT enzyme is life-threatening if left untreated. Complications in the neonatal period include failure to thrive, liver failure, sepsis, and death; even with survival, long-term intellectual disability can result.

Galactosemia is treated by a galactose-restricted diet, which allows for rapid recovery from the acute symptoms and a generally good prognosis. Despite adequate treatment from an early age, individuals with galactosemia remain at increased risk for developmental delays, speech problems, and abnormalities of motor function. Females with galactosemia are at increased risk for premature ovarian failure. Based upon reports by newborn screening programs, the frequency of classic galactosemia in the United States is 1 in 30,000, although literature reports range from 1 in 10,000 to 1 in 60,000 live births.

COLLECTION

Sample Type:
Heparinized plasma

Collect:
Dark Green top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL plasma

Minimum Volume:
0.2 mL plasma

Stability (from collection to initiation):
Room temperature 20 days, refrigerated 20 days, frozen 1 year

PROCESSING

Test Code:
GALAC

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Aliquot plasma and freeze. Transport to CB frozen. Order Mayo test code GALP.

Preferred Volume:
0.5 mL plasma

Minimum Volume:
0.2 mL plasma

Stability (from collection to initiation):
Room temperature 20 days, refrigerated 20 days, frozen 1 year

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:
1-7 days: < 5.4 mg/dL
8-14 days: < 3.6 mg/dL
>14 days: < 2.0 mg/dL

Additional Information:
Galactosemia is an autosomal recessive disorder that results from a deficiency of 1 of the 3 enzymes catalyzing the conversion of galactose to glucose: galactose-1-phosphate uridyltransferase (GALT), galactokinase (GALK), and uridine diphosphate galactose-4-epimerase (GALE). GALT deficiency is the most common cause of galactosemia and is often referred to as classic galactosemia. The complete or near-complete deficiency of GALT enzyme is life-threatening if left untreated. Complications in the neonatal period include failure to thrive, liver failure, sepsis, and death; even with survival, long-term intellectual disability can result.

Galactosemia is treated by a galactose-restricted diet, which allows for rapid recovery from the acute symptoms and a generally good prognosis. Despite adequate treatment from an early age, individuals with galactosemia remain at increased risk for developmental delays, speech problems, and abnormalities of motor function. Females with galactosemia are at increased risk for premature ovarian failure. Based upon reports by newborn screening programs, the frequency of classic galactosemia in the United States is 1 in 30,000, although literature reports range from 1 in 10,000 to 1 in 60,000 live births.

ADMINISTRATIVE

CPT Codes:
82760-90

LOINC Codes:
25426-8

COMPLETE VIEW

Available Stat:
No

Test Code:
GALAC

Performing Lab:
Mayo

Sendout:
Yes

Methodology:
Spectrophotometric, kinetic

Collect:
Dark Green top

Amount to Collect:
1 mL blood

Sample Type:
Heparinized plasma

Preferred Volume:
0.5 mL plasma

Minimum Volume:
0.2 mL plasma

Specimen Preparation:
Aliquot plasma and freeze. Transport to CB frozen. Order Mayo test code GALP.

Units:
mg/dL

Reference Interval:
1-7 days: < 5.4 mg/dL
8-14 days: < 3.6 mg/dL
>14 days: < 2.0 mg/dL

Stability (from collection to initiation):
Room temperature 20 days, refrigerated 20 days, frozen 1 year

Reported:
8-15 days

Additional Information:

Galactosemia is an autosomal recessive disorder that results from a deficiency of 1 of the 3 enzymes catalyzing the conversion of galactose to glucose: galactose-1-phosphate uridyltransferase (GALT), galactokinase (GALK), and uridine diphosphate galactose-4-epimerase (GALE). GALT deficiency is the most common cause of galactosemia and is often referred to as classic galactosemia. The complete or near-complete deficiency of GALT enzyme is life-threatening if left untreated. Complications in the neonatal period include failure to thrive, liver failure, sepsis, and death; even with survival, long-term intellectual disability can result.

Galactosemia is treated by a galactose-restricted diet, which allows for rapid recovery from the acute symptoms and a generally good prognosis. Despite adequate treatment from an early age, individuals with galactosemia remain at increased risk for developmental delays, speech problems, and abnormalities of motor function. Females with galactosemia are at increased risk for premature ovarian failure. Based upon reports by newborn screening programs, the frequency of classic galactosemia in the United States is 1 in 30,000, although literature reports range from 1 in 10,000 to 1 in 60,000 live births.

CPT Codes:

82760-90

LOINC Codes:

25426-8

Galactose-1-Phosphate Uridyl Transferase, RBC

G1PUT

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
Ultraviolet, kinetic

Reported:
4-8 days

Additional Information:
Galactosemia is an autosomal recessive disorder that results from a deficiency of 1 of the 3 enzymes catalyzing the conversion of galactose to glucose: galactose-1-phosphate uridyltransferase (GALT), galactokinase (GALK), and uridine diphosphate galactose-4-epimerase (GALE). GALT deficiency is the most common cause of galactosemia and is often referred to as classic galactosemia. The complete or near-complete deficiency of GALT enzyme is life-threatening if left untreated. Complications in the neonatal period include failure to thrive, liver failure, sepsis, and death; even with survival, long-term intellectual disability can result. Galactosemia is treated by a galactose-restricted diet, which allows for rapid recovery from the acute symptoms and a generally good prognosis. Despite adequate treatment from an early age, individuals with galactosemia remain at increased risk for developmental delays, speech problems, and abnormalities of motor function. Females with galactosemia are at increased risk for premature ovarian failure. Based upon reports by newborn screening programs, the frequency of classic galactosemia in the United States is approximately 1 in 30,000, although literature reports range from 1 in 10,000 to 1 in 60,000 live births.

Galactose-1-phosphate (Gal-1-P) accumulates in the erythrocytes of patients with galactosemia. The quantitative measurement of Gal-1-P is useful for monitoring compliance with dietary therapy. Gal-1-P is thought to be the causative factor for development of liver disease in these patients and, because of this, patients should maintain low levels and be monitored on a regular basis.

Duarte-variant galactosemia (compound heterozygosity for the Duarte mutation, N314D, and a classic mutation) is generally associated with higher levels of enzyme activity (5%-20%) than classic galactosemia (<5%); however, this may be indistinguishable by newborn screening assays. Typically, individuals with Duarte-variant galactosemia have a milder phenotype, but are also often treated with a low galactose diet during infancy. The LA variant, which consists of N314D and a second mutation, L218L, is associated with higher levels of GALT enzyme activity than the Duarte-variant allele.

Newborn screening, which identifies potentially affected individuals by measuring total galactose (galactose and Gal-1-P) and/or determining the activity of the GALT enzyme, varies from state to state. The diagnosis of galactosemia is established by follow-up quantitative measurement of GALT enzyme activity. If enzyme levels are indicative of carrier or affected status, molecular testing for common GALT mutations may be performed. If 1 or both disease-causing mutations are not detected by targeted mutation analysis and biochemical testing has confirmed the diagnosis of galactosemia, sequencing of the GALT gene is available to identify private mutations.

The GALT gene maps to 9p13. Several disease-causing mutations are common in patients with classic galactosemia (G/G genotype). The most frequently observed is the Q188R classic mutation. This mutation accounts for 60% to 70% of classical galactosemia alleles. The S135L mutation is the most frequently observed mutation in African Americans and accounts for approximately 50% of the mutant alleles in this population. The K285N mutation is common in those of eastern European descent and accounts for 25% to 40% of the alleles in this population. The L195P mutation is observed in 5% to 7% of classical galactosemia. The Duarte mutation (N314D) is observed in 5% of the general US population.

Synonyms:

- Phosphogalactose transferase
- Gal-1-P uridyl transferase

COLLECTION

Patient Preparation:
The patient should not be transfused prior to obtaining samples. If transfused sampling should be delayed for at least 1 month to make sure the transfused cells have predominantly cleared and we are only testing the patient's own cells.

Sample Type:
EDTA whole blood

Collect:
Lavender top

Amount to Collect:
5 mL blood

Preferred Volume:
5 mL blood

Minimum Volume:
2 mL blood

Remarks:
Maintain sample at room temperature.

Stability (from collection to initiation):
Room temperature 2 weeks, refrigerated 4 weeks

PROCESSING

Test Code:
G1PUT

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Transport sample refrigerated to CB. Order Mayo test code GALT.

Preferred Volume:
5 mL blood

Minimum Volume:
2 mL blood

Stability (from collection to initiation):
Room temperature 2 weeks, refrigerated 4 weeks

RESULT INTERPRETATION

Units:
U/g Hgb

Reference Interval:
> 18.4 U/g Hgb

Additional Information:
Galactosemia is an autosomal recessive disorder that results from a deficiency of 1 of the 3 enzymes catalyzing the conversion of galactose to glucose: galactose-1-phosphate uridyltransferase (GALT), galactokinase (GALK), and uridine diphosphate galactose-4-epimerase (GALE). GALT deficiency is the most common cause of galactosemia and is often referred to as classic galactosemia. The complete or near-complete deficiency of GALT enzyme is life-threatening if left untreated. Complications in the neonatal period include failure to thrive, liver failure, sepsis, and death; even with survival, long-term intellectual disability can result. Galactosemia is treated by a galactose-restricted diet, which allows for rapid recovery from the acute symptoms and a generally good prognosis. Despite adequate treatment from an early age, individuals with galactosemia remain at increased risk for developmental delays, speech problems, and abnormalities of motor function. Females with galactosemia are at increased risk for premature ovarian failure. Based upon reports by newborn screening programs, the frequency of classic galactosemia in the United States is approximately 1 in 30,000, although literature reports range from 1 in 10,000 to 1 in 60,000 live births.

Galactose-1-phosphate (Gal-1-P) accumulates in the erythrocytes of patients with galactosemia. The quantitative measurement of Gal-1-P is useful for monitoring compliance with dietary therapy. Gal-1-P is thought to be the causative factor for development of liver disease in these patients and, because of this, patients should maintain low levels and be monitored on a regular basis.

Duarte-variant galactosemia (compound heterozygosity for the Duarte mutation, N314D, and a classic mutation) is generally associated with higher levels of enzyme activity (5%-20%) than classic galactosemia (<5%); however, this may be indistinguishable by newborn screening assays. Typically, individuals with Duarte-variant galactosemia have a milder phenotype, but are also often treated with a low galactose diet during infancy. The LA variant, which consists of N314D and a second mutation, L218L, is associated with higher levels of GALT enzyme activity than the Duarte-variant allele.

Newborn screening, which identifies potentially affected individuals by measuring total galactose (galactose and Gal-1-P) and/or determining the activity of the GALT enzyme, varies from state to state. The diagnosis of galactosemia is established by follow-up quantitative measurement of GALT enzyme activity. If enzyme levels are indicative of carrier or affected status, molecular testing for common GALT mutations may be performed. If 1 or both disease-causing mutations are not detected by targeted mutation analysis and biochemical testing has confirmed the diagnosis of galactosemia, sequencing of the GALT gene is available to identify private mutations.

The GALT gene maps to 9p13. Several disease-causing mutations are common in patients with classic galactosemia (G/G genotype). The most frequently observed is the Q188R classic mutation. This mutation accounts for 60% to 70% of classical galactosemia alleles. The S135L mutation is the most frequently observed mutation in African Americans and accounts for approximately 50% of the mutant alleles in this population. The K285N mutation is common in those of eastern European descent and accounts for 25% to 40% of the alleles in this population. The L195P mutation is observed in 5% to 7% of classical galactosemia. The Duarte mutation (N314D) is observed in 5% of the general US population.

ADMINISTRATIVE

CPT Codes:
82275-90

LOINC Codes:
2314-3

COMPLETE VIEW

Available Stat:
No

Test Code:
G1PUT

Performing Lab:
Mayo

Sendout:
Yes

Methodology:
Ultraviolet, kinetic

Patient Preparation:
The patient should not be transfused prior to obtaining samples. If transfused sampling should be delayed for at least 1 month to make sure the transfused cells have predominantly cleared and we are only testing the patient's own cells.

Remarks:
Maintain sample at room temperature.

Collect:
Lavender top

Amount to Collect:
5 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
5 mL blood

Minimum Volume:
2 mL blood

Specimen Preparation:
Transport sample refrigerated to CB. Order Mayo test code GALT.

Units:
U/g Hgb

Reference Interval:
> 18.4 U/g Hgb

Synonyms:

- Phosphogalactose transferase
- Gal-1-P uridyl transferase

Stability (from collection to initiation):
Room temperature 2 weeks, refrigerated 4 weeks

Reported:
4-8 days

Additional Information:

Galactosemia is an autosomal recessive disorder that results from a deficiency of 1 of the 3 enzymes catalyzing the conversion of galactose to glucose: galactose-1-phosphate uridyltransferase (GALT), galactokinase (GALK), and uridine diphosphate galactose-4-epimerase (GALE). GALT deficiency is the most common cause of galactosemia and is often referred to as classic galactosemia. The complete or near-complete deficiency of GALT enzyme is life-threatening if left untreated. Complications in the neonatal period include failure to thrive, liver failure, sepsis, and death; even with survival, long-term intellectual disability can result. Galactosemia is treated by a galactose-restricted diet, which allows for rapid recovery from the acute symptoms and a generally good prognosis. Despite adequate treatment from an early age, individuals with galactosemia remain at increased risk for developmental delays, speech problems, and abnormalities of motor function. Females with galactosemia are at increased risk for premature ovarian failure. Based upon reports by newborn screening programs, the frequency of classic galactosemia in the United States is approximately 1 in 30,000, although literature reports range from 1 in 10,000 to 1 in 60,000 live births.

Galactose-1-phosphate (Gal-1-P) accumulates in the erythrocytes of patients with galactosemia. The quantitative measurement of Gal-1-P is useful for monitoring compliance with dietary therapy. Gal-1-P is thought to be the causative factor for development of liver disease in these patients and, because of this, patients should maintain low levels and be monitored on a regular basis.

Duarte-variant galactosemia (compound heterozygosity for the Duarte mutation, N314D, and a classic mutation) is generally associated with higher levels of enzyme activity (5%-20%) than classic galactosemia (<5%); however, this may be indistinguishable by newborn screening assays. Typically, individuals with Duarte-variant galactosemia have a milder phenotype, but are also often treated with a low galactose diet during infancy. The LA variant, which consists of N314D and a second mutation, L218L, is associated with higher levels of GALT enzyme activity than the Duarte-variant allele.

Newborn screening, which identifies potentially affected individuals by measuring total galactose (galactose and Gal-1-P) and/or determining the activity of the GALT enzyme, varies from state to state. The diagnosis of galactosemia is established by follow-up quantitative measurement of GALT enzyme activity. If enzyme levels are indicative of carrier or affected status, molecular testing for common GALT mutations may be performed. If 1 or both disease-causing mutations are not detected by targeted mutation analysis and biochemical testing has confirmed the diagnosis of galactosemia, sequencing of the GALT gene is available to identify private mutations.

The GALT gene maps to 9p13. Several disease-causing mutations are common in patients with classic galactosemia (G/G genotype). The most frequently observed is the Q188R classic mutation. This mutation accounts for 60% to 70% of classical galactosemia alleles. The S135L mutation is the most frequently observed mutation in African Americans and accounts for approximately 50% of the mutant alleles in this population. The K285N mutation is common in those of eastern European descent and accounts for 25% to 40% of the alleles in this population. The L195P mutation is observed in 5% to 7% of classical galactosemia. The Duarte mutation (N314D) is observed in 5% of the general US population.

CPT Codes:

82275-90

LOINC Codes:

2314-3

Galactose-1-Phosphate, RBC

GLT1P

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
Ultraviolet, enzymatic

Reported:
8-15 days

Additional Information:
Galactosemia is an autosomal recessive disorder that results from a deficiency of 1 of the 3 enzymes catalyzing the conversion of galactose to glucose: galactose-1-phosphate uridyltransferase (GALT), galactokinase (GALK), and uridine diphosphate galactose-4-epimerase (GALE). GALT deficiency is the most common cause of galactosemia and is often referred to as classic galactosemia. The complete or near-complete deficiency of GALT enzyme is life-threatening if left untreated. Complications in the neonatal period include failure to thrive, liver failure, sepsis, and death; even with survival, long-term intellectual disability can result. Galactosemia is treated by a galactose-restricted diet, which allows for rapid recovery from the acute symptoms and a generally good prognosis. Despite adequate treatment from an early age, individuals with galactosemia remain at increased risk for developmental delays, speech problems, and abnormalities of motor function. Females with galactosemia are at increased risk for premature ovarian failure. Based upon reports by newborn screening programs, the frequency of classic galactosemia in the United States is approximately 1 in 30,000, although literature reports range from 1 in 10,000 to 1 in 60,000 live births.

Galactose-1-phosphate (Gal-1-P) accumulates in the erythrocytes of patients with galactosemia. The quantitative measurement of Gal-1-P is useful for monitoring compliance with and effectiveness of dietary therapy. Gal-1-P is thought to be the causative factor for development of liver disease in these patients and, because of this, patients should maintain low levels and be monitored on a regular basis. The concentration of Gal-1-P in erythrocytes is the most sensitive index of dietary control.

Synonyms:

- Gal-1-P

COLLECTION

Patient Preparation:
The patient should not be transfused prior to obtaining samples. If transfused sampling should be delayed for at least 1 month to make sure the transfused cells have predominantly cleared and we are only testing the patient's own cells.

Specimens collected following a meal can exhibit postprandial elevations. For infants, collect a specimen immediately prior to feeding to avoid this.

Sample Type:
Heparinized whole blood

Collect:
Lavender top preferred, dark Green top acceptable

Amount to Collect:
3 mL blood

Preferred Volume:
3 mL blood

Minimum Volume:
3 mL blood

Remarks:
Samples should only be collected Monday-Friday on the day shift, before noon. If received after 12:00 noon we can not guarantee the sample will be processed.

Do not collect these samples on weekends, holidays, or evenings.

Stability (from collection to initiation):
Refrigerated: 72 hours

PROCESSING

Test Code:
GLT1P

Sendout:
Yes

Performing Lab:
Mayo

Preferred Volume:
3 mL blood

Minimum Volume:
3 mL blood

Stability (from collection to initiation):
Refrigerated: 72 hours

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:
Reference interval: <= 0.9 mg/dL
Therapeutic range: <= 4.9 mg/dL

Additional Information:
Galactosemia is an autosomal recessive disorder that results from a deficiency of 1 of the 3 enzymes catalyzing the conversion of galactose to glucose: galactose-1-phosphate uridyltransferase (GALT), galactokinase (GALK), and uridine diphosphate galactose-4-epimerase (GALE). GALT deficiency is the most common cause of galactosemia and is often referred to as classic galactosemia. The complete or near-complete deficiency of GALT enzyme is life-threatening if left untreated. Complications in the neonatal period include failure to thrive, liver failure, sepsis, and death; even with survival, long-term intellectual disability can result. Galactosemia is treated by a galactose-restricted diet, which allows for rapid recovery from the acute symptoms and a generally good prognosis. Despite adequate treatment from an early age, individuals with galactosemia remain at increased risk for developmental delays, speech problems, and abnormalities of motor function. Females with galactosemia are at increased risk for premature ovarian failure. Based upon reports by newborn screening programs, the frequency of classic galactosemia in the United States is approximately 1 in 30,000, although literature reports range from 1 in 10,000 to 1 in 60,000 live births.

Galactose-1-phosphate (Gal-1-P) accumulates in the erythrocytes of patients with galactosemia. The quantitative measurement of Gal-1-P is useful for monitoring compliance with and effectiveness of dietary therapy. Gal-1-P is thought to be the causative factor for development of liver disease in these patients and, because of this, patients should maintain low levels and be monitored on a regular basis. The concentration of Gal-1-P in erythrocytes is the most sensitive index of dietary control.

ADMINISTRATIVE

CPT Codes:
84378-90

LOINC Codes:
2312-7

COMPLETE VIEW

Available Stat:
No

Test Code:
GLT1P

Performing Lab:
Mayo

Sendout:
Yes

Methodology:
Ultraviolet, enzymatic

Patient Preparation:
The patient should not be transfused prior to obtaining samples. If transfused sampling should be delayed for at least 1 month to make sure the transfused cells have predominantly cleared and we are only testing the patient's own cells.

Specimens collected following a meal can exhibit postprandial elevations. For infants, collect a specimen immediately prior to feeding to avoid this.

Remarks:
Samples should only be collected Monday-Friday on the day shift, before noon. If received after 12:00 noon we can not guarantee the sample will be processed.

Do not collect these samples on weekends, holidays, or evenings.

Collect:
Lavender top preferred, dark Green top acceptable

Amount to Collect:
3 mL blood

Sample Type:
Heparinized whole blood

Preferred Volume:
3 mL blood

Minimum Volume:
3 mL blood

Units:
mg/dL

Reference Interval:
Reference interval: <= 0.9 mg/dL
Therapeutic range: <= 4.9 mg/dL

Synonyms:

- Gal-1-P

Stability (from collection to initiation):
Refrigerated: 72 hours

Reported:
8-15 days

Additional Information:
Galactosemia is an autosomal recessive disorder that results from a deficiency of 1 of the 3 enzymes catalyzing the conversion of galactose to glucose: galactose-1-phosphate uridyltransferase (GALT), galactokinase (GALK), and uridine diphosphate galactose-4-epimerase (GALE). GALT deficiency is the most common cause of galactosemia and is often referred to as classic galactosemia. The complete or near-complete deficiency of GALT enzyme is life-threatening if left untreated. Complications in the neonatal period include failure to thrive, liver failure, sepsis, and death; even with survival, long-term intellectual disability can result. Galactosemia is treated by a galactose-restricted diet, which allows for rapid recovery from the acute symptoms and a generally good prognosis. Despite adequate treatment from an early age, individuals with galactosemia remain at increased risk for developmental delays, speech problems, and abnormalities of motor function. Females with galactosemia are at increased risk for premature ovarian failure. Based upon reports by newborn screening programs, the frequency of classic galactosemia in the United States is approximately 1 in 30,000, although literature reports range from 1 in 10,000 to 1 in 60,000 live births.

Galactose-1-phosphate (Gal-1-P) accumulates in the erythrocytes of patients with galactosemia. The quantitative measurement of Gal-1-P is useful for monitoring compliance with and effectiveness of dietary therapy. Gal-1-P is thought to be the causative factor for development of liver disease in these patients and, because of this, patients should maintain low levels and be monitored on a regular basis. The concentration of Gal-1-P in erythrocytes is the most sensitive index of dietary control.

CPT Codes:
84378-90

LOINC Codes:
2312-7

Gamma-Glutamyl Transpeptidase, Plasma / Serum

GGT

ORDERING

Available Stat:
No

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Enzymatic (*L*-Gamma-glutamyl-3-carboxy-4-nitroanilide Substrate)

Reported:
4 hours

Additional Information:
Hemolysis may artifactually lower the result.

Synonyms:

- GGT

COLLECTION

Sample Type:
Plasma or serum

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 2 days, frozen at -20C 1 week

PROCESSING

Test Code:
GGT

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 2 days, frozen at -20C 1 week

RESULT INTERPRETATION

Units:
U/L

Reference Interval:

Age	Male (U/L)	Female (U/L)
0 to 14 days	23-219	23-219
15 days to <1 year	8-127	8-127
1 to 10 years	6-16	6-16
11 to 18 years	7-21	7-21
>18 years	11-84	8-59

Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, https://caliper.research.sickkids.ca/#/search.

The adult reference ranges were established by running 45 normal male and 49 normal female volunteers from UCSF Clinical Labs.

Additional Information:
Hemolysis may artifactually lower the result.

ADMINISTRATIVE

CPT Codes:
82977

LOINC Codes:
2324-2

COMPLETE VIEW

Available Stat:
No

Test Code:
GGT

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Enzymatic (*L*-Gamma-glutamyl-3-carboxy-4-nitroanilide Substrate)

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
1 mL blood

Sample Type:
Plasma or serum

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Units:
U/L

Reference Interval:

Age	Male (U/L)	Female (U/L)
0 to 14 days	23-219	23-219
15 days to <1 year	8-127	8-127
1 to 10 years	6-16	6-16
11 to 18 years	7-21	7-21
>18 years	11-84	8-59

Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, https://caliper.research.sickkids.ca/#/search.

The adult reference ranges were established by running 45 normal male and 49 normal female volunteers from UCSF Clinical Labs.

Synonyms:

- GGT

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 2 days, frozen at -20C 1 week

Reported:
4 hours

Additional Information:
Hemolysis may artifactually lower the result.

CPT Codes:
82977

LOINC Codes:
2324-2

Gastric Parietal Cell Antibody

GPCA

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
ELISA

Additional Information:
Pernicious anemia is a chronic disease and is the end stage of type A (autoimmune) chronic atrophic gastritis. The type A chronic atrophic gastritis affects the fundus and body of the stomach, while type B (nonimmune, associated with H. pylori infection) affects the antrum as well as the secretory canaliculi and the tubulovesicles of the gastric parietal cells. This antigen has been identrified as the gastric H+/K+ ATPase (gastric proton pump). GPA bind to both the alpha and beta subunits of the H+/K+ ATPase.

GPA prevalence increases with age and has been reported in 2.5% of a normal population 30-39 years old and in 9.6% of a population in their 8th decade.

Synonyms:

- anti-parietal cell antibody
- parietal cell antibodies

COLLECTION

Sample Type:
Serum

Collect:
Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

PROCESSING

Test Code:
GPCA

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze sample. Order Quest #15114X

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

RESULT INTERPRETATION

Units:
Units

Reference Interval:
Negative: <= 20.0 Units
Equivocal: 20.1-24.9 Units
Positive: >= 25.0 Units

Additional Information:

Pernicious anemia is a chronic disease and is the end stage of type A (autoimmune) chronic atrophic gastritis. The type A chronic atrophic gastritis affects the fundus and body of the stomach, while type B (nonimmune, associated with H. pylori infection) affects the antrum as well as the secretory canaliculi and the tubulovesicles of the gastric parietal cells. This antigen has been identrified as the gastric H+/K+ ATPase (gastric proton pump). GPA bind to both the alpha and beta subunits of the H+/K+ ATPase.

GPA prevalence increases with age and has been reported in 2.5% of a normal population 30-39 years old and in 9.6% of a population in their 8th decade.

ADMINISTRATIVE

CPT Codes:
83516-90

LOINC Codes:
56147-2

COMPLETE VIEW

Available Stat:
No

Test Code:
GPCA

Performing Lab:
Quest

Sendout:
Yes

Methodology:
ELISA

Collect:
Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Specimen Preparation:
Freeze sample. Order Quest #15114X

Units:
Units

Reference Interval:
Negative: <= 20.0 Units
Equivocal: 20.1-24.9 Units
Positive: >= 25.0 Units

Synonyms:

- anti-parietal cell antibody
- parietal cell antibodies

Additional Information:

Pernicious anemia is a chronic disease and is the end stage of type A (autoimmune) chronic atrophic gastritis. The type A chronic atrophic gastritis affects the fundus and body of the stomach, while type B (nonimmune, associated with H. pylori infection) affects the antrum as well as the secretory canaliculi and the tubulovesicles of the gastric parietal cells. This antigen has been identrified as the gastric H+/K+ ATPase (gastric proton pump). GPA bind to both the alpha and beta subunits of the H+/K+ ATPase.

GPA prevalence increases with age and has been reported in 2.5% of a normal population 30-39 years old and in 9.6% of a population in their 8th decade.

CPT Codes:
83516-90

LOINC Codes:
56147-2

Gastrin

GAST

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Chemiluminescence

Reported:
Test performed 3 days a week. Turnaround time: 6-7 days.

Synonyms:

- Secretin stimulation test

COLLECTION

Patient Preparation:
Overnight fasting is required, preferably >= 12 hours.

Sample Type:
Serum

Collect:
Red top, or Gold top (on ice)

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Remarks:
Chill tube on ice prior to collection. Bring to lab on ice immediately after collection.

Stability (from collection to initiation):
Refrigerated 5 hours, frozen at -20C 1 month.

Unacceptable Conditions:
Not delivered on ice. Sample hemolyzed or lipemic.

Rejection Criteria:
Received thawed.

PROCESSING

Test Code:
GAST

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Process immediately. Freeze at -20°C. Order Quest # 478X.

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Not delivered on ice. Sample hemolyzed or lipemic.

Rejection Criteria:
Received thawed.

Stability (from collection to initiation):
Refrigerated 5 hours, frozen at -20C 1 month.

RESULT INTERPRETATION

Units:
pg/mL

Reference Interval:
< 5 years: Not established
5-17 years: 13-64 pg/mL
>= 18 year old: <= 100 pg/mL

Note: reference ranges apply to fasting samples only.

ADMINISTRATIVE

CPT Codes:
82941-90

LOINC Codes:
2333-3

COMPLETE VIEW

Available Stat:
No

Test Code:
GAST

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Chemiluminescence

Patient Preparation:
Overnight fasting is required, preferably >= 12 hours.

Remarks:
Chill tube on ice prior to collection. Bring to lab on ice immediately after collection.

Collect:
Red top, or Gold top (on ice)

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Rejection Criteria:
Received thawed.

Unacceptable Conditions:
Not delivered on ice. Sample hemolyzed or lipemic.

Specimen Preparation:
Process immediately. Freeze at -20°C. Order Quest # 478X.

Units:
pg/mL

Reference Interval:
< 5 years: Not established
5-17 years: 13-64 pg/mL
>= 18 year old: <= 100 pg/mL

Note: reference ranges apply to fasting samples only.

Synonyms:

- Secretin stimulation test

Stability (from collection to initiation):
Refrigerated 5 hours, frozen at -20C 1 month.

Reported:
Test performed 3 days a week. Turnaround time: 6-7 days.

CPT Codes:
82941-90

LOINC Codes:
2333-3

GD1A Antibody, IgG

GD1AG

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Enzyme Immunoassay

Reported:
5-7 days

Additional Information:
Ganglioside GD1a antibody IgG is associated with acute motor axonal neuropathy, sometimes followed by Campylobacter jejuni infections. Ganglioside GD1a antibody IgG can aid in the diagnosis of acute motor axonal neuropathy variant of Guillain-Barre syndrome.

Synonyms:

- Ganglioside GD1a antibody
- Guillian-Barre

COLLECTION

Patient Preparation:
Overnight fasting preferred but not required

Sample Type:
Serum

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Stability (from collection to initiation):
Room temperture 1 day, refrigerated 1 week, frozen 1 month

PROCESSING

Test Code:
GD1AG

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot serum and freeze. Transport to CB frozen. Order Quest test code 38916

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Stability (from collection to initiation):
Room temperture 1 day, refrigerated 1 week, frozen 1 month

RESULT INTERPRETATION

Units:
Titer

Reference Interval:
< 1:100

Additional Information:
Ganglioside GD1a antibody IgG is associated with acute motor axonal neuropathy, sometimes followed by Campylobacter jejuni infections. Ganglioside GD1a antibody IgG can aid in the diagnosis of acute motor axonal neuropathy variant of Guillain-Barre syndrome.

ADMINISTRATIVE

CPT Codes:
83520-90

LOINC Codes:
21283-7

COMPLETE VIEW

Available Stat:
No

Test Code:
GD1AG

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Enzyme Immunoassay

Patient Preparation:
Overnight fasting preferred but not required

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Specimen Preparation:
Aliquot serum and freeze. Transport to CB frozen. Order Quest test code 38916

Units:
Titer

Reference Interval:
< 1:100

Synonyms:

- Ganglioside GD1a antibody
- Guillian-Barre

Stability (from collection to initiation):
Room temperture 1 day, refrigerated 1 week, frozen 1 month

Reported:
5-7 days

Additional Information:
Ganglioside GD1a antibody IgG is associated with acute motor axonal neuropathy, sometimes followed by Campylobacter jejuni infections. Ganglioside GD1a antibody IgG can aid in the diagnosis of acute motor axonal neuropathy variant of Guillain-Barre syndrome.

CPT Codes:
83520-90

LOINC Codes:
21283-7

GD1A Antibody, IgM

GD1AM

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Enzyme Immunoassay

Reported:
5-7 days

Additional Information:
Ganglioside GD1a antibody IgM is associated with acute motor axonal neuropathy, sometimes followed by Campylobacter jejuni infections. Ganglioside GD1a antibody IgG can aid in the diagnosis of acute motor axonal neuropathy variant of Guillain-Barre syndrome.

Synonyms:

- Ganglioside GD1a antibody

COLLECTION

Patient Preparation:
Overnight fasting preferred but not required

Sample Type:
Serum

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Stability (from collection to initiation):
Room temperture 1 day, refrigerated 1 week, frozen 1 month

PROCESSING

Test Code:
GD1AM

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot serum and freeze. Transport to CB frozen. Order Quest test code 389644

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Stability (from collection to initiation):
Room temperture 1 day, refrigerated 1 week, frozen 1 month

RESULT INTERPRETATION

Units:
Titer

Reference Interval:
< 1:800

Additional Information:
Ganglioside GD1a antibody IgM is associated with acute motor axonal neuropathy, sometimes followed by Campylobacter jejuni infections. Ganglioside GD1a antibody IgG can aid in the diagnosis of acute motor axonal neuropathy variant of Guillain-Barre syndrome.

ADMINISTRATIVE

CPT Codes:
83520-90

LOINC Codes:
21282-9

COMPLETE VIEW

Available Stat:
No

Test Code:
GD1AM

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Enzyme Immunoassay

Patient Preparation:
Overnight fasting preferred but not required

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Specimen Preparation:
Aliquot serum and freeze. Transport to CB frozen. Order Quest test code 389644

Units:
Titer

Reference Interval:
< 1:800

Synonyms:

- Ganglioside GD1a antibody

Stability (from collection to initiation):
Room temperture 1 day, refrigerated 1 week, frozen 1 month

Reported:
5-7 days

Additional Information:
Ganglioside GD1a antibody IgM is associated with acute motor axonal neuropathy, sometimes followed by Campylobacter jejuni infections. Ganglioside GD1a antibody IgG can aid in the diagnosis of acute motor axonal neuropathy variant of Guillain-Barre syndrome.

CPT Codes:
83520-90

LOINC Codes:
21282-9

Gentamicin

GENPK, GENTH, GENRN

ORDERING

Available Stat:
No

Performing Lab:
Parnassus and Mission Bay Chemistry

Performed:
24 hours per day and 7 days per week

Methodology:
Particle-enhanced turbidimetric inhibition immunoassay (PETINIA)

Reported:
4 hours

Additional Information:
For desired peak and trough levels in special situations, Click here

Toxicity associated with trough levels > 2 mg/L or peak levels > 10-12 mg/L.

The aminoglycoside sisomicin cross-reacts with this gentamicin assay due to their structural similarity. Therefore, the results of this assay cannot be used to accurately quantitate gentamicin serum or plasma levels in patients receiving sisomicin in combination with gentamicin.

See the lab manual's "A Guide on Drug Level Monitoring" (in the Chemistry Guide) for additional information.

COLLECTION

Sample Type:
Serum or plasma

Collect:
Gold top or Light Green top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Remarks:
Time to Steady State: 2-3 doses (1 dose for ICN extended interval dosing).

Collect trough samples 30 minutes prior to 3rd or 4th dose.

For patients on hemodialysis collect just prior to and/or 1 hour post dialysis.

For standard dosing draw peak samples 30 minutes after the end of infusion. For ICN extended interval dosing draw peak 30 minutes after end of 4th dose.

Note the exact time of collection on BOTH the sample and the requisition.

Bring to lab immediately for processing if patient also receiving carbenicillin or other high dose penicillin or cephalosporin because prolonged interactions with these drugs (8 hours or more) at room temperature can modify amino groups and interfere with aminoglycoside assay.

Stability (from collection to initiation):
Refrigerated 7 days, frozen at -20C 14 days

Samples containing carbenicillin or piperacillin should be stored frozen if a delay in analysis of more than 8 hours is anticipated. Failure to freeze samples containing these antibiotics may result in falsely low gentamicin levels due to in vitro inactivation.

PROCESSING

Test Code:
GENPK (Peak), GENTH (Trough), GENRN (Random)

Performing Lab:
Parnassus and Mission Bay Chemistry

Specimen Preparation:
Mission Bay and Mount Zion: Refrigerate serum or plasma and send to Parnassus Chemistry

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Stability (from collection to initiation):
Refrigerated 7 days, frozen at -20C 14 days

Samples containing carbenicillin or piperacillin should be stored frozen if a delay in analysis of more than 8 hours is anticipated. Failure to freeze samples containing these antibiotics may result in falsely low gentamicin levels due to in vitro inactivation.

RESULT INTERPRETATION

Units:
mg/L

Reference Interval:
Therapeutic Peak Levels:Bacteremia, pneumonia, sepsis: 8-10 mg/L
Urinary tract infection: 4-8 mg/L
Trough Levels:Standard dosing: <2 mg/L (<1 mg/L optimum)
Once daily, high dose: <1 mg/L (<0.3 mg/L optimum)

Toxicity associated with trough levels > 2 mg/L or peak levels > 10-12 mg/L.

Peak levels of <5 or >10 mg/L will be flagged as abnormal.

Trough levels >2 mg/L will be flagged as abnormal.

Source of reference range: UCSF Medical Center Aminoglycoside Dosing and Monitoring Recommendations (Accessed November 2020). https://idmp.ucsf.edu/content/gentamicin

Additional Information:
For desired peak and trough levels in special situations, Click here

Toxicity associated with trough levels > 2 mg/L or peak levels > 10-12 mg/L.

The aminoglycoside sisomicin cross-reacts with this gentamicin assay due to their structural similarity. Therefore, the results of this assay cannot be used to accurately quantitate gentamicin serum or plasma levels in patients receiving sisomicin in combination with gentamicin.

See the lab manual's "A Guide on Drug Level Monitoring" (in the Chemistry Guide) for additional information.

ADMINISTRATIVE

CPT Codes:
80170

LOINC Codes:
35668-3

COMPLETE VIEW

Available Stat:
No

Test Code:
GENPK (Peak), GENTH (Trough), GENRN (Random)

Performing Lab:
Parnassus and Mission Bay Chemistry

Performed:
24 hours per day and 7 days per week

Methodology:
Particle-enhanced turbidimetric inhibition immunoassay (PETINIA)

Remarks:

Time to Steady State: 2-3 doses (1 dose for ICN extended interval dosing).

Collect trough samples 30 minutes prior to 3rd or 4th dose.

For patients on hemodialysis collect just prior to and/or 1 hour post dialysis.

For standard dosing draw peak samples 30 minutes after the end of infusion. For ICN extended interval dosing draw peak 30 minutes after end of 4th dose.

Note the exact time of collection on BOTH the sample and the requisition.

Bring to lab immediately for processing if patient also receiving carbenicillin or other high dose penicillin or cephalosporin because prolonged interactions with these drugs (8 hours or more) at room temperature can modify amino groups and interfere with aminoglycoside assay.

Collect:

Gold top or Light Green top

Amount to Collect:

1 mL blood

Sample Type:

Serum or plasma

Preferred Volume:

0.5 mL serum or plasma

Minimum Volume:

0.2 mL serum or plasma

Specimen Preparation:

Mission Bay and Mount Zion: Refrigerate serum or plasma and send to Parnassus Chemistry

Units:

mg/L

Reference Interval:

Therapeutic Peak Levels:Bacteremia, pneumonia, sepsis: 8-10 mg/L
Urinary tract infection: 4-8 mg/L
Trough Levels:Standard dosing: <2 mg/L (<1 mg/L optimum)
Once daily, high dose: <1 mg/L (<0.3 mg/L optimum)

Toxicity associated with trough levels > 2 mg/L or peak levels > 10-12 mg/L.

Peak levels of <5 or >10 mg/L will be flagged as abnormal.

Trough levels >2 mg/L will be flagged as abnormal.

Source of reference range: UCSF Medical Center Aminoglycoside Dosing and Monitoring Recommendations (Accessed November 2020). https://idmp.ucsf.edu/content/gentamicin

Stability (from collection to initiation):

Refrigerated 7 days, frozen at -20C 14 days

Samples containing carbenicillin or piperacillin should be stored frozen if a delay in analysis of more than 8 hours is anticipated. Failure to freeze samples containing these antibiotics may result in falsely low gentamicin levels due to in vitro inactivation.

Reported:

4 hours

Additional Information:

For desired peak and trough levels in special situations, Click here

Toxicity associated with trough levels > 2 mg/L or peak levels > 10-12 mg/L.

The aminoglycoside sisomicin cross-reacts with this gentamicin assay due to their structural similarity. Therefore, the results of this assay cannot be used to accurately quantitate gentamicin serum or plasma levels in patients receiving sisomicin in combination with gentamicin.

See the lab manual's "A Guide on Drug Level Monitoring" (in the Chemistry Guide) for additional information.

CPT Codes:

80170

LOINC Codes:

35668-3

GI Bacteria Panel PCR

P366

ORDERING

Ordering Recommendations:
This test is primarily intended for diagnosis of community-acquired diarrhea.

Approval Required:
Yes, consultation required for samples submitted > 72 hours after inpatient admission. Contact Microbiology at 415-353-1268 or specify the reason for testing in the order comment field.

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Monday, Wednesday, Friday

Methodology:
PCR

Reported:
3 days

Additional Information:
Detects Campylobacter (C. jejuni, C. coli, and C. lari), Escherichia coli O157, Enterotoxigenic E. coli (ETEC) LT/ST, Salmonella, Shiga-like Toxin producing E. coli (STEC) stx 1/stx 2, Shigella (S. boydii, S. sonnei, S. flexneri, and S. dysenteriae), Vibrio cholera cholera toxin gene (ctx).

Reflex Testing:
Cultures will be performed on samples with PCR results positive for Campylobacter, E. coli O157, Salmonella, Shigella, and Vibrio cholera.

Synonyms:

- Camplylobacter
- Escherichia coli O157
- ETEC
- Salmonella
- STEC
- Vibrio cholera
- Shigella
- GI Pathogen Panel PCR

COLLECTION

Sample Type:
Stool

Collect:
Urine cup, FecalSwab or C & S (Cary-Blair) transport medium

Amount to Collect:
See Preferred Volume

Preferred Volume:
5 mL

Minimum Volume:
Fresh unpreserved stool : 0.5 mL or size of pea
Stool in C & S (Cary-Blair) transport medium: 5 mL

Remarks:
Submit unpreserved stool to laboratory within 3 hours of collection.

If specimen will be submitted to the laboratory more than 3 hours after collection, or after 11 pm when Microbiology is closed, submit stool in C & S (Cary-Blair) Medium. Add stool to red line on vial and mix well with spoon.

C & S (Cary-Blair) Medium is available from Material Services. Outpatients can obtain these from the laboratories' draw stations. For patient collect samples, order PMM 68902 C & S Medium Cary Blair 2805-05-WB (with bag and instructions). PMM 49206 C & S Medium 2805-05 (without bag or instructions) also available.

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Stool in C & S (Cary-Blair) Medium or FecalSwab: Room Temp or refrigerated
Fresh unpreserved stool: Refrigerated or Frozen at -70 degrees C

Rejection Criteria:
Samples received >48 hours after collection.
Reject if more than two samples submitted per day.

PROCESSING

Test Code:
P366

Performing Lab:
Microbiology

Specimen Preparation:
Transfer unpreserved stool to Cary Blair as soon as possible after receipt in lab. Do not reject unpreserved samples unless received >48 hours after collection.

Preferred Volume:
5 mL

Minimum Volume:
Fresh unpreserved stool : 0.5 mL or size of pea
Stool in C & S (Cary-Blair) transport medium: 5 mL

Rejection Criteria:
Samples received >48 hours after collection.
Reject if more than two samples submitted per day.

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Stool in C & S (Cary-Blair) Medium or FecalSwab: Room Temp or refrigerated
Fresh unpreserved stool: Refrigerated or Frozen at -70 degrees C

RESULT INTERPRETATION

Reference Interval:
Not detected

Critical Values:
Inpatient results only. After hours outpatient results will be phoned the following morning.

E. coli O157 DETECTED
Vibrio cholera DETECTED

Additional Information:
Detects Campylobacter (C. jejuni, C. coli, and C. lari), Escherichia coli O157, Enterotoxigenic E. coli (ETEC) LT/ST, Salmonella, Shiga-like Toxin producing E. coli (STEC) stx 1/stx 2, Shigella (S. boydii, S. sonnei, S. flexneri, and S. dysenteriae), Vibrio cholera cholera toxin gene (ctx).

ADMINISTRATIVE

CPT Codes:
87506

LOINC Codes:
79381-0

COMPLETE VIEW

Approval Required:
Yes, consultation required for samples submitted > 72 hours after inpatient admission. Contact Microbiology at 415-353-1268 or specify the reason for testing in the order comment field.

Available Stat:
No

Ordering Recommendations:
This test is primarily intended for diagnosis of community-acquired diarrhea.

Test Code:
P366

Performing Lab:
Microbiology

Performed:
Monday, Wednesday, Friday

Methodology:
PCR

Remarks:

Submit unpreserved stool to laboratory within 3 hours of collection.

If specimen will be submitted to the laboratory more than 3 hours after collection, or after 11 pm when Microbiology is closed, submit stool in C & S (Cary-Blair) Medium. Add stool to red line on vial and mix well with spoon.

C & S (Cary-Blair) Medium is available from Material Services. Outpatients can obtain these from the laboratories' draw stations. For patient collect samples, order PMM 68902 C & S Medium Cary Blair 2805-05-WB (with bag and instructions). PMM 49206 C & S Medium 2805-05 (without bag or instructions) also available.

Collect:

Urine cup, FecalSwab or C & S (Cary-Blair) transport medium

Amount to Collect:

See Preferred Volume

Sample Type:

Stool

Preferred Volume:

5 mL

Minimum Volume:

Fresh unpreserved stool : 0.5 mL or size of pea
Stool in C & S (Cary-Blair) transport medium: 5 mL

Rejection Criteria:

Samples received >48 hours after collection.
Reject if more than two samples submitted per day.

Specimen Preparation:

Transfer unpreserved stool to Cary Blair as soon as possible after receipt in lab. Do not reject unpreserved samples unless received >48 hours after collection.

Reference Interval:

Not detected

Critical Values:

Inpatient results only. After hours outpatient results will be phoned the following morning.

E. coli O157 DETECTED
Vibrio cholera DETECTED

Synonyms:

- Camplylobacter
- Escherichia coli O157
- ETEC
- Salmonella
- STEC
- Vibrio cholera
- Shigella
- GI Pathogen Panel PCR

Storage/Transport Temperature:

Stool in C & S (Cary-Blair) Medium or FecalSwab: Room Temp or refrigerated
Fresh unpreserved stool: Refrigerated or Frozen at -70 degrees C

Stability (from collection to initiation):

2 days

Reported:

3 days

Reflex Testing:

Cultures will be performed on samples with PCR results positive for Campylobacter, E. coli O157, Salmonella, Shigella, and Vibrio cholera.

Additional Information:

Detects Campylobacter (C. jejuni, C. coli, and C. lari), Escherichia coli O157, Enterotoxigenic E. coli (ETEC) LT/ST, Salmonella, Shiga-like Toxin producing E. coli (STEC) stx 1/stx 2, Shigella (S. boydii, S. sonnei, S. flexneri, and S. dysenteriae), Vibrio cholera cholera toxin gene (ctx).

CPT Codes:

87506

LOINC Codes:

79381-0

GI Parasite Panel PCR

P368

ORDERING

Ordering Recommendations:
This test is primarily intended for diagnosis of community-acquired diarrhea.

Approval Required:
Yes, consultation required for samples submitted > 72 hours after inpatient admission. Contact Microbiology at 415-353-1268 or specify the reason for testing in the order comment field.

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Monday, Wednesday, Friday

Methodology:
PCR

Reported:
3 days

Additional Information:
Detects Cryptosporidium (C. parvum and C. hominis), Entamoeba histolytica, and Giardia (G. lamblia, also known as G. intestinalis and G. duodenalis).

Synonyms:

- Cryptosporidium
- Entamoeba histolytica
- Giardia
- GI Pathogen Panel PCR

COLLECTION

Sample Type:
Stool

Collect:
Urine cup, FecalSwab or C & S (Cary-Blair) transport medium

Amount to Collect:
See Preferred Volume

Preferred Volume:
5 mL

Minimum Volume:
Fresh unpreserved stool : 0.5 mL or size of pea
Stool in C & S (Cary-Blair) transport medium: 5 mL

Remarks:
Submit unpreserved stool to laboratory within 3 hours of collection.

If specimen will be submitted to the laboratory more than 3 hours after collection, or after 11 pm when Microbiology is closed, submit stool in C & S (Cary-Blair) Medium. Add stool to red line on vial and mix well with spoon.

C & S (Cary-Blair) Medium is available from Material Services. Outpatients can obtain these from the laboratories' draw stations. For patient collect samples, order PMM 68902 C & S Medium Cary Blair 2805-05-WB (with bag and instructions). PMM 49206 C & S Medium 2805-05 (without bag or instructions) also available.

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Stool in C & S (Cary-Blair) Medium or FecalSwab: Room Temp or refrigerated
Fresh unpreserved stool: Refrigerated or Frozen at -70 degrees C

Rejection Criteria:
Samples received >48 hours after collection.
Reject if more than two samples submitted per day.

PROCESSING

Test Code:
P368

Performing Lab:
Microbiology

Specimen Preparation:
Transfer unpreserved stool to Cary Blair as soon as possible after receipt in lab. Do not reject unpreserved samples unless received >48 hours after collection.

Preferred Volume:
5 mL

Minimum Volume:
Fresh unpreserved stool : 0.5 mL or size of pea
Stool in C & S (Cary-Blair) transport medium: 5 mL

Rejection Criteria:
Samples received >48 hours after collection.
Reject if more than two samples submitted per day.

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Stool in C & S (Cary-Blair) Medium or FecalSwab: Room Temp or refrigerated
Fresh unpreserved stool: Refrigerated or Frozen at -70 degrees C

RESULT INTERPRETATION

Reference Interval:
Not detected

Additional Information:
Detects Cryptosporidium (C. parvum and C. hominis), Entamoeba histolytica, and Giardia (G. lamblia, also known as G. intestinalis and G. duodenalis).

ADMINISTRATIVE

CPT Codes:
87505

LOINC Codes:
79381-0

COMPLETE VIEW

Approval Required:
Yes, consultation required for samples submitted > 72 hours after inpatient admission. Contact Microbiology at 415-353-1268 or specify the reason for testing in the order comment field.

Available Stat:
No

Ordering Recommendations:
This test is primarily intended for diagnosis of community-acquired diarrhea.

Test Code:
P368

Performing Lab:
Microbiology

Performed:
Monday, Wednesday, Friday

Methodology:
PCR

Remarks:
Submit unpreserved stool to laboratory within 3 hours of collection.

If specimen will be submitted to the laboratory more than 3 hours after collection, or after 11 pm when Microbiology is closed, submit stool in C & S (Cary-Blair) Medium. Add stool to red line on vial and mix well with spoon.

C & S (Cary-Blair) Medium is available from Material Services. Outpatients can obtain these from the laboratories' draw stations. For patient collect samples, order PMM 68902 C & S Medium Cary Blair 2805-05-WB (with bag and instructions). PMM 49206 C & S Medium 2805-05 (without bag or instructions) also available.

Collect:
Urine cup, FecalSwab or C & S (Cary-Blair) transport medium

Amount to Collect:
See Preferred Volume

Sample Type:
Stool

Preferred Volume:
5 mL

Minimum Volume:
Fresh unpreserved stool : 0.5 mL or size of pea
Stool in C & S (Cary-Blair) transport medium: 5 mL

Rejection Criteria:
Samples received >48 hours after collection.
Reject if more than two samples submitted per day.

Specimen Preparation:
Transfer unpreserved stool to Cary Blair as soon as possible after receipt in lab. Do not reject unpreserved samples unless received >48 hours after collection.

Reference Interval:
Not detected

Synonyms:

- Cryptosporidium
- Entamoeba histolytica
- Giardia
- GI Pathogen Panel PCR

Storage/Transport Temperature:
Stool in C & S (Cary-Blair) Medium or FecalSwab: Room Temp or refrigerated
Fresh unpreserved stool: Refrigerated or Frozen at -70 degrees C

Stability (from collection to initiation):
2 days

Reported:
3 days

Additional Information:
Detects Cryptosporidium (C. parvum and C. hominis), Entamoeba histolytica, and Giardia (G. lamblia, also known as G. intestinalis and G. duodenalis).

CPT Codes:
87505

LOINC Codes:
79381-0

GI Viral Panel PCR

P367

ORDERING

Ordering Recommendations:
This test is primarily intended for diagnosis of community-acquired diarrhea.

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Monday, Wednesday, Friday

Methodology:
PCR

Reported:
3 days

Additional Information:
Detects Adenovirus 40/41, Norovirus GI/GII, Rotavirus A.

Synonyms:

- Adenovirus
- Norovirus
- Rotavirus
- GI Pathogen Panel PCR

COLLECTION

Sample Type:
Stool

Collect:
Urine cup, FecalSwab or C & S (Cary-Blair) transport medium

Amount to Collect:
See Preferred Volume

Preferred Volume:
5 mL

Minimum Volume:
Fresh unpreserved stool : 0.5 mL or size of pea
Stool in C & S (Cary-Blair) transport medium: 5 mL

Remarks:
Submit unpreserved stool to laboratory within 3 hours of collection.

If specimen will be submitted to the laboratory more than 3 hours after collection, or after 11 pm when Microbiology is closed, submit stool in C & S (Cary-Blair) Medium. Add stool to red line on vial and mix well with spoon.

C & S (Cary-Blair) Medium is available from Material Services. Outpatients can obtain these from the laboratories' draw stations. For patient collect samples, order PMM 68902 C & S Medium Cary Blair 2805-05-WB (with bag and instructions). PMM 49206 C & S Medium 2805-05 (without bag or instructions) also available.

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Stool in C & S (Cary-Blair) Medium or FecalSwab: Room Temp or refrigerated
Fresh unpreserved stool: Refrigerated or Frozen at -70 degrees C

Rejection Criteria:
Samples received >48 hours after collection.
Reject if more than two samples submitted per day.

PROCESSING

Test Code:
P367

Performing Lab:
Microbiology

Specimen Preparation:
Transfer unpreserved stool to Cary Blair as soon as possible after receipt in lab. Do not reject unpreserved samples unless received >48 hours after collection.

Preferred Volume:
5 mL

Minimum Volume:
Fresh unpreserved stool : 0.5 mL or size of pea
Stool in C & S (Cary-Blair) transport medium: 5 mL

Rejection Criteria:
Samples received >48 hours after collection.
Reject if more than two samples submitted per day.

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Stool in C & S (Cary-Blair) Medium or FecalSwab: Room Temp or refrigerated
Fresh unpreserved stool: Refrigerated or Frozen at -70 degrees C

RESULT INTERPRETATION

Reference Interval:
Not detected

Additional Information:
Detects Adenovirus 40/41, Norovirus GI/GII, Rotavirus A.

ADMINISTRATIVE

CPT Codes:
87505

LOINC Codes:
79381-0

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
This test is primarily intended for diagnosis of community-acquired diarrhea.

Test Code:
P367

Performing Lab:
Microbiology

Performed:
Monday, Wednesday, Friday

Methodology:
PCR

Remarks:
Submit unpreserved stool to laboratory within 3 hours of collection.

If specimen will be submitted to the laboratory more than 3 hours after collection, or after 11 pm when Microbiology is closed, submit stool in C & S (Cary-Blair) Medium. Add stool to red line on vial and mix well with spoon.

C & S (Cary-Blair) Medium is available from Material Services. Outpatients can obtain these from the laboratories' draw stations. For patient collect samples, order PMM 68902 C & S Medium Cary Blair 2805-05-WB (with bag and instructions). PMM 49206 C & S Medium 2805-05 (without bag or instructions) also available.

Collect:
Urine cup, FecalSwab or C & S (Cary-Blair) transport medium

Amount to Collect:
See Preferred Volume

Sample Type:
Stool

Preferred Volume:
5 mL

Minimum Volume:
Fresh unpreserved stool : 0.5 mL or size of pea
Stool in C & S (Cary-Blair) transport medium: 5 mL

Rejection Criteria:

Samples received >48 hours after collection.
Reject if more than two samples submitted per day.

Specimen Preparation:

Transfer unpreserved stool to Cary Blair as soon as possible after receipt in lab. Do not reject unpreserved samples unless received >48 hours after collection.

Reference Interval:

Not detected

Synonyms:

- Adenovirus
- Norovirus
- Rotavirus
- GI Pathogen Panel PCR

Storage/Transport Temperature:

Stool in C & S (Cary-Blair) Medium or FecalSwab: Room Temp or refrigerated
Fresh unpreserved stool: Refrigerated or Frozen at -70 degrees C

Stability (from collection to initiation):

2 days

Reported:

3 days

Additional Information:

Detects Adenovirus 40/41, Norovirus GI/GII, Rotavirus A.

CPT Codes:

87505

LOINC Codes:

79381-0

Gliadin Antibodies, Deamidated (IgG and IgA)

GLIA

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Tuesday (day shift)

Methodology:
Chemiluminescence

Reported:
2-8 days

Additional Information:
Anti-gliadin antibodies are associated with Celiac Disease (also called gluten-sensitive enteropathy). IgG and/or IgA antibodies can be found, but generally, IgA antibodies are considered more specific for disease, while IgG antibodies are considered more sensitive. This assay uses the deamidated form of gliadin as a substrate, which is considered to have greater diagnostic accuracy in comparison with traditional assays. Testing for antibodies to TTG (tissue transglutaminase) are usually performed in addition to testing for antibodies to gliadin.

Note: Since IgA deficiency is common in patients with celiac disease, serum IgA levels may be useful in patients with negative results for the IgA anti-gliadin assay.

Synonyms:

- Celiac disease
- gluten sensitive enteropathy
- anti deamidated gliadin antibodies

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Remarks:
Avoid hemolysis

Unacceptable Conditions:
Grossly hemolyzed or icteric samples

PROCESSING

Test Code:
GLIA

Performing Lab:
Immunology

Specimen Preparation:
Freeze serum at -20°C

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Grossly hemolyzed or icteric samples

RESULT INTERPRETATION

Units:
Chemiluminescence units (CU)

Reference Interval:
Gliadin antibody (IgG)

Negative	< 20.0 CU
Weak Positive	20.0-30.0 CU
Positive	> 30.0 CU

Gliadin Antibody (IgA)

Negative	< 20.0 CU
Weak Positive	20.0-30.0 CU
Positive	> 30.0 CU

Additional Information:
Anti-gliadin antibodies are associated with Celiac Disease (also called gluten-sensitive enteropathy). IgG and/or IgA antibodies can be found, but generally, IgA antibodies are considered more specific for disease, while IgG antibodies are considered more sensitive. This assay uses the deamidated form of gliadin as a substrate, which is considered to have greater diagnostic accuracy in comparison with traditional assays. Testing for antibodies to TTG (tissue transglutaminase) are usually performed in addition to testing for antibodies to gliadin.

Note: Since IgA deficiency is common in patients with celiac disease, serum IgA levels may be useful in patients with negative results for the IgA anti-gliadin assay.

ADMINISTRATIVE

CPT Codes:
86258 X 2

LOINC Codes:
57776-7

COMPLETE VIEW

Available Stat:
No

Test Code:
GLIA

Performing Lab:
Immunology

Performed:
Tuesday (day shift)

Methodology:
Chemiluminescence

Remarks:
Avoid hemolysis

Collect:
Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Grossly hemolyzed or icteric samples

Specimen Preparation:
Freeze serum at -20°C

Units:
Chemiluminescence units (CU)

Reference Interval:

Gliadin antibody (IgG)

Negative	< 20.0 CU
Weak Positive	20.0-30.0 CU
Positive	> 30.0 CU

Gliadin Antibody (IgA)

Negative	< 20.0 CU
Weak Positive	20.0-30.0 CU
Positive	> 30.0 CU

Synonyms:

- Celiac disease
- gluten sensitive enteropathy
- anti deamidated gliadin antibodies

Reported:

2-8 days

Additional Information:

Anti-gliadin antibodies are associated with Celiac Disease (also called gluten-sensitive enteropathy). IgG and/or IgA antibodies can be found, but generally, IgA antibodies are considered more specific for disease, while IgG antibodies are considered more sensitive. This assay uses the deamidated form of gliadin as a substrate, which is considered to have greater diagnostic accuracy in comparison with traditional assays. Testing for antibodies to TTG (tissue transglutaminase) are usually performed in addition to testing for antibodies to gliadin.

Note: Since IgA deficiency is common in patients with celiac disease, serum IgA levels may be useful in patients with negative results for the IgA anti-gliadin assay.

CPT Codes:

86258 X 2

LOINC Codes:

57776-7

Global Hemostasis TEG

GHTEG

ORDERING

Approval Required:
Test is only available for cardiac patients in the OR.

Available Stat:
No

Performing Lab:
Parnassus Hematology

Performed:
24-hours per day, 7-days per week

Methodology:
Thromboelastography

Reported:
4 hours

Reflex Testing:
If unusual findings are noted a pathologist review and intrepretation may be performed and separately billed for.

Synonyms:

- TEG6S
- Citrated K
- KH
- RT
- FF

COLLECTION

Sample Type:
citrated whole blood

Collect:
Blue (2.7 mL) top filled to full extent of vacuum

Amount to Collect:
Blue top: 2.7 mL blood

Preferred Volume:
2.7mL

Minimum Volume:
2.7mL

Remarks:
Test available for intraoperative patients only.
Use a 21G needle to perform the venipuncture.
Draw and discard the first 3 mL of blood or fill another tube. Blue top cannot be the first tube drawn .
After collection, mix each tube by gently inverting 3 to 4 times.
Discard the sample if there is a venous collapse or stoppage of blood flow during collection. Likewise, avoid prolonged placement of the tourniquet or a traumatic phlebotomy.
Dedicated specimen required. Do not combine with other tests.
Specimens MUST BE HAND DELIVERED to M524 and clarify to the recipient that the item is a TEG sample.

Stability (from collection to initiation):
Room Temperature, hand deliver immediately to Hematology Laboratory within 30 minutes of collection, Stable for 2 hours post collection..

Storage/Transport Temperature:
Ambient Temperature

Unacceptable Conditions:
Orders outside of the OR or Cardiac Transplant Team. Specimens that are under or over filled
Specimen sent in pneumatic tube system.
Combined with other tests.
Specimen received past stability.

PROCESSING

Test Code:
GHTEG

Performing Lab:
Parnassus Hematology

Preferred Volume:
2.7mL

Minimum Volume:
2.7mL

Unacceptable Conditions:
Orders outside of the OR or Cardiac Transplant Team. Specimens that are under or over filled
Specimen sent in pneumatic tube system.
Combined with other tests.
Specimen received past stability.

Stability (from collection to initiation):
Room Temperature, hand deliver immediately to Hematology Laboratory within 30 minutes of collection, Stable for 2 hours post collection..

Storage/Transport Temperature:
Ambient Temperature

RESULT INTERPRETATION

Units:
Kaolin TEG R (min) Kaolin TEG K (min) Kaolin TEG Angle (deg) Kaolin TEG MA (mm) Citrated TEG MA (mm) Kaolin TEG + Heparinase R (min) CFF MA (mm) CFF FLEV (mg/dL)

Reference Interval:

Test ID	Reference Range
CKR	4.6-9.1 min
CKK	0.8-2.1 min
CKANG	63-78 degrees
CKMA	52-69 mm
CRTMA	52-70 mm
CKHR	4.3-8.3 min
CFFMA	15-32 mm
CFFFL	278-581 mg/dl

NOTE: Reference ranges are not established for patients under 18 years old.

ADMINISTRATIVE

CPT Codes:
85347, 85347-59, 85384, 85576, 85576-59, 85390, 85396, 85397

LOINC Codes:
99761-9, 99763-5, 99762-7, 97005-3, 97007-9, 97014-5, 97016-0

COMPLETE VIEW

Approval Required:
Test is only available for cardiac patients in the OR.

Available Stat:
No

Test Code:
GHTEG

Performing Lab:
Parnassus Hematology

Performed:
24-hours per day, 7-days per week

Methodology:
Thromboelastography

Remarks:
Test available for intraoperative patients only.
Use a 21G needle to perform the venipuncture.
Draw and discard the first 3 mL of blood or fill another tube. Blue top cannot be the first tube drawn .
After collection, mix each tube by gently inverting 3 to 4 times.
Discard the sample if there is a venous collapse or stoppage of blood flow during collection. Likewise, avoid prolonged placement of the tourniquet or a traumatic phlebotomy.
Dedicated specimen required. Do not combine with other tests.
Specimens MUST BE HAND DELIVERED to M524 and clarify to the recipient that the item is a TEG sample.

Collect:
Blue (2.7 mL) top filled to full extent of vacuum

Amount to Collect:
Blue top: 2.7 mL blood

Sample Type:
citrated whole blood

Preferred Volume:
2.7mL

Minimum Volume:
2.7mL

Unacceptable Conditions:
Orders outside of the OR or Cardiac Transplant Team. Specimens that are under or over filled
Specimen sent in pneumatic tube system.
Combined with other tests.
Specimen received past stability.

Units:
Kaolin TEG R (min) Kaolin TEG K (min) Kaolin TEG Angle (deg) Kaolin TEG MA (mm) Citrated TEG MA (mm) Kaolin TEG + Heparinase R (min) CFF MA (mm) CFF FLEV (mg/dL)

Reference Interval:

Test ID	Reference Range
CKR	4.6-9.1 min
CKK	0.8-2.1 min
CKANG	63-78 degrees
CKMA	52-69 mm
CRTMA	52-70 mm
CKHR	4.3-8.3 min
CFFMA	15-32 mm
CFFFL	278-581 mg/dl

NOTE: Reference ranges are not established for patients under 18 years old.

Synonyms:

- TEG6S
- Citrated K
- KH
- RT
- FF

Storage/Transport Temperature:
Ambient Temperature

Stability (from collection to initiation):
Room Temperature, hand deliver immediately to Hematology Laboratory within 30 minutes of collection, Stable for 2 hours post collection..

Reported:
4 hours

Reflex Testing:
If unusual findings are noted a pathologist review and intrepretation may be performed and separately billed for.

CPT Codes:
85347, 85347-59, 85384, 85576, 85576-59, 85390, 85396, 85397

LOINC Codes:
99761-9, 99763-5, 99762-7, 97005-3, 97007-9, 97014-5, 97016-0

Global Hemostasis TEG with Lysis

LYTEG

ORDERING

Approval Required:
Test is only available for Liver transplant patients in the OR.

Available Stat:
No

Performing Lab:
Parnassus Hematology

Performed:
24/7

Methodology:
Thromboeslastography

Reported:
4 hours

Synonyms:

- TEG6S
- Citrated K
- RT
- FF

COLLECTION

Sample Type:
Citrated whole blood

Collect:
Citrated Blue Top

Amount to Collect:
2.7 mL

Preferred Volume:
2.7mL

Minimum Volume:
2.7mL

Remarks:
Test available for intraoperative patients only.
Use a 21G needle to perform the venipuncture.
Draw and discard the first 3 mL of blood or fill another tube. Blue top cannot be the first tube drawn .
After collection, mix each tube by gently inverting 3 to 4 times.
Discard the sample if there is a venous collapse or stoppage of blood flow during collection. Likewise, avoid prolonged placement of the tourniquet or a traumatic phlebotomy.
Dedicated specimen required. Do not combine with other tests.
Specimens MUST BE HAND DELIVERED to M524 and clarify to the recipient that the item is a TEG sample.

Stability (from collection to initiation):
Room Temperature, hand deliver immediately to Hematology Laboratory within 30 minutes of collection and is stable for 2 hours..

Storage/Transport Temperature:
Ambient temperature

Unacceptable Conditions:
Orders outside of OR or Liver Transplant Team. Specimens that are under or over filled
Specimen sent in pneumatic tube system.
Combined with other tests.
Specimen received past stability.

PROCESSING

Test Code:
LYTEG

Performing Lab:
Parnassus Hematology

Preferred Volume:
2.7mL

Minimum Volume:
2.7mL

Unacceptable Conditions:
Orders outside of OR or Liver Transplant Team. Specimens that are under or over filled
Specimen sent in pneumatic tube system.
Combined with other tests.
Specimen received past stability.

Stability (from collection to initiation):
Room Temperature, hand deliver immediately to Hematology Laboratory within 30 minutes of collection and is stable for 2 hours..

Storage/Transport Temperature:
Ambient temperature

RESULT INTERPRETATION

Reference Interval:

Parameter	Reference Range
CK R (LYCKR)	4.6-9.1 minutes
CK LY30 (LYLY30)	0.0-2.6 %
CRT (LRTMA)	52-70 mm
CFF (LFFMA)	15-32 mm

NOTE: Reference ranges are not established for patients under 18 years old.

ADMINISTRATIVE

CPT Codes:
85576, 85347, 85390, 85397, 85384

LOINC Codes:
99761-9, 97013-7, 97005-3, 97014-5

COMPLETE VIEW

Approval Required:
Test is only available for Liver transplant patients in the OR.

Available Stat:
No

Test Code:
LYTEG

Performing Lab:
Parnassus Hematology

Performed:
24/7

Methodology:
Thromboeslastography

Remarks:
Test available for intraoperative patients only.
Use a 21G needle to perform the venipuncture.
Draw and discard the first 3 mL of blood or fill another tube. Blue top cannot be the first tube drawn .
After collection, mix each tube by gently inverting 3 to 4 times.
Discard the sample if there is a venous collapse or stoppage of blood flow during collection. Likewise, avoid prolonged placement of the tourniquet or a traumatic phlebotomy.
Dedicated specimen required. Do not combine with other tests.
Specimens MUST BE HAND DELIVERED to M524 and clarify to the recipient that the item is a TEG sample.

Collect:
Citrated Blue Top

Amount to Collect:
2.7 mL

Sample Type:
Citrated whole blood

Preferred Volume:
2.7mL

Minimum Volume:
2.7mL

Unacceptable Conditions:

Orders outside of OR or Liver Transplant Team. Specimens that are under or over filled
Specimen sent in pneumatic tube system.
Combined with other tests.
Specimen received past stability.

Reference Interval:

Parameter	Reference Range
CK R (LYCKR)	4.6-9.1 minutes
CK LY30 (LYLY30)	0.0-2.6 %
CRT (LRTMA)	52-70 mm
CFF (LFFMA)	15-32 mm

NOTE: Reference ranges are not established for patients under 18 years old.

Synonyms:

- TEG6S
- Citrated K
- RT
- FF

Storage/Transport Temperature:

Ambient temperature

Stability (from collection to initiation):

Room Temperature, hand deliver immediately to Hematology Laboratory within 30 minutes of collection and is stable for 2 hours..

Reported:

4 hours

CPT Codes:

85576, 85347, 85390, 85397, 85384

LOINC Codes:

99761-9, 97013-7, 97005-3, 97014-5

Glomerular Basement Membrane Antibody

AGBM

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
EIA

Reported:
Test run Tuesday and Thursday. Turnaround time: 2-7 days.

Synonyms:

- anti-GBM
- anti-glomerular basement membrane antibody
- Good pasture's syndrome

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL serum

Minimum Volume:
0.2 mL serum

PROCESSING

Test Code:
AGBM

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate. Order Quest # 93294P.

Preferred Volume:
2 mL serum

Minimum Volume:
0.2 mL serum

RESULT INTERPRETATION

Units:
EU/mL

Reference Interval:
Negative: < 3.0 EU/mL
Positive: >= 3.0 EU/mL

ADMINISTRATIVE

CPT Codes:
83520-90

LOINC Codes:
30343-8

COMPLETE VIEW

Available Stat:
No

Test Code:
AGBM

Performing Lab:
Quest

Sendout:
Yes

Methodology:
EIA

Collect:
Gold top

Amount to Collect:
4 mL blood

Sample Type:
Serum

Preferred Volume:
2 mL serum

Minimum Volume:
0.2 mL serum

Specimen Preparation:
Refrigerate. Order Quest # 93294P.

Units:
EU/mL

Reference Interval:
Negative: < 3.0 EU/mL
Positive: >= 3.0 EU/mL

Synonyms:

- anti-GBM
- anti-glomerular basement membrane antibody
- Good pasture's syndrome

Reported:
Test run Tuesday and Thursday. Turnaround time: 2-7 days.

CPT Codes:
83520-90

LOINC Codes:
30343-8

Glucagon

GLGN

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Extraction, RIA

Reported:
Set up 2x per week. Turnaround time: 5-7 days.

COLLECTION

Patient Preparation:
Overnight fasting before specimen collection is required.

Sample Type:
EDTA Plasma

Collect:
Lavender top (on ice)

Amount to Collect:
6 mL blood

Preferred Volume:
3 mL plasma

Minimum Volume:
1.1 mL plasma

Remarks:
Pre-chill tube before collection. Bring sample immediately to lab on ice. To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested.

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 1 week, frozen at -20C 4 weeks.

Unacceptable Conditions:
Not delivered on ice

PROCESSING

Test Code:
GLGN

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze plasma at -20°C. Order Quest # 519 For B&T patients, draw 7 mL blood into chilled EDTA (lavender-stopper) tube. Add 0.5 mL Trasylol (Aprotinin) (10,000 KIU/mL). Mix well, centrifuge, transfer plasma to specially labeled transport tube and freeze. Contact LabCorp's Supply Department for collection kit.

Preferred Volume:
3 mL plasma

Minimum Volume:
1.1 mL plasma

Unacceptable Conditions:
Not delivered on ice

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 1 week, frozen at -20C 4 weeks.

RESULT INTERPRETATION

Units:
pg/mL

Reference Interval:
Cord Blood: <= 215 pg/mL
Day 1: <= 240 pg/mL
Day 2: <= 400 pg/mL
Day 3: <= 420 pg/mL
Days 4-14: <= 148 pg/mL
Adults: <= 60 pg/mL

ADMINISTRATIVE

CPT Codes:
82943-90

LOINC Codes:
2338-2

COMPLETE VIEW

Available Stat:
No

Test Code:
GLGN

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Extraction, RIA

Patient Preparation:
Overnight fasting before specimen collection is required.

Remarks:
Pre-chill tube before collection. Bring sample immediately to lab on ice. To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested.

Collect:
Lavender top (on ice)

Amount to Collect:
6 mL blood

Sample Type:
EDTA Plasma

Preferred Volume:
3 mL plasma

Minimum Volume:
1.1 mL plasma

Unacceptable Conditions:
Not delivered on ice

Specimen Preparation:
Freeze plasma at -20°C. Order Quest # 519 For B&T patients, draw 7 mL blood into chilled EDTA (lavender-stopper) tube. Add 0.5 mL Trasylol (Aprotinin) (10,000 KIU/mL). Mix well, centrifuge, transfer plasma to specially labeled transport tube and freeze. Contact LabCorp's Supply Department for collection kit.

Units:
pg/mL

Reference Interval:
Cord Blood: <= 215 pg/mL
Day 1: <= 240 pg/mL
Day 2: <= 400 pg/mL
Day 3: <= 420 pg/mL
Days 4-14: <= 148 pg/mL
Adults: <= 60 pg/mL

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 1 week, frozen at -20C 4 weeks.

Reported:
Set up 2x per week. Turnaround time: 5-7 days.

CPT Codes:
82943-90

LOINC Codes:
2338-2

Glucose, 24 hour urine

GLUU

ORDERING

Available Stat:
No

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 7 days per week from 8:00 AM to midnight only.

Methodology:
Hexokinase/G-6-PDH

Reported:
Same or next day

Additional Information:
To convert mg/dl to mmol/L (SI units) multiply by 0.0555.

Synonyms:

- Diabetes mellitus
- Quantitative sugar, urine

COLLECTION

Sample Type:
Timed urine collection

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container, 30mL 6N HCL, 10g Boric Acid

Amount to Collect:
Entire 24 hour urine output

Preferred Volume:
5 mL urine

Minimum Volume:
0.2 mL urine

Remarks:
Sample compatible with all urine tests collected in a plain container EXCEPT Osmolality. Obtain container from Specimen Receiving.Refrigerate the collection container during the collection period.

Stability (from collection to initiation):
Room temperature 2 hours, refrigerated 2 hours, frozen at -20C 2 days

PROCESSING

Test Code:
GLUU

Test Group:
Glucose

Performing Lab:
Parnassus & Mission Bay Chemistry

Specimen Preparation:
Mix 24-hour urine sample well. Alliquot 1 mL.

Preferred Volume:
5 mL urine

Minimum Volume:
0.2 mL urine

Stability (from collection to initiation):
Room temperature 2 hours, refrigerated 2 hours, frozen at -20C 2 days

RESULT INTERPRETATION

Units:
g/D

Reference Interval:
< 0.5 g/D

Additional Information:
To convert mg/dl to mmol/L (SI units) multiply by 0.0555.

ADMINISTRATIVE

CPT Codes:
82945

COMPLETE VIEW

Available Stat:
No

Test Code:
GLUU

Test Group:
Glucose

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 7 days per week from 8:00 AM to midnight only.

Methodology:
Hexokinase/G-6-PDH

Remarks:
Sample compatible with all urine tests collected in a plain container EXCEPT Osmolality. Obtain container from Specimen Receiving.Refrigerate the collection container during the collection period.

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container, 30mL 6N HCL, 10g Boric Acid

Amount to Collect:
Entire 24 hour urine output

Sample Type:
Timed urine collection

Preferred Volume:
5 mL urine

Minimum Volume:
0.2 mL urine

Specimen Preparation:
Mix 24-hour urine sample well. Alliquot 1 mL.

Units:
g/D

Reference Interval:
< 0.5 g/D

Synonyms:

- Diabetes mellitus
- Quantitative sugar, urine

Stability (from collection to initiation):
Room temperature 2 hours, refrigerated 2 hours, frozen at -20C 2 days

Reported:
Same or next day

Additional Information:
To convert mg/dl to mmol/L (SI units) multiply by 0.0555.

CPT Codes:
82945

Glucose, Body fluid

GLBF

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Hexokinase/G-6-PDH

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context.
Interpretive information on this testing can be found at https://aruplab.com/bodyfluids

To convert mg/dl to mmol/L (SI units) multiply by 0.0555.

COLLECTION

Sample Type:
Body Fluid

Collect:
Clean, empty container OR red top (no additives)
Note: Do NOT collect in red top with clot activator (silicone coated).

Amount to Collect:
5 mL fluid

Preferred Volume:
0.5 mL fluid

Minimum Volume:
0.2 mL fluid

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Stability (from collection to initiation):
Room temperature 5 hours, refrigerated 3 days, frozen at -20C 1 month

PROCESSING

Test Code:
GLBF

Test Group:
Glucose

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
0.5 mL fluid

Minimum Volume:
0.2 mL fluid

Stability (from collection to initiation):
Room temperature 5 hours, refrigerated 3 days, frozen at -20C 1 month

RESULT INTERPRETATION

Units:
mg/dL

Additional Information:

Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context.
Interpretive information on this testing can be found at https://aruplab.com/bodyfluids

To convert mg/dl to mmol/L (SI units) multiply by 0.0555.

ADMINISTRATIVE

CPT Codes:
82945

LOINC Codes:
2344-0

COMPLETE VIEW

Available Stat:
Yes

Test Code:
GLBF

Test Group:
Glucose

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Hexokinase/G-6-PDH

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Collect:
Clean, empty container OR red top (no additives)
Note: Do NOT collect in red top with clot activator (silicone coated).

Amount to Collect:
5 mL fluid

Sample Type:
Body Fluid

Preferred Volume:
0.5 mL fluid

Minimum Volume:
0.2 mL fluid

Units:
mg/dL

Stability (from collection to initiation):
Room temperature 5 hours, refrigerated 3 days, frozen at -20C 1 month

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:

Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context.
Interpretive information on this testing can be found at https://aruplab.com/bodyfluids

To convert mg/dl to mmol/L (SI units) multiply by 0.0555.

CPT Codes:
82945

LOINC Codes:
2344-0

Glucose, CSF

GLC

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Hexokinase/G-6-PDH

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
To convert mg/dl to mmol/L (SI units) multiply by 0.0555.CSF levels are usually > 55% of serum glucose and > 40 mg/dL. As serum glucose rises above 200 mg/dL the CSF/serum ratio falls from about 0.55 to a minimum of 0.31.

COLLECTION

Sample Type:
CSF

Collect:
CSF tube or sterile collection tube

Amount to Collect:
3 mL CSF

Preferred Volume:
0.5 mL CSF

Minimum Volume:
0.2 mL CSF

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Stability (from collection to initiation):
Room temperature 5 hours, refrigerated 3 days, frozen at -20C 1 month

PROCESSING

Test Code:
GLC

Test Group:
Glucose

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
0.5 mL CSF

Minimum Volume:
0.2 mL CSF

Stability (from collection to initiation):
Room temperature 5 hours, refrigerated 3 days, frozen at -20C 1 month

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:
40-70 mg/dl

Critical Values:
< 30 mg/dL

Additional Information:
To convert mg/dl to mmol/L (SI units) multiply by 0.0555.CSF levels are usually > 55% of serum glucose and > 40 mg/dL. As serum glucose rises above 200 mg/dL the CSF/serum ratio falls from about 0.55 to a minimum of 0.31.

ADMINISTRATIVE

CPT Codes:
82945

LOINC Codes:
2342-4

COMPLETE VIEW

Available Stat:
Yes

Test Code:
GLC

Test Group:
Glucose

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Hexokinase/G-6-PDH

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Collect:
CSF tube or sterile collection tube

Amount to Collect:
3 mL CSF

Sample Type:
CSF

Preferred Volume:
0.5 mL CSF

Minimum Volume:
0.2 mL CSF

Units:
mg/dL

Reference Interval:
40-70 mg/dl

Critical Values:
< 30 mg/dL

Stability (from collection to initiation):
Room temperature 5 hours, refrigerated 3 days, frozen at -20C 1 month

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
To convert mg/dl to mmol/L (SI units) multiply by 0.0555.CSF levels are usually > 55% of serum glucose and > 40 mg/dL. As serum glucose rises above 200 mg/dL the CSF/serum ratio falls from about 0.55 to a minimum of 0.31.

CPT Codes:
82945

LOINC Codes:
2342-4

Glucose, Fasting, Plasma / Serum

FBS

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Chemistry: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center (Mon-Fri 0800-1630)

Methodology:
Parnassus, Mission Bay & Mt. Zion Chemistry: Hexokinase/G-6-PDH on Abbott Architect
Berkeley Outpatient Center: Hexokinase/G-6-PDH on Roche cobas c311

Additional Information:
To convert mg/dl to mmol/L (SI units) multiply by 0.0555.

The stated reference ranges reflect criteria for the diagnosis of diabetes mellitus established by the American Diabetes Association (Diabetes Care, Volume 34, Supplement 1, January 2011). All recommendations of the ADA are based upon plasma or serum levels). The diagnosis of diabetes mellitus should NOT be made until one of these abnormalities has been confirmed on a subsequent day. Impaired glucose tolerance/impaired fasting glucose implies an increased risk of future diabetes. Fasting levels < 50 mg/dL are frequently found in apparently normal individuals after 1-3 days of fasting, especially in women and children; levels as low as 20 mg/dL may be normal in prematures (Pediatrics 1990;85:834).

Note that glucose concentrations in capillary blood are higher than those in venous blood. In fasting samples, the differences are small (2 to 5 mg/dL), however, in non-fasting samples, differences as high as 70 mg/dL may be observed.

Synonyms:

- Diabetes mellitus
- FBS
- fasting blood sugar

COLLECTION

Patient Preparation:
Patients should have fasted (no caloric intake) for a minimum of 8 hours before testing.

Sample Type:
Plasma or serum

Collect:
Lt Green top preferred, Gold top and Gray top acceptable.

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Parnassus, Mission Bay & Mt. Zion Chemistry
Room temperature 2 days, refrigerated 7 days, frozen at -20C 3 months

Berkeley Outpatient Center
Room temperature 8 hrs, refrigerated 3 days

PROCESSING

Test Code:
FBS

Test Group:
Glucose

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Parnassus, Mission Bay & Mt. Zion Chemistry
Room temperature 2 days, refrigerated 7 days, frozen at -20C 3 months

Berkeley Outpatient Center
Room temperature 8 hrs, refrigerated 3 days

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:
Normal: 70-99 mg/dL
Impaired fasting glucose ("pre-diabetes"): 100-125 mg/dL
Diabetes mellitus: > 125 mg/dL

Critical Values:
Neonates: < 30 mg/dL or > 170 mg/dL
>= 1 month old: < 50 mg/dL or > 500 mg/dL

Additional Information:
To convert mg/dl to mmol/L (SI units) multiply by 0.0555.

The stated reference ranges reflect criteria for the diagnosis of diabetes mellitus established by the American Diabetes Association (Diabetes Care, Volume 34, Supplement 1, January 2011). All recommendations of the ADA are based upon plasma or serum levels). The diagnosis of diabetes mellitus should NOT be made until one of these abnormalities has been confirmed on a subsequent day. Impaired glucose tolerance/impaired fasting glucose implies an increased risk of future diabetes. Fasting levels < 50 mg/dL are frequently found in apparently normal individuals after 1-3 days of fasting, especially in women and children; levels as low as 20 mg/dL may be normal in prematures (Pediatrics 1990;85:834).

Note that glucose concentrations in capillary blood are higher than those in venous blood. In fasting samples, the differences are small (2 to 5 mg/dL), however, in non-fasting samples, differences as high as 70 mg/dL may be observed.

ADMINISTRATIVE

CPT Codes:
82947

LOINC Codes:
1558-6

COMPLETE VIEW

Available Stat:
Yes

Test Code:
FBS

Test Group:
Glucose

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Chemistry: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center (Mon-Fri 0800-1630)

Methodology:
Parnassus, Mission Bay & Mt. Zion Chemistry: Hexokinase/G-6-PDH on Abbott Architect
Berkeley Outpatient Center: Hexokinase/G-6-PDH on Roche cobas c311

Patient Preparation:
Patients should have fasted (no caloric intake) for a minimum of 8 hours before testing.

Collect:
Lt Green top preferred, Gold top and Gray top acceptable.

Amount to Collect:
1 mL blood

Sample Type:
Plasma or serum

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Units:
mg/dL

Reference Interval:
Normal: 70-99 mg/dL
Impaired fasting glucose ("pre-diabetes"): 100-125 mg/dL
Diabetes mellitus: > 125 mg/dL

Critical Values:
Neonates: < 30 mg/dL or > 170 mg/dL
>= 1 month old: < 50 mg/dL or > 500 mg/dL

Synonyms:

- Diabetes mellitus
- FBS
- fasting blood sugar

Stability (from collection to initiation):
Parnassus, Mission Bay & Mt. Zion Chemistry
Room temperature 2 days, refrigerated 7 days, frozen at -20C 3 months

Berkeley Outpatient Center
Room temperature 8 hrs, refrigerated 3 days

Additional Information:
To convert mg/dl to mmol/L (SI units) multiply by 0.0555.

The stated reference ranges reflect criteria for the diagnosis of diabetes mellitus established by the American Diabetes Association (Diabetes Care, Volume 34, Supplement 1, January 2011). All recommendations of the ADA are based upon plasma or serum levels). The diagnosis of diabetes mellitus should NOT be made until one of these abnormalities has been confirmed on a subsequent day. Impaired glucose tolerance/impaired fasting glucose implies an increased risk of future diabetes. Fasting levels < 50 mg/dL are frequently found in apparently normal individuals after 1-3 days of fasting, especially in women and children; levels as low as 20 mg/dL may be normal in prematures (Pediatrics 1990;85:834).

Note that glucose concentrations in capillary blood are higher than those in venous blood. In fasting samples, the differences are small (2 to 5 mg/dL), however, in non-fasting samples, differences as high as 70 mg/dL may be observed.

CPT Codes:
82947

LOINC Codes:
1558-6

Glucose, non-fasting, Plasma / Serum

GLU

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Chemistry: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center (Mon-Fri 0800-1630)

Methodology:
Parnassus, Mission Bay & Mt. Zion Chemistry: Hexokinase/G-6-PDH on Abbott Architect
Berkeley Outpatient Center: Hexokinase/G-6-PDH on Roche cobas c311

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
To convert mg/dl to mmol/L (SI units) multiply by 0.0555.

The above reference ranges reflect new criteria for the diagnosis of diabetes mellitus established by the American Diabetes Association ((Diabetes Care, Volume 34, Supplement 1, January 2011). All recommendations of the ADA are based upon plasma or serum levels). The diagnosis of diabetes mellitus should NOT be made until one of these abnormalities has been confirmed on a subsequent day. Impaired glucose tolerance/impaired fasting glucose implies an increased risk of future diabetes.

Synonyms:

- Diabetes mellitus

COLLECTION

Sample Type:
Plasma or serum

Collect:
Light green top preferred, Gold top acceptable (Gray or Dark Green top acceptable)

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Parnassus, Mission Bay & Mt. Zion Chemistry
Room temperature 2 days, refrigerated 7 days, frozen at -20C 3 months
Berkeley Outpatient Center
Room temperature 8 hrs, refrigerated 3 days

PROCESSING

Test Code:
GLU

Test Group:
Glucose

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Specimen Preparation:
Note on specimen if sample was from a gray top tube.

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Parnassus, Mission Bay & Mt. Zion Chemistry
Room temperature 2 days, refrigerated 7 days, frozen at -20C 3 months
Berkeley Outpatient Center
Room temperature 8 hrs, refrigerated 3 days

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:
Pediatrics:

< 1 month	55-115 mg/dL
1 month - 1 year	55-123 mg/dL
1 year - 17 years	56-145 mg/dL

Adults (>= 18 years old):

Normal	70-199 mg/dL
Impaired glucose tolerance	140-199 mg/dL*
Diabetes mellitus	> 199 mg/dL**

* If measured 2 hour postprandial
** AND Sx of diabetes such as polyuria, polydipsia or unexplained weight loss

1. Normal range for infants 0 to <1 month adapted from Soldin, Steven J., "Pediatric Reference Intervals", 6th edition, AACC Press, 2007, method 1.
2. Normal range for 1 month to <18 years adapted from Beckman Coulter's "Pediatric Reference Range Guidelines for Synchron Systems" Bulletin 9345
3. ADA guidelines used for adults.

Critical Values:
Neonates: < 30 mg/dL or > 170 mg/dL
>=1 month old: < 50 mg/dL or > 500 mg/dL

Additional Information:
To convert mg/dl to mmol/L (SI units) multiply by 0.0555.

The above reference ranges reflect new criteria for the diagnosis of diabetes mellitus established by the American Diabetes Association ((Diabetes Care, Volume 34, Supplement 1, January 2011). All recommendations of the ADA are based upon plasma or serum levels). The diagnosis of diabetes mellitus should NOT be made until one of these abnormalities has been confirmed on a subsequent day. Impaired glucose tolerance/impaired fasting glucose implies an increased risk of future diabetes.

ADMINISTRATIVE

CPT Codes:
82947

LOINC Codes:
2345-7

COMPLETE VIEW

Available Stat:
Yes

Test Code:
GLU

Test Group:
Glucose

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Chemistry: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center (Mon-Fri 0800-1630)

Methodology:
Parnassus, Mission Bay & Mt. Zion Chemistry: Hexokinase/G-6-PDH on Abbott Architect
Berkeley Outpatient Center: Hexokinase/G-6-PDH on Roche cobas c311

Collect:
Light green top preferred, Gold top acceptable (Gray or Dark Green top acceptable)

Amount to Collect:
1 mL blood

Sample Type:
Plasma or serum

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Specimen Preparation:
Note on specimen if sample was from a gray top tube.

Units:
mg/dL

Reference Interval:
Pediatrics:

< 1 month	55-115 mg/dL
1 month - 1 year	55-123 mg/dL
1 year - 17 years	56-145 mg/dL

Adults (>= 18 years old):

Normal	70-199 mg/dL
Impaired glucose tolerance	140-199 mg/dL*
Diabetes mellitus	> 199 mg/dL**

* If measured 2 hour postprandial
** AND Sx of diabetes such as polyuria, polydipsia or unexplained weight loss

1. Normal range for infants 0 to <1 month adapted from Soldin, Steven J., "Pediatric Reference Intervals", 6th edition, AACC Press, 2007, method 1.
2. Normal range for 1 month to <18 years adapted from Beckman Coulter's "Pediatric Reference Range Guidelines for Synchron Systems" Bulletin 9345
3. ADA guidelines used for adults.

Critical Values:
Neonates: < 30 mg/dL or > 170 mg/dL
>=1 month old: < 50 mg/dL or > 500 mg/dL

Synonyms:

- Diabetes mellitus

Stability (from collection to initiation):
Parnassus, Mission Bay & Mt. Zion Chemistry
Room temperature 2 days, refrigerated 7 days, frozen at -20C 3 months
Berkeley Outpatient Center
Room temperature 8 hrs, refrigerated 3 days

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
To convert mg/dl to mmol/L (SI units) multiply by 0.0555.

The above reference ranges reflect new criteria for the diagnosis of diabetes mellitus established by the American Diabetes Association ((Diabetes Care, Volume 34, Supplement 1, January 2011). All recommendations of the ADA are based upon plasma or serum levels). The diagnosis of diabetes mellitus should NOT be made until one of these abnormalities has been confirmed on a subsequent day. Impaired glucose tolerance/impaired fasting glucose implies an increased risk of future diabetes.

CPT Codes:
82947

LOINC Codes:
2345-7

Glucose, random urine

GLUR

ORDERING

Available Stat:
No

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Hexokinase/G-6-PDH

Reported:
Same or next day

Synonyms:

- Diabetes mellitus
- Quantitative sugar, urine

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
20 mL urine

Preferred Volume:
5 mL urine

Minimum Volume:
0.2 mL urine

Stability (from collection to initiation):
Room temperature 2 hours, refrigerated 2 hours, frozen at -20C 2 days

PROCESSING

Test Code:
GLUR

Test Group:
Glucose

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
5 mL urine

Minimum Volume:
0.2 mL urine

Stability (from collection to initiation):
Room temperature 2 hours, refrigerated 2 hours, frozen at -20C 2 days

RESULT INTERPRETATION

Units:
g/dL

Reference Interval:
0.001-0.015 g/dL

ADMINISTRATIVE

CPT Codes:
82945

LOINC Codes:
2350-7

COMPLETE VIEW

Available Stat:
No

Test Code:
GLUR

Test Group:
Glucose

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Hexokinase/G-6-PDH

Collect:
Urine cup

Amount to Collect:
20 mL urine

Sample Type:
Random urine

Preferred Volume:
5 mL urine

Minimum Volume:
0.2 mL urine

Units:
g/dL

Reference Interval:
0.001-0.015 g/dL

Synonyms:

- Diabetes mellitus
- Quantitative sugar, urine

Stability (from collection to initiation):
Room temperature 2 hours, refrigerated 2 hours, frozen at -20C 2 days

Reported:
Same or next day

CPT Codes:
82945

LOINC Codes:
2350-7

Glucose, Whole Blood

NGLU

ORDERING

Ordering Recommendations:
Follow the link for information about Blood Gas Panels that contain this test.

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay and Mt Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Amperometry
Oxygen consumption (O2 electrode with glucose oxidase)
Radiometer ABL 90 FLEX Plus

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
Glucose results from whole blood samples tested on the blood gas analyzers are based on direct measurements of glucose in the water phase of the samples and ordinarily provide values similar to those obtained by measuring plasma glucose concentrations with the general chemistry analyzer in the central laboratory.

Synonyms:

- Diabetes mellitus
- ARTBGL
- VENBGL
- CVBGL
- MVBGL
- CAPBG
- Blood gas
- ABG

COLLECTION

Sample Type:
Heparinized whole blood

Collect:
Plastic blood gas syringe containing 100 U of dry heparin or capillary tube with 70 IU/ml dry electrolyte-balanced heparin

Amount to Collect:
3 mL blood

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood

Remarks:

Arterial puncture:

Due to the risk of arterial damage and subsequent distal ischemia, prior to puncturing an artery the RN assesses the collateral circulation. If the radial artery is to be punctured, then the pulse of the ulnar artery is assessed. If the dorsalis pedis artery is to be accessed then the posterial tibial pulse is assessed and likewise if the posterial tibial approach is used the dorsalis pedis pulse is assessed. The modified Allens's test may be used to assess collateral circulation of the ulnar artery before a radial artery puncture, but it does not always ensure adequate flow. A Doppler ultrasound flow indicator may be used to verify collateral circulation. If the collateral circulation is poor and the RN cannot palpate a pulse then the physician should be notified before proceeding. If for any reason the circulation is compromised to the extremity being assessed for arterial puncture then the physician should be notified prior to proceeding.

1. Palpate the radial artery and identify the site where the pulse is the strongest. Avoid areas with overlying veins to prevent venous admixture.
2. Prepare the patient's skin with an alcohol or 2% chlorhexidine wipe/swab.
3. Place two or three fingers along the course of the artery both to locate its position and direction, and to stabilize it.
4. Penetrate the skin smoothly holding the needle at 30-60 degree angle with the needle bevel up and pointed proximally. The angle of the butterfly" IV catheter should not exceed 45° for pediatric patients.
5. Re-establish the position and direction of the artery by palpation.
6. Gently and slowly advance the needle or butterfly", aiming directly for the area of maximum pulsation.
7. When the arterial lumen has been entered, less resistance is felt and blood appears in the syringe above the needle hub.
8. Obtain required amount of arterial blood for test(s).
9. If blood is not obtained on first attempt, withdraw the needle to just below the skin surface and advance needle at same angle but at 1 mm to either side of previous attempt.
10. Place the 2x2 gauze over the site of the puncture then withdraw the needle from the artery. Press firmly at the site for at least five minutes, or until the bleeding stops. Apply bandage or pressure dressing.
11. Expel any air bubble in the syringe with air filter cap placed on specimen syringe.
12. Label sample with patient's name, ID number and DOB.

Venous samples:

1. Avoid excessive venous stasis from prolonged tourniquet application or clenching of the fist prior to sample collection.
2. For central line draws make sure to waste a full red top tube then draw via the blood gas syringe as noted above.
3. Fill syringe completely, remove needle (in peripheral draws), cap sample, expel all bubbles (while holding syringe upright) until blood hits the top of cap.
4. Label sample with patient's name, ID number and DOB.

Capillary Samples:

1. The following are recommended sampling sites: earlobe, fingertip, big toe, heel. The heel and big toe are more suitable for use on neonates and infants.
2. Warm the area or puncture site for 5 to 10 minutes prior to actual sampling. This accelerates flow for blood to be representative of general status of patient.
3. Make a puncture using a lancet or similar device. Do not squeeze the area to avoid tissue juice from mixing into blood sample.
4. Wipe off the first drop of blood. Take the sample from the center of the second drop of blood and hold the capillary at a slightly downward angle for an uninterrupted blood flow. Avoid getting air bubbles in the specimen.
5. Refrain from squeezing or milking the puncture site as this may result in faulty measurements or cause hemolysis of blood sample and cause elevated K+ readings.
6. Apply accompanying caps to both ends of the capillary tube and mix the sample with the heparin immediately after collection to prevent blood from clotting. The manufacturer recommends the use of a mixing wire and magnet for capillary samples.
7. Label sample with patient's name, ID and DOB.

Deliver samples immediately to lab for testing. Samples delivered to the lab >30 minutes after collection may yield erroneous results.

Unacceptable Conditions:

Delivered to lab > 30 min after collection

PROCESSING

Test Code:

NGLU

Test Group:

Glucose

Performing Lab:

Parnassus, Mission Bay and Mt Zion Chemistry

Preferred Volume:

3 mL blood

Minimum Volume:

1 mL blood

Unacceptable Conditions:

Delivered to lab > 30 min after collection

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:
NOTE: These are non-fasting reference intervals.

Pediatrics:

< 1 month	55-115 mg/dL
1 month - 1 year	55-123 mg/dL
1 year - 17 years	56-145 mg/dL

Adults (>= 18 years old):

Normal	70-199 mg/dL
Impaired glucose tolerance	140-199 mg/dL*
Diabetes mellitus	> 199 mg/dL**

* measured 2 hour postprandial
** AND Sx of diabetes such as polyuria, polydipsia or unexplained weight loss

Reference range adopted from current plasma/serum reference ranges for non-fasting glucose.

Critical Values:
Neonates: < 30 mg/dL or > 170 mg/dL
>= 1 month old: < 50 mg/dL or > 500 mg/dL

Additional Information:
Glucose results from whole blood samples tested on the blood gas analyzers are based on direct measurements of glucose in the water phase of the samples and ordinarily provide values similar to those obtained by measuring plasma glucose concentrations with the general chemistry analyzer in the central laboratory.

ADMINISTRATIVE

CPT Codes:
82947

LOINC Codes:
2339-0

COMPLETE VIEW

Available Stat:
Yes

Ordering Recommendations:
Follow the link for information about Blood Gas Panels that contain this test.

Test Code:
NGLU

Test Group:
Glucose

Performing Lab:
Parnassus, Mission Bay and Mt Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Amperometry
Oxygen consumption (O2 electrode with glucose oxidase)
Radiometer ABL 90 FLEX Plus

Remarks:

Arterial puncture:

Due to the risk of arterial damage and subsequent distal ischemia, prior to puncturing an artery the RN assesses the collateral circulation. If the radial artery is to be punctured, then the pulse of the ulnar artery is assessed. If the dorsalis pedis artery is to be accessed then the posterial tibial pulse is assessed and likewise if the posterial tibial approach is used the dorsalis pedis pulse is assessed. The modified Allens's test may be used to assess collateral circulation of the ulnar artery before a radial artery puncture, but it does not always ensure adequate flow. A Doppler ultrasound flow indicator may be used to verify collateral circulation. If the collateral circulation is poor and the RN cannot palpate a pulse then the physician should be notified before proceeding. If for any reason the circulation is compromised to the extremity being assessed for arterial puncture then the physician should be notified prior to proceeding.

1. Palpate the radial artery and identify the site where the pulse is the strongest. Avoid areas with overlying veins to prevent venous admixture.
2. Prepare the patient's skin with an alcohol or 2% chlorhexidine wipe/swab.
3. Place two or three fingers along the course of the artery both to locate its position and direction, and to stabilize it.
4. Penetrate the skin smoothly holding the needle at 30-60 degree angle with the needle bevel up and pointed proximally. The angle of the butterfly" IV catheter should not exceed 45° for pediatric patients.
5. Re-establish the position and direction of the artery by palpation.
6. Gently and slowly advance the needle or butterfly", aiming directly for the area of maximum pulsation.
7. When the arterial lumen has been entered, less resistance is felt and blood appears in the syringe above the needle hub.
8. Obtain required amount of arterial blood for test(s).
9. If blood is not obtained on first attempt, withdraw the needle to just below the skin surface and advance needle at same angle but at 1 mm to either side of previous attempt.
10. Place the 2x2 gauze over the site of the puncture then withdraw the needle from the artery. Press firmly at the site for at least five minutes, or until the bleeding stops. Apply bandage or pressure dressing.
11. Expel any air bubble in the syringe with air filter cap placed on specimen syringe.
12. Label sample with patient's name, ID number and DOB.

Venous samples:

1. Avoid excessive venous stasis from prolonged tourniquet application or clenching of the fist prior to sample collection.
2. For central line draws make sure to waste a full red top tube then draw via the blood gas syringe as noted above.
3. Fill syringe completely, remove needle (in peripheral draws), cap sample, expel all bubbles (while holding syringe upright) until blood hits the top of cap.
4. Label sample with patient's name, ID number and DOB.

Capillary Samples:

1. The following are recommended sampling sites: earlobe, fingertip, big toe, heel. The heel and big toe are more suitable for use on neonates and infants.
2. Warm the area or puncture site for 5 to 10 minutes prior to actual sampling. This accelerates flow for blood to be representative of general status of patient.
3. Make a puncture using a lancet or similar device. Do not squeeze the area to avoid tissue juice from mixing into blood sample.
4. Wipe off the first drop of blood. Take the sample from the center of the second drop of blood and hold the capillary at a slightly downward angle for an uninterrupted blood flow. Avoid getting air bubbles in the specimen.
5. Refrain from squeezing or milking the puncture site as this may result in faulty measurements or cause hemolysis of blood sample and cause elevated K+ readings.
6. Apply accompanying caps to both ends of the capillary tube and mix the sample with the heparin immediately after collection to prevent blood from clotting. The manufacturer recommends the use of a mixing wire and magnet for capillary samples.
7. Label sample with patient's name, ID and DOB.

Deliver samples immediately to lab for testing. Samples delivered to the lab >30 minutes after collection may yield erroneous results.

Collect:

Plastic blood gas syringe containing 100 U of dry heparin or capillary tube with 70 IU/ml dry electrolyte-balanced heparin

Amount to Collect:

3 mL blood

Sample Type:

Heparinized whole blood

Preferred Volume:

3 mL blood

Minimum Volume:

1 mL blood

Unacceptable Conditions:

Delivered to lab > 30 min after collection

Units:

mg/dL

Reference Interval:

NOTE: These are non-fasting reference intervals.

Pediatrics:

< 1 month	55-115 mg/dL
1 month - 1 year	55-123 mg/dL
1 year - 17 years	56-145 mg/dL

Adults (>= 18 years old):

Normal	70-199 mg/dL
Impaired glucose tolerance	140-199 mg/dL*
Diabetes mellitus	> 199 mg/dL**

* measured 2 hour postprandial
** AND Sx of diabetes such as polyuria, polydipsia or unexplained weight loss

Reference range adopted from current plasma/serum reference ranges for non-fasting glucose.

Critical Values:

Neonates: < 30 mg/dL or > 170 mg/dL
>= 1 month old: < 50 mg/dL or > 500 mg/dL

Synonyms:

- Diabetes mellitus
- ARTBGL
- VENBGL
- CVBGL
- MVBGL
- CAPBG
- Blood gas
- ABG

Reported:

STAT 1 hour, Routine 4 hours

Additional Information:

Glucose results from whole blood samples tested on the blood gas analyzers are based on direct measurements of glucose in the water phase of the samples and ordinarily provide values similar to those obtained by measuring plasma glucose concentrations with the general chemistry analyzer in the central laboratory.

CPT Codes:

82947

LOINC Codes:

2339-0

Glucose-6-Phosphate Dehydrogenase Screen, RBC, quantitative

G6PD

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
End point UV Spectrophotometry

Reported:
Test performed Tuesday-Saturday. Turnaround time: 2-5 days.

Additional Information:
To convert U/g Hgb to MU/mol Hgb (SI units) multiply by 0.0645.

Synonyms:

- G-6-PDH
- G6PD
- G6PDH
- red cell enzymes

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top

Amount to Collect:
4 mL blood

Preferred Volume:
4 mL blood

Minimum Volume:
0.5 mL blood

PROCESSING

Test Code:
G6PD

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate sample. Do not centrifuge. Order Quest # 23572P. Ship refrigerated.

Preferred Volume:
4 mL blood

Minimum Volume:
0.5 mL blood

RESULT INTERPRETATION

Units:
U/g Hgb

Reference Interval:
4.6-13.5 U/g Hgb

Additional Information:
To convert U/g Hgb to MU/mol Hgb (SI units) multiply by 0.0645.

ADMINISTRATIVE

CPT Codes:
82955-90

LOINC Codes:
2356-4

COMPLETE VIEW

Available Stat:
No

Test Code:
G6PD

Performing Lab:
Quest

Sendout:
Yes

Methodology:
End point UV Spectrophotometry

Collect:
Lavender top

Amount to Collect:
4 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
4 mL blood

Minimum Volume:
0.5 mL blood

Specimen Preparation:
Refrigerate sample. Do not centrifuge. Order Quest # 23572P. Ship refrigerated.

Units:
U/g Hgb

Reference Interval:
4.6-13.5 U/g Hgb

Synonyms:

- G-6-PDH
- G6PD
- G6PDH
- red cell enzymes

Reported:
Test performed Tuesday-Saturday. Turnaround time: 2-5 days.

Additional Information:
To convert U/g Hgb to MU/mol Hgb (SI units) multiply by 0.0645.

CPT Codes:
82955-90

LOINC Codes:
2356-4

Glycine, CSF:Plasma ratio

ORDERING

Available Stat:
No

Performing Lab:
Lucille-Packard Childrens Hospital

COLLECTION

Patient Preparation:
Patients must be fasting for at least 4 hours before sample collection.

The test request should be accompanied by a brief clinical history, the tentative diagnosis, and a listing of drugs, x-rays, infant formula or dietary therapy administered within the previous 3 days.

Sample Type:
CSF & heparinized plasma

Collect:
CSF tube or sterile collection tube and Dark Green top

Remarks:
Submit both plasma and CSF samples, following the collection instructions for plasma under Amino Acids, Quantitative, 1-5 only. CSF specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

PROCESSING

Test Group:
Glycine

Sendout:
Yes

Performing Lab:
Lucille-Packard Childrens Hospital

RESULT INTERPRETATION

Units:
Ratio

Reference Interval:
CSF/plasma ratio: 0.02-0.05

COMPLETE VIEW

Available Stat:
No

Test Group:
Glycine

Performing Lab:
Lucille-Packard Childrens Hospital

Sendout:
Yes

Patient Preparation:
Patients must be fasting for at least 4 hours before sample collection.

The test request should be accompanied by a brief clinical history, the tentative diagnosis, and a listing of drugs, x-rays, infant formula or dietary therapy administered within the previous 3 days.

Remarks:
Submit both plasma and CSF samples, following the collection instructions for plasma under Amino Acids, Quantitative, 1-5 only. CSF specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Collect:
CSF tube or sterile collection tube and Dark Green top

Sample Type:
CSF & heparinized plasma

Units:
Ratio

Reference Interval:
CSF/plasma ratio: 0.02-0.05

GM-1 Antibodies, IgG and IgM

GM1AB

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Immunoassay

Reported:
3-5 days

Synonyms:

- GM-1 antibodies
- Asialo-GM1 antibodies
- Anti-GM1 antibodies

COLLECTION

Sample Type:
Serum

Collect:
Red top or Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 2 weeks, frozen 1 month.

Rejection Criteria:
Received thawed

PROCESSING

Test Code:
GM1AB

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Spin sample and freeze aliquot, Ship to China Basis frozen.

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Rejection Criteria:
Received thawed

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 2 weeks, frozen 1 month.

RESULT INTERPRETATION

Units:
Titer

Reference Interval:
< 1:800

ADMINISTRATIVE

CPT Codes:
83520 x 2

COMPLETE VIEW

Available Stat:
No

Test Code:
GM1AB

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Immunoassay

Collect:
Red top or Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Rejection Criteria:
Received thawed

Specimen Preparation:
Spin sample and freeze aliquot, Ship to China Basis frozen.

Units:
Titer

Reference Interval:
< 1:800

Synonyms:

- GM-1 antibodies
- Asialo-GM1 antibodies
- Anti-GM1 antibodies

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 2 weeks, frozen 1 month.

Reported:
3-5 days

CPT Codes:
83520 x 2

GML Exome Family Member Peripheral blood draw

GMLEXF

ORDERING

Available Stat:
No

Performing Lab:
Institute for Human Genetics, Genomic Medicine Lab

Additional Information:
Specimen sent to GML

Synonyms:

- Peripheral blood draw for exome

COLLECTION

Sample Type:
Peripheral blood

Collect:
EDTA (lavender top)

Amount to Collect:
3 mL

Preferred Volume:
3 mL

Minimum Volume:
1 mL

Stability (from collection to initiation):
Whole blood is stable refrigerated for 1 week. Please refrigerate samples over the weekend or holidays at 4°C for next business day pick up.

PROCESSING

Test Code:
GMLEXF

Performing Lab:
Institute for Human Genetics, Genomic Medicine Lab

Specimen Preparation:
Peripheral blood sent on the courier to Mt. Zion Central Processing

Preferred Volume:
3 mL

Minimum Volume:
1 mL

Stability (from collection to initiation):
Whole blood is stable refrigerated for 1 week. Please refrigerate samples over the weekend or holidays at 4°C for next business day pick up.

RESULT INTERPRETATION

Additional Information:
Specimen sent to GML

ADMINISTRATIVE

CPT Codes:
36415

COMPLETE VIEW

Available Stat:
No

Test Code:
GMLEXF

Performing Lab:
Institute for Human Genetics, Genomic Medicine Lab

Collect:
EDTA (lavender top)

Amount to Collect:
3 mL

Sample Type:
Peripheral blood

Preferred Volume:
3 mL

Minimum Volume:
1 mL

Specimen Preparation:
Peripheral blood sent on the courier to Mt. Zion Central Processing

Synonyms:

- Peripheral blood draw for exome

Stability (from collection to initiation):
Whole blood is stable refrigerated for 1 week. Please refrigerate samples over the weekend or holidays at 4°C for next business day pick up.

Additional Information:
Specimen sent to GML

CPT Codes:
36415

GQ1B Antibody, IgG

GQ1B

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Enzyme Immunoassay

Reported:
5-7 days

Additional Information:
Measuring IgG antibodies to GQ1b ganglioside in serum as an aid in diagnosis of acute and chronic neuropathies.

Synonyms:

- Ganglioside GD1a antibody

COLLECTION

Patient Preparation:
Overnight fasting preferred but not required

Sample Type:
Serum

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Stability (from collection to initiation):
Room temperture 1 day, refrigerated 1 week, frozen 1 month

PROCESSING

Test Code:
GQ1B

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot serum and freeze. Transport to CB frozen. Order Quest test code 389644

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Stability (from collection to initiation):
Room temperture 1 day, refrigerated 1 week, frozen 1 month

RESULT INTERPRETATION

Units:
Titer

Reference Interval:
< 1:100

Additional Information:
Measuring IgG antibodies to GQ1b ganglioside in serum as an aid in diagnosis of acute and chronic neuropathies.

ADMINISTRATIVE

CPT Codes:
83520-90

LOINC Codes:
14254-7

COMPLETE VIEW

Available Stat:
No

Test Code:
GQ1B

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Enzyme Immunoassay

Patient Preparation:
Overnight fasting preferred but not required

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Specimen Preparation:
Aliquot serum and freeze. Transport to CB frozen. Order Quest test code 389644

Units:
Titer

Reference Interval:
< 1:100

Synonyms:

- Ganglioside GD1a antibody

Stability (from collection to initiation):
Room temperture 1 day, refrigerated 1 week, frozen 1 month

Reported:
5-7 days

Additional Information:
Measuring IgG antibodies to GQ1b ganglioside in serum as an aid in diagnosis of acute and chronic neuropathies.

CPT Codes:
83520-90

LOINC Codes:
14254-7

Gram Stain

P057

ORDERING

Available Stat:
Sterile sites 24x7, Non-sterile sites 7:30 AM-11:30 PM

Performing Lab:
Routine orders: Microbiology
STAT orders: Hematology at Parnassus & Mission Bay

Note: Mount Zion STATs are performed by Microbiology at China Basin.

Performed:
Daily

See information under 'Available stat' for stat testing availability

Methodology:
Gram stain and Microscopy

Reported:
STAT: 1 hour
Routine: Same or next day

Additional Information:
Normally sterile site specimens include CSF and other sterile body fluids (e.g. vitreous, pleural, peritoneal, ascites, amniotic, or joint fluids, bile, dialysates), sterile body tissues, and other specimens from specialized invasive procedures (e.g. bronchoalveolar lavage), and transfused blood product in the case of a transfusion reaction.

For diagnosis of bacterial vaginosis or yeast infection on vaginal exudate, order Vaginal smear for Bacterial vaginosis/yeast.

Synonyms:

- bacterial smear

COLLECTION

Sample Type:
Respiratory, urine*, genital, wound*, CSF**, body fluid**, unfixed tissue*

* considered 'sterile' if collected in the OR or by sterile means
** considered normally sterile sites

See Additional information

Collect:
CSF: CSF tube or sterile tube
Fluids: Sterile tube
Tissue: Anaerobic transport medium or sterile container if large
Swabs: Amies charcoal transport medium
Urine: Urine cup or red-top vacutainer tube
Sputum: Clean container

PROCESSING

Test Code:
P057

Performing Lab:
Routine orders: Microbiology
STAT orders: Hematology at Parnassus & Mission Bay

Note: Mount Zion STATs are performed by Microbiology at China Basin.

RESULT INTERPRETATION

Critical Values:
Positive gram stains on samples from normally sterile sites, except urine (first positive smear only)

Additional Information:

Normally sterile site specimens include CSF and other sterile body fluids (e.g. vitreous, pleural, peritoneal, ascites, amniotic, or joint fluids, bile, dialysates), sterile body tissues, and other specimens from specialized invasive procedures (e.g. bronchoalveolar lavage), and transfused blood product in the case of a transfusion reaction.

For diagnosis of bacterial vaginosis or yeast infection on vaginal exudate, order Vaginal smear for Bacterial vaginosis/yeast.

ADMINISTRATIVE

CPT Codes:
87205

LOINC Codes:
664-3

COMPLETE VIEW

Available Stat:
Sterile sites 24x7, Non-sterile sites 7:30 AM-11:30 PM

Test Code:
P057

Performing Lab:
Routine orders: Microbiology
STAT orders: Hematology at Parnassus & Mission Bay

Note: Mount Zion STATs are performed by Microbiology at China Basin.

Performed:
Daily

See information under 'Available stat' for stat testing availability

Methodology:
Gram stain and Microscopy

Collect:
CSF: CSF tube or sterile tube
Fluids: Sterile tube
Tissue: Anaerobic transport medium or sterile container if large
Swabs: Amies charcoal transport medium
Urine: Urine cup or red-top vacutainer tube
Sputum: Clean container

Sample Type:
Respiratory, urine*, genital, wound*, CSF**, body fluid**, unfixed tissue*

* considered 'sterile' if collected in the OR or by sterile means
** considered normally sterile sites

See Additional information

Critical Values:
Positive gram stains on samples from normally sterile sites, except urine (first positive smear only)

Synonyms:

- bacterial smear

Reported:
STAT: 1 hour
Routine: Same or next day

Additional Information:

Normally sterile site specimens include CSF and other sterile body fluids (e.g. vitreous, pleural, peritoneal, ascites, amniotic, or joint fluids, bile, dialysates), sterile body tissues, and other specimens from specialized invasive procedures (e.g. bronchoalveolar lavage), and transfused blood product in the case of a transfusion reaction.

For diagnosis of bacterial vaginosis or yeast infection on vaginal exudate, order Vaginal smear for Bacterial vaginosis/yeast.

CPT Codes:
87205

LOINC Codes:
664-3

Growth Hormone

GH2

ORDERING

Ordering Recommendations:
Aids in diagnosis of growth hormone excess or deficiency disorders.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative Chemiluminescent Immunoassay

Reported:
1-2 days

Synonyms:

- GH
- GH testing
- GHRH
- Growth Hormone Stimulation
- growth hormone, Serum
- hGH
- Human Growth Hormone
- Somatotrophic Hormone
- Somatotropin

COLLECTION

Patient Preparation:
Patient must be fasting and at complete rest for 30 minutes before blood collection

Sample Type:
Plasma or serum

Collect:
Plasma separator tube or serum separator tube. Also acceptable: Green (sodium or lithium heparin), lavender (EDTA), or pink (K_2EDTA).

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL plasma or serum

Minimum Volume:
0.4 mL plasma or serum

Stability (from collection to initiation):
After separation from cells: Ambient: 24 hours; Refrigerated: 1 week; Frozen: 2 months

Storage/Transport Temperature:
Frozen. Also acceptable: Refrigerated.

Unacceptable Conditions:
Tissue or urine. Grossly hemolyzed or lipemic specimens.

PROCESSING

Test Code:
GH2

ARUP Test Code:
0070080

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Allow specimen to clot completely at room temperature. Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.4 mL)

Preferred Volume:
1 mL plasma or serum

Minimum Volume:
0.4 mL plasma or serum

Unacceptable Conditions:
Tissue or urine. Grossly hemolyzed or lipemic specimens.

Stability (from collection to initiation):
After separation from cells: Ambient: 24 hours; Refrigerated: 1 week; Frozen: 2 months

Storage/Transport Temperature:
Frozen. Also acceptable: Refrigerated.

RESULT INTERPRETATION

Reference Interval:
Effective May 20, 2013

Age	Male	Female
0-6 years	0.10-6.20 ng/mL	0.10-6.20 ng/mL
7-17 years	0.05-11.00 ng/mL	0.05-17.30 ng/mL
18 years and older	0.05-3.00 ng/mL	0.05-8.00 ng/mL

ADMINISTRATIVE

CPT Codes:
83003

LOINC:

- 2963-7

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Aids in diagnosis of growth hormone excess or deficiency disorders.

Test Code:
GH2

ARUP Test Code:
0070080

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative Chemiluminescent Immunoassay

Patient Preparation:
Patient must be fasting and at complete rest for 30 minutes before blood collection

Collect:
Plasma separator tube or serum separator tube. Also acceptable: Green (sodium or lithium heparin), lavender (EDTA), or pink (K_2EDTA).

Amount to Collect:
2 mL blood

Sample Type:
Plasma or serum

Preferred Volume:
1 mL plasma or serum

Minimum Volume:
0.4 mL plasma or serum

Unacceptable Conditions:
Tissue or urine. Grossly hemolyzed or lipemic specimens.

Specimen Preparation:

Allow specimen to clot completely at room temperature. Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.4 mL)

Reference Interval:

Effective May 20, 2013

Age	Male	Female
0-6 years	0.10-6.20 ng/mL	0.10-6.20 ng/mL
7-17 years	0.05-11.00 ng/mL	0.05-17.30 ng/mL
18 years and older	0.05-3.00 ng/mL	0.05-8.00 ng/mL

Synonyms:

- GH
- GH testing
- GHRH
- Growth Hormone Stimulation
- growth hormone, Serum
- hGH
- Human Growth Hormone
- Somatotrophic Hormone
- Somatotropin

Storage/Transport Temperature:

Frozen. Also acceptable: Refrigerated.

Stability (from collection to initiation):

After separation from cells: Ambient: 24 hours; Refrigerated: 1 week; Frozen: 2 months

Reported:

1-2 days

CPT Codes:

83003

LOINC:

- 2963-7

Notes:

This Growth Hormone assay is now standardized to the Recombinant Second International Standard (IS): 98/574. Growth hormone results read approximately 25 percent lower than with the previous standards (FirstIS: 80/505). Reference ranges have also been modified according to the assay manufacturer.

Growth Hormone Supression Testing

ORDERING

Ordering Recommendations:
Growth Hormone Supression Test Ordering/Collection Instructions

COMPLETE VIEW

Ordering Recommendations:
Growth Hormone Supression Test Ordering/Collection Instructions

Growth Hormone, Pediatric

PGHB

ORDERING

Available Stat:
No

Performing Lab:
Esoterix

Methodology:
RIA, Double antibody

Reported:
Test performed Monday-Saturday. Turnaround time: 2-4 days

Additional Information:
This send-out assay is primarily reserved for testing in pediatric patients with suspected or complex endocrine abnormalities. For adult patients see "Growth Hormone" (test code GH). It requires approval if ordered in patients over the age of 20.

Reasons for testing (children and adults):

The assessment of GH secretory capacity is complicated because of the episodic nature of GH release from the pituitary. Basal GH levels can exhibit considerable variability throughout a 24 hour period, thus limiting their clinical utility. Alternatively, measurement of GH response to various stimuli has commonly been used to improve the diagnostic assessment of GH secretion. GH response to provocative stimuli among normal individuals, however is highly variable. Response values greater than 10 ng/mL have historically been considered to reflect normal GH secretory function, while values below 10 ng/mL have been considered to some degree of GH deficiency. However, it should be noted that this limit is arbitrarily derived. A significant percentage of normal controls exhibit response values well below this 10 ng/mL limit. The clinical research literature should be consulted for a more recent detailed review of the interpretation of GH response data.

Because of wide fluctuations in normal levels, normal ranges are difficult to define and measuring random GH values is not usually diagnostically helpful. Screening tests for GH deficiency include measurements 1 hour after sleep or after 20 min of vigorous exercise, but definitive testing requires provocative testing. Increased levels are expected with insulin-induced hypoglycemia, arginine infusion, or the administration of L-dopa or clonidine. Well defined, normative values for stimulation testing are not available for this assay or other widely used growth hormone assays.

Consensus guidelines for the diagnosis and treatment of growth hormone (GH) deficiency in childhood and adolescence: summary statement of the GH Research Society. GH Research Society. J Clin Endocrinol Metab. 2000 Nov;85(11):3990-3

Synonyms:

- GH
- GH, pediatric
- Growth Hormone ultrasensitive

COLLECTION

Sample Type:
Serum

Collect:
Gold top, Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.4 mL serum

PROCESSING

Test Code:
PGHB

Test Group:
GH

Sendout:
Yes

Performing Lab:
Esoterix

Specimen Preparation:
Separate serum within 1 hour after collection. Freeze at -20C. Ship frozen

Preferred Volume:
1 mL serum

Minimum Volume:
0.4 mL serum

RESULT INTERPRETATION

Units:
ng/mL

Reference Interval:

Age	
1-2 days	5-53 ng/mL
2-7 days	5-27 ng/mL
31 days-11 months	2-10 ng/mL
Post-overnight fast	
Children	0-6 ng/mL
>= 18 year olds	0-6 ng/mL

Additional Information:
This send-out assay is primarily reserved for testing in pediatric patients with suspected or complex endocrine abnormalities. For adult patients see "Growth Hormone" (test code GH). It requires approval if ordered in patients over the age of 20.

Reasons for testing (children and adults):

The assessment of GH secretory capacity is complicated because of the episodic nature of GH release from the pituitary. Basal GH levels can exhibit considerable variability throughout a 24 hour period, thus limiting their clinical utility. Alternatively, measurement of GH response to various stimuli has commonly been used to improve the diagnostic assessment of GH secretion. GH response to provocative stimuli among normal individuals, however is highly variable. Response values greater than 10 ng/mL have historically been considered to reflect normal GH secretory function, while values below 10 ng/mL have been considered to some degree of GH deficiency. However, it should be noted that this limit is arbitrarily derived. A significant percentage of normal controls exhibit response values well below this 10 ng/mL limit. The clinical research literature should be consulted for a more recent detailed review of the interpretation of GH response data.

Because of wide fluctuations in normal levels, normal ranges are difficult to define and measuring random GH values is not usually diagnostically helpful. Screening tests for GH deficiency include measurements 1 hour after sleep or after 20 min of vigorous exercise, but definitive testing requires provocative testing. Increased levels are expected with insulin-induced hypoglycemia, arginine infusion, or the administration of L-dopa or clonidine. Well defined, normative values for stimulation testing are not available for this assay or other widely used growth hormone assays.

Consensus guidelines for the diagnosis and treatment of growth hormone (GH) deficiency in childhood and adolescence: summary statement of the GH Research Society. GH Research Society. J Clin Endocrinol Metab. 2000 Nov;85(11):3990-3

ADMINISTRATIVE

CPT Codes:
83003-90

LOINC Codes:
2963-7

COMPLETE VIEW

Available Stat:
No

Test Code:
PGHB

Test Group:
GH

Performing Lab:
Esoterix

Sendout:
Yes

Methodology:
RIA, Double antibody

Collect:
Gold top, Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.4 mL serum

Specimen Preparation:
Separate serum within 1 hour after collection. Freeze at -20C. Ship frozen

Units:
ng/mL

Reference Interval:

Age	
1-2 days	5-53 ng/mL
2-7 days	5-27 ng/mL
31 days-11 months	2-10 ng/mL
Post-overnight fast	
Children	0-6 ng/mL
>= 18 year olds	0-6 ng/mL

Synonyms:

- GH
- GH, pediatric
- Growth Hormone ultrasensitive

Reported:
Test performed Monday-Saturday. Turnaround time: 2-4 days

Additional Information:
This send-out assay is primarily reserved for testing in pediatric patients with suspected or complex endocrine abnormalities. For adult patients see "Growth Hormone" (test code GH). It requires approval if ordered in patients over the age of 20.

Reasons for testing (children and adults):

The assessment of GH secretory capacity is complicated because of the episodic nature of GH release from the pituitary. Basal GH levels can exhibit considerable variability throughout a 24 hour period, thus limiting their clinical utility. Alternatively, measurement of GH response to various stimuli has commonly been used to improve the diagnostic assessment of GH secretion. GH response to provocative stimuli among normal individuals, however is highly variable. Response values greater than 10 ng/mL have historically been considered to reflect normal GH secretory function, while values below 10 ng/mL have been considered to some degree of GH deficiency. However, it should be noted that this limit is arbitrarily derived. A significant percentage of normal controls exhibit response values well below this 10 ng/mL limit. The clinical research literature should be consulted for a more recent detailed review of the interpretation of GH response data.

Because of wide fluctuations in normal levels, normal ranges are difficult to define and measuring random GH values is not usually diagnostically helpful. Screening tests for GH deficiency include measurements 1 hour after sleep or after 20 min of vigorous exercise, but definitive testing requires provocative testing. Increased levels are expected with insulin-induced hypoglycemia, arginine infusion, or the administration of L-dopa or clonidine. Well defined, normative values for stimulation testing are not available for this assay or other widely used growth hormone assays.

Consensus guidelines for the diagnosis and treatment of growth hormone (GH) deficiency in childhood and adolescence: summary statement of the GH Research Society. GH Research Society. J Clin Endocrinol Metab. 2000 Nov;85(11):3990-3

CPT Codes:
83003-90

LOINC Codes:
2963-7

Haemophilus influenzae Type B, IgG antibody

HIBG

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
EIA

Reported:
2 - 4 days

Additional Information:
Haemophilus influenzae is a gram-negative bacteria that is present in approximately three-quarters of children and adults. In infants and young children, haemophilus influenzae, especially type B, may cause bacteremias and meningitis. In children and older individuals haemophilus influenzae may cause respiratory tract infections.

Synonyms:

- H. flu
- HIB antibody
- HIB titer

COLLECTION

Sample Type:
Serum

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen 1 month

Unacceptable Conditions:
Gossly heomlyzed, lipemic or icteric samples.

Rejection Criteria:
Gossly heomlyzed, lipemic or icteric samples.

PROCESSING

Test Code:
HIBG

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot and freeze serum. Transport to China Basin frozen. Order Quest test code 35135

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Unacceptable Conditions:
Gossly heomlyzed, lipemic or icteric samples.

Rejection Criteria:
Gossly heomlyzed, lipemic or icteric samples.

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen 1 month

RESULT INTERPRETATION

Units:
µg/mL (mcg/mL)

Additional Information:
Haemophilus influenzae is a gram-negative bacteria that is present in approximately three-quarters of children and adults. In infants and young children, haemophilus influenzae, especially type B, may cause bacteremias and meningitis. In children and older individuals haemophilus influenzae may cause respiratory tract infections.

ADMINISTRATIVE

CPT Codes:
86684-90

LOINC Codes:
11257-3

COMPLETE VIEW

Available Stat:
No

Test Code:
HIBG

Performing Lab:
Quest

Sendout:
Yes

Methodology:
EIA

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Rejection Criteria:
Gossly heomlyzed, lipemic or icteric samples.

Unacceptable Conditions:
Gossly heomlyzed, lipemic or icteric samples.

Specimen Preparation:
Aliquot and freeze serum. Transport to China Basin frozen. Order Quest test code 35135

Units:
µg/mL (mcg/mL)

Synonyms:

- H. flu
- HIB antibody
- HIB titer

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen 1 month

Reported:
2 - 4 days

Additional Information:
Haemophilus influenzae is a gram-negative bacteria that is present in approximately three-quarters of children and adults. In infants and young children, haemophilus influenzae, especially type B, may cause bacteremias and meningitis. In children and older individuals haemophilus influenzae may cause respiratory tract infections.

CPT Codes:
86684-90

LOINC Codes:
11257-3

Haloperidol

HALO

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
LC-MS

Reported:
Test performed Tuesday-Friday. Turnaround time: 2-6 days.

Synonyms:

- Haldol

COLLECTION

Sample Type:
Serum

Collect:
Red top

Amount to Collect:
8 mL blood

Preferred Volume:
4 mL serum

Minimum Volume:
2.1 mL serum

Remarks:
Collect the sample 11-17 hours after last dose. Write time of collection on requisition.

PROCESSING

Test Code:
HALO

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate. Order Quest # 564

Preferred Volume:
4 mL serum

Minimum Volume:
2.1 mL serum

RESULT INTERPRETATION

Units:
µg/L (mcg/L)

Reference Interval:
Therapeutic: 5-15 ug/L
Toxic: > 50 ug/L

ADMINISTRATIVE

CPT Codes:
80173-90

LOINC Codes:
3669-9

COMPLETE VIEW

Available Stat:
No

Test Code:
HALO

Performing Lab:
Quest

Sendout:
Yes

Methodology:
LC-MS

Remarks:
Collect the sample 11-17 hours after last dose. Write time of collection on requisition.

Collect:
Red top

Amount to Collect:
8 mL blood

Sample Type:
Serum

Preferred Volume:
4 mL serum

Minimum Volume:
2.1 mL serum

Specimen Preparation:
Refrigerate. Order Quest # 564

Units:
µg/L (mcg/L)

Reference Interval:
Therapeutic: 5-15 ug/L
Toxic: > 50 ug/L

Synonyms:

- Haldol

Reported:
Test performed Tuesday-Friday. Turnaround time: 2-6 days.

CPT Codes:
80173-90

LOINC Codes:
3669-9

Hantavirus Antibodies (IgG & IgM)

HANTA

ORDERING

Available Stat:
No

Performing Lab:
Focus via Quest

Methodology:
ELISA

Reported:
Set up 6 days a week. Turnaround 2-4 days

Additional Information:
Two major groups of hantaviruses are recognized based on clinical presentation. The first group includes Sin Nombre Virus (SNV), which causes hantavirus pulmonary syndrome, a severe and sometimes fatal form of acute respiratory distress. A second group of hantaviruses (including Seoul, Hantaan, Dobrava, and Puumala) causes hemorrhagic fever with renal syndrome, a condition not typically seen in the United States.

Sera are initially screened for IgG and IgM antibodies recognizing the nucleocapsid protein common to all hantaviruses. All screen IgM positive samples are then tested for SNV-specific IgM; any screen IgM positive samples that are also screen IgG positive are tested for SNV-specific IgG, as well as SNV-specific IgM. Samples that are screen IgG positive but screen IgM negative are not subjected to SNV-specific IgG testing, since the lack of IgM rules out acute SNV infection. A positive screening result but a negative SNV-specific antibody result may indicate either reactivity to a hantavirus other than SNV or false positive reactivity. A small number of SNV IgM positive (but screen IgG negative) samples represent false positive reactivity associated with acute cytomegalovirus or Epstein Barr virus infection.

These assays were developed and their performance characteristics have been determined by Focus Diagnostics. They have not been cleared or approved by the U.S. Food and Drug Administration. The FDA has determined that such clearance or approval is not necessary. Performance characteristics refer to the analytical performance of the test.

Reflex Testing:
If Hantavirus IgG is > 1.10 and Hantavirus IgM is >1.10 then Sin Nombre Virus IgG Comfirmation will be performed at an additional charge by the reference lab.

Synonyms:

- Sin nombre antibodies

COLLECTION

Sample Type:
Serum

Collect:
Red top (Gold top acceptable)

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.25 mL serum

PROCESSING

Test Code:
HANTA

Test Group:
Hantavirus

Sendout:
Yes

Performing Lab:
Focus via Quest

Specimen Preparation:
Refrigerate sample at 4C. Order Quest #37547X

Preferred Volume:
1 mL serum

Minimum Volume:
0.25 mL serum

RESULT INTERPRETATION

Units:
Index

Reference Interval:
<= 1.10: Antibody not detected
> 1.10: Antibody detected

Additional Information:
Two major groups of hantaviruses are recognized based on clinical presentation. The first group includes Sin Nombre Virus (SNV), which causes hantavirus pulmonary syndrome, a severe and sometimes fatal form of acute respiratory distress. A second group of hantaviruses (including Seoul, Hantaan, Dobrava, and Puumala) causes hemorrhagic fever with renal syndrome, a condition not typically seen in the United States.

Sera are initially screened for IgG and IgM antibodies recognizing the nucleocapsid protein common to all hantaviruses. All screen IgM positive samples are then tested for SNV-specific IgM; any screen IgM positive samples that are also screen IgG positive are tested for SNV-specific IgG, as well as SNV-specific IgM. Samples that are screen IgG positive but screen IgM negative are not subjected to SNV-specific IgG testing, since the lack of IgM rules out acute SNV infection. A positive screening result but a negative SNV-specific antibody result may indicate either reactivity to a hantavirus other than SNV or false positive reactivity. A small number of SNV IgM positive (but screen IgG negative) samples represent false positive reactivity associated with acute cytomegalovirus or Epstein Barr virus infection.

These assays were developed and their performance characteristics have been determined by Focus Diagnostics. They have not been cleared or approved by the U.S. Food and Drug Administration. The FDA has determined that such clearance or approval is not necessary. Performance characteristics refer to the analytical performance of the test.

ADMINISTRATIVE

CPT Codes:
86790-90 x2

LOINC Codes:
16928-4

COMPLETE VIEW

Available Stat:
No

Test Code:
HANTA

Test Group:
Hantavirus

Performing Lab:
Focus via Quest

Sendout:
Yes

Methodology:
ELISA

Collect:
Red top (Gold top acceptable)

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.25 mL serum

Specimen Preparation:
Refrigerate sample at 4C. Order Quest #37547X

Units:
Index

Reference Interval:
<= 1.10: Antibody not detected
> 1.10: Antibody detected

Synonyms:

- Sin nombre antibodies

Reported:

Set up 6 days a week. Turnaround 2-4 days

Reflex Testing:

If Hantavirus IgG is > 1.10 and Hantavirus IgM is >1.10 then Sin Nombre Virus IgG Comfirmation will be performed at an additional charge by the reference lab.

Additional Information:

Two major groups of hantaviruses are recognized based on clinical presentation. The first group includes Sin Nombre Virus (SNV), which causes hantavirus pulmonary syndrome, a severe and sometimes fatal form of acute respiratory distress. A second group of hantaviruses (including Seoul, Hantaan, Dobrava, and Puumala) causes hemorrhagic fever with renal syndrome, a condition not typically seen in the United States.

Sera are initially screened for IgG and IgM antibodies recognizing the nucleocapsid protein common to all hantaviruses. All screen IgM positive samples are then tested for SNV-specific IgM; any screen IgM positive samples that are also screen IgG positive are tested for SNV-specific IgG, as well as SNV-specific IgM. Samples that are screen IgG positive but screen IgM negative are not subjected to SNV-specific IgG testing, since the lack of IgM rules out acute SNV infection. A positive screening result but a negative SNV-specific antibody result may indicate either reactivity to a hantavirus other than SNV or false positive reactivity. A small number of SNV IgM positive (but screen IgG negative) samples represent false positive reactivity associated with acute cytomegalovirus or Epstein Barr virus infection.

These assays were developed and their performance characteristics have been determined by Focus Diagnostics. They have not been cleared or approved by the U.S. Food and Drug Administration. The FDA has determined that such clearance or approval is not necessary. Performance characteristics refer to the analytical performance of the test.

CPT Codes:

86790-90 x2

LOINC Codes:

16928-4

Hantavirus, Antigen

MOLT

ORDERING

Approval Required:
May be performed after consultation with State Viral and Rickettsial Disease Laboratory.

Available Stat:
No

Performing Lab:
State Viral & Rickettsial Disease Laboratory

Methodology:
FA, EIA

Additional Information:
Seldom needed due to specificity of serology.

COLLECTION

Sample Type:
Serum, Unfixed tissue

Collect:
Gold top

Amount to Collect:
10 mL blood

Preferred Volume:
5 mL serum

Minimum Volume:
1 mL serum

PROCESSING

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Test Group:
Hantavirus

Sendout:
Yes

Performing Lab:
State Viral & Rickettsial Disease Laboratory

Specimen Preparation:
Refrigerate sample

Preferred Volume:
5 mL serum

Minimum Volume:
1 mL serum

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
Seldom needed due to specificity of serology.

COMPLETE VIEW

Approval Required:
May be performed after consultation with State Viral and Rickettsial Disease Laboratory.

Available Stat:
No

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Test Group:
Hantavirus

Performing Lab:
State Viral & Rickettsial Disease Laboratory

Sendout:
Yes

Methodology:
FA, EIA

Collect:
Gold top

Amount to Collect:
10 mL blood

Sample Type:
Serum, Unfixed tissue

Preferred Volume:
5 mL serum

Minimum Volume:
1 mL serum

Specimen Preparation:
Refrigerate sample

Reference Interval:
Negative

Additional Information:
Seldom needed due to specificity of serology.

Haptoglobin
HAPT

ORDERING

Ordering Recommendations:
Should only be ordered in anemic patients when peripheral smear review, reticulocyte counts, and Coombs testing have failed to elucidate the cause.

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday, Wednesday, Friday (day shift)

Methodology:
Turbidimetry

Reported:
2-5 days

Additional Information:
Haptoglobin is a serum protein that binds hemoglobin irreversibly.This protein functions to transport intravascular free hemoglobin to its degradation site in the reticulo-endothelial system. Haptoglobin normally is expected to decrease during active hemolysis; however, haptoglobin is an acute phase reactant, thus normal or elevated levels do not exclude the presence of hemolysis. Further, some individuals may normally have very low levels of haptoglobin at baseline and therefore testing in these individuals may result in a false impression of hemolysis. For the test to be reliably interpreted, it is best to compare a result with the patient's baseline level.

Further, haptoglobin does not provide information as to the cause of the hemolysis and therefore rarely results in changes in therapy. In patients with suspected hemolysis, the suspicion is more easily strengthened by determining LDH and bilirubin levels. If these are elevated, then determining a reticulcyte count as a confirmatory test and examining the patient's peripheral smear for red cell features that may offer information as to the cause of the hemolysis would be appropriate.

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Refrigerated 8 days; Frozen for longer stability

Storage/Transport Temperature:
Frozen

Unacceptable Conditions:
Lipemic and grossly hemolyzed samples (delete icteric samples)

PROCESSING

Test Code:
HAPT

Performing Lab:
Immunology

Specimen Preparation:
Frozen

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Lipemic and grossly hemolyzed samples (delete icteric samples)

Stability (from collection to initiation):
Refrigerated 8 days; Frozen for longer stability

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:
32-197 mg/dL

Additional Information:
Haptoglobin is a serum protein that binds hemoglobin irreversibly.This protein functions to transport intravascular free hemoglobin to its degradation site in the reticulo-endothelial system. Haptoglobin normally is expected to decrease during active hemolysis; however, haptoglobin is an acute phase reactant, thus normal or elevated levels do not exclude the presence of hemolysis. Further, some individuals may normally have very low levels of haptoglobin at baseline and therefore testing in these individuals may result in a false impression of hemolysis. For the test to be reliably interpreted, it is best to compare a result with the patient's baseline level.

Further, haptoglobin does not provide information as to the cause of the hemolysis and therefore rarely results in changes in therapy. In patients with suspected hemolysis, the suspicion is more easily strengthened by determining LDH and bilirubin levels. If these are elevated, then determining a reticulcyte count as a confirmatory test and examining the patient's peripheral smear for red cell features that may offer information as to the cause of the hemolysis would be appropriate.

ADMINISTRATIVE

CPT Codes:
83010

LOINC Codes:
4542-7

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Should only be ordered in anemic patients when peripheral smear review, reticulocyte counts, and Coombs testing have failed to elucidate the cause.

Test Code:
HAPT

Performing Lab:
Immunology

Performed:
Monday, Wednesday, Friday (day shift)

Methodology:
Turbidimetry

Collect:
Gold top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Lipemic and grossly hemolyzed samples (delete icteric samples)

Specimen Preparation:
Frozen

Units:
mg/dL

Reference Interval:
32-197 mg/dL

Storage/Transport Temperature:
Frozen

Stability (from collection to initiation):
Refrigerated 8 days; Frozen for longer stability

Reported:
2-5 days

Additional Information:
Haptoglobin is a serum protein that binds hemoglobin irreversibly.This protein functions to transport intravascular free hemoglobin to its degradation site in the reticulo-endothelial system. Haptoglobin normally is expected to decrease during active hemolysis; however, haptoglobin is an acute phase reactant, thus normal or elevated levels do not exclude the presence of hemolysis. Further, some individuals may normally have very low levels of haptoglobin at baseline and therefore testing in these individuals may result in a false impression of hemolysis. For the test to be reliably interpreted, it is best to compare a result with the patient's baseline level.

Further, haptoglobin does not provide information as to the cause of the hemolysis and therefore rarely results in changes in therapy. In patients with suspected hemolysis, the suspicion is more easily strengthened by determining LDH and bilirubin levels. If these are elevated, then determining a reticulcyte count as a confirmatory test and examining the patient's peripheral smear for red cell features that may offer information as to the cause of the hemolysis would be appropriate.

CPT Codes:
83010

LOINC Codes:
4542-7

Hazelnut Component Panel

HCOMP

ORDERING

Available Stat:
No

Performing Lab:
Quest

Performed:
Tuesday-Saturday

Methodology:
Immunoassay

Reported:
1-3 days

Synonyms:

- Hazelnut Component IgE

COLLECTION

Sample Type:
Serum

Collect:
Gold or red-top

Amount to Collect:
2.0 mL blood

Preferred Volume:
1.0 mL serum

Minimum Volume:
0.6 mL serum

Stability (from collection to initiation):
Room Temperature and Refrigerated: 14 days
Frozen: 30 days

Storage/Transport Temperature:
Frozen

PROCESSING

Test Code:
HCOMP

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot and freeze. Send to China Basin frozen. Order Quest test code 94476.

Preferred Volume:
1.0 mL serum

Minimum Volume:
0.6 mL serum

Stability (from collection to initiation):
Room Temperature and Refrigerated: 14 days
Frozen: 30 days

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Units:
kU/L

Reference Interval:
< 0.10

ADMINISTRATIVE

CPT Codes:
86008X4

LOINC Codes:
69421-6, 58753-5, 65765-0, 81788-2

COMPLETE VIEW

Available Stat:
No

Test Code:
HCOMP

Performing Lab:
Quest

Sendout:
Yes

Performed:
Tuesday-Saturday

Methodology:
Immunoassay

Collect:
Gold or red-top

Amount to Collect:
2.0 mL blood

Sample Type:
Serum

Preferred Volume:
1.0 mL serum

Minimum Volume:
0.6 mL serum

Specimen Preparation:
Aliquot and freeze. Send to China Basin frozen. Order Quest test code 94476.

Units:
kU/L

Reference Interval:
< 0.10

Synonyms:

- Hazelnut Component IgE

Storage/Transport Temperature:
Frozen

Stability (from collection to initiation):
Room Temperature and Refrigerated: 14 days
Frozen: 30 days

Reported:
1-3 days

CPT Codes:
86008X4

LOINC Codes:
69421-6, 58753-5, 65765-0, 81788-2

HC COMMON HEREDITARY CANCER PANEL

CCGLHCP

ORDERING

Available Stat:
No

Performing Lab:
UCSF Clinical Cancer Genomics Lab

Performed:
Weekly

Methodology:
Next generation sequencing

Reported:
14 days

Additional Information:
See additional information and forms on CCGL website [URL: https://genomics.ucsf.edu/content/ucsf-common-hereditary-cancer-panel]

Synonyms:

- UCSF HCP
- UCSF Hereditary Cancer Panel
- HCP
- Hereditary Cancer Panel

Supplemental Test Request Form Required:
Yes

COLLECTION

Sample Type:
Blood
Buccal swabs
Saliva
DNA

Collect:
Blood collected in EDTA (lavender top), 4 cc - APeX test code PBCGL
Buccal swabs, minimum 3 swabs - APeX test code BUCCGL
Saliva in Oragene collection kit, minimum 1 cc
DNA, minimum 2 micrograms

Preferred Volume:
4 cc
minimum 3 swabs
minimum 1 cc
minimum 2 micrograms

PROCESSING

Performing Lab:
UCSF Clinical Cancer Genomics Lab

Preferred Volume:
4 cc
minimum 3 swabs
minimum 1 cc
minimum 2 micrograms

RESULT INTERPRETATION

Additional Information:
See additional information and forms on CCGL website [URL: https://genomics.ucsf.edu/content/ucsf-common-hereditary-cancer-panel]

ADMINISTRATIVE

CPT Codes:
81432, 81435

COMPLETE VIEW

Available Stat:
No

Performing Lab:
UCSF Clinical Cancer Genomics Lab

Performed:
Weekly

Methodology:
Next generation sequencing

Collect:
Blood collected in EDTA (lavender top), 4 cc - APeX test code PBCGL
Buccal swabs, minimum 3 swabs - APeX test code BUCCGL
Saliva in Oragene collection kit, minimum 1 cc
DNA, minimum 2 micrograms

Sample Type:
Blood
Buccal swabs
Saliva
DNA

Preferred Volume:
4 cc
minimum 3 swabs
minimum 1 cc
minimum 2 micrograms

Synonyms:

- UCSF HCP
- UCSF Hereditary Cancer Panel
- HCP
- Hereditary Cancer Panel

Reported:
14 days

Additional Information:
See additional information and forms on CCGL website [URL: https://genomics.ucsf.edu/content/ucsf-common-hereditary-cancer-panel]

CPT Codes:
81432, 81435

Supplemental Test Request Form Required:
Yes

HCV & HIV NAT

NAT

ORDERING

Available Stat:
No

Performing Lab:
Creative Testing Solutions

Methodology:
Transcription mediated Amplification

Reported:
Test set up Monday through Saturday p.m. Turnaround time: 2-4 days

Additional Information:
Testing for stem cell and organ donors is performed on individual samples (non-pooled). This is per current FDA regulations. The assay detects HIV & HCV RNA simultaneously and if the screen is reactive HIV & HCV RNA is tested for separately. Results are qualitative as Non-reactive or Reactive. The test can only be ordered as part of the package PTXID.

Synonyms:

- nucleic acid testing
- Hepatitis C
- Human immunodeficiency virus

COLLECTION

Sample Type:
EDTA Plasma

Collect:
6 mL Lavender top x 2

Amount to Collect:
12 mL blood

Preferred Volume:
6 mL plasma

Minimum Volume:
5 mL plasma

Remarks:
These tests are ordered as part of the Pre-Transplant Infectious Disease (PTXID) screen and cannot be ordered separately.

DO NOT draw samples for NAT send out on weekends and holidays or after 2 PM on Fridays.

PROCESSING

Test Code:
NAT

Test Group:
Hepatitis

Sendout:
Yes

Performing Lab:
Creative Testing Solutions

Specimen Preparation:
Ordered as part of the PTXID package. Samples must be received by BSL within 72 hours of collection. Keep at room temperature, DO NOT refrigerate or centrifuge sample.

NAT (HCV/HIV) and WNV NAT can be performed on a single 6 mL lavender top tube.

Preferred Volume:
6 mL plasma

Minimum Volume:
5 mL plasma

RESULT INTERPRETATION

Reference Interval:
Nonreactive

Additional Information:
Testing for stem cell and organ donors is performed on individual samples (non-pooled). This is per current FDA regulations. The assay detects HIV & HCV RNA simultaneously and if the screen is reactive HIV & HCV RNA is tested for separately. Results are qualitative as Non-reactive or Reactive. The test can only be ordered as part of the package PTXID.

ADMINISTRATIVE

LOINC Codes:
53825-6

COMPLETE VIEW

Available Stat:
No

Test Code:
NAT

Test Group:
Hepatitis

Performing Lab:
Creative Testing Solutions

Sendout:
Yes

Methodology:
Transcription mediated Amplification

Remarks:
These tests are ordered as part of the Pre-Transplant Infectious Disease (PTXID) screen and cannot be ordered separately.

DO NOT draw samples for NAT send out on weekends and holidays or after 2 PM on Fridays.

Collect:
6 mL Lavender top x 2

Amount to Collect:
12 mL blood

Sample Type:
EDTA Plasma

Preferred Volume:
6 mL plasma

Minimum Volume:
5 mL plasma

Specimen Preparation:
Ordered as part of the PTXID package. Samples must be received by BSL within 72 hours of collection. Keep at room temperature, DO NOT refrigerate or centrifuge sample.

NAT (HCV/HIV) and WNV NAT can be performed on a single 6 mL lavender top tube.

Reference Interval:
Nonreactive

Synonyms:

- nucleic acid testing
- Hepatitis C
- Human immunodeficiency virus

Reported:
Test set up Monday through Saturday p.m. Turnaround time: 2-4 days

Additional Information:
Testing for stem cell and organ donors is performed on individual samples (non-pooled). This is per current FDA regulations. The assay detects HIV & HCV RNA simultaneously and if the screen is reactive HIV & HCV RNA is tested for separately. Results are qualitative as Non-reactive or Reactive. The test can only be ordered as part of the package PTXID.

LOINC Codes:
53825-6

HeartCare

HEARTC

ORDERING

Available Stat:
No

Performing Lab:
CareDx

Methodology:
Targeted Next Generation Sequencing

Reported:
3-5 days

COLLECTION

Sample Type:
Whole blood

Collect:
Streck Cell-Free DNA BCT® (Streck Tube): AlloMap (Blue Tubes) and AlloSure (Brown Tubes)

Amount to Collect:
10 ml for AlloMap
10 ml for AlloSure

Minimum Volume:
8 ml for AlloMap
10 ml for AlloSure

Remarks:
Collection kit is required for this testing. Kits stocks are limited at draw sites, if possible, patient should bring kit from ordering clinic.

This test is only collected Monday through Friday (Excluding Holidays), from 8 am to 2 pm at Parnassus Outpatient Blood Draw and Parnassus Inpatient units.

Some areas may collect this sample from 2-3pm and must call a STAT AmTran Courier for pickup.

Mix the tubes after drawing by gently inverting them back and forth 10 times.

Label with patient's name, the date and time of collection, and RN or Phlebotomist initials.

Stability (from collection to initiation):
AlloMap - 3 Hours
AlloSure - 7 Days

Unacceptable Conditions:
Frozen samples. Hemolysis.

PROCESSING

Test Code:
HEARTC

Sendout:
Yes

Performing Lab:
CareDx

Specimen Preparation:
Collection kit is required for processing. After collection kit is to be shipped from drawing location.

Minimum Volume:
8 ml for AlloMap
10 ml for AlloSure

Unacceptable Conditions:
Frozen samples. Hemolysis.

Stability (from collection to initiation):
AlloMap - 3 Hours
AlloSure - 7 Days

COMPLETE VIEW

Available Stat:
No

Test Code:
HEARTC

Performing Lab:
CareDx

Sendout:
Yes

Methodology:
Targeted Next Generation Sequencing

Remarks:
Collection kit is required for this testing. Kits stocks are limited at draw sites, if possible, patient should bring kit from ordering clinic.

This test is only collected Monday through Friday (Excluding Holidays), from 8 am to 2 pm at Parnassus Outpatient Blood Draw and Parnassus Inpatient units.

Some areas may collect this sample from 2-3pm and must call a STAT AmTran Courier for pickup.

Mix the tubes after drawing by gently inverting them back and forth 10 times.

Label with patient's name, the date and time of collection, and RN or Phlebotomist initials.

Collect:
Streck Cell-Free DNA BCT® (Streck Tube): AlloMap (Blue Tubes) and AlloSure (Brown Tubes)

Amount to Collect:
10 ml for AlloMap
10 ml for AlloSure

Sample Type:
Whole blood

Minimum Volume:
8 ml for AlloMap
10 ml for AlloSure

Unacceptable Conditions:
Frozen samples. Hemolysis.

Specimen Preparation:
Collection kit is required for processing. After collection kit is to be shipped from drawing location.

Stability (from collection to initiation):
AlloMap - 3 Hours
AlloSure - 7 Days

Reported:
3-5 days

Heart-Reactive Antibody

MOLT

ORDERING

Available Stat:
No

Additional Information:
Research procedure only. Cannot be charged to a patient account. Please supply a budget number. Sent to: Dr. J. Zabriskie The Rockefeller University, 230 York Avenue, New York, NY 10021 (212)360-1125 or -1555)

Synonyms:

- anti-heart antibody

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL serum

PROCESSING

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Sendout:
Yes

Specimen Preparation:
Refrigerate sample

Preferred Volume:
2 mL serum

RESULT INTERPRETATION

Additional Information:
Research procedure only. Cannot be charged to a patient account. Please supply a budget number. Sent to: Dr. J. Zabriskie The Rockefeller University, 230 York Avenue, New York, NY 10021 (212)360-1125 or -1555)

COMPLETE VIEW

Available Stat:
No

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Sendout:
Yes

Collect:
Gold top

Amount to Collect:
4 mL blood

Sample Type:
Serum

Preferred Volume:
2 mL serum

Specimen Preparation:
Refrigerate sample

Synonyms:

- anti-heart antibody

Additional Information:

Research procedure only. Cannot be charged to a patient account. Please supply a budget number. Sent to: Dr. J. Zabriskie The Rockefeller University, 230 York Avenue, New York, NY 10021 (212)360-1125 or -1555)

Heat Shock Protein Antibody

MOLT

ORDERING

Available Stat:
No

Performing Lab:
CO via Quest

Methodology:
Western Blot

Additional Information:
This test, which has been used in the diagnosis of hearing loss, is not offered by the UCSF Clinical Laboratories due to the poor sensitivity of this assay.

References: Does the serological testing really play a role in the diagnosis immune-mediated inner ear disease? Garcia Berrocal JR, Ramirez-Camacho R, Vargas JA, Millan I. Acta Otolaryngol. 2002 Apr;122(3):243-8; and Validity of the Western blot immunoassay for heat shock protein-70 in associated and isolated immunorelated inner ear disease.Garcia Berrocal JR, Ramirez-Camacho R, Arellano B, Vargas JA. Laryngoscope. 2002 Feb;112(2):304-9.

Synonyms:

- anti-68 KD antibodies
- HSP-70
- anti-HSP

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

PROCESSING

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Sendout:
Yes

Performing Lab:
CO via Quest

Specimen Preparation:
Refrigerate serum, send in plastic tube, order #11918. This test is referred by Quest to IMMCO, Buffalo,NY

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

RESULT INTERPRETATION

Reference Interval:
Not present

Additional Information:
This test, which has been used in the diagnosis of hearing loss, is not offered by the UCSF Clinical Laboratories due to the poor sensitivity of this assay.

References: Does the serological testing really play a role in the diagnosis immune-mediated inner ear disease? Garcia Berrocal JR, Ramirez-Camacho R, Vargas JA, Millan I. Acta Otolaryngol. 2002 Apr;122(3):243-8; and Validity of the Western blot immunoassay for heat shock protein-70 in associated and isolated immunorelated inner ear disease.Garcia Berrocal JR, Ramirez-Camacho R, Arellano B, Vargas JA. Laryngoscope. 2002 Feb;112(2):304-9.

COMPLETE VIEW

Available Stat:
No

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Performing Lab:
CO via Quest

Sendout:
Yes

Methodology:
Western Blot

Collect:
Gold top

Amount to Collect:
4 mL blood

Sample Type:
Serum

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Specimen Preparation:
Refrigerate serum, send in plastic tube, order #11918. This test is referred by Quest to IMMCO, Buffalo,NY

Reference Interval:
Not present

Synonyms:

- anti-68 KD antibodies
- HSP-70
- anti-HSP

Additional Information:
This test, which has been used in the diagnosis of hearing loss, is not offered by the UCSF Clinical Laboratories due to the poor sensitivity of this assay.

References: Does the serological testing really play a role in the diagnosis immune-mediated inner ear disease? Garcia Berrocal JR, Ramirez-Camacho R, Vargas JA, Millan I. Acta Otolaryngol. 2002 Apr;122(3):243-8; and Validity of the Western blot immunoassay for heat shock protein-70 in associated and isolated immunorelated inner ear disease.Garcia Berrocal JR, Ramirez-Camacho R, Arellano B, Vargas JA. Laryngoscope. 2002 Feb;112(2):304-9.

Helicobacter pylori Antigen

HPAG

ORDERING

Available Stat:
No

Performing Lab:
UC Irvine

Methodology:
EIA

Reported:
Performed once per week. Results available in 3-10 days.

Additional Information:
Detection of antigen in the stool is reported to be as sensitive as the urea breath test for the presence of Helicobacter-associated gastritis and nearly as sensitive as PCR (the clinical relevance of the latter is unclear). The presence of antigen cannot be used as a test of cure, as stools remain positive due to persistence of antigen from presumably unviable organisms one month after treatment is initiated in nearly 20% of patients (and in 40% of patients by PCR.

Synonyms:

- Campylobacter pyloridis
- H pylori
- gastritis

COLLECTION

Patient Preparation:
No prior treatment with antibacterial antibiotics, proton-pump inhibitors or bismuth preparation use for two weeks before samples collection.

Sample Type:
Unpreserved Stool

Collect:
Urine cup or other leakproof container

Amount to Collect:
1 gm stool

Preferred Volume:
1 gm

Minimum Volume:
0.5 gm

Remarks:
Collect specimens Saturday-Thursday only. Deliver immediately to laboratory. Refrigerate sample if transport is delayed > 1 hour.

Stability (from collection to initiation):
Room temperature 1 hour, refrigerated 3 days, frozen 1 month.

Unacceptable Conditions:
Watery stools, swabs or specimens in transport media. Samples collected outside of stated time frames.

PROCESSING

Test Code:
HPAG

Test Group:
H pylori

Sendout:
Yes

Performing Lab:
UC Irvine

Specimen Preparation:
Freeze sample at -20C and transport frozen. Orcer UCI test code SERHPA

Preferred Volume:
1 gm

Minimum Volume:
0.5 gm

Unacceptable Conditions:
Watery stools, swabs or specimens in transport media. Samples collected outside of stated time frames.

Stability (from collection to initiation):
Room temperature 1 hour, refrigerated 3 days, frozen 1 month.

RESULT INTERPRETATION

Reference Interval:
Not detected

Additional Information:
Detection of antigen in the stool is reported to be as sensitive as the urea breath test for the presence of Helicobacter-associated gastritis and nearly as sensitive as PCR (the clinical relevance of the latter is unclear). The presence of antigen cannot be used as a test of cure, as stools remain positive due to persistence of antigen from presumably unviable organisms one month after treatment is initiated in nearly 20% of patients (and in 40% of patients by PCR.

ADMINISTRATIVE

CPT Codes:
87338- 90

LOINC Codes:
17780-8

COMPLETE VIEW

Available Stat:
No

Test Code:
HPAG

Test Group:
H pylori

Performing Lab:
UC Irvine

Sendout:
Yes

Methodology:
EIA

Patient Preparation:
No prior treatment with antibacterial antibiotics, proton-pump inhibitors or bismuth preparation use for two weeks before samples collection.

Remarks:
Collect specimens Saturday-Thursday only. Deliver immediately to laboratory. Refrigerate sample if transport is delayed > 1 hour.

Collect:
Urine cup or other leakproof container

Amount to Collect:
1 gm stool

Sample Type:
Unpreserved Stool

Preferred Volume:
1 gm

Minimum Volume:
0.5 gm

Unacceptable Conditions:
Watery stools, swabs or specimens in transport media. Samples collected outside of stated time frames.

Specimen Preparation:
Freeze sample at -20C and transport frozen. Orcer UCI test code SERHPA

Reference Interval:
Not detected

Synonyms:

- Campylobacter pyloridis
- H pylori
- gastritis

Stability (from collection to initiation):

Room temperature 1 hour, refrigerated 3 days, frozen 1 month.

Reported:

Performed once per week. Results available in 3-10 days.

Additional Information:

Detection of antigen in the stool is reported to be as sensitive as the urea breath test for the presence of Helicobacter-associated gastritis and nearly as sensitive as PCR (the clinical relevance of the latter is unclear). The presence of antigen cannot be used as a test of cure, as stools remain positive due to persistence of antigen from presumably unviable organisms one month after treatment is initiated in nearly 20% of patients (and in 40% of patients by PCR.

CPT Codes:

87338- 90

LOINC Codes:

17780-8

Helicobacter pylori Culture with Antimicrobial Sensitivities

P131

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Culture

Reported:
8-14 days

Reflex Testing:
If Helicobacter pylori is isolated, susceptibility will be performed at an additional charge.

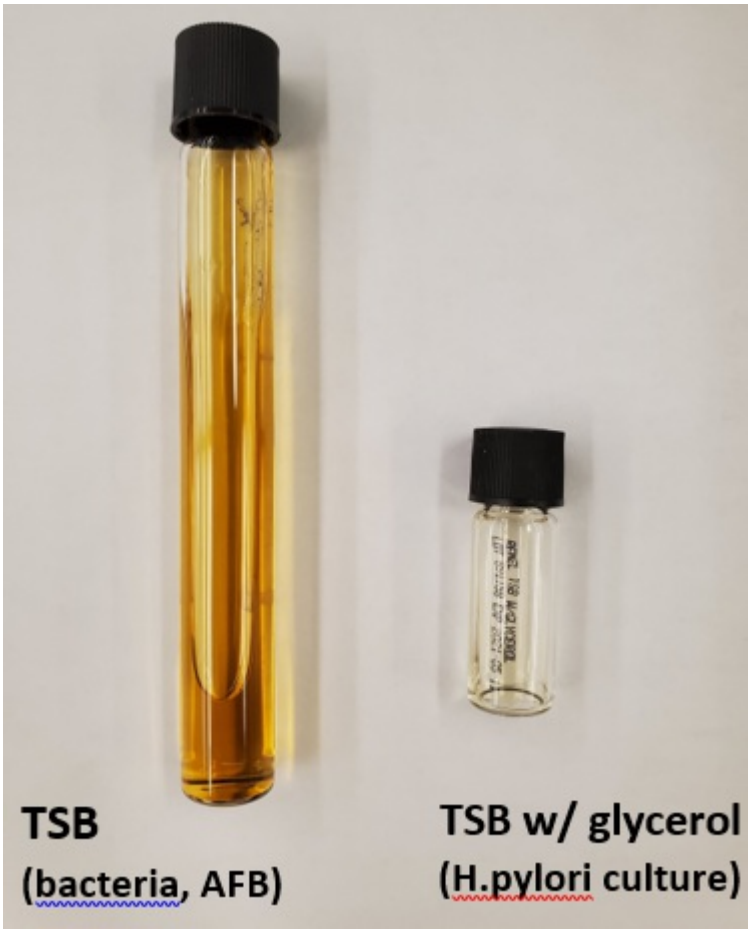
Synonyms:

- Bacterial culture
- Campylobacter pyloridis
- H pylori
- gastritis

COLLECTION

Sample Type:
Gastric biopsy

Collect:
Tryptic Soy Broth with 15% glycerol vial (obtain from Microbiology prior to sample collection); NOT plain TSB (see image below).



Amount to Collect:
3 mm

Preferred Volume:
3 mm

Minimum Volume:
1 mm

Remarks:
Place gastric biopsy into Tryptic Soy Broth with 15% glycerol vial at time of collection. Obtain vials from the microbiology lab.

Stability (from collection to initiation):
Frozen at -70C: 5 days
Refrigerated: 48 hours

Rejection Criteria:
Samples not frozen within 48 hours of collection
Samples not collected in Tryptic Soy Broth with 15% glycerol vial

PROCESSING

Test Code:
P131

Test Group:
H pylori

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate sample in Tryptic Soy Broth with 15% glycerol vial. Quest Diagnostics Infectious Disease test code 91245 Helicobacter pylori Culture with Reflex to Susceptibility

Preferred Volume:
3 mm

Minimum Volume:
1 mm

Rejection Criteria:
Samples not frozen within 48 hours of collection
Samples not collected in Tryptic Soy Broth with 15% glycerol vial

Stability (from collection to initiation):
Frozen at -70C: 5 days
Refrigerated: 48 hours

RESULT INTERPRETATION

Reference Interval:
Not isolated

ADMINISTRATIVE

CPT Codes:
87081, 87205

LOINC Codes:
664-3, 587-6

COMPLETE VIEW

Available Stat:
No

Test Code:
P131

Test Group:
H pylori

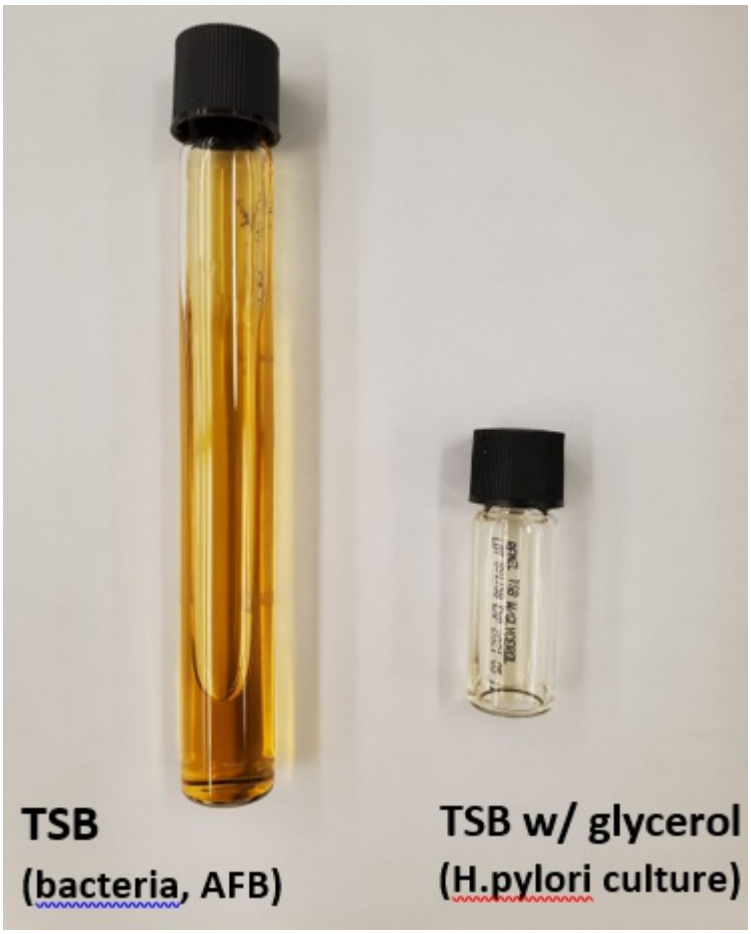
Performing Lab:
Quest

Sendout:
Yes

Methodology:
Culture

Remarks:
Place gastric biopsy into Tryptic Soy Broth with 15% glycerol vial at time of collection. Obtain vials from the microbiology lab.

Collect:
Tryptic Soy Broth with 15% glycerol vial (obtain from Microbiology prior to sample collection); NOT plain TSB (see image below).



Amount to Collect:
3 mm

Sample Type:
Gastric biopsy

Preferred Volume:
3 mm

Minimum Volume:
1 mm

Rejection Criteria:
Samples not frozen within 48 hours of collection
Samples not collected in Tryptic Soy Broth with 15% glycerol vial

Specimen Preparation:
Refrigerate sample in Tryptic Soy Broth with 15% glycerol vial. Quest Diagnostics Infectious Disease test code 91245 Helicobacter pylori Culture with Reflex to Susceptibility

Reference Interval:
Not isolated

Synonyms:

- Bacterial culture
- Campylobacter pyloridis
- H pylori
- gastritis

Stability (from collection to initiation):
Frozen at -70C: 5 days
Refrigerated: 48 hours

Reported:
8-14 days

Reflex Testing:

If Helicobacter pylori is isolated, susceptibility will be performed at an additional charge.

CPT Codes:

87081, 87205

LOINC Codes:

664-3, 587-6

Helicobacter pylori IgG Antibody

HELI

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Wednesday (day shift)

Methodology:
EIA

Reported:
1-8 days

Additional Information:
This is a qualitative test; no quantitative interpretation should be placed upon the height of the antibody response. Unlike elevated IgA or IgM titers which may represent past infection, elevated levels of IgG antibody correlate with a positive gastric culture. However, a positive result may also be found in healthy, asymptomatic individuals, and the serologic test is most useful when the result is negative, which suggests little likelihood of infection.

Synonyms:

- Campylobacter pyloridis
- H pylori
- gastritis

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
3 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

PROCESSING

Test Code:
HELI

Test Group:
H pylori

Performing Lab:
Immunology

Specimen Preparation:
Freeze serum at -20C.

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

RESULT INTERPRETATION

Units:
Units

Reference Interval:
Negative: < 20.1 Units
Equivocal: 20.1-24.9 Units
Positive: > 24.9 Units

Additional Information:
This is a qualitative test; no quantitative interpretation should be placed upon the height of the antibody response. Unlike elevated IgA or IgM titers which may represent past infection, elevated levels of IgG antibody correlate with a positive gastric culture. However, a positive result may also be found in healthy, asymptomatic individuals, and the serologic test is most useful when the result is negative, which suggests little likelihood of infection.

ADMINISTRATIVE

CPT Codes:
86677

LOINC Codes:
5176-3

COMPLETE VIEW

Available Stat:
No

Test Code:
HELI

Test Group:
H pylori

Performing Lab:
Immunology

Performed:
Wednesday (day shift)

Methodology:
EIA

Collect:
Gold top

Amount to Collect:
3 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Specimen Preparation:
Freeze serum at -20C.

Units:
Units

Reference Interval:
Negative: < 20.1 Units
Equivocal: 20.1-24.9 Units
Positive: > 24.9 Units

Synonyms:

- Campylobacter pyloridis
- H pylori
- gastritis

Reported:
1-8 days

Additional Information:
This is a qualitative test; no quantitative interpretation should be placed upon the height of the antibody response. Unlike elevated IgA or IgM titers which may represent past infection, elevated levels of IgG antibody correlate with a positive gastric culture. However, a positive result may also be found in healthy, asymptomatic individuals, and the serologic test is most useful when the result is negative, which suggests little likelihood of infection.

CPT Codes:
86677

LOINC Codes:
5176-3

HELICOBACTER PYLORI, UREA BREATH, adult

HPUBA

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Infra-red Spectrophotometry (IR)

Reported:
3-5 days

Additional Information:
This test is available as Clinic Collect only and clinics must provide the collection kit; Clinical lab phlebotomy services do not perform this test. Once the specimen has been collected at the clinic, send completed kit to China Basin to be sent out to Quest.

Helicobacter pylori is a gram-negative microaerophilic curved bacillus with an affinity for human gastric mucosa. H. pylori has been identified as an important pathogen in the upper GI tract. The casual relationship between H. pylori and chronic active gastritis, duodenal ulcers, and gastric ulcers has been well documented. BreathTek™ UBiT® for H. pylori is a non-invasive, non-radioactive method for detecting urease activity associated with H. pylori infection. It is FDA approved to confirm cure and offers 95.2% sensitivity and 89.7% specificity compared with endoscopic methods.

Synonyms:

- H. pylori
- Campylobacter pyloridis
- gastritis

COLLECTION

Patient Preparation:
Patient should fast one hour before collection of baseline breath sample. Pranactin®-Citric contains a small amount of aspartame sweetener. Test may not be suitable for patients with phenylketonuria whose dietary phenylalanine should be restricted

Collect:
Gulf Coast Scientific PyloPlus UBT Collection Kit. Collection kits need to be ordered by the clinics directly from Quest, Part # K01.

Remarks:
This test is available as Clinic Collect only and clinics must provide the collection kit; Clinical lab phlebotomy services do not perform this test. Once the specimen has been collected at the clinic, send completed kit to China Basin to be sent out to Quest.

Stability (from collection to initiation):
Room temperature: 7 days
Refrigerated: Unacceptable
Frozen: Unacceptable

Rejection Criteria:
Specimen types other than Gulf Coast Scientific PyloPlus UBT bags • Insufficient breath for analysis • Single collection bags • Specimens from patients <3 years old • Specimens not submitted in PyloPlus UBT collection bags • Uncapped bags

PROCESSING

Test Code:
HPUBA

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Transport to CB ambient. Order Quest test code 14839.

Rejection Criteria:
Specimen types other than Gulf Coast Scientific PyloPlus UBT bags • Insufficient breath for analysis • Single collection bags • Specimens from patients <3 years old • Specimens not submitted in PyloPlus UBT collection bags • Uncapped bags

Stability (from collection to initiation):
Room temperature: 7 days
Refrigerated: Unacceptable
Frozen: Unacceptable

RESULT INTERPRETATION

Additional Information:
This test is available as Clinic Collect only and clinics must provide the collection kit; Clinical lab phlebotomy services do not perform this test. Once the specimen has been collected at the clinic, send completed kit to China Basin to be sent out to Quest.

Helicobacter pylori is a gram-negative microaerophilic curved bacillus with an affinity for human gastric mucosa. H. pylori has been identified as an important pathogen in the upper GI tract. The casual relationship between H. pylori and chronic active gastritis, duodenal ulcers, and gastric ulcers has been well documented. BreathTek™ UBiT® for H. pylori is a non-invasive, non-radioactive method for detecting urease activity associated with H. pylori infection. It is FDA approved to confirm cure and offers 95.2% sensitivity and 89.7% specificity compared with endoscopic methods.

ADMINISTRATIVE

CPT Codes:
83013-90

LOINC Codes:
29891-9

COMPLETE VIEW

Available Stat:
No

Test Code:
HPUBA

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Infra-red Spectrophotometry (IR)

Patient Preparation:
Patient should fast one hour before collection of baseline breath sample. Pranactin®-Citric contains a small amount of aspartame sweetener. Test may not be suitable for patients with phenylketonuria whose dietary phenylalanine should be restricted

Remarks:
This test is available as Clinic Collect only and clinics must provide the collection kit; Clinical lab phlebotomy services do not perform this test. Once the specimen has been collected at the clinic, send completed kit to China Basin to be sent out to Quest.

Collect:
Gulf Coast Scientific PyloPlus UBT Collection Kit. Collection kits need to be ordered by the clinics directly from Quest, Part # K01.

Rejection Criteria:
Specimen types other than Gulf Coast Scientific PyloPlus UBT bags • Insufficient breath for analysis • Single collection bags • Specimens from patients <3 years old • Specimens not submitted in PyloPlus UBT collection bags • Uncapped bags

Specimen Preparation:
Transport to CB ambient. Order Quest test code 14839.

Synonyms:

- H. pylori
- Campylobacter pyloridis
- gastritis

Stability (from collection to initiation):
Room temperature: 7 days
Refrigerated: Unacceptable
Frozen: Unacceptable

Reported:
3-5 days

Additional Information:

This test is available as Clinic Collect only and clinics must provide the collection kit; Clinical lab phlebotomy services do not perform this test. Once the specimen has been collected at the clinic, send completed kit to China Basin to be sent out to Quest.

Helicobacter pylori is a gram-negative microaerophilic curved bacillus with an affinity for human gastric mucosa. H. pylori has been identified as an important pathogen in the upper GI tract. The casual relationship between H. pylori and chronic active gastritis, duodenal ulcers, and gastric ulcers has been well documented. BreathTek™ UBiT® for H. pylori is a non-invasive, non-radioactive method for detecting urease activity associated with H. pylori infection. It is FDA approved to confirm cure and offers 95.2% sensitivity and 89.7% specificity compared with endoscopic methods.

CPT Codes:

83013-90

LOINC Codes:

29891-9

Hematocrit, automated

HCT, HCTM, CBC, CBCD, ORHT, LBGH

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center
San Mateo Cancer Center

Performed:
Parnassus, Mission Bay & Mt. Zion Hematology: 24-hours per day, 7-days per week
Berkeley Outpatient Center: Test available Mon-Fri (0800-1630)
San Mateo Cancer Center (Infusion patients only)

Methodology:
Calculation from MCV and RBC Count or measured by Conductance (iStat)

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
Also part of CBC & CBC w/differential

Reference ranges are also dependent upon the intensity of chronic exposure to high altitudes or to tobacco smoke, as well as to the duration of pregnancy. A manual assay will be performed whenever accurate results cannot be obtained on an automated instrument because of some intrinsic abnormality of the specimen, such as the presence of cold agglutinins.

For technical reasons related to plasma trapping between the centrifuged RBCS, manual results are usually 1-2% higher than results by automated methods.

Conductance (e.g. iStat) method may yield spurious results in patients with high volume crystalloid infusion (particularly patients on bypass pump) or other plasma protein derangements. Conductance values may not compare well with calculated Hct results.

Capillary tubes for spun hematocrits require only 100 µL vs 250 µL for a microtainer, but they are leak-prone, fragile, hazardous to handle, less informative than a CBC and-because they are imprecise-should be run in duplicate, diminishing any benefit of requiring less blood volume. We discourage their use but will accept them for processing. Two capillaries should be submitted in a labeled tube to minimize breakage during transport, and should be accompanied by a requisition on which "SPUN HCT" is written next to the box checked for a CBC

Synonyms:

- Hct
- Crit
- PCV
- Packed cell volume

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top

Amount to Collect:
1 mL blood

Preferred Volume:
1 mL blood

Minimum Volume:
250 uL (microtainer sample) See notes.

Rejection Criteria:
Clotted specimens

PROCESSING

Test Code:
HCT, HCTM, CBC, CBCD, ORHT, LBGH

Test Group:
Hct

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center
San Mateo Cancer Center

Preferred Volume:
1 mL blood

Minimum Volume:
250 uL (microtainer sample) See notes.

Rejection Criteria:
Clotted specimens

RESULT INTERPRETATION

Units:
%

Reference Interval:

0-7 days	45-67%
8-14 days	42-66%
2- <4 weeks	39-63%
1- <2 months	31-55%
2- <3 months	28-42%
3- <6 months	29-41%
6- <24 months	33-39%
2- <5 years	34-40%
5- <12 years	35-45%
Male 12- <15 years	37-49%
Male 15- <18 years	40-52%
Male >= 18 years	41-53%
Female >= 12 years	36-46%

Additional Information:
Also part of CBC & CBC w/differential

Reference ranges are also dependent upon the intensity of chronic exposure to high altitudes or to tobacco smoke, as well as to the duration of pregnancy. A manual assay will be performed whenever accurate results cannot be obtained on an automated instrument because of some intrinsic abnormality of the specimen, such as the presence of cold agglutinins.

For technical reasons related to plasma trapping between the centrifuged RBCS, manual results are usually 1-2% higher than results by automated methods.

Conductance (e.g. iStat) method may yield spurious results in patients with high volume crystalloid infusion (particularly patients on bypass pump) or other plasma protein derangements. Conductance values may not compare well with calculated Hct results.

Capillary tubes for spun hematocrits require only 100 µL vs 250 µL for a microtainer, but they are leak-prone, fragile, hazardous to handle, less informative than a CBC and-because they are imprecise-should be run in duplicate, diminishing any benefit of requiring less blood volume. We discourage their use but will accept them for processing. Two capillaries should be submitted in a labeled tube to minimize breakage during transport, and should be accompanied by a requisition on which "SPUN HCT" is written next to the box checked for a CBC

ADMINISTRATIVE

CPT Codes:
85014

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HCT, HCTM, CBC, CBCD, ORHT, LBGH

Test Group:
Hct

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center
San Mateo Cancer Center

Performed:
Parnassus, Mission Bay & Mt. Zion Hematology: 24-hours per day, 7-days per week
Berkeley Outpatient Center: Test available Mon-Fri (0800-1630)
San Mateo Cancer Center (Infusion patients only)

Methodology:
Calculation from MCV and RBC Count or measured by Conductance (iStat)

Collect:
Lavender top

Amount to Collect:
1 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
1 mL blood

Minimum Volume:
250 uL (microtainer sample) See notes.

Rejection Criteria:
Clotted specimens

Units:
%

Reference Interval:

0-7 days	45-67%
8-14 days	42-66%
2- <4 weeks	39-63%
1- <2 months	31-55%
2- <3 months	28-42%
3- <6 months	29-41%
6- <24 months	33-39%
2- <5 years	34-40%
5- <12 years	35-45%
Male 12- <15 years	37-49%
Male 15- <18 years	40-52%
Male >= 18 years	41-53%
Female >= 12 years	36-46%

Synonyms:

- Hct
- Crit
- PCV
- Packed cell volume

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:

Also part of CBC & CBC w/differential

Reference ranges are also dependent upon the intensity of chronic exposure to high altitudes or to tobacco smoke, as well as to the duration of pregnancy. A manual assay will be performed whenever accurate results cannot be obtained on an automated instrument because of some intrinsic abnormality of the specimen, such as the presence of cold agglutinins.

For technical reasons related to plasma trapping between the centrifuged RBCS, manual results are usually 1-2% higher than results by automated methods.

Conductance (e.g. iStat) method may yield spurious results in patients with high volume crystalloid infusion (particularly patients on bypass pump) or other plasma protein derangements. Conductance values may not compare well with calculated Hct results.

Capillary tubes for spun hematocrits require only 100 µL vs 250 µL for a microtainer, but they are leak-prone, fragile, hazardous to handle, less informative than a CBC and-because they are imprecise-should be run in duplicate, diminishing any benefit of requiring less blood volume. We discourage their use but will accept them for processing. Two capillaries should be submitted in a labeled tube to minimize breakage during transport, and should be accompanied by a requisition on which "SPUN HCT" is written next to the box checked for a CBC

CPT Codes:

85014

Hematocrit, Body Fluid-Automated

BHCT

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Hematology

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Calculated (from MCV & RBC count)

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
A manual assay will be performed whenever accurate results cannot be obtained on an automated instrument because of some intrinsic abnormality of the specimen, such as the presence of small clots.

Testing is only performed on visibly bloody samples.

Synonyms:

- Hct
- PCV
- Packed cell volume

COLLECTION

Sample Type:
EDTA anticoagulated body fluid

Collect:
Lavender top

Amount to Collect:
1 mL

Preferred Volume:
1 mL fluid

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Unacceptable Conditions:
Non-bloody sample. Testing is only performed on visibly bloody samples.

PROCESSING

Test Code:
BHCT

Test Group:
Hct

Performing Lab:
Parnassus & Mission Bay Hematology

Preferred Volume:
1 mL fluid

Unacceptable Conditions:
Non-bloody sample. Testing is only performed on visibly bloody samples.

RESULT INTERPRETATION

Units:
%

Reference Interval:
RBCs are not normally present

Additional Information:
A manual assay will be performed whenever accurate results cannot be obtained on an automated instrument because of some intrinsic abnormality of the specimen, such as the presence of small clots.

Testing is only performed on visibly bloody samples.

ADMINISTRATIVE

CPT Codes:
85014

LOINC Codes:
11153-4

COMPLETE VIEW

Available Stat:
Yes

Test Code:
BHCT

Test Group:
Hct

Performing Lab:
Parnassus & Mission Bay Hematology

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Calculated (from MCV & RBC count)

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Collect:
Lavender top

Amount to Collect:
1 mL

Sample Type:
EDTA anticoagulated body fluid

Preferred Volume:
1 mL fluid

Unacceptable Conditions:
Non-bloody sample. Testing is only performed on visibly bloody samples.

Units:
%

Reference Interval:
RBCs are not normally present

Synonyms:

- Hct
- PCV
- Packed cell volume

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
A manual assay will be performed whenever accurate results cannot be obtained on an automated instrument because of some intrinsic abnormality of the specimen, such as the presence of small clots.

Testing is only performed on visibly bloody samples.

CPT Codes:
85014

LOINC Codes:
11153-4

Hematocrit, Body Fluid-Manual

BHCTM

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Hematology

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Centrifugation

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
A manual assay will be performed whenever accurate results cannot be obtained on an automated instrument because of some intrinsic abnormality of the specimen, such as the presence of small clots.

Testing is only performed on visibly bloody samples.

Synonyms:

- Hct
- PCV
- Packed cell volume

COLLECTION

Sample Type:
EDTA anticoagulated body fluid

Collect:
Lavender top

Amount to Collect:
1 mL

Preferred Volume:
1 mL fluid

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Unacceptable Conditions:
Non-bloody sample. Testing is only performed on visibly bloody samples.

PROCESSING

Test Code:
BHCTM

Test Group:
Hct

Performing Lab:
Parnassus & Mission Bay Hematology

Preferred Volume:
1 mL fluid

Unacceptable Conditions:
Non-bloody sample. Testing is only performed on visibly bloody samples.

RESULT INTERPRETATION

Units:
%

Reference Interval:
RBCs are not normally present

Additional Information:
A manual assay will be performed whenever accurate results cannot be obtained on an automated instrument because of some intrinsic abnormality of the specimen, such as the presence of small clots.

Testing is only performed on visibly bloody samples.

ADMINISTRATIVE

CPT Codes:
85013

LOINC Codes:
4545-0

COMPLETE VIEW

Available Stat:
Yes

Test Code:
BHCTM

Test Group:
Hct

Performing Lab:
Parnassus & Mission Bay Hematology

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Centrifugation

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Collect:
Lavender top

Amount to Collect:
1 mL

Sample Type:
EDTA anticoagulated body fluid

Preferred Volume:
1 mL fluid

Unacceptable Conditions:
Non-bloody sample. Testing is only performed on visibly bloody samples.

Units:
%

Reference Interval:
RBCs are not normally present

Synonyms:

- Hct
- PCV
- Packed cell volume

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
A manual assay will be performed whenever accurate results cannot be obtained on an automated instrument because of some intrinsic abnormality of the specimen, such as the presence of small clots.

Testing is only performed on visibly bloody samples.

CPT Codes:
85013

LOINC Codes:
4545-0

Hematocrit, spun

HCTM

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Hematology

Performed:
24 hours a day seven days a week

Methodology:
Centrifugation

Additional Information:
There are several variables which may result in inaccuracies in the measurement of a spun hematocrit and it's use should be restricted to infants where the sample volume is more suitable.

Hemoglobin is a much more accurate and stable parameter in assessing patients for anemia and provides a better indication of oxygen carrying capacity.

Synonyms:

- Hct
- Crit
- PCV
- Packed cell volume
- microhematocrit

COLLECTION

Sample Type:
Whole blood

Collect:
Microhemtocrit tube

Amount to Collect:
Full microhematocrit tubes x2

Preferred Volume:
Full microhemtocrit tubes x2

Minimum Volume:
3/4 full microhematocrit tubes x2

Remarks:
Collect from finger or heel skin puncture or fill tubes from well mixed syringe or vacutainer sample

Unacceptable Conditions:
Microhematocrit tubes received unsealed or sealed at both ends.

PROCESSING

Test Code:
HCTM

Performing Lab:
Parnassus & Mission Bay Hematology

Preferred Volume:
Full microhemtocrit tubes x2

Minimum Volume:
3/4 full microhematocrit tubes x2

Unacceptable Conditions:
Microhematocrit tubes received unsealed or sealed at both ends.

RESULT INTERPRETATION

Units:
%

Reference Interval:

0-7 days	45-67%
8-14 days	42-66%
2-4 weeks	39-63%
1-2 months	31-55%
2-3 months	28-42%
3-6 months	29-41%
6-24 months	33-39%
2-5 years	34-40%
5-12 years	35-45%
Male 12-15 years	37-49%
Male 15-18 years	38-49%
Male > 18 years	41-53%
Female > 12 years	36-46%

Critical Values:

< 25%

or

> 67% for patients 0-14 days old
> 65% for patients >= 15 days old

Additional Information:

There are several variables which may result in inaccuracies in the measurement of a spun hematocrit and it's use should be restricted to infants where the sample volume is more suitable.

Hemoglobin is a much more accurate and stable parameter in assessing patients for anemia and provides a better indication of oxygen carrying capacity.

ADMINISTRATIVE

CPT Codes:
85013

LOINC Codes:
4545-0

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HCTM

Performing Lab:
Parnassus & Mission Bay Hematology

Performed:
24 hours a day seven days a week

Methodology:
Centrifugation

Remarks:
Collect from finger or heel skin puncture or fill tubes from well mixed syringe or vacutainer sample

Collect:
Microhemtocrit tube

Amount to Collect:
Full microhematocrit tubes x2

Sample Type:
Whole blood

Preferred Volume:
Full microhemtocrit tubes x2

Minimum Volume:
3/4 full microhematocrit tubes x2

Unacceptable Conditions:
Microhematocrit tubes received unsealed or sealed at both ends.

Units:
%

Reference Interval:

0-7 days	45-67%
8-14 days	42-66%
2-4 weeks	39-63%
1-2 months	31-55%
2-3 months	28-42%
3-6 months	29-41%
6-24 months	33-39%
2-5 years	34-40%
5-12 years	35-45%
Male 12-15 years	37-49%
Male 15-18 years	38-49%
Male > 18 years	41-53%
Female > 12 years	36-46%

Critical Values:
< 25%

or

> 67% for patients 0-14 days old
> 65% for patients >= 15 days old

Synonyms:

- Hct
- Crit
- PCV
- Packed cell volume
- microhematocrit

Additional Information:
There are several variables which may result in inaccuracies in the measurement of a spun hematocrit and it's use should be restricted to infants where the sample volume is more suitable.

Hemoglobin is a much more accurate and stable parameter in assessing patients for anemia and provides a better indication of oxygen carrying capacity.

CPT Codes:
85013

LOINC Codes:
4545-0

Hemochromatosis, Hereditary

HHEM

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Molecular Diagnostics

Performed:
Run 1x per week as needed, Tuesday or Thursday, day shift only

Methodology:
PCR and allele-specific probes

Reported:
7-10 days

Additional Information:
The Cys282Tyr (G845A, C282Y) mutation in the HLA-H gene is found in 85% of the chromosomes of patients with Hereditary Hemochromatosis.

Homozygosity for the C282Y or compound heterozygosity for C282Y and H63D mutations is associated with increased risk of iron overload. Despite the high frequency of the C282Y mutation the clinical penetrance of the homozygous C282Y genotype is estimated to only be 1-4% (Beutler, BE, Blood 101:3347, 2003)

Heterozygosity or homozygosity for the H63D mutation does not appear to be clinically significant but may ben associated with elevated serum transferrin levels. (Gochee, et al., Gastroentroology 122:646, 2002)

Results are reported as "No Mutation Detected", "Heterozygous for Mutation" or "Homozygous for Mutation".

If a mutation is detected it is recommended that the patient seek genetic counseling.

Note: This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

See also Iron, Transferrin and Transferrin Saturation and Iron, Liver.

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Synonyms:

- Cys282Tyr
- G845A
- C282Y
- Hereditary Hemochromatosis
- HFE mutation
- HLA-H mutation

COLLECTION

Sample Type:
EDTA whole blood, CVS, Tissue culture

Collect:
Lavender top, (Blue (citrate) and Yellow (ACD) tops acceptable)

Amount to Collect:
3 mL blood

Preferred Volume:
3 mL blood

Minimum Volume:
0.1 mL blood

Remarks:
If collecting in citrate, check the expiration date on the label of the blue top vacutainer before drawing the patient.Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer.

PROCESSING

Test Code:
HHEM

Performing Lab:
Medical Genomics - Molecular Diagnostics

Specimen Preparation:
Do not centrifuge the specimen. Store at room temperature. Refrigerated samples are acceptable.

Preferred Volume:
3 mL blood

Minimum Volume:
0.1 mL blood

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer.

RESULT INTERPRETATION

Reference Interval:
No mutation detected.

Additional Information:
The Cys282Tyr (G845A, C282Y) mutation in the HLA-H gene is found in 85% of the chromosomes of patients with Hereditary Hemochromatosis.

Homozygosity for the C282Y or compound heterozygosity for C282Y and H63D mutations is associated with increased risk of iron overload. Despite the high frequency of the C282Y mutation the clinical penetrance of the homozygous C282Y genotype is estimated to only be 1-4% (Beutler, BE, Blood 101:3347, 2003)

Heterozygosity or homozygosity for the H63D mutation does not appear to be clinically significant but may ben associated with elevated serum transferrin levels. (Gochee, et al., Gastroentroology 122:646, 2002)

Results are reported as "No Mutation Detected", "Heterozygous for Mutation" or "Homozygous for Mutation".

If a mutation is detected it is recommended that the patient seek genetic counseling.

Note: This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

See also Iron, Transferrin and Transferrin Saturation and Iron, Liver.

ADMINISTRATIVE

CPT Codes:
81256

LDT or Modified FDA:
Yes

LOINC Codes:
48577-1

COMPLETE VIEW

Available Stat:
No

Test Code:
HHEM

Performing Lab:
Medical Genomics - Molecular Diagnostics

Performed:
Run 1x per week as needed, Tuesday or Thursday, day shift only

Methodology:
PCR and allele-specific probes

Remarks:
If collecting in citrate, check the expiration date on the label of the blue top vacutainer before drawing the patient.Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Collect:
Lavender top, (Blue (citrate) and Yellow (ACD) tops acceptable)

Amount to Collect:
3 mL blood

Sample Type:
EDTA whole blood, CVS, Tissue culture

Preferred Volume:
3 mL blood

Minimum Volume:
0.1 mL blood

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer.

Specimen Preparation:
Do not centrifuge the specimen. Store at room temperature. Refrigerated samples are acceptable.

Reference Interval:
No mutation detected.

Synonyms:

- Cys282Tyr
- G845A
- C282Y
- Hereditary Hemochromatosis
- HFE mutation
- HLA-H mutation

Reported:
7-10 days

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Additional Information:
The Cys282Tyr (G845A, C282Y) mutation in the HLA-H gene is found in 85% of the chromosomes of patients with Hereditary Hemochromatosis.

Homozygosity for the C282Y or compound heterozygosity for C282Y and H63D mutations is associated with increased risk of iron overload. Despite the high frequency of the C282Y mutation the clinical penetrance of the homozygous C282Y genotype is estimated to only be 1-4% (Beutler, BE, Blood 101:3347, 2003)

Heterozygosity or homozygosity for the H63D mutation does not appear to be clinically significant but may ben associated with elevated serum transferrin levels. (Gochee, et al., Gastroentroology 122:646, 2002)

Results are reported as "No Mutation Detected", "Heterozygous for Mutation" or "Homozygous for Mutation".

If a mutation is detected it is recommended that the patient seek genetic counseling.

Note: This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

See also Iron, Transferrin and Transferrin Saturation and Iron, Liver.

CPT Codes:
81256

LDT or Modified FDA:
Yes

LOINC Codes:
48577-1

Hemoglobin

HGB, CBC, CBCD, LBGH

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center
San Mateo Cancer Center

Performed:
Parnassus, Mission Bay & Mt. Zion Hematology: 24-hours per day, 7-days per week
Berkeley Outpatient Center: Test available Mon-Fri (0800-1630)
San Mateo Cancer Center (Infusion patients only)

Methodology:
Spectrophotometry

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
Reference ranges are altered by the intensity of chronic exposure to high altitudes or tobacco smoke, or by the duration of pregnancy.

A manual hemoglobin assay will be performed whenever accurate results cannot be obtained on an automated instrument because of some intrinsic abnormality of the specimen.

Values are calculated from conductance hematocrit on iStat analyzer. Conductance methods for hematocrit may yield spurious results in patients with high volume crystalloid infusion (particularly patients on bypass pump) or other plasma protein derangements. Therefore hemoglobin values based on conductance may not compare well with measured Hgb results.

Synonyms:

- Hgb
- Hb

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top

Amount to Collect:
1 mL blood

Preferred Volume:
1 mL blood

Minimum Volume:
250 uL (microtainer)

Rejection Criteria:
Clotted specimens

PROCESSING

Test Code:
HGB, CBC, CBCD, LBGH

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center
San Mateo Cancer Center

Preferred Volume:
1 mL blood

Minimum Volume:
250 uL (microtainer)

Rejection Criteria:
Clotted specimens

RESULT INTERPRETATION

Units:
g/dL

Reference Interval:

0-7 days	14.5-22.5 g/dL
8-14 days	13.5-21.5 g/dL
2-4 weeks	12.5-20.5 g/dL
1- <2 months	10.0-18.0 g/dL
2- <3 months	9.0-14.0 g/dL
3- <6 months	9.5-13.5 g/dL
6- <24 months	11.0-13.5 g/dL
2- <5 years	11.2-13.5 g/dL
5- <8 years	11.4-15.5 g/dL
8- <12 years	11.6-15.5 g/dL
Male 12- <15 years	12.3-16.0 g/dL
Male 15- <18 years	12.6 -17.0 g/dL
Male >= 18 years	13.6-17.5 g/dL
Female 12- <15 years	11.8-15.5 g/dL
Female >= 15 years	12.0-15.5 g/dL

Critical Values:
<= 7.0 g/dl

Additional Information:
Reference ranges are altered by the intensity of chronic exposure to high altitudes or tobacco smoke, or by the duration of pregnancy.

A manual hemoglobin assay will be performed whenever accurate results cannot be obtained on an automated instrument because of some intrinsic abnormality of the specimen.

Values are calculated from conductance hematocrit on iStat analyzer. Conductance methods for hematocrit may yield spurious results in patients with high volume crystalloid infusion (particularly patients on bypass pump) or other plasma protein derangements. Therefore hemoglobin values based on conductance may not compare well with measured Hgb results.

ADMINISTRATIVE

CPT Codes:
85018

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HGB, CBC, CBCD, LBGH

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center
San Mateo Cancer Center

Performed:
Parnassus, Mission Bay & Mt. Zion Hematology: 24-hours per day, 7-days per week
Berkeley Outpatient Center: Test available Mon-Fri (0800-1630)
San Mateo Cancer Center (Infusion patients only)

Methodology:
Spectrophotometry

Collect:
Lavender top

Amount to Collect:
1 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
1 mL blood

Minimum Volume:
250 uL (microtainer)

Rejection Criteria:
Clotted specimens

Units:
g/dL

Reference Interval:

0-7 days	14.5-22.5 g/dL
8-14 days	13.5-21.5 g/dL
2-4 weeks	12.5-20.5 g/dL
1- <2 months	10.0-18.0 g/dL
2- <3 months	9.0-14.0 g/dL
3- <6 months	9.5-13.5 g/dL
6- <24 months	11.0-13.5 g/dL
2- <5 years	11.2-13.5 g/dL
5- <8 years	11.4-15.5 g/dL
8- <12 years	11.6-15.5 g/dL
Male 12- <15 years	12.3-16.0 g/dL
Male 15- <18 years	12.6 -17.0 g/dL
Male >= 18 years	13.6-17.5 g/dL
Female 12- <15 years	11.8-15.5 g/dL
Female >= 15 years	12.0-15.5 g/dL

Critical Values:
<= 7.0 g/dl

Synonyms:

- Hgb
- Hb

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
Reference ranges are altered by the intensity of chronic exposure to high altitudes or tobacco smoke, or by the duration of pregnancy.

A manual hemoglobin assay will be performed whenever accurate results cannot be obtained on an automated instrument because of some intrinsic abnormality of the specimen.

Values are calculated from conductance hematocrit on iStat analyzer. Conductance methods for hematocrit may yield spurious results in patients with high volume crystalloid infusion (particularly patients on bypass pump) or other plasma protein derangements. Therefore hemoglobin values based on conductance may not compare well with measured Hgb results.

CPT Codes:
85018

Hemoglobin A1c

HBA1

ORDERING

Available Stat:
No

Performing Lab:
Parnassus, Mission Bay and Mt Zion Chemistry

Performed:
Parnassus and Mission Bay: 24 hours per day, 7 days per week
Mt Zion: Monday-Friday (day shift)

Methodology:
Parnassus and Mission Bay: Abbott Architect c8000 (Enzymatic)
Mt Zion: Abbott Architect c4000 (Enzymatic)

Reported:
1-3 days

Additional Information:

INTERFERENCES:

Impact of variant hemoglobins on A1c results: When present in the heterozygous state, the most common variant hemoglobins S, D, C, or E do not have a significant impact on the A1c results in this assay. In patients homozygous for these variants, it is recommended to monitor glucose control with other methods such as fructosamine testing.

Impact of fetal hemoglobin on A1c results: The presence of fetal hemoglobin can cause a negative interference in this A1c assay. Hemoglobin F in concentrations > 5% will reduce the A1c result in proportion to the magnitude of the % of hemoglobin F in the sample. For example, a hemoglobin F level of 20% will reduce the A1c result by approximately 20% in this assay.

Serum glycated albumin (fructosamine) testing can be ordered as an alternative means of monitoring glucose control when interferences preclude following A1c by this method.

In diabetic patients who have experienced recent blood loss, hemolysis, or have elevated reticulocyte counts for other reasons, the level may be lowered and may not reflect actual glycemic control.

TESTING RECOMMENDATIONS:

Management of Diabetes:

Goals for HbA1c management recommended by American Diabetes Association (ADA) Standards of Medical Care in Diabetes (Diabetes Care, Volume 33, Supplement 1, January 2010) are as follows:

When using this assay, the ADA recommended goal for A1c control for adult diabetic patients in general is <7% although use of an A1c goal as close to normal as possible without causing significant hypoglycemia may be appropriate for individual patients. In pregnant patients with diabetes, the ADA recommends aiming for the range < 6% if it can be achieved without excessive hypoglycemia.

The ADA recommended goals for other age groups are:0-6 years old 7.6% - 8.4%6-12 years old < 8%
13-19 years old < 7.5%
> 19 years old < 7%

Diagnosis of diabetes or increased risk for diabetes: The American Diabetes Association recommends the following HbA1c cutoffs when assessing increased risk for diabetes and when diagnosing diabetes.

5.7% - 6.4% Increased risk for diabetes
>6.4% Consistent with diabetes

Note: In the absence of unequivocal hyperglycemia, the diagnosis of diabetes should be confirmed by repeat testing.

Receiver operating curve analyses of nationally representative U.S. data (NHANES 2005-2006) indicate that among the nondiabetic adult population, an A1C value of 5.7%, compared with other cut points, has the best combination of sensitivity (39%) and specificity (91%) to identify cases of impaired fasting glucose (FPG >= 100 mg/dl [5.6 mmol/l]). Note that individuals with an A1c < 5.7% may still be at risk, depending on the level of A1c and presence of other risk factors, such as obesity and family history. Individuals with an A1c > 6% should be considered at very high risk for diabetes.

Certification/Traceability/Precision:

This enzymatic method is certified by the National Glycohemoglobin Standardization Program (NGSP), standardized to International Federation of Clinical Chemistry and Laboratory Medicine (IFCC), and traceable to Diabetes Control and Complications Trial (DCCT).

The hemoglobin A1C assay has an imprecision (%CV) of <=2% for samples targeted to 6.5% HbA1c (5.7 to 7.0% HbA1c inclusive), and a <=3.5% imprecision (%CV) for samples with concentrations >7.0% HbA1c. In patients with elevated A1c levels, results determined by the point of care DCA Vantage device may run approximately 0.1 to 0.4 units higher than this enzymatic method

Synonyms:

- Glyco-hgb
- Glycohemoglobin
- Glycosylated hemoglobin
- Hgb A1
- HgbA1c
- Glycated hemoglobin

COLLECTION

Sample Type:

EDTA whole blood

Collect:
Lavender top

Amount to Collect:
1 mL blood

Preferred Volume:
1 mL blood

Stability (from collection to initiation):
Room temperature: 8 hours
Refrigerated: 7 days
Frozen (less than -70C): 7 days

PROCESSING

Test Code:
HBA1

Test Group:
Hemoglobin A1c

Performing Lab:
Parnassus, Mission Bay and Mt Zion Chemistry

Specimen Preparation:
Do not centrifuge.

Preferred Volume:
1 mL blood

Stability (from collection to initiation):
Room temperature: 8 hours
Refrigerated: 7 days
Frozen (less than -70C): 7 days

RESULT INTERPRETATION

Units:
%

Reference Interval:
Non-Diabetic: 4.3-5.6%

Additional Information:

INTERFERENCES:

Impact of variant hemoglobins on A1c results: When present in the heterozygous state, the most common variant hemoglobins S, D, C, or E do not have a significant impact on the A1c results in this assay. In patients homozygous for these variants, it is recommended to monitor glucose control with other methods such as fructosamine testing.

Impact of fetal hemoglobin on A1c results: The presence of fetal hemoglobin can cause a negative interference in this A1c assay. Hemoglobin F in concentrations > 5% will reduce the A1c result in proportion to the magnitude of the % of hemoglobin F in the sample. For example, a hemoglobin F level of 20% will reduce the A1c result by approximately 20% in this assay.

Serum glycated albumin (fructosamine) testing can be ordered as an alternative means of monitoring glucose control when interferences preclude following A1c by this method.

In diabetic patients who have experienced recent blood loss, hemolysis, or have elevated reticulocyte counts for other reasons, the level may be lowered and may not reflect actual glycemic control.

TESTING RECOMMENDATIONS:

Management of Diabetes:

Goals for HbA1c management recommended by American Diabetes Association (ADA) Standards of Medical Care in Diabetes (Diabetes Care, Volume 33, Supplement 1, January 2010) are as follows:

When using this assay, the ADA recommended goal for A1c control for adult diabetic patients in general is <7% although use of an A1c goal as close to normal as possible without causing significant hypoglycemia may be appropriate for individual patients. In pregnant patients with diabetes, the ADA recommends aiming for the range < 6% if it can be achieved without excessive hypoglycemia.

The ADA recommended goals for other age groups are:0-6 years old 7.6% - 8.4%6-12 years old < 8%
13-19 years old < 7.5%
> 19 years old < 7%

Diagnosis of diabetes or increased risk for diabetes: The American Diabetes Association recommends the following HbA1c cutoffs when assessing increased risk for diabetes and when diagnosing diabetes.

5.7% - 6.4% Increased risk for diabetes
>6.4% Consistent with diabetes

Note: In the absence of unequivocal hyperglycemia, the diagnosis of diabetes should be confirmed by repeat testing.

Receiver operating curve analyses of nationally representative U.S. data (NHANES 2005-2006) indicate that among the nondiabetic adult population, an A1C value of 5.7%, compared with other cut points, has the best combination of sensitivity (39%) and specificity (91%) to identify cases of impaired fasting glucose (FPG >= 100 mg/dl [5.6 mmol/l]). Note that individuals with an A1c < 5.7% may still be at risk, depending on the level of A1c and presence of other risk factors, such as obesity and family history. Individuals with an A1c > 6% should be considered at very high risk for diabetes.

Certification/Traceability/Precision:

This enzymatic method is certified by the National Glycohemoglobin Standardization Program (NGSP), standardized to International Federation of Clinical Chemistry and Laboratory Medicine (IFCC), and traceable to Diabetes Control and Complications Trial (DCCT).

The hemoglobin A1C assay has an imprecision (%CV) of <=2% for samples targeted to 6.5% HbA1c (5.7 to 7.0% HbA1c inclusive), and a <=3.5% imprecision (%CV) for samples with concentrations >7.0% HbA1c. In patients with elevated A1c levels, results determined by the point of care DCA Vantage device may run approximately 0.1 to 0.4 units higher than this enzymatic method

ADMINISTRATIVE

CPT Codes:
83036

LOINC Codes:
17856-6

COMPLETE VIEW

Available Stat:
No

Test Code:
HBA1

Test Group:
Hemoglobin A1c

Performing Lab:
Parnassus, Mission Bay and Mt Zion Chemistry

Performed:
Parnassus and Mission Bay: 24 hours per day, 7 days per week
Mt Zion: Monday-Friday (day shift)

Methodology:
Parnassus and Mission Bay: Abbott Architect c8000 (Enzymatic)
Mt Zion: Abbott Architect c4000 (Enzymatic)

Collect:
Lavender top

Amount to Collect:
1 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
1 mL blood

Specimen Preparation:
Do not centrifuge.

Units:
%

Reference Interval:
Non-Diabetic: 4.3-5.6%

Synonyms:

- Glyco-hgb
- Glycohemoglobin
- Glycosylated hemoglobin
- Hgb A1
- HgbA1c
- Glycated hemoglobin

Stability (from collection to initiation):
Room temperature: 8 hours
Refrigerated: 7 days
Frozen (less than -70C): 7 days

Reported:
1-3 days

Additional Information:

INTERFERENCES:

Impact of variant hemoglobins on A1c results: When present in the heterozygous state, the most common variant hemoglobins S, D, C, or E do not have a significant impact on the A1c results in this assay. In patients homozygous for these variants, it is recommended to monitor glucose control with other methods such as fructosamine testing.

Impact of fetal hemoglobin on A1c results: The presence of fetal hemoglobin can cause a negative interference in this A1c assay. Hemoglobin F in concentrations > 5% will reduce the A1c result in proportion to the magnitude of the % of hemoglobin F in the sample. For example, a hemoglobin F level of 20% will reduce the A1c result by approximately 20% in this assay.

Serum glycated albumin (fructosamine) testing can be ordered as an alternative means of monitoring glucose control when interferences preclude following A1c by this method.

In diabetic patients who have experienced recent blood loss, hemolysis, or have elevated reticulocyte counts for other reasons, the level may be lowered and may not reflect actual glycemic control.

TESTING RECOMMENDATIONS:

Management of Diabetes:

Goals for HbA1c management recommended by American Diabetes Association (ADA) Standards of Medical Care in Diabetes (Diabetes Care, Volume 33, Supplement 1, January 2010) are as follows:

When using this assay, the ADA recommended goal for A1c control for adult diabetic patients in general is <7% although use of an A1c goal as close to normal as possible without causing significant hypoglycemia may be appropriate for individual patients. In pregnant patients with diabetes, the ADA recommends aiming for the range < 6% if it can be achieved without excessive hypoglycemia.

The ADA recommended goals for other age groups are:0-6 years old 7.6% - 8.4%6-12 years old < 8%
13-19 years old < 7.5%
> 19 years old < 7%

Diagnosis of diabetes or increased risk for diabetes: The American Diabetes Association recommends the following HbA1c cutoffs when assessing increased risk for diabetes and when diagnosing diabetes.

5.7% - 6.4% Increased risk for diabetes
>6.4% Consistent with diabetes

Note: In the absence of unequivocal hyperglycemia, the diagnosis of diabetes should be confirmed by repeat testing.

Receiver operating curve analyses of nationally representative U.S. data (NHANES 2005-2006) indicate that among the nondiabetic adult population, an A1C value of 5.7%, compared with other cut points, has the best combination of sensitivity (39%) and specificity (91%) to identify cases of impaired fasting glucose (FPG >= 100 mg/dl [5.6 mmol/l]). Note that individuals with an A1c < 5.7% may still be at risk, depending on the level of A1c and presence of other risk factors, such as obesity and family history. Individuals with an A1c > 6% should be considered at very high risk for diabetes.

Certification/Traceability/Precision:

This enzymatic method is certified by the National Glycohemoglobin Standardization Program (NGSP), standardized to International Federation of Clinical Chemistry and Laboratory Medicine (IFCC), and traceable to Diabetes Control and Complications Trial (DCCT).

The hemoglobin A1C assay has an imprecision (%CV) of <=2% for samples targeted to 6.5% HbA1c (5.7 to 7.0% HbA1c inclusive), and a <=3.5% imprecision (%CV) for samples with concentrations >7.0% HbA1c. In patients with elevated A1c levels, results determined by the point of care DCA Vantage device may run approximately 0.1 to 0.4 units higher than this enzymatic method

CPT Codes:

83036

LOINC Codes:

17856-6

Hemoglobin/Hematocrit, Whole Blood

CAHB, NHCT

ORDERING

Ordering Recommendations:
Follow the link for information about Blood Gas Panels that contain this test.

Available Stat:
Yes

Performing Lab:
Parnassus Chemistry, Mission Bay and Mt Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Radiometer ABL 90 FLEX Plus

Hematocrit is calculated from total hemoglobin

Reported:
15 minutes

Synonyms:

- Hgb
- Hct
- ARTBGL
- VENBGL
- CVBGL
- MVBGL
- CAPBG
- MVBGCX
- CIRBGA
- CIRBGV
- Blood gas
- ABG

COLLECTION

Sample Type:
Heparinized whole blood

Collect:
Plastic syringe containing 100 U of dry heparin
Capillary tube

Amount to Collect:
3 mL blood

Preferred Volume:
3 mL blood

Minimum Volume:
55 µL blood

Remarks:

Arterial puncture:
Due to the risk of arterial damage and subsequent distal ischemia, prior to puncturing an artery the RN assesses the collateral circulation. If the radial artery is to be punctured, then the pulse of the ulnar artery is assessed. If the dorsalis pedis artery is to be accessed then the posterial tibial pulse is assessed and likewise if the posterial tibial approach is used the dorsalis pedis pulse is assessed. The modified Allens's test may be used to assess collateral circulation of the ulnar artery before a radial artery puncture, but it does not always ensure adequate flow. A Doppler ultrasound flow indicator may be used to verify collateral circulation. If the collateral circulation is poor and the RN cannot palpate a pulse then the physician should be notified before proceeding. If for any reason the circulation is compromised to the extremity being assessed for arterial puncture then the physician should be notified prior to proceeding.

1. Palpate the radial artery and identify the site where the pulse is the strongest. Avoid areas with overlying veins to prevent venous admixture.
2. Prepare the patient's skin with an alcohol or 2% chlorhexidine wipe/swab.
3. Place two or three fingers along the course of the artery both to locate its position and direction, and to stabilize it.
4. Penetrate the skin smoothly holding the needle at 30-60 degree angle with the needle bevel up and pointed proximally. The angle of the "butterfly" IV catheter should not exceed 45° for pediatric patients.
5. Re-establish the position and direction of the artery by palpation.
6. Gently and slowly advance the needle or "butterfly", aiming directly for the area of maximum pulsation.
7. When the arterial lumen has been entered, less resistance is felt and blood appears in the syringe above the needle hub.
8. Obtain required amount of arterial blood for test(s).
9. If blood is not obtained on first attempt, withdraw the needle to just below the skin surface and advance needle at same angle but at 1 mm to either side of previous attempt.
10. Place the 2x2 gauze over the site of the puncture then withdraw the needle from the artery. Press firmly at the site for at least five minutes, or until the bleeding stops. Apply bandage or pressure dressing.
11. Expel any air bubble in the syringe with air filter cap placed on specimen syringe.
12. Label sample with patient's name, ID number and DOB.

Venous samples:
1. Avoid excessive venous stasis from prolonged tourniquet application or clenching of the fist prior to sample collection.
2. For central line draws make sure to waste a full red top tube then draw via the blood gas syringe as noted above.
3. Fill syringe completely, remove needle (in peripheral draws), cap sample, expel all bubbles (while holding syringe upright) until blood hits the top of cap.
4. Label sample with patient's name, ID number and DOB.

Capillary Samples:
1. The following are recommended sampling sites: earlobe, finger tip, big toe, heel. The heel and big toe are more suitable for use on neonates and infants.
2. Warm the area or puncture site for 5 to 10 minutes prior to actual sampling. This accelerates flow for blood to be representative of general status of patient.
3. Make a puncture using a lancet or similar device. Do not squeeze the area to avoid tissue juice from mixing into blood sample.
4. Wipe off the first drop of blood. Take the sample from the center of the second drop of blood and hold the capillary at a slightly downward angle for an uninterrupted blood flow. Avoid getting air bubbles in the specimen.
5. Refrain from squeezing or milking the puncture site as this may result in faulty measurements or cause hemolysis of blood sample and cause elevated K+ readings.
6. Apply accompanying caps to both ends of the capillary tube and mix the sample with the heparin immediately after collection to prevent blood from clotting. The manufacturer recommends the use of a mixing wire and magnet for capillary samples.
7. Label sample with patient's name, ID and DOB.

Deliver samples immediately to lab for testing. Samples delivered to the lab > 30 minutes after collection may yield erroneous results.

Stability (from collection to initiation):
Room temperature 30 minutes

Unacceptable Conditions:
Syringe received with needle attached

PROCESSING

Test Code:
CAHB
NHCT

Performing Lab:
Parnassus Chemistry, Mission Bay and Mt Zion Chemistry

Preferred Volume:
3 mL blood

Minimum Volume:
55 µL blood

Unacceptable Conditions:
Syringe received with needle attached

Stability (from collection to initiation):
Room temperature 30 minutes

RESULT INTERPRETATION

Units:
Calculated Hct: %
Hgb: g/dL

Reference Interval:
Hct:

0 - 7 days	45-67%
8 - 14 days	42-66%
2 - <4 weeks	39-63%
1 - <2 months	31-55%
2 - <6 months	28-42%
6 months - <5 years	33-40%
5 - <12 years	35-45%
Male 12 - <15 years	37-49%
Male 15 - <18 years	38-49%
Male >=18 years	41-53%
Female >=12 years	36-46%

Reference range adopted from reference range used in the central UCSF hematology laboratory for hematocrit determined from the measurement of MCV and RBC count.

Hgb (g/dL):

0 - <14 days	13.5-22.5
2 - <4 weeks	12.5-20.5
1 - <2 months	10.0-18.0
2 - <3 months	9.0-14.0
3 - <6 months	9.5-13.5
6 months - <5 years	11.0-13.5
5 - <12 years	11.4-15.5
Male 12 - <15years	12.3-16.0
Male 15 - <18 years	12.6-17.0
Male >=18 years	13.6-17.5
Female >=12 years	11.8-15.6

Adult reference ranges adopted from Hematology section spectrophotometry-based hemoglobin assay and verified using 25 male and 25 female volunteers from UCSF Clinical Laboratories.

Critical Values:
Hemoglobin: <= 7.0 g/dL

ADMINISTRATIVE

CPT Codes:
85018

COMPLETE VIEW

Available Stat:
Yes

Ordering Recommendations:
Follow the link for information about Blood Gas Panels that contain this test.

Test Code:
CAHB
NHCT

Performing Lab:
Parnassus Chemistry, Mission Bay and Mt Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Radiometer ABL 90 FLEX Plus

Hematocrit is calculated from total hemoglobin

Remarks:

Arterial puncture:
Due to the risk of arterial damage and subsequent distal ischemia, prior to puncturing an artery the RN assesses the collateral circulation. If the radial artery is to be punctured, then the pulse of the ulnar artery is assessed. If the dorsalis pedis artery is to be accessed then the posterial tibial pulse is assessed and likewise if the posterial tibial approach is used the dorsalis pedis pulse is assessed. The modified Allens's test may be used to assess collateral circulation of the ulnar artery before a radial artery puncture, but it does not always ensure adequate flow. A Doppler ultrasound flow indicator may be used to verify collateral circulation. If the collateral circulation is poor and the RN cannot palpate a pulse then the physician should be notified before proceeding. If for any reason the circulation is compromised to the extremity being assessed for arterial puncture then the physician should be notified prior to proceeding.

1. Palpate the radial artery and identify the site where the pulse is the strongest. Avoid areas with overlying veins to prevent venous admixture.
2. Prepare the patient's skin with an alcohol or 2% chlorhexidine wipe/swab.
3. Place two or three fingers along the course of the artery both to locate its position and direction, and to stabilize it.
4. Penetrate the skin smoothly holding the needle at 30-60 degree angle with the needle bevel up and pointed proximally. The angle of the "butterfly" IV catheter should not exceed 45° for pediatric patients.
5. Re-establish the position and direction of the artery by palpation.
6. Gently and slowly advance the needle or "butterfly", aiming directly for the area of maximum pulsation.
7. When the arterial lumen has been entered, less resistance is felt and blood appears in the syringe above the needle hub.
8. Obtain required amount of arterial blood for test(s).
9. If blood is not obtained on first attempt, withdraw the needle to just below the skin surface and advance needle at same angle but at 1 mm to either side of previous attempt.
10. Place the 2x2 gauze over the site of the puncture then withdraw the needle from the artery. Press firmly at the site for at least five minutes, or until the bleeding stops. Apply bandage or pressure dressing.
11. Expel any air bubble in the syringe with air filter cap placed on specimen syringe.
12. Label sample with patient's name, ID number and DOB.

Venous samples:
1. Avoid excessive venous stasis from prolonged tourniquet application or clenching of the fist prior to sample collection.
2. For central line draws make sure to waste a full red top tube then draw via the blood gas syringe as noted above.
3. Fill syringe completely, remove needle (in peripheral draws), cap sample, expel all bubbles (while holding syringe upright) until blood hits the top of cap.
4. Label sample with patient's name, ID number and DOB.

Capillary Samples:
1. The following are recommended sampling sites: earlobe, finger tip, big toe, heel. The heel and big toe are more suitable for use on neonates and infants.
2. Warm the area or puncture site for 5 to 10 minutes prior to actual sampling. This accelerates flow for blood to be representative of general status of patient.
3. Make a puncture using a lancet or similar device. Do not squeeze the area to avoid tissue juice from mixing into blood sample.
4. Wipe off the first drop of blood. Take the sample from the center of the second drop of blood and hold the capillary at a slightly downward angle for an uninterrupted blood flow. Avoid getting air bubbles in the specimen.
5. Refrain from squeezing or milking the puncture site as this may result in faulty measurements or cause hemolysis of blood sample and cause elevated K+ readings.
6. Apply accompanying caps to both ends of the capillary tube and mix the sample with the heparin immediately after collection to prevent blood from clotting. The manufacturer recommends the use of a mixing wire and magnet for capillary samples.
7. Label sample with patient's name, ID and DOB.

Deliver samples immediately to lab for testing. Samples delivered to the lab > 30 minutes after collection may yield erroneous results.

Collect:
Plastic syringe containing 100 U of dry heparin
Capillary tube

Amount to Collect:
3 mL blood

Sample Type:
Heparinized whole blood

Preferred Volume:
3 mL blood

Minimum Volume:
55 µL blood

Unacceptable Conditions:
Syringe received with needle attached

Units:
Calculated Hct: %
Hgb: g/dL

Reference Interval:
Hct:

0 - 7 days	45-67%
8 - 14 days	42-66%
2 - <4 weeks	39-63%
1 - <2 months	31-55%
2 - <6 months	28-42%
6 months - <5 years	33-40%
5 - <12 years	35-45%
Male 12 - <15 years	37-49%
Male 15 - <18 years	38-49%
Male >=18 years	41-53%
Female >=12 years	36-46%

Reference range adopted from reference range used in the central UCSF hematology laboratory for hematocrit determined from the measurement of MCV and RBC count.

Hgb (g/dL):

0 - <14 days	13.5-22.5
2 - <4 weeks	12.5-20.5
1 - <2 months	10.0-18.0
2 - <3 months	9.0-14.0
3 - <6 months	9.5-13.5
6 months - <5 years	11.0-13.5
5 - <12 years	11.4-15.5
Male 12 - <15years	12.3-16.0
Male 15 - <18 years	12.6-17.0
Male >=18 years	13.6-17.5
Female >=12 years	11.8-15.6

Adult reference ranges adopted from Hematology section spectrophotometry-based hemoglobin assay and verified using 25 male and 25 female volunteers from UCSF Clinical Laboratories.

Critical Values:
Hemoglobin: <= 7.0 g/dL

Synonyms:

- Hgb
- Hct
- ARTBGL
- VENBGL
- CVBGL
- MVBGL
- CAPBG
- MVBGCX
- CIRBGA
- CIRBGV
- Blood gas
- ABG

Stability (from collection to initiation):
Room temperature 30 minutes

Reported:
15 minutes

CPT Codes:
85018

Hemoglobinopathy Evaluation

HBEP

ORDERING

Available Stat:

STAT testing requires approval and is only available Monday through Friday and not on holidays. To alert the laboratory and obtain approval for STAT testing, please contact China Basin Chemistry at 415-353-4820 or email clinlabspecialchemsupsspecialists@ucsf.edu. Samples must be received in the laboratory by 9am for STAT testing to insure same day resulting that afternoon.

Performing Lab:

China Basin Chemistry

Performed:

Set up Mondays and Thursdays, reports next day.

Methodology:

Capillary Electrophoresis (on Sebia Capillarys 2 Flex Piercing) and HPLC Electrophoresis (on Bio Rad Variant II) (+/- Electrophoresis)

Reported:

1-8 days

Additional Information:

Only A, A2 and F are normally present; the latter is almost completely replaced by A at age two. Hemoglobins A, A2, S, C, F, D or G, E or O, and fast hemoglobins, e.g., Hgb Bart's, are separated and quantitated.

HPLC and capillary electrophoresis are rapid and reproducible methods for identifying variants; however, it is possible that a rare variant may be missed. If clinical indications strongly suggest a variant hemoglobin not identified by HPLC & capillary electrophoresis, please contact the Chemistry Laboratory at 353-4820.

Iron deficiency decreases Hgb A2, and the characteristic elevation of Hgb A2 in beta-thalassemia may easily be missed.

Note: The HPLC test was developed by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

Synonyms:

- Alkali denaturation
- sickle hemoglobin
- HbSS
- Hemoglobin A2
- Hemoglobin F
- fetal hemoglobin
- hemoglobin E
- Hemoglobin C
- hemoglobin electrophoresis
- Hemoglobin Bart's
- sickle screen
- sickledex
- HbC
- HbS
- HbE
- Hgb S
- Hgb C
- HGB E

COLLECTION

Sample Type:

EDTA whole blood

Collect:

Lavender top

Amount to Collect:

2 mL blood

Preferred Volume:

2 mL blood

Minimum Volume:

1 mL blood

Stability (from collection to initiation):

Refrigerated 1 week

PROCESSING

Test Code:
HBEP

Performing Lab:
China Basin Chemistry

Specimen Preparation:
Do not centrifuge. Refrigerate samples

Preferred Volume:
2 mL blood

Minimum Volume:
1 mL blood

Stability (from collection to initiation):
Refrigerated 1 week

RESULT INTERPRETATION

Units:
%

Reference Interval:

Age	Hgb F	Hgb A2	Hgb A
0 to 6 days	77.0-97.9%	< 1.0%	2.4-22.4%
7 to 14 days	79.6-91.4%	0.0-1.0%	8.5-19.8%
15 to 45 days	59.8-89.6%	0.0-1.5%	12.9-51.1%
46 days to < 3 months	23.9-67.2%	0.6-1.9%	35.8-77.3%
3 month to < 6 months	4.4-27.5%	1.7-2.8%	75.3-96.6%
6 months to < 9 months	1.5-27.8%	2.1-2.9%	81.1-97.6%
9 months to < 15 months	0.4-8.4%	2.2-3.2%	91.2-98.3%
15 months to < 2 years	0.1-4.9%	2.2-3.2%	94.4-98.0%
2 years to < 6 years	0.0-3.7%	2.2-3.2%	95.7-98.0%
6 years and older	<1.0%	2.2-3.2%	95.9-97.8%

Additional Information:
Only A, A2 and F are normally present; the latter is almost completely replaced by A at age two. Hemoglobins A, A2, S, C, F, D or G, E or O, and fast hemoglobins, e.g., Hgb Bart's, are separated and quantitated.

HPLC and capillary electrophoresis are rapid and reproducible methods for identifying variants; however, it is possible that a rare variant may be missed. If clinical indications strongly suggest a variant hemoglobin not identified by HPLC & capillary electrophoresis, please contact the Chemistry Laboratory at 353-4820.

Iron deficiency decreases Hgb A2, and the characteristic elevation of Hgb A2 in beta-thalassemia may easily be missed.

Note: The HPLC test was developed by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

Interpretive Data:
Only A, A2 and F are normally present; the latter is almost completely replaced by A at age two. Hemoglobins A, A2, S, C, F, D or G, E or O, and fast hemoglobins, e.g., Hgb Bart's, are separated and quantitated.

HPLC and capillary electrophoresis are rapid and reproducible methods for identifying variants; however, it is possible that a rare variant may be missed. If clinical indications strongly suggest a variant hemoglobin not identified by HPLC & capillary electrophoresis, please contact the Chemistry Laboratory at 353-4820.

Iron deficiency decreases Hgb A2, and the characteristic elevation of Hgb A2 in beta-thalassemia may easily be missed.

Note: The HPLC test was developed by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

ADMINISTRATIVE

CPT Codes:
83021; 83020

LDT or Modified FDA:
Yes

LOINC Codes:
49322-1

COMPLETE VIEW

Available Stat:
STAT testing requires approval and is only available Monday through Friday and not on holidays. To alert the laboratory and obtain approval for STAT testing, please contact China Basin Chemistry at 415-353-4820 or email clinlabspecialchemsupsspecialists@ucsf.edu. Samples must be received in the laboratory by 9am for STAT testing to insure same day resulting that afternoon.

Test Code:
HBEP

Performing Lab:
China Basin Chemistry

Performed:
Set up Mondays and Thursdays, reports next day.

Methodology:
Capillary Electrophoresis (on Sebia Capillarys 2 Flex Piercing) and HPLC Electrophoresis (on Bio Rad Variant II) (+/- Electrophoresis)

Collect:
Lavender top

Amount to Collect:
2 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
2 mL blood

Minimum Volume:
1 mL blood

Specimen Preparation:
Do not centrifuge. Refrigerate samples

Units:
%

Reference Interval:

Age	Hgb F	Hgb A2	Hgb A
0 to 6 days	77.0-97.9%	< 1.0%	2.4-22.4%
7 to 14 days	79.6-91.4%	0.0-1.0%	8.5-19.8%
15 to 45 days	59.8-89.6%	0.0-1.5%	12.9-51.1%
46 days to < 3 months	23.9-67.2%	0.6-1.9%	35.8-77.3%
3 month to < 6 months	4.4-27.5%	1.7-2.8%	75.3-96.6%
6 months to < 9 months	1.5-27.8%	2.1-2.9%	81.1-97.6%
9 months to < 15 months	0.4-8.4%	2.2-3.2%	91.2-98.3%
15 months to < 2 years	0.1-4.9%	2.2-3.2%	94.4-98.0%
2 years to < 6 years	0.0-3.7%	2.2-3.2%	95.7-98.0%
6 years and older	<1.0%	2.2-3.2%	95.9-97.8%

Interpretive Data:
Only A, A2 and F are normally present; the latter is almost completely replaced by A at age two. Hemoglobins A, A2, S, C, F, D or G, E or O, and fast hemoglobins, e.g., Hgb Bart's, are separated and quantitated.

HPLC and capillary electrophoresis are rapid and reproducible methods for identifying variants; however, it is possible that a rare variant may be missed. If clinical indications strongly suggest a variant hemoglobin not identified by HPLC & capillary electrophoresis, please contact the Chemistry Laboratory at 353-4820.

Iron deficiency decreases Hgb A2, and the characteristic elevation of Hgb A2 in beta-thalassemia may easily be missed.

Note: The HPLC test was developed by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

Synonyms:

- Alkali denaturation
- sickle hemoglobin
- HbSS
- Hemoglobin A2
- Hemoglobin F
- fetal hemoglobin
- hemoglobin E
- Hemoglobin C
- hemoglobin electrophoresis
- Hemoglobin Bart's
- sickle screen
- sickledex
- HbC
- HbS
- HbE
- Hgb S
- Hgb C
- HGB E

Stability (from collection to initiation):
Refrigerated 1 week

Reported:
1-8 days

Additional Information:
Only A, A2 and F are normally present; the latter is almost completely replaced by A at age two. Hemoglobins A, A2, S, C, F, D or G, E or O, and fast hemoglobins, e.g., Hgb Bart's, are separated and quantitated.

HPLC and capillary electrophoresis are rapid and reproducible methods for identifying variants; however, it is possible that a rare variant may be missed. If clinical indications strongly suggest a variant hemoglobin not identified by HPLC & capillary electrophoresis, please contact the Chemistry Laboratory at 353-4820.

Iron deficiency decreases Hgb A2, and the characteristic elevation of Hgb A2 in beta-thalassemia may easily be missed.

Note: The HPLC test was developed by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

CPT Codes:
83021; 83020

LDT or Modified FDA:
Yes

LOINC Codes:
49322-1

Hemosiderin Stain, urine

HMSU

ORDERING

Available Stat:
No

Performing Lab:
Parnassus Hematology

Performed:
Test run 0800-1500 Monday-Friday

Methodology:
Prussian Blue stain of urine sediment

Reported:
Same day or next weekday

COLLECTION

Sample Type:
1st AM void urine

Collect:
Urine cup

Amount to Collect:
See preferred volume

Preferred Volume:
50 mL urine

Unacceptable Conditions:
Collected in non-plastic container

PROCESSING

Test Code:
HMSU

Performing Lab:
Parnassus Hematology

Preferred Volume:
50 mL urine

Unacceptable Conditions:
Collected in non-plastic container

RESULT INTERPRETATION

Reference Interval:
Negative

ADMINISTRATIVE

CPT Codes:
83070

LOINC Codes:
4644-1

COMPLETE VIEW

Available Stat:
No

Test Code:
HMSU

Performing Lab:
Parnassus Hematology

Performed:
Test run 0800-1500 Monday-Friday

Methodology:
Prussian Blue stain of urine sediment

Collect:
Urine cup

Amount to Collect:
See preferred volume

Sample Type:
1st AM void urine

Preferred Volume:
50 mL urine

Unacceptable Conditions:
Collected in non-plastic container

Reference Interval:
Negative

Reported:
Same day or next weekday

CPT Codes:
83070

LOINC Codes:
4644-1

Heparin Induced Thrombocytopenia Panel

HEPRA

ORDERING

Ordering Recommendations:

The pretest likelihood of HIT can be assessed by the 4T's:

Category	2 points	1 point	0 points
Degree of thrombocytopenia	Fall > 50% and nadir >= 20K	fall 30-50% or nadir 10K-19K	Fall < 30% or nadir < 10K
Timing of fall	5-14 days post heparin or <= 1 day if prior exposure < 30 days	Consistent with days 5-14 fall, but not clear or onset after day 14 or fall <= 1 day (with heparin exposure 30-100 days ago)	<= 4days without recent exposure
Thrombsis or sequelae	New thrombosis; skin necrosis; acute systemic reaction post IV unfract. heparin	Progressive or recurrent thrombosis; skin erythema w/out necrosis; suspected thrombosis only (not confirmed)	None
Other cause of thrombocytopenia	None apparent	Possible	Definite

Score	Probability of HIT
1-3	Low
4-5	Intermediate
6-8	High

Adapted from: American Society of Hematology Guideline, 2009 Clinical Practice Guideline on the Evaluation and Management of Heparin-Induced Thrombocytopenia.

Approval Required:

No, but if washed platelet-heparin induced platelet activation" is required before result of heparin-PF4 ELISA test is available, please contact hematology at x3-1747

Available Stat:

No

Performing Lab:

Machaon Diagnostics

Methodology:

Enzyme Linked Immunosorbent Assay

Reported:

1-2 days

Additional Information:

A negative test does not exclude thrombotic risk due to heparin induced thrombocytopenia (HIT), nor does a positive test exclude other causes of thrombocytopenia. Correlation with platelet counts and clinical findings can be important for diagnosis of HIT. If there is continued concern for HIT in the face of a negative heparin-PF4 immunoassay, repeat testing with a request to perform washed platelet activation assay (even if heparin-PF4 immunoassay remains negative) could be considered.

Antibodies to heparin-PF4 complexes are found in the majority of patients with clinical findings of heparin-induced thrombocytopenia (HIT), but also in variable numbers of heparinized patients without thrombocytopenia.

For assistance in interpreting results, please contact the Hematology consultation services: for adults pager 443-4276, for pediatrics pager 443-6966. Or you may contact Hematology lab resident at 353-1747.

Reflex Testing:

A heparin antibody by ELISA method will be performed initially. If results are positive, will reflex to a washed platelet heparin-induced platelet activation method (wp-HIPA).

Synonyms:

- HIT
- heparin induced thrombocytopenia
- platelet factor 4
- HIT panel
- HPA
- heparin induced platelet antibody
- HIPAB
- SRAU
- Serotonin Release Assay

COLLECTION

Sample Type:
Serum

Collect:
Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Frozen 7 days

Rejection Criteria:
Sample thawed on receipt

PROCESSING

Test Code:
HEPRA

Test Group:
HIT

Sendout:
Yes

Performing Lab:
Machaon Diagnostics

Specimen Preparation:
Freeze serum at -20C. Order Machaon test "heparin pf4 w/ reflex to wp-HIPA".

If the Reflex test for wp-HIPA is required, the test code HEPWP will be ordered to bill the additional charge when the results are entered at China Basin.

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Rejection Criteria:
Sample thawed on receipt

Stability (from collection to initiation):
Frozen 7 days

RESULT INTERPRETATION

Reference Interval:
Heparin antibody by Elisa: Negative
wp-HIPA: Normal

Additional Information:
A negative test does not exclude thrombotic risk due to heparin induced thrombocytopenia (HIT), nor does a positive test exclude other causes of thrombocytopenia. Correlation with platelet counts and clinical findings can be important for diagnosis of HIT. If there is continued concern for HIT in the face of a negative heparin-PF4 immunoassay, repeat testing with a request to perform washed platelet activation assay (even if heparin-PF4 immunoassay remains negative) could be considered.

Antibodies to heparin-PF4 complexes are found in the majority of patients with clinical findings of heparin-induced thrombocytopenia (HIT), but also in variable numbers of heparinized patients without thrombocytopenia.

For assistance in interpreting results, please contact the Hematology consultation services: for adults pager 443-4276, for pediatrics pager 443-6966. Or you may contact Hematology lab resident at 353-1747.

ADMINISTRATIVE

CPT Codes:
83520-90 (HEPAB), 86022-90 x3 (HEPWP)

LOINC Codes:
45155-9 (HEPAB), 50736-8 (HEPWP)

COMPLETE VIEW

Approval Required:
No, but if washed platelet-heparin induced platelet activation" is required before result of heparin-PF4 ELISA test is available, please contact hematology at x3-1747

Available Stat:
No

Ordering Recommendations:
The pretest likelihood of HIT can be assessed by the 4T's:

Category	2 points	1 point	0 points
Degree of thrombocytopenia	Fall > 50% and nadir >= 20K	fall 30-50% or nadir 10K-19K	Fall < 30% or nadir < 10K
Timing of fall	5-14 days post heparin or <= 1 day if prior exposure < 30 days	Consistent with days 5-14 fall, but not clear or onset after day 14 or fall <= 1 day (with heparin exposure 30-100 days ago)	<= 4days without recent exposure
Thrombsis or sequelae	New thrombosis; skin necrosis; acute systemic reaction post IV unfract. heparin	Progressive or recurrent thrombosis; skin erythema w/out necrosis; suspected thrombosis only (not confirmed)	None
Other cause of thrombocytopenia	None apparent	Possible	Definite

Score	Probability of HIT
1-3	Low
4-5	Intermediate
6-8	High

Adapted from: American Society of Hematology Guideline, 2009 Clinical Practice Guideline on the Evaluation and Management of Heparin-Induced Thrombocytopenia.

Test Code:
HEPRA

Test Group:
HIT

Performing Lab:
Machaon Diagnostics

Sendout:
Yes

Methodology:
Enzyme Linked Immunosorbent Assay

Collect:
Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Rejection Criteria:
Sample thawed on receipt

Specimen Preparation:
Freeze serum at -20C. Order Machaon test "heparin pf4 w/ reflex to wp-HIPA".

If the Reflex test for wp-HIPA is required, the test code HEPWP will be ordered to bill the additional charge when the results are entered at China Basin.

Reference Interval:
Heparin antibody by Elisa: Negative
wp-HIPA: Normal

Synonyms:

- HIT
- heparin induced thrombocytopenia
- platelet factor 4
- HIT panel
- HPA
- heparin induced platelet antibody
- HIPAB
- SRAU
- Serotonin Release Assay

Stability (from collection to initiation):
Frozen 7 days

Reported:
1-2 days

Reflex Testing:
A heparin antibody by ELISA method will be performed initially. If results are positive, will reflex to a washed platelet heparin-induced platelet activation method (wp-HIPA).

Additional Information:
A negative test does not exclude thrombotic risk due to heparin induced thrombocytopenia (HIT), nor does a positive test exclude other causes of thrombocytopenia. Correlation with platelet counts and clinical findings can be important for diagnosis of HIT. If there is continued concern for HIT in the face of a negative heparin-PF4 immunoassay, repeat testing with a request to perform washed platelet activation assay (even if heparin-PF4 immunoassay remains negative) could be considered.

Antibodies to heparin-PF4 complexes are found in the majority of patients with clinical findings of heparin-induced thrombocytopenia (HIT), but also in variable numbers of heparinized patients without thrombocytopenia.

For assistance in interpreting results, please contact the Hematology consultation services: for adults pager 443-4276, for pediatrics pager 443-6966. Or you may contact Hematology lab resident at 353-1747.

CPT Codes:
83520-90 (HEPAB), 86022-90 x3 (HEPWP)

LOINC Codes:
45155-9 (HEPAB), 50736-8 (HEPWP)

Hepatitis A virus, IgG Antibody

HAVIGG

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday-Friday day shift

Methodology:
Microparticle Chemiluminescent Immunoassay

Reported:
1-3 days

Additional Information:
This test detected IgG antibodies to the Hepatitis A virus. IgG antibodies can result from either prior exposure or infection with Hepatitis A or from vaccination.

This test should **not** be used to diagnose acute Hepatitis A infection.

Positive results are automatically forwarded to California Public Health per regulations. However, this does not absolve the ordering provider from any additional reporting if such is required

Synonyms:

- Hepatitis A Antibody
- HAV
- anti-HAV antibody
- HAAb

COLLECTION

Sample Type:
Serum

Collect:
Gold Top or Red Top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Stability (from collection to initiation):
Refrigerated 8 days

PROCESSING

Test Code:
HAVIGG

Test Group:
Hepatitis

Performing Lab:
Immunology

Specimen Preparation:
Refrigerate serum

Preferred Volume:
0.5 mL serum

Stability (from collection to initiation):
Refrigerated 8 days

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:

This test detected IgG antibodies to the Hepatitis A virus. IgG antibodies can result from either prior exposure or infection with Hepatitis A or from vaccination.

This test should **not** be used to diagnose acute Hepatitis A infection.

Positive results are automatically forwarded to California Public Health per regulations. However, this does not absolve the ordering provider from any additional reporting if such is required

ADMINISTRATIVE

CPT Codes:
86790

COMPLETE VIEW

Available Stat:
No

Test Code:
HAVIGG

Test Group:
Hepatitis

Performing Lab:
Immunology

Performed:
Monday-Friday day shift

Methodology:
Microparticle Chemiluminescent Immunoassay

Collect:
Gold Top or Red Top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Specimen Preparation:
Refrigerate serum

Reference Interval:
Negative

Synonyms:

- Hepatitis A Antibody
- HAV
- anti-HAV antibody
- HAAb

Stability (from collection to initiation):
Refrigerated 8 days

Reported:
1-3 days

Additional Information:

This test detected IgG antibodies to the Hepatitis A virus. IgG antibodies can result from either prior exposure or infection with Hepatitis A or from vaccination.

This test should **not** be used to diagnose acute Hepatitis A infection.

Positive results are automatically forwarded to California Public Health per regulations. However, this does not absolve the ordering provider from any additional reporting if such is required

CPT Codes:
86790

Hepatitis A virus, IgM Antibody

HAVM

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday - Friday (day shift)

Methodology:
Microparticle Chemiluminescent Immunoassay

Reported:
1-4 days

Additional Information:
This is test of choice for the diagnosis of acute HAV infection; it is positive at the time a patient presents with clinical illness. The IgM antibody persists for up to 6 months, and a negative IgM antibody test rules out acute HAV infection in an immunocompetent subject.

For determination of immunity or vaccine response 'HAV Ab, Total' is the appropriate test to order

Positive results are automatically forwarded to California public health per regulations. However, this does not absolve the ordering provider from any additional reporting if such is required.

Synonyms:

- HAV IgM Antibody
- HAV IgM Ab
- HAAb
- anti-HAV antibody

COLLECTION

Sample Type:
Serum

Collect:
Gold Top or Red Top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Stability (from collection to initiation):
Refrigerated 7 days

PROCESSING

Test Code:
HAVM

Test Group:
Hepatitis

Performing Lab:
Immunology

Specimen Preparation:
Refrigerate serum.

Preferred Volume:
0.5 mL serum

Stability (from collection to initiation):
Refrigerated 7 days

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:

This is test of choice for the diagnosis of acute HAV infection; it is positive at the time a patient presents with clinical illness. The IgM antibody persists for up to 6 months, and a negative IgM antibody test rules out acute HAV infection in an immunocompetent subject.

For determination of immunity or vaccine response 'HAV Ab, Total' is the appropriate test to order

Positive results are automatically forwarded to California public health per regulations. However, this does not absolve the ordering provider from any additional reporting if such is required.

ADMINISTRATIVE

CPT Codes:
86709

LOINC Codes:
13950-1

COMPLETE VIEW

Available Stat:
No

Test Code:
HAVM

Test Group:
Hepatitis

Performing Lab:
Immunology

Performed:
Monday - Friday (day shift)

Methodology:
Microparticle Chemiluminescent Immunoassay

Collect:
Gold Top or Red Top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Specimen Preparation:
Refrigerate serum.

Reference Interval:
Negative

Synonyms:

- HAV IgM Antibody
- HAV IgM Ab
- HAAb
- anti-HAV antibody

Stability (from collection to initiation):
Refrigerated 7 days

Reported:
1-4 days

Additional Information:

This is test of choice for the diagnosis of acute HAV infection; it is positive at the time a patient presents with clinical illness. The IgM antibody persists for up to 6 months, and a negative IgM antibody test rules out acute HAV infection in an immunocompetent subject.

For determination of immunity or vaccine response 'HAV Ab, Total' is the appropriate test to order

Positive results are automatically forwarded to California public health per regulations. However, this does not absolve the ordering provider from any additional reporting if such is required.

CPT Codes:
86709

LOINC Codes:
13950-1

Hepatitis B Core Antibody, IgM

CORM

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday - Friday (day shift)

Methodology:
Chemiluminescent Immunoassay

Reported:
1-8 days

Additional Information:
The antibody found earliest in acute HBV infection, IgM will usually be present during the "window" period after HBsAg production has declined to undetectable levels, often before anti-HBs is measurable. It usually persists for up to 6 months, but may occasionally persist for as long as 24 months, or even remain at detectable levels if active virus replication is continuing with chronic hepatitis B infection.

Positive results are automatically forwarded to California public health per regulations. However, this does not absolve the ordering provider from any additional reporting if such is required.

Synonyms:

- HBcAb, IgM
- HBV
- anti-HBc
- anti-HBcAg

COLLECTION

Sample Type:
Serum

Collect:
Gold Top or Red Top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.25 mL serum (this volume is insufficient for repeat testing if needed)

Stability (from collection to initiation):
Refrigerated 7 days

PROCESSING

Test Code:
CORM

Test Group:
Hepatitis

Performing Lab:
Immunology

Specimen Preparation:
Refrigerate sample

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.25 mL serum (this volume is insufficient for repeat testing if needed)

Stability (from collection to initiation):
Refrigerated 7 days

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
The antibody found earliest in acute HBV infection, IgM will usually be present during the "window" period after HBsAg production has declined to undetectable levels, often before anti-HBs is measurable. It usually persists for up to 6 months, but may occasionally persist for as long as 24 months, or even remain at detectable levels if active virus replication is continuing with chronic hepatitis B infection.

Positive results are automatically forwarded to California public health per regulations. However, this does not absolve the ordering provider from any additional reporting if such is required.

ADMINISTRATIVE

CPT Codes:
86705

LOINC Codes:
5185-4

COMPLETE VIEW

Available Stat:
No

Test Code:
CORM

Test Group:
Hepatitis

Performing Lab:
Immunology

Performed:
Monday - Friday (day shift)

Methodology:
Chemiluminescent Immunoassay

Collect:
Gold Top or Red Top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.25 mL serum (this volume is insufficient for repeat testing if needed)

Specimen Preparation:
Refrigerate sample

Reference Interval:
Negative

Synonyms:

- HBcAb, IgM
- HBV
- anti-HBc
- anti-HBcAg

Stability (from collection to initiation):
Refrigerated 7 days

Reported:
1-8 days

Additional Information:
The antibody found earliest in acute HBV infection, IgM will usually be present during the "window" period after HBsAg production has declined to undetectable levels, often before anti-HBs is measurable. It usually persists for up to 6 months, but may occasionally persist for as long as 24 months, or even remain at detectable levels if active virus replication is continuing with chronic hepatitis B infection.

Positive results are automatically forwarded to California public health per regulations. However, this does not absolve the ordering provider from any additional reporting if such is required.

CPT Codes:
86705

LOINC Codes:
5185-4

Hepatitis B Core Antibody, Total

CORE

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift)

Methodology:
Microparticle Chemiluminescent Immunoassay

Reported:
1-3 days

Additional Information:
A marker of HBV infection at some indefinite time in the past, this assay may be positive when anti-HBs is negative. Although this test can be helpful in implicating a possible viral etiology of unexplained cirrhosis or hepatocellular carcinoma, it has no role in the diagnosis of acute HBV infection.

This test is not FDA approved for donor screening. For pre-transplant donor screen see Pre-Transplant Send out (PTXID).

Positive results are automatically forwarded to California public health per regulations. However, this does not absolve the ordering provider from any additional reporting if such is required.

Synonyms:

- HBcAb
- Hep B Core Antibody
- HBcAg
- HBV
- anti-HBc
- anti-HBcAg

COLLECTION

Sample Type:
Serum

Collect:
Gold Top or Red Top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Stability (from collection to initiation):
Refrigerated 7 days

PROCESSING

Test Code:
CORE

Test Group:
Hepatitis

Performing Lab:
Immunology

Specimen Preparation:
Refrigerate sample

Preferred Volume:
0.5 mL serum

Stability (from collection to initiation):
Refrigerated 7 days

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:

A marker of HBV infection at some indefinite time in the past, this assay may be positive when anti-HBs is negative. Although this test can be helpful in implicating a possible viral etiology of unexplained cirrhosis or hepatocellular carcinoma, it has no role in the diagnosis of acute HBV infection.

This test is not FDA approved for donor screening. For pre-transplant donor screen see Pre-Transplant Send out (PTXID).

Positive results are automatically forwarded to California public health per regulations. However, this does not absolve the ordering provider from any additional reporting if such is required.

ADMINISTRATIVE

CPT Codes:
86704

LOINC Codes:
16933-4

COMPLETE VIEW

Available Stat:
No

Test Code:
CORE

Test Group:
Hepatitis

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift)

Methodology:
Microparticle Chemiluminescent Immunoassay

Collect:
Gold Top or Red Top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Specimen Preparation:
Refrigerate sample

Reference Interval:
Negative

Synonyms:

- HBcAb
- Hep B Core Antibody
- HBcAg
- HBV
- anti-HBc
- anti-HBcAg

Stability (from collection to initiation):
Refrigerated 7 days

Reported:
1-3 days

Additional Information:

A marker of HBV infection at some indefinite time in the past, this assay may be positive when anti-HBs is negative. Although this test can be helpful in implicating a possible viral etiology of unexplained cirrhosis or hepatocellular carcinoma, it has no role in the diagnosis of acute HBV infection.

This test is not FDA approved for donor screening. For pre-transplant donor screen see Pre-Transplant Send out (PTXID).

Positive results are automatically forwarded to California public health per regulations. However, this does not absolve the ordering provider from any additional reporting if such is required.

CPT Codes:
86704

LOINC Codes:
16933-4

Hepatitis B DNA, Quantitative

HBVRT

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Methodology:
RT-PCR

Reported:
Performed 1x per week. Turnaround time 3-9 days.

Additional Information:
The use of specimens collected in serum tubes containing Z-clot activator, or similar types of rapid clot activator, may cause inhibited results in the Real Time HBV assay.

High off-scale results are routinely reported as > 1,000,000,000 IU/mL or > 9.0 log IU/mL. .

Low level results where HBV DNA is detected by the assay but not quantifiable are reported as Detected with a result <10 IU/mL or <1.00 log IU/mL.

Target Not Detected is reported when no HBV DNA can be detected by the assay. This result should not imply the patient is not infected with HBV. Viral loads less than 10 IU/mL will not be reliably detected by this assay. Correlation with clinical findings and serologic results are recommended.

The assay is intended for use as an aid in the management of patients with chronic HBV infection undergoing anti-viral therapy. The assay can be used to measure HBV DNA levels at baseline and during treatment to aid in assessing response to treatment. This assay is not intended for use as a screening test in blood or blood products for HBV or as a diagnostic test to confirm the presence of HBV infection.

Synonyms:

- HBV DNA
- HBV PCR

COLLECTION

Sample Type:
EDTA plasma

Collect:
Pearl White top preferred, Lavender top acceptable

Amount to Collect:
8.5 mL blood

Preferred Volume:
3 mL plasma

Minimum Volume:
1.5 mL plasma

Unacceptable Conditions:
Gold or Red top vacutainer received. Sample not separated from cells within 6 hours of collection.

PROCESSING

Test Code:
HBVRT

Test Group:
Hepatitis

Performing Lab:
Immunology

Specimen Preparation:
Centrifuge and freeze Pearl White tube within 6 hours at -70C.

If Lavender top received, centrifuge and separate plasma within 6 hours of collection into a 10mL tube with white cap. Freeze plasma at -70C.

Preferred Volume:
3 mL plasma

Minimum Volume:
1.5 mL plasma

Unacceptable Conditions:
Gold or Red top vacutainer received. Sample not separated from cells within 6 hours of collection.

RESULT INTERPRETATION

Units:
IU/mL or log IU/mL

Reference Interval:
Target not detected (< 10 IU/mL or < 1.00 log IU/mL)

Additional Information:
The use of specimens collected in serum tubes containing Z-clot activator, or similar types of rapid clot activator, may cause inhibited results in the Real Time HBV assay.

High off-scale results are routinely reported as > 1,000,000,000 IU/mL or > 9.0 log IU/mL. .

Low level results where HBV DNA is detected by the assay but not quantifiable are reported as Detected with a result <10 IU/mL or <1.00 log IU/mL.

Target Not Detected is reported when no HBV DNA can be detected by the assay. This result should not imply the patient is not infected with HBV. Viral loads less than 10 IU/mL will not be reliably detected by this assay. Correlation with clinical findings and serologic results are recommended.

The assay is intended for use as an aid in the management of patients with chronic HBV infection undergoing anti-viral therapy. The assay can be used to measure HBV DNA levels at baseline and during treatment to aid in assessing response to treatment. This assay is not intended for use as a screening test in blood or blood products for HBV or as a diagnostic test to confirm the presence of HBV infection.

ADMINISTRATIVE

CPT Codes:
87517

COMPLETE VIEW

Available Stat:
No

Test Code:
HBVRT

Test Group:
Hepatitis

Performing Lab:
Immunology

Methodology:
RT-PCR

Collect:
Pearl White top preferred, Lavender top acceptable

Amount to Collect:
8.5 mL blood

Sample Type:
EDTA plasma

Preferred Volume:
3 mL plasma

Minimum Volume:
1.5 mL plasma

Unacceptable Conditions:
Gold or Red top vacutainer received. Sample not separated from cells within 6 hours of collection.

Specimen Preparation:
Centrifuge and freeze Pearl White tube within 6 hours at -70C.

If Lavender top received, centrifuge and separate plasma within 6 hours of collection into a 10mL tube with white cap. Freeze plasma at -70C.

Units:
IU/mL or log IU/mL

Reference Interval:

Target not detected (< 10 IU/mL or < 1.00 log IU/mL)

Synonyms:

- HBV DNA
- HBV PCR

Reported:

Performed 1x per week. Turnaround time 3-9 days.

Additional Information:

The use of specimens collected in serum tubes containing Z-clot activator, or similar types of rapid clot activator, may cause inhibited results in the Real Time HBV assay.

High off-scale results are routinely reported as > 1,000,000,000 IU/mL or > 9.0 log IU/mL. .

Low level results where HBV DNA is detected by the assay but not quantifiable are reported as Detected with a result <10 IU/mL or <1.00 log IU/mL.

Target Not Detected is reported when no HBV DNA can be detected by the assay. This result should not imply the patient is not infected with HBV. Viral loads less than 10 IU/mL will not be reliably detected by this assay. Correlation with clinical findings and serologic results are recommended.

The assay is intended for use as an aid in the management of patients with chronic HBV infection undergoing anti-viral therapy. The assay can be used to measure HBV DNA levels at baseline and during treatment to aid in assessing response to treatment. This assay is not intended for use as a screening test in blood or blood products for HBV or as a diagnostic test to confirm the presence of HBV infection.

CPT Codes:

87517

Hepatitis B e Antibody

AHBE

ORDERING

Available Stat:
No

Performing Lab:
UC Davis

Methodology:
Microtiter

Reported:
Test run Tuesday. Turnaround time: 2-7 days.

Additional Information:
This test has minimal, if any, clinical value. The presence of antibody to HBeAg suggests that the HBsAg-positive patient is less infectious than an antibody-negative counterpart and less likely to develop chronic liver disease, but these advantages are only relative; *HBsAg positive patients are infectious and at risk of hepatic complications regardless of anti-HBe or HBe status.*

Synonyms:

- HBeAb
- HBV
- anti-HBe
- anti-HBeAg
- e an tibody

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

PROCESSING

Test Code:
AHBE

Test Group:
Hepatitis

Sendout:
Yes

Performing Lab:
UC Davis

Specimen Preparation:
Refrigerate serum, store in plastic tube. Order UCD Test code HBEAB.

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
This test has minimal, if any, clinical value. The presence of antibody to HBeAg suggests that the HBsAg-positive patient is less infectious than an antibody-negative counterpart and less likely to develop chronic liver disease, but these advantages are only relative; *HBsAg positive patients are infectious and at risk of hepatic complications regardless of anti-HBe or HBe status.*

ADMINISTRATIVE

CPT Codes:
86707-90

LOINC Codes:
22320-6

COMPLETE VIEW

Available Stat:
No

Test Code:
AHBE

Test Group:
Hepatitis

Performing Lab:
UC Davis

Sendout:
Yes

Methodology:
Microtiter

Collect:
Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Specimen Preparation:
Refrigerate serum, store in plastic tube. Order UCD Test code HBEAB.

Reference Interval:
Negative

Synonyms:

- HBeAb
- HBV
- anti-HBe
- anti-HBeAg
- e an tibody

Reported:
Test run Tuesday. Turnaround time: 2-7 days.

Additional Information:
This test has minimal, if any, clinical value. The presence of antibody to HBeAg suggests that the HBsAg-positive patient is less infectious than an antibody-negative counterpart and less likely to develop chronic liver disease, but these advantages are only relative; *HBsAg positive patients are infectious and at risk of hepatic complications regardless of anti-HBe or HBe status.*

CPT Codes:
86707-90

LOINC Codes:
22320-6

Hepatitis B e Antigen

HBE

ORDERING

Available Stat:
No

Performing Lab:
UC Davis

Methodology:
Microtiter

Reported:
Test run Wednesday. Turnaround time: 2-7 days.

Additional Information:
HBeAg is a marker of extensive viral replication found almost exclusively in HBsAg-positive sera (in rare mutants not expressing HBsAg, HBeAg can remain positive. Persistently HBeAg-positive patients are more infectious than HBeAg-individuals, more likely to develop chronic liver disease, have less satisfactory results following liver transplantation, and may be candidates for alpha-interferon therapy.

NOTE: HBIG and HBV vaccine are administered to neonates, intimate contacts and recipients of needle sticks on the basis of HBsAg positivity, even if the mother/index case is HBeAg-negative.

Positive results are automatically forwarded to California public health per regulations. However, this does not absolve the ordering provider from any additional reporting if such is required.

Synonyms:

- HBeAg
- HBV
- e antigen
- e Ag

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

PROCESSING

Test Code:
HBE

Test Group:
Hepatitis

Sendout:
Yes

Performing Lab:
UC Davis

Specimen Preparation:
Refrigerate serum, store in plastic tube. Order UCD Test code HBEHE.

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:

HBeAg is a marker of extensive viral replication found almost exclusively in HBsAg-positive sera (in rare mutants not expressing HBsAg, HBeAg can remain positive. Persistently HBeAg-positive patients are more infectious than HBeAg-individuals, more likely to develop chronic liver disease, have less satisfactory results following liver transplantation, and may be candidates for alpha-interferon therapy.

NOTE: HBIG and HBV vaccine are administered to neonates, intimate contacts and recipients of needle sticks on the basis of HBsAg positivity, even if the mother/index case is HBeAg-negative.

Positive results are automatically forwarded to California public health per regulations. However, this does not absolve the ordering provider from any additional reporting if such is required.

ADMINISTRATIVE

CPT Codes:
87350

LOINC Codes:
32178-6

COMPLETE VIEW

Available Stat:
No

Test Code:
HBE

Test Group:
Hepatitis

Performing Lab:
UC Davis

Sendout:
Yes

Methodology:
Microtiter

Collect:
Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Specimen Preparation:
Refrigerate serum, store in plastic tube. Order UCD Test code HBEHE.

Reference Interval:
Negative

Synonyms:

- HBeAg
- HBV
- e antigen
- e Ag

Reported:
Test run Wednesday. Turnaround time: 2-7 days.

Additional Information:

HBeAg is a marker of extensive viral replication found almost exclusively in HBsAg-positive sera (in rare mutants not expressing HBsAg, HBeAg can remain positive. Persistently HBeAg-positive patients are more infectious than HBeAg-individuals, more likely to develop chronic liver disease, have less satisfactory results following liver transplantation, and may be candidates for alpha-interferon therapy.

NOTE: HBIG and HBV vaccine are administered to neonates, intimate contacts and recipients of needle sticks on the basis of HBsAg positivity, even if the mother/index case is HBeAg-negative.

Positive results are automatically forwarded to California public health per regulations. However, this does not absolve the ordering provider from any additional reporting if such is required.

CPT Codes:

87350

LOINC Codes:

32178-6

Hepatitis B Surface Antibody, Quantitative

HBABQ

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday-Friday day shift

Methodology:
Microparticle Chemiluminescent Immunoassay

Reported:
1-3 days

Additional Information:
HBsAb is a marker of immunity to HBV infection, either by prior exposure to the virus or immunization with Hepatitis B vaccine. This assay reports the quantitative amount of antiviral antibodies present. Values greater than 10 mIU/mL are considered adequate for protection from viral infection. Results should be interpreted as follows:

NEGATIVE: < 8 mIU/mL
EQUIVOCAL: 8-11 mIU/mL
POSITIVE: >= 12 mIU/mL

Equivocal results may be seen in individuals with adequate immunity; however, clinical correlation is required. All initially equivocal results are repeated in duplicate to confirm. Repeat testing could be performed in individuals with a recent vaccination history.

Synonyms:

- HBsAb
- Hep B Surface Ab
- HBV
- . anti-HBs
- anti-HBsAg
- surface antibody

COLLECTION

Sample Type:
Serum

Collect:
Gold top or Red top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Stability (from collection to initiation):
Refrigerated 1 week

PROCESSING

Test Code:
HBABQ

Test Group:
Hepatitis

Performing Lab:
Immunology

Specimen Preparation:
Refrigerate serum

Preferred Volume:
0.5 mL serum

Stability (from collection to initiation):
Refrigerated 1 week

RESULT INTERPRETATION

Units:
mIU/mL

Reference Interval:
< 8 mIU/mL: Not immune
8-11 mIU/mL: Equivocal, questionable immunity
>= 12 mmIU/mL: Immune

Additional Information:
HBsAb is a marker of immunity to HBV infection, either by prior exposure to the virus or immunization with Hepatitis B vaccine. This assay reports the quantitative amount of antiviral antibodies present. Values greater than 10 mIU/mL are considered adequate for protection from viral infection. Results should be interpreted as follows:

NEGATIVE: < 8 mIU/mL
EQUIVOCAL: 8-11 mIU/mL
POSITIVE: >= 12 mIU/mL

Equivocal results may be seen in individuals with adequate immunity; however, clinical correlation is required. All initially equivocal results are repeated in duplicate to confirm. Repeat testing could be performed in individuals with a recent vaccination history.

ADMINISTRATIVE

CPT Codes:
86317

COMPLETE VIEW

Available Stat:
No

Test Code:
HBABQ

Test Group:
Hepatitis

Performing Lab:
Immunology

Performed:
Monday-Friday day shift

Methodology:
Microparticle Chemiluminescent Immunoassay

Collect:
Gold top or Red top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Specimen Preparation:
Refrigerate serum

Units:
mIU/mL

Reference Interval:
< 8 mIU/mL: Not immune
8-11 mIU/mL: Equivocal, questionable immunity
>= 12 mmIU/mL: Immune

Synonyms:

- HBsAb
- Hep B Surface Ab
- HBV
- . anti-HBs
- anti-HBsAg
- surface antibody

Stability (from collection to initiation):
Refrigerated 1 week

Reported:

1-3 days

Additional Information:

HBsAb is a marker of immunity to HBV infection, either by prior exposure to the virus or immunization with Hepatitis B vaccine. This assay reports the quantitative amount of antiviral antibodies present. Values greater than 10 mIU/mL are considered adequate for protection from viral infection. Results should be interpreted as follows:

NEGATIVE: < 8 mIU/mL
EQUIVOCAL: 8-11 mIU/mL
POSITIVE: >= 12 mIU/mL

Equivocal results may be seen in individuals with adequate immunity; however, clinical correlation is required. All initially equivocal results are repeated in duplicate to confirm. Repeat testing could be performed in individuals with a recent vaccination history.

CPT Codes:

86317

Hepatitis B Surface Antigen

HBAG

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift). Note: confirmatory test is performed Monday & Thursday only.

Methodology:
Microparticle Chemiluminescent Immunoassay

Reported:
1-3 days (Confirmation of positives requires additional 3-5 days)

Additional Information:
HBsAg is the most useful single marker of acute or chronic HBV infection. The distinction between chronic carriage and acute or convalescent carriage can be difficult; chronic carriage is suggested by the absence of IgM anti-HBc, a positive test for Total (and therefore IgG) anti-HBc, and persistence of HBsAg for more than 6 months. A confirmatory test will be automatically be performed on all positive assays (ordered only by Immunology)

This test is not FDA approved for donor screening. For pre-transplant donor screen see Pre-Transplant Send out (PTXID).

Positive results are automatically forwarded to California public health per regulations. However, this does not absolve the ordering provider from any additional reporting if such is required.

Reflex Testing:
A confirmatory test will automatically be run on all positive specimens at an additional charge.

Synonyms:

- HBsAg
- Hep B surface Ag
- HBV
- Australia antigen
- HAA
- Hepatitis associated antigen
- surface antigen

COLLECTION

Sample Type:
Serum

Collect:
Gold Top or Red Top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum (insufficeint for confirmatory testing)

Stability (from collection to initiation):
Refrigerated 6 days

PROCESSING

Test Code:
HBAG

Test Group:
Hepatitis

Performing Lab:
Immunology

Specimen Preparation:
Refrigerate sample

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum (insufficeint for confirmatory testing)

Stability (from collection to initiation):
Refrigerated 6 days

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
HBsAg is the most useful single marker of acute or chronic HBV infection. The distinction between chronic carriage and acute or convalescent carriage can be difficult; chronic carriage is suggested by the absence of IgM anti-HBc, a positive test for Total (and therefore IgG) anti-HBc, and persistence of HBsAg for more than 6 months. A confirmatory test will be automatically be performed on all positive assays (ordered only by Immunology)

This test is not FDA approved for donor screening. For pre-transplant donor screen see Pre-Transplant Send out (PTXID).

Positive results are automatically forwarded to California public health per regulations. However, this does not absolve the ordering provider from any additional reporting if such is required.

ADMINISTRATIVE

CPT Codes:
87340

LOINC Codes:
5196-1

COMPLETE VIEW

Available Stat:
No

Test Code:
HBAG

Test Group:
Hepatitis

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift). Note: confirmatory test is performed Monday & Thursday only.

Methodology:
Microparticle Chemiluminescent Immunoassay

Collect:
Gold Top or Red Top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum (insufficeint for confirmatory testing)

Specimen Preparation:
Refrigerate sample

Reference Interval:
Negative

Synonyms:

- HBsAg
- Hep B surface Ag
- HBV
- Australia antigen
- HAA
- Hepatitis associated antigen
- surface antigen

Stability (from collection to initiation):
Refrigerated 6 days

Reported:
1-3 days (Confirmation of positives requires additional 3-5 days)

Reflex Testing:
A confirmatory test will automatically be run on all positive specimens at an additional charge.

Additional Information:
HBsAg is the most useful single marker of acute or chronic HBV infection. The distinction between chronic carriage and acute or convalescent carriage can be difficult; chronic carriage is suggested by the absence of IgM anti-HBc, a positive test for Total (and therefore IgG) anti-HBc, and persistence of HBsAg for more than 6 months. A confirmatory test will be automatically be performed on all positive assays (ordered only by Immunology)

This test is not FDA approved for donor screening. For pre-transplant donor screen see Pre-Transplant Send out (PTXID).

Positive results are automatically forwarded to California public health per regulations. However, this does not absolve the ordering provider from any additional reporting if such is required.

CPT Codes:
87340

LOINC Codes:
5196-1

Hepatitis B Virus Drug Resistance & BCP/Precore Mutations

HBVDRG

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
PCR and Sequencing

Reported:
10-12 days

Additional Information:
This test can only be performed reliably on specimens with a viral load of at least 600 IU/mL.

Synonyms:

- HBV

COLLECTION

Sample Type:
Serum, or EDTA plasma

Collect:
Red top, Gold top, Lavender top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL

Minimum Volume:
0.3 mL

Remarks:
This test can only be performed reliably on specimens with a viral load of at least 600 IU/mL.Transport as soon as possible to laboratory for processing

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 1 week, frozen 1 month.

PROCESSING

Test Code:
HBVDRG

Test Group:
HBV

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Serum: Allow blood to clot, centrifuge and aliquot within 2 hours of collection. Freeze aliquot.

Plasma: centrifuge and aliquot within 2 hours of collection. Freeze aliquot.

Transport frozen to China Basin

Preferred Volume:
1 mL

Minimum Volume:
0.3 mL

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 1 week, frozen 1 month.

RESULT INTERPRETATION

Additional Information:
This test can only be performed reliably on specimens with a viral load of at least 600 IU/mL.

ADMINISTRATIVE

CPT Codes:
87912

COMPLETE VIEW

Available Stat:
No

Test Code:
HBVDRG

Test Group:
HBV

Performing Lab:
Quest

Sendout:
Yes

Methodology:
PCR and Sequencing

Remarks:
This test can only be performed reliably on specimens with a viral load of at least 600 IU/mL.Transport as soon as possible to laboratory for processing

Collect:
Red top, Gold top, Lavender top

Amount to Collect:
2 mL blood

Sample Type:
Serum, or EDTA plasma

Preferred Volume:
1 mL

Minimum Volume:
0.3 mL

Specimen Preparation:
Serum: Allow blood to clot, centrifuge and aliquot within 2 hours of collection. Freeze aliquot.

Plasma: centrifuge and aliquot within 2 hours of collection. Freeze aliquot.

Transport frozen to China Basin

Synonyms:

- HBV

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 1 week, frozen 1 month.

Reported:
10-12 days

Additional Information:
This test can only be performed reliably on specimens with a viral load of at least 600 IU/mL.

CPT Codes:
87912

Hepatitis C Antibody

HCV

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift).

Methodology:
Microparticle Chemiluminescent Immunoassay

Reported:
1-3 days

Additional Information:
Results will be reported as:

NEGATIVE	no detectable antibody present, presumed negative
EQUIVOCAL	very low level detected, may reflect false positive or early infection, repeat or supplemental testing such as HCV viral load could be performed if clinically indicated
POSITIVE	high level antibody detected, most patients are truly positive for HCV infection and supplemental testing is not generally recommended

This test is not FDA approved for donor screening. For pre-transplant donor screen see Pre-Transplant Send out (PTXID).

Positive results are automatically forwarded to California Public Health per regulations. However, this does not absolve the ordering provider from any additional reporting if such is required.

Synonyms:

- Hep C Ab
- HCVAb
- anti-HCV antibody

COLLECTION

Sample Type:
Serum

Collect:
Gold Top or Red Top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.25 mL serum (this volume is insufficient for repeat testing if needed)

Stability (from collection to initiation):
Refrigerated 7 days

PROCESSING

Test Code:
HCV

Test Group:
Hepatitis

Performing Lab:
Immunology

Specimen Preparation:
Refrigerate sample

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.25 mL serum (this volume is insufficient for repeat testing if needed)

Stability (from collection to initiation):
Refrigerated 7 days

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
Results will be reported as:

NEGATIVE	no detectable antibody present, presumed negative
EQUIVOCAL	very low level detected, may reflect false positive or early infection, repeat or supplemental testing such as HCV viral load could be performed if clinically indicated
POSITIVE	high level antibody detected, most patients are truly positive for HCV infection and supplemental testing is not generally recommended

This test is not FDA approved for donor screening. For pre-transplant donor screen see Pre-Transplant Send out (PTXID).

Positive results are automatically forwarded to California Public Health per regulations. However, this does not absolve the ordering provider from any additional reporting if such is required.

Interpretive Data:

NEGATIVE	no detectable antibody present, presumed negative
EQUIVOCAL	very low level detected, may reflect false positive or early infection, repeat or supplemental testing such as HCV viral load could be performed if clinically indicated
POSITIVE	high level antibody detected, most patients are truly positive for HCV infection and supplemental testing is not generally recommended

ADMINISTRATIVE

CPT Codes:
86803

LOINC Codes:
13955-0

COMPLETE VIEW

Available Stat:
No

Test Code:
HCV

Test Group:
Hepatitis

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift).

Methodology:
Microparticle Chemiluminescent Immunoassay

Collect:
Gold Top or Red Top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.25 mL serum (this volume is insufficient for repeat testing if needed)

Specimen Preparation:
Refrigerate sample

Reference Interval:
Negative

Interpretive Data:

NEGATIVE	no detectable antibody present, presumed negative
EQUIVOCAL	very low level detected, may reflect false positive or early infection, repeat or supplemental testing such as HCV viral load could be performed if clinically indicated
POSITIVE	high level antibody detected, most patients are truly positive for HCV infection and supplemental testing is not generally recommended

Synonyms:

- Hep C Ab
- HCVAb
- anti-HCV antibody

Stability (from collection to initiation):
Refrigerated 7 days

Reported:
1-3 days

Additional Information:
Results will be reported as:

NEGATIVE	no detectable antibody present, presumed negative
EQUIVOCAL	very low level detected, may reflect false positive or early infection, repeat or supplemental testing such as HCV viral load could be performed if clinically indicated
POSITIVE	high level antibody detected, most patients are truly positive for HCV infection and supplemental testing is not generally recommended

This test is not FDA approved for donor screening. For pre-transplant donor screen see Pre-Transplant Send out (PTXID).

Positive results are automatically forwarded to California Public Health per regulations. However, this does not absolve the ordering provider from any additional reporting if such is required.

CPT Codes:
86803

LOINC Codes:
13955-0

Hepatitis C RNA, Quantitative

HCVRT

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Methodology:
RT-PCR

Reported:
Performed once per week. Turnaround time 3-9 days

Additional Information:
High off-scale results are routinely reported as > 100,000,000 IU/mL or > 8.0 log IU/mL.

Low level results where HCV RNA is detected by the assay but not quantifiable are reported as Detected with a result <12 IU/mL or <1.08 log IU/mL.

Target Not Detected is reported when no HCV RNA can be detected by the assay. This result should not imply the patient is not infected with HCV. Viral loads less than 12 IU/mL will not be reliably detected by this assay. Correlation with clinical findings and serologic results are recommended.

This test may be used as a marker for the effect of interferon or other therapy, but should not be used for diagnosis without confirmation by other established means. Positive results are automatically forwarded to California public health per regulations. However, this does not absolve the ordering provider from any additional reporting if such is required.

Synonyms:

- Hepatitis C RNA, Qualitative, PCR
- Hepatitis C RNA, Quantitative, PCR
- HCV
- Hepatitis C RNA, Quantitative by B-DNA

COLLECTION

Sample Type:
EDTA Plasma

Collect:
Pearl White top preferred, Lavender top acceptable

Amount to Collect:
8.5 mL blood

Preferred Volume:
3 mL plasma

Minimum Volume:
1.5 mL plasma

Remarks:
Transport to laboratory as soon as possible after collection. Sample needs to be processed within 6 hours.

Stability (from collection to initiation):
Room temperature 6 hours

PROCESSING

Test Code:
HCVRT

Test Group:
Hepatitis

Performing Lab:
Immunology

Specimen Preparation:
Centrifuge and freeze Pearl White tube within 6 hours at -70C.

If Lavender top received, centrifuge and separate plasma within 6 hours of collection into a 10mL tube with white cap. Freeze plasma at -70C.

Preferred Volume:
3 mL plasma

Minimum Volume:
1.5 mL plasma

Stability (from collection to initiation):
Room temperature 6 hours

RESULT INTERPRETATION

Units:
IU/mL and log IU/mL

Reference Interval:
Target not detected (< 12 IU/mL or < 1.08 log IU/mL)

Additional Information:
High off-scale results are routinely reported as > 100,000,000 IU/mL or > 8.0 log IU/mL.

Low level results where HCV RNA is detected by the assay but not quantifiable are reported as Detected with a result <12 IU/mL or <1.08 log IU/mL.

Target Not Detected is reported when no HCV RNA can be detected by the assay. This result should not imply the patient is not infected with HCV. Viral loads less than 12 IU/mL will not be reliably detected by this assay. Correlation with clinical findings and serologic results are recommended.

This test may be used as a marker for the effect of interferon or other therapy, but should not be used for diagnosis without confirmation by other established means. Positive results are automatically forwarded to California public health per regulations. However, this does not absolve the ordering provider from any additional reporting if such is required.

ADMINISTRATIVE

CPT Codes:
87522

COMPLETE VIEW

Available Stat:
No

Test Code:
HCVRT

Test Group:
Hepatitis

Performing Lab:
Immunology

Methodology:
RT-PCR

Remarks:
Transport to laboratory as soon as possible after collection. Sample needs to be processed within 6 hours.

Collect:
Pearl White top preferred, Lavender top acceptable

Amount to Collect:
8.5 mL blood

Sample Type:
EDTA Plasma

Preferred Volume:
3 mL plasma

Minimum Volume:
1.5 mL plasma

Specimen Preparation:
Centrifuge and freeze Pearl White tube within 6 hours at -70C.

If Lavender top received, centrifuge and separate plasma within 6 hours of collection into a 10mL tube with white cap. Freeze plasma at -70C.

Units:
IU/mL and log IU/mL

Reference Interval:
Target not detected (< 12 IU/mL or < 1.08 log IU/mL)

Synonyms:

- Hepatitis C RNA, Qualitative, PCR
- Hepatitis C RNA, Quantitative, PCR
- HCV
- Hepatitis C RNA, Quantitative by B-DNA

Stability (from collection to initiation):
Room temperature 6 hours

Reported:
Performed once per week. Turnaround time 3-9 days

Additional Information:
High off-scale results are routinely reported as > 100,000,000 IU/mL or > 8.0 log IU/mL.

Low level results where HCV RNA is detected by the assay but not quantifiable are reported as Detected with a result <12 IU/mL or <1.08 log IU/mL.

Target Not Detected is reported when no HCV RNA can be detected by the assay. This result should not imply the patient is not infected with HCV. Viral loads less than 12 IU/mL will not be reliably detected by this assay. Correlation with clinical findings and serologic results are recommended.

This test may be used as a marker for the effect of interferon or other therapy, but should not be used for diagnosis without confirmation by other established means. Positive results are automatically forwarded to California public health per regulations. However, this does not absolve the ordering provider from any additional reporting if such is required.

CPT Codes:
87522

Hepatitis C Virus (HCV) Genotype with Reflex to HCV High-Resolution Genotype by Sequencing

HCVGR

ORDERING

Ordering Recommendations:
Reflex genotyping panel for prognosis and treatment selection when a higher level of subtype resolution is required. Do not order prior to molecular confirmation of positive HCV screen.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Sequencing/Polymerase Chain Reaction

Reported:
8-10 days

Reflex Testing:
Reflex to HCV High-Resolution Genotyping

Synonyms:

- HCV, Subtype (Hepatitis C Virus Genotyping)

COLLECTION

Sample Type:
Serum or plasma

Collect:
Lavender (EDTA), pink (K2EDTA), plasma preparation tube, or serum separator tube.

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL serum or plasma

Minimum Volume:
1 mL serum or plasma

Stability (from collection to initiation):
On cells: Ambient: Unacceptable; Refrigerated: 72 hours; Frozen: 4 Months.

Storage/Transport Temperature:
Frozen.

Unacceptable Conditions:
Heparinized specimens.

PROCESSING

Test Code:
HCVGR

ARUP Test Code:
2009255

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate from cells ASAP or within 24 hours of collection. Transfer 2 mL serum or plasma to an ARUP standard transport tube. (Min: 1 mL)

Preferred Volume:
2 mL serum or plasma

Minimum Volume:
1 mL serum or plasma

Unacceptable Conditions:
Heparinized specimens.

Stability (from collection to initiation):
On cells: Ambient: Unacceptable; Refrigerated: 72 hours; Frozen: 4 Months.

Storage/Transport Temperature:
Frozen.

RESULT INTERPRETATION

Reference Interval:
By report

Interpretive Data:
Refer to report.

ADMINISTRATIVE

CPT Codes:
87902; if reflexed, add 87902

LOINC:

- 92731-9

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Reflex genotyping panel for prognosis and treatment selection when a higher level of subtype resolution is required. Do not order prior to molecular confirmation of positive HCV screen.

Test Code:
HCVGR

ARUP Test Code:
2009255

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Sequencing/Polymerase Chain Reaction

Collect:
Lavender (EDTA), pink (K2EDTA), plasma preparation tube, or serum separator tube.

Amount to Collect:
4 mL blood

Sample Type:
Serum or plasma

Preferred Volume:
2 mL serum or plasma

Minimum Volume:
1 mL serum or plasma

Unacceptable Conditions:
Heparinized specimens.

Specimen Preparation:
Separate from cells ASAP or within 24 hours of collection. Transfer 2 mL serum or plasma to an ARUP standard transport tube. (Min: 1 mL)

Reference Interval:
By report

Interpretive Data:
Refer to report.

Synonyms:

- HCV, Subtype (Hepatitis C Virus Genotyping)

Storage/Transport Temperature:
Frozen.

Stability (from collection to initiation):
On cells: Ambient: Unacceptable; Refrigerated: 72 hours; Frozen: 4 Months.

Reported:
8-10 days

Reflex Testing:
Reflex to HCV High-Resolution Genotyping

CPT Codes:
87902; if reflexed, add 87902

LOINC:

- 92731-9

Notes:
This test may be unsuccessful if HCV RNA viral load is less than log 4.2 or 16,000 IU/mL. If initial result is "1a or 1b," or a mixed genotype containing type 1, or type 6, then Hepatitis C High Resolution Genotyping will be added. Additional charges apply.

Hepatitis D Antibody

HDV

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
EIA

Reported:
Test run Wednesday & Friday. Turnaround time: 2-7 days.

Additional Information:
Anti-HDV is a marker for acute or persisting infection with the "delta" agent, a defective RNA virus which can only infect HBV-infected patients. Combined HBV-HDV infection may be more severe than HBV infection alone. Antibody to HDV ordinarily persists for about 6 months following acute infection; detection beyond that point is evidence that the patient has become a carrier. Clinical use is to diagnose hepatitis delta virus (HDV) infection in patients with fulminant hepatic failure, or known previous HBV infection. A positive HDV antibody test, along with the presence of HbsAg, indicates HBV/HDV coinfection

Synonyms:

- Delta Antibody
- HDV Ab
- anti-HDV antibody
- Delta agent
- Delta antibody

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature 7 days, refrigerated 2 weeks, frozen at -20C 1 month, frozen at -70C indefinite.

Unacceptable Conditions:
Plasma samples

PROCESSING

Test Code:
HDV

Test Group:
Hepatitis

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze serum at -20C. Deliver serum to immunology, who will forward the specimen to the sendout desk where appropriate. Order Nichols # 4990X .

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Plasma samples

Stability (from collection to initiation):
Room temperature 7 days, refrigerated 2 weeks, frozen at -20C 1 month, frozen at -70C indefinite.

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
Anti-HDV is a marker for acute or persisting infection with the "delta" agent, a defective RNA virus which can only infect HBV-infected patients. Combined HBV-HDV infection may be more severe than HBV infection alone. Antibody to HDV ordinarily persists for about 6 months following acute infection; detection beyond that point is evidence that the patient has become a carrier. Clinical use is to diagnose hepatitis delta virus (HDV) infection in patients with fulminant hepatic failure, or known previous HBV infection. A positive HDV antibody test, along with the presence of HbsAg, indicates HBV/HDV coinfection

ADMINISTRATIVE

CPT Codes:
86692-90

LOINC Codes:
40727-0

COMPLETE VIEW

Available Stat:
No

Test Code:
HDV

Test Group:
Hepatitis

Performing Lab:
Quest

Sendout:
Yes

Methodology:
EIA

Collect:
Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Plasma samples

Specimen Preparation:
Freeze serum at -20C. Deliver serum to immunology, who will forward the specimen to the sendout desk where appropriate. Order Nichols # 4990X .

Reference Interval:
Negative

Synonyms:

- Delta Antibody
- HDV Ab
- anti-HDV antibody
- Delta agent
- Delta antibody

Stability (from collection to initiation):
Room temperature 7 days, refrigerated 2 weeks, frozen at -20C 1 month, frozen at -70C indefinite.

Reported:
Test run Wednesday & Friday. Turnaround time: 2-7 days.

Additional Information:

Anti-HDV is a marker for acute or persisting infection with the "delta" agent, a defective RNA virus which can only infect HBV-infected patients. Combined HBV-HDV infection may be more severe than HBV infection alone. Antibody to HDV ordinarily persists for about 6 months following acute infection; detection beyond that point is evidence that the patient has become a carrier. Clinical use is to diagnose hepatitis delta virus (HDV) infection in patients with fulminant hepatic failure, or known previous HBV infection. A positive HDV antibody test, along with the presence of HbsAg, indicates HBV/HDV coinfection

CPT Codes:

86692-90

LOINC Codes:

40727-0

Hepatitis D RNA, Qualitative

HDVR

ORDERING

Ordering Recommendations:
Should only be ordered in patient who are Hepatitis B surface Antigen positive.

Available Stat:
No

Performing Lab:
Quest

Methodology:
PCR

Reported:
3-5 days

Additional Information:
Hepatitis D Virus (HDV) is an RNA virus whose transmission is dependent on associated hepatitis B viral infection.

Synonyms:

- HDV

COLLECTION

Sample Type:
Serum

Collect:
Gold top or Red top

Amount to Collect:
1.5 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 1 week, frozen 1 month

PROCESSING

Test Code:
HDVR

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot and freeze. Transport to CB frozen. Order Quest test code 34469.

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 1 week, frozen 1 month

RESULT INTERPRETATION

Reference Interval:
Not detected

Additional Information:
Hepatitis D Virus (HDV) is an RNA virus whose transmission is dependent on associated hepatitis B viral infection.

ADMINISTRATIVE

CPT Codes:
87798-90

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Should only be ordered in patient who are Hepatitis B surface Antigen positive.

Test Code:
HDVR

Performing Lab:
Quest

Sendout:
Yes

Methodology:
PCR

Collect:
Gold top or Red top

Amount to Collect:
1.5 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Specimen Preparation:
Aliquot and freeze. Transport to CB frozen. Order Quest test code 34469.

Reference Interval:
Not detected

Synonyms:

- HDV

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 1 week, frozen 1 month

Reported:
3-5 days

Additional Information:
Hepatitis D Virus (HDV) is an RNA virus whose transmission is dependent on associated hepatitis B viral infection.

CPT Codes:
87798-90

Hepatitis E Antibody, IgM

HEVM

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
EIA

Reported:
Test performed Monday and Thursday. Turnaround time: 2-5 days.

Additional Information:
Hepatitis E Virus (HEV) is a major cause of enteric non-A hepatitis worldwide. HEV IgM is typically detected within 2-4 weeks after infection, and then declines rapidly during convalescence.

This test was performed using a kit that has not been cleared or approved bythe FDA. The analytical performance characteristics of this test have been determined by Focus Diagnostics. This test should not be used for diagnosis without confirmation by other medically established means.

Synonyms:

- HEV

COLLECTION

Sample Type:
Serum

Collect:
Gold top, Red top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.1 mL serum

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen at -20C 1 month.

PROCESSING

Test Code:
HEVM

Test Group:
Hepatitis

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Serum should be removed from cells promptly after collection and transferred to a plastic tube. Freeze serum at -20C. Order Quest # 36582X

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.1 mL serum

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen at -20C 1 month.

RESULT INTERPRETATION

Reference Interval:
Not detected

Additional Information:

Hepatitis E Virus (HEV) is a major cause of enteric non-A hepatitis worldwide. HEV IgM is typically detected within 2-4 weeks after infection, and then declines rapidly during convalescence.

This test was performed using a kit that has not been cleared or approved bythe FDA. The analytical performance characteristics of this test have been determined by Focus Diagnostics. This test should not be used for diagnosis without confirmation by other medically established means.

ADMINISTRATIVE

CPT Codes:
86790-90

LOINC Codes:
14212-5

COMPLETE VIEW

Available Stat:
No

Test Code:
HEVM

Test Group:
Hepatitis

Performing Lab:
Quest

Sendout:
Yes

Methodology:
EIA

Collect:
Gold top, Red top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.1 mL serum

Specimen Preparation:
Serum should be removed from cells promptly after collection and transferred to a plastic tube. Freeze serum at -20C. Order Quest # 36582X

Reference Interval:
Not detected

Synonyms:

- HEV

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen at -20C 1 month.

Reported:
Test performed Monday and Thursday. Turnaround time: 2-5 days.

Additional Information:

Hepatitis E Virus (HEV) is a major cause of enteric non-A hepatitis worldwide. HEV IgM is typically detected within 2-4 weeks after infection, and then declines rapidly during convalescence.

This test was performed using a kit that has not been cleared or approved bythe FDA. The analytical performance characteristics of this test have been determined by Focus Diagnostics. This test should not be used for diagnosis without confirmation by other medically established means.

CPT Codes:
86790-90

LOINC Codes:
14212-5

HEPTEG

HEPTEG

ORDERING

Approval Required:
By appointment only, contact Mission Bay Hematology at x-60194.

Available Stat:
No

Performing Lab:
Mission Bay Hematology

Performed:
By appointment only, 0800-1530 daily

Reported:
2 hours

Additional Information:
Patient has to be on a heparinized line at the time of draw.

Synonyms:

- Hep Thromboelastograph (TEG5000)

COLLECTION

Sample Type:
Citrated Whole Blood

Collect:
Citrated Blue Top

Amount to Collect:
2.7 ml

Preferred Volume:
2.7 ml

Minimum Volume:
2.7 ml

Remarks:
By appointment only, contact Mission Bay Hematology at x-60194.

1. Use a 21G needle to perform the venipuncture.
2. Draw and discard the first 3 mL of blood or fill another tube. Blue top cannot be the first tube drawn.
3. After collection, mix each tube by gently inverting 3 to 4 times.
4. Discard the sample if there is a venous collapse or stoppage of blood flow during collection. Likewise, avoid prolonged placement of the tourniquet or a traumatic phlebotomy.
5. Sample should be hand delivered immediately to the Hematology laboratory.

Stability (from collection to initiation):
Room Temperature, hand deliver immediately to Hematology Laboratory within 30 minutes of collection.

Unacceptable Conditions:
Unapproved orders, sample past stability time, tubed samples, samples from a traumatic phlebotomy, over or under filled tubes.

PROCESSING

Test Code:
HEPTEG

Performing Lab:
Mission Bay Hematology

Preferred Volume:
2.7 ml

Minimum Volume:
2.7 ml

Unacceptable Conditions:
Unapproved orders, sample past stability time, tubed samples, samples from a traumatic phlebotomy, over or under filled tubes.

Stability (from collection to initiation):
Room Temperature, hand deliver immediately to Hematology Laboratory within 30 minutes of collection.

RESULT INTERPRETATION

Units:
R (min) K (min) Angle (deg) MA (mm)

Reference Interval:
ADULT NORMAL VALUES: HEPTEG

R (min)	K (min)	Angle (deg)	MA (mm)
5.0-10.4	0.8-2.8	55.2-78.4	50.6-69.4

The thrombelastograph has been cleared by the U.S. FDA as a medical device indicated for use with adult patients where an evaluation of their blood coagulation properties is desired. The use of TEG in pediatric patients has not been cleared by the FDA. The performance characteristics of the test were assessed by the UCSF Clinical Laboratories.

Additional Information:
Patient has to be on a heparinized line at the time of draw.

ADMINISTRATIVE

CPT Codes:
85347, 85384, 85576, 85390

LOINC Codes:
69552-8

COMPLETE VIEW

Approval Required:
By appointment only, contact Mission Bay Hematology at x-60194.

Available Stat:
No

Test Code:
HEPTEG

Performing Lab:
Mission Bay Hematology

Performed:
By appointment only, 0800-1530 daily

Remarks:
By appointment only, contact Mission Bay Hematology at x-60194.

1. Use a 21G needle to perform the venipuncture.
2. Draw and discard the first 3 mL of blood or fill another tube. Blue top cannot be the first tube drawn.
3. After collection, mix each tube by gently inverting 3 to 4 times.
4. Discard the sample if there is a venous collapse or stoppage of blood flow during collection. Likewise, avoid prolonged placement of the tourniquet or a traumatic phlebotomy.
5. Sample should be hand delivered immediately to the Hematology laboratory.

Collect:
Citrated Blue Top

Amount to Collect:
2.7 ml

Sample Type:
Citrated Whole Blood

Preferred Volume:
2.7 ml

Minimum Volume:
2.7 ml

Unacceptable Conditions:
Unapproved orders, sample past stability time, tubed samples, samples from a traumatic phlebotomy, over or under filled tubes.

Units:
R (min) K (min) Angle (deg) MA (mm)

Reference Interval:

ADULT NORMAL VALUES: HEPTEG

R (min)	K (min)	Angle (deg)	MA (mm)
5.0-10.4	0.8-2.8	55.2-78.4	50.6-69.4

The thrombelastograph has been cleared by the U.S. FDA as a medical device indicated for use with adult patients where an evaluation of their blood coagulation properties is desired. The use of TEG in pediatric patients has not been cleared by the FDA. The performance characteristics of the test were assessed by the UCSF Clinical Laboratories.

Synonyms:

- Hep Thromboelastograph (TEG5000)

Stability (from collection to initiation):

Room Temperature, hand deliver immediately to Hematology Laboratory within 30 minutes of collection.

Reported:

2 hours

Additional Information:

Patient has to be on a heparinized line at the time of draw.

CPT Codes:

85347, 85384, 85576, 85390

LOINC Codes:

69552-8

Herpes Simplex 1,2 Antibody, IgG

HSVP

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Wednesday only

Methodology:
Chemiluminescent Immunoassay

Reported:
1 - 8 days

Synonyms:

- HSV 1,2 Ab
- HSV IgG
- TORCH antibodies

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

PROCESSING

Test Code:
HSVP

Test Group:
Herpes

Performing Lab:
Immunology

Specimen Preparation:
Freeze sample at -20C

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

RESULT INTERPRETATION

Reference Interval:
Negative

ADMINISTRATIVE

CPT Codes:
86695 x 2

LOINC Codes:
36921-5

COMPLETE VIEW

Available Stat:
No

Test Code:
HSVP

Test Group:
Herpes

Performing Lab:
Immunology

Performed:
Wednesday only

Methodology:
Chemiluminescent Immunoassay

Collect:
Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Specimen Preparation:
Freeze sample at -20C

Reference Interval:
Negative

Synonyms:

- HSV 1,2 Ab
- HSV IgG
- TORCH antibodies

Reported:
1 - 8 days

CPT Codes:
86695 x 2

LOINC Codes:
36921-5

HERPES SIMPLEX VIRUS BY PCR, AMNIOTIC FLUID

HSVSAF

ORDERING

Ordering Recommendations:
Preferred test to detect herpes simplex virus types 1 and 2 (HSV-1/HSV-2).

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Qualitative Polymerase Chain Reaction

Reported:
1-3 days

Synonyms:

- Herpes Simplex Virus, Type 1/2 DNA, Real-Time PCR,
- HSV
- HSV Types 1 and 2

COLLECTION

Sample Type:
Amniotic fluid

Collect:
Sterile container

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Remarks:
Specimen source required.

Stability (from collection to initiation):
Central Processing, please send/transport ALL amniotic fluid tubes (including tubes with sendout labels) at ROOM TEMPERATURE to China Basin Cytogenetics Lab immediately upon receiving. China Basin Processing will give Cytogenetics lab all tubes and Cytogenetics lab will bring all send out tests back to Sendout lab. Sendout department will then send the tubes out at frozen temperature.

Storage/Transport Temperature:
From Central processing to China Basin Central processing : Room Temperature
(send ALL amniotic fluid tubes (including tubes with sendout labels) at ROOM TEMPERATURE to China Basin Cytogenetics Lab immediately upon receiving)
From China Basin Central Processing to Cytogenetics: Room Temperature
From China Basin Central Processing to Send Out institution: Frozen

Unacceptable Conditions:
Heparinized specimens.

PROCESSING

Test Code:
HSVSAF

ARUP Test Code:
2010095

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transfer 1 mL amniotic fluid to a sterile container. (Min: 0.5 mL)

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Unacceptable Conditions:
Heparinized specimens.

Stability (from collection to initiation):
Central Processing, please send/transport ALL amniotic fluid tubes (including tubes with sendout labels) at ROOM TEMPERATURE to China Basin Cytogenetics Lab immediately upon receiving. China Basin Processing will give Cytogenetics lab all tubes and Cytogenetics lab will bring all send out tests back to Sendout lab. Sendout department will then send the tubes out at frozen temperature.

Storage/Transport Temperature:
From Central processing to China Basin Central processing : Room Temperature
(send ALL amniotic fluid tubes (including tubes with sendout labels) at ROOM TEMPERATURE to China Basin Cytogenetics Lab immediately upon receiving)
From China Basin Central Processing to Cytogenetics: Room Temperature
From China Basin Central Processing to Send Out institution: Frozen

RESULT INTERPRETATION

Interpretive Data:
A negative result does not rule out the presence of PCR inhibitors in the patient specimen or test-specific nucleic acid in concentrations below the level of detection by this test.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:
87529 x2

LOINC:

- 5014-6
- 31208-2
- 16130-7
- 16131-5

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Preferred test to detect herpes simplex virus types 1 and 2 (HSV-1/HSV-2).

Test Code:
HSVSAF

ARUP Test Code:
2010095

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Qualitative Polymerase Chain Reaction

Remarks:
Specimen source required.

Collect:
Sterile container

Sample Type:
Amniotic fluid

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Unacceptable Conditions:
Heparinized specimens.

Specimen Preparation:
Transfer 1 mL amniotic fluid to a sterile container. (Min: 0.5 mL)

Interpretive Data:
A negative result does not rule out the presence of PCR inhibitors in the patient specimen or test-specific nucleic acid in concentrations below the level of detection by this test.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Synonyms:

- Herpes Simplex Virus, Type 1/2 DNA, Real-Time PCR,
- HSV
- HSV Types 1 and 2

Storage/Transport Temperature:
From Central processing to China Basin Central processing : Room Temperature
(send ALL amniotic fluid tubes (including tubes with sendout labels) at ROOM TEMPERATURE to China Basin Cytogenetics Lab immediately upon receiving)
From China Basin Central Processing to Cytogenetics: Room Temperature
From China Basin Central Processing to Send Out institution: Frozen

Stability (from collection to initiation):
Central Processing, please send/transport ALL amniotic fluid tubes (including tubes with sendout labels) at ROOM TEMPERATURE to China Basin Cytogenetics Lab immediately upon receiving. China Basin Processing will give Cytogenetics lab all tubes and Cytogenetics lab will bring all send out tests back to Sendout lab. Sendout department will then send the tubes out at frozen temperature.

Reported:
1-3 days

CPT Codes:
87529 x2

LOINC:

- 5014-6
- 31208-2
- 16130-7
- 16131-5

Herpes Simplex Virus Culture with Reflex to HSV Typing

P319

ORDERING

Ordering Recommendations:

Use to detect herpes simplex virus (HSV) by viral culture and differentiate types 1 and 2. Molecular testing is generally preferred; refer to Herpes Simplex Virus (HSV-1/HSV-2) Subtype by PCR (2010095). Orthopoxviruses, including monkeypox virus, cannot be identified clinically using this testing method. Refer to https://www.aruplab.com/monkeypox-testing for more information.

Approval Required:

Yes, consult with Microbiology Director x3-1628

Available Stat:

No

Performing Lab:

ARUP

Performed:

Sun-Sat

Methodology:

Cell Culture/Microscopy/Immunofluorescent Stain

Reported:

1-7 days

Synonyms:

- Drug susceptibility testing
- HSV
- antiviral susceptability testing
- Acyclovir
- Foscarnet
- Herpes Culture
- Herpes Simplex Viral Culture
- HSV type 1
- HSV type 2
- HSV-1 or HSV-2
- HSV1 and HSV2

COLLECTION

Collect:

Buccal mucosa, eye, genital, rectal, throat or vesicle swab, neonatal surface swab, or bronchoalveolar lavage, tissue, or vesicle fluid.

Remarks:

Specimen source preferred.

Stability (from collection to initiation):

Ambient: 2 hours; Refrigerated: 72 hours; Frozen: Unacceptable

Storage/Transport Temperature:

Refrigerated.

Unacceptable Conditions:

Blood, CSF, plasma, or serum. Bacterial transport systems; molecular transport systems; calcium alginate, dry, or wood swabs.

PROCESSING

Test Code:

P319

Test Group:

Herpes

ARUP Test Code:

0065065

Sendout:

Yes

Performing Lab:

ARUP

Specimen Preparation:
Fluid: Transfer 3 mL specimen to a sterile container. (Min: 0.5 mL) Also acceptable: Transfer to 3 mL viral transport media (ARUP Supply #12884) available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at (800) 522-2787.
Swab or Tissue: Place in 3 mL viral transport media (ARUP Supply #12884) available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at (800) 522-2787.

Unacceptable Conditions:
Blood, CSF, plasma, or serum. Bacterial transport systems; molecular transport systems; calcium alginate, dry, or wood swabs.

Stability (from collection to initiation):
Ambient: 2 hours; Refrigerated: 72 hours; Frozen: Unacceptable

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:
Culture negative for herpes simplex virus.

ADMINISTRATIVE

CPT Codes:
87255; if reflexed, add 87140 x2

LOINC:

- 5859-4

LOINC Codes:
Culture: 16291-7 Acyclovir: 73574-6, 9416-9 Foscarnet: 42317-8

COMPLETE VIEW

Approval Required:
Yes, consult with Microbiology Director x3-1628

Available Stat:
No

Ordering Recommendations:
Use to detect herpes simplex virus (HSV) by viral culture and differentiate types 1 and 2. Molecular testing is generally preferred; refer to Herpes Simplex Virus (HSV-1/HSV-2) Subtype by PCR (2010095). Orthopoxviruses, including monkeypox virus, cannot be identified clinically using this testing method. Refer to https://www.aruplab.com/monkeypox-testing for more information.

Test Code:
P319

Test Group:
Herpes

ARUP Test Code:
0065065

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Cell Culture/Microscopy/Immunofluorescent Stain

Remarks:
Specimen source preferred.

Collect:
Buccal mucosa, eye, genital, rectal, throat or vesicle swab, neonatal surface swab, or bronchoalveolar lavage, tissue, or vesicle fluid.

Unacceptable Conditions:
Blood, CSF, plasma, or serum. Bacterial transport systems; molecular transport systems; calcium alginate, dry, or wood swabs.

Specimen Preparation:

Fluid: Transfer 3 mL specimen to a sterile container. (Min: 0.5 mL) Also acceptable: Transfer to 3 mL viral transport media (ARUP Supply #12884) available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at (800) 522-2787.

Swab or Tissue: Place in 3 mL viral transport media (ARUP Supply #12884) available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at (800) 522-2787.

Reference Interval:

Culture negative for herpes simplex virus.

Synonyms:

- Drug susceptibility testing
- HSV
- antiviral susceptability testing
- Acyclovir
- Foscarnet
- Herpes Culture
- Herpes Simplex Viral Culture
- HSV type 1
- HSV type 2
- HSV-1 or HSV-2
- HSV1 and HSV2

Storage/Transport Temperature:

Refrigerated.

Stability (from collection to initiation):

Ambient: 2 hours; Refrigerated: 72 hours; Frozen: Unacceptable

Reported:

1-7 days

CPT Codes:

87255; if reflexed, add 87140 x2

LOINC:

- 5859-4

LOINC Codes:

Culture: 16291-7 Acyclovir: 73574-6, 9416-9 Foscarnet: 42317-8

Notes:

If culture is positive for HSV, then HSV typing test will be added. Additional charges apply.

Herpes simplex virus, DNA, Quantitative

P337

ORDERING

Ordering Recommendations:

For testing of CSF, order Rapid HSV DNA, CSF.
For testing of blood, order Rapid HSV DNA, skin lesion / blood.

Quantification can be performed on positive samples by ordering add-on Herpes Simplex Virus PCR, Quantitative test.

Available Stat:

No

Performing Lab:

Amniotic fluid: Quest Diagnostics
Other samples: Viracor, see https://www.eurofins-viracor.com/clinical/test-menu/8500-herpes-simplex-viruses-1-2-hsv-1-hsv-2-quantitative-pcr/

Methodology:

Real time PCR

Reported:

2-5 days

Additional Information:

HSV is a etiologic agent of encephalitis and aseptic meningitis as well as a wide variety of other infections. PCR for HSV in CNS disease is highly sensitive, whereas culture is often negative. This assay differentiates between HSV-1 and HSV-2.

This test has not been cleared or approved by the U.S. Food and Drug Administration. It was developed and its performance characteristics have been determined by the performing laboratory.

Synonyms:

- HSV
- PCR

COLLECTION

Sample Type:

CSF, amniotic fluid, EDTA plasma

Collect:

CSF or Amniotic fluid: Sterile tube
Blood: Lavender top
Other sample types: See Specimen Information section at https://www.eurofins-viracor.com/clinical/test-menu/8500-herpes-simplex-viruses-1-2-hsv-1-hsv-2-quantitative-pcr/

Amount to Collect:

CSF or Amniotic fluid: 1 mL
Blood: 3 mL

Preferred Volume:

CSF or Amniotic fluid: 1 mL
Plasma: 1 mL

Minimum Volume:

CSF or Amniotic fluid: 0.5 mL
Plasma: 0.5 mL

Stability (from collection to initiation):

CSF and amniotic fluid: Frozen at -70C 1 month
Plasma: Room temperature 4 days, frozen at -70C 1 month

PROCESSING

Test Code:

P337

Test Group:

Herpes

Sendout:

Yes

Performing Lab:

Amniotic fluid: Quest Diagnostics
Other samples: Viracor, see https://www.eurofins-viracor.com/clinical/test-menu/8500-herpes-simplex-viruses-1-2-hsv-1-hsv-2-quantitative-pcr/

Specimen Preparation:

Test sent out and reported by Microbiology.

CSF and amniotic fluid: Store at -70°C. Ship frozen on dry ice.

Blood: Centrifuge blood, remove plasma, and freeze at -70C. Ship frozen on dry ice.

CSF and plasma: Send to Viracor for HSV1 and HSV2 Real time qPCR #8500

Amniotic fluid: Send to Focus for Herpes Simplex Virus, Type 1 & 2 DNA, Quantitative Real-Time PCR # 43220

Preferred Volume:

CSF or Amniotic fluid: 1 mL
Plasma: 1 mL

Minimum Volume:

CSF or Amniotic fluid: 0.5 mL
Plasma: 0.5 mL

Stability (from collection to initiation):

CSF and amniotic fluid: Frozen at -70C 1 month
Plasma: Room temperature 4 days, frozen at -70C 1 month

RESULT INTERPRETATION

Units:

copies/mL

Reference Interval:

Not detected

Additional Information:

HSV is a etiologic agent of encephalitis and aseptic meningitis as well as a wide variety of other infections. PCR for HSV in CNS disease is highly sensitive, whereas culture is often negative. This assay differentiates between HSV-1 and HSV-2.

This test has not been cleared or approved by the U.S. Food and Drug Administration. It was developed and its performance characteristics have been determined by the performing laboratory.

ADMINISTRATIVE

CPT Codes:

87530-90 x2

LOINC Codes:

5014-6

COMPLETE VIEW

Available Stat:

No

Ordering Recommendations:

For testing of CSF, order Rapid HSV DNA, CSF.
For testing of blood, order Rapid HSV DNA, skin lesion / blood.

Quantification can be performed on positive samples by ordering add-on Herpes Simplex Virus PCR, Quantitative test.

Test Code:

P337

Test Group:

Herpes

Performing Lab:

Amniotic fluid: Quest Diagnostics
Other samples: Viracor, see https://www.eurofins-viracor.com/clinical/test-menu/8500-herpes-simplex-viruses-1-2-hsv-1-hsv-2-quantitative-pcr/

Sendout:

Yes

Methodology:

Real time PCR

Collect:

CSF or Amniotic fluid: Sterile tube
Blood: Lavender top
Other sample types: See Specimen Information section at https://www.eurofins-viracor.com/clinical/test-menu/8500-herpes-simplex-viruses-1-2-hsv-1-hsv-2-quantitative-pcr/

Amount to Collect:
CSF or Amniotic fluid: 1 mL
Blood: 3 mL

Sample Type:
CSF, amniotic fluid, EDTA plasma

Preferred Volume:
CSF or Amniotic fluid: 1 mL
Plasma: 1 mL

Minimum Volume:
CSF or Amniotic fluid: 0.5 mL
Plasma: 0.5 mL

Specimen Preparation:
Test sent out and reported by Microbiology.

CSF and amniotic fluid: Store at -70°C. Ship frozen on dry ice.

Blood: Centrifuge blood, remove plasma, and freeze at -70C. Ship frozen on dry ice.

CSF and plasma: Send to Viracor for HSV1 and HSV2 Real time qPCR #8500

Amniotic fluid: Send to Focus for Herpes Simplex Virus, Type 1 & 2 DNA, Quantitative Real-Time PCR # 43220

Units:
copies/mL

Reference Interval:
Not detected

Synonyms:

- HSV
- PCR

Stability (from collection to initiation):
CSF and amniotic fluid: Frozen at -70C 1 month
Plasma: Room temperature 4 days, frozen at -70C 1 month

Reported:
2-5 days

Additional Information:
HSV is a etiologic agent of encephalitis and aseptic meningitis as well as a wide variety of other infections. PCR for HSV in CNS disease is highly sensitive, whereas culture is often negative. This assay differentiates between HSV-1 and HSV-2.

This test has not been cleared or approved by the U.S. Food and Drug Administration. It was developed and its performance characteristics have been determined by the performing laboratory.

CPT Codes:
87530-90 x2

LOINC Codes:
5014-6

Histamine, plasma

HIST

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Enzyme immunoassay

Reported:
Set up 2x per week. TAT: 6-8 days

Additional Information:
Histamine is a mediator of the allergic response. Histamine release causes itching, flushing, hives, vomiting, syncope, and even shock. In addition, some patients with gastric carcinoids may exhibit high concentrations of Histamine.

This test was performed using a kit that has not been approved or cleared by the FDA. The analytical performance characteristics of this test have been determined by Quest Diagnostics Nichols Institute.

This test should not be used for diagnosis without confirmation by other medically established means.

COLLECTION

Patient Preparation:
Patient should avoid taking allergy causing drugs, antihistamines, oral corticosteroids and substances which block H2 receptors 24 hours prior to collection.

Sample Type:
EDTA plasma

Collect:
Lavender top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Remarks:
Avoid hemolysis.

Stability (from collection to initiation):
Room temperature and refrigerated 1 day, frozen at -20C 1 week.

Unacceptable Conditions:
Hemolyzed

Rejection Criteria:
Thawed, refrigerated or room temperature sample.

PROCESSING

Test Code:
HIST

Test Group:
Histamine

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Centrifuge immediately and freeze in plastic vial at -20C. Transport frozen to China basin. Order Quest # 36586X

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Hemolyzed

Rejection Criteria:
Thawed, refrigerated or room temperature sample.

Stability (from collection to initiation):
Room temperature and refrigerated 1 day, frozen at -20C 1 week.

RESULT INTERPRETATION

Units:
ng/mL

Reference Interval:
0.1-1.8 ng/mL

Additional Information:
Histamine is a mediator of the allergic response. Histamine release causes itching, flushing, hives, vomiting, syncope, and even shock. In addition, some patients with gastric carcinoids may exhibit high concentrations of Histamine.

This test was performed using a kit that has not been approved or cleared by the FDA. The analytical performance characteristics of this test have been determined by Quest Diagnostics Nichols Institute.

This test should not be used for diagnosis without confirmation by other medically established means.

ADMINISTRATIVE

CPT Codes:
83088-90

LOINC Codes:
2416-6

COMPLETE VIEW

Available Stat:
No

Test Code:
HIST

Test Group:
Histamine

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Enzyme immunoassay

Patient Preparation:
Patient should avoid taking allergy causing drugs, antihistamines, oral corticosteroids and substances which block H2 receptors 24 hours prior to collection.

Remarks:
Avoid hemolysis.

Collect:
Lavender top

Amount to Collect:
2 mL blood

Sample Type:
EDTA plasma

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Rejection Criteria:
Thawed, refrigerated or room temperature sample.

Unacceptable Conditions:
Hemolyzed

Specimen Preparation:
Centrifuge immediately and freeze in plastic vial at -20C. Transport frozen to China basin. Order Quest # 36586X

Units:
ng/mL

Reference Interval:
0.1-1.8 ng/mL

Stability (from collection to initiation):
Room temperature and refrigerated 1 day, frozen at -20C 1 week.

Reported:
Set up 2x per week. TAT: 6-8 days

Additional Information:
Histamine is a mediator of the allergic response. Histamine release causes itching, flushing, hives, vomiting, syncope, and even shock. In addition, some patients with gastric carcinoids may exhibit high concentrations of Histamine.

This test was performed using a kit that has not been approved or cleared by the FDA. The analytical performance characteristics of this test have been determined by Quest Diagnostics Nichols Institute.

This test should not be used for diagnosis without confirmation by other medically established means.

CPT Codes:
83088-90

LOINC Codes:
2416-6

Histamine, urine

HISTU

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Radioimmunoassay

Reported:
Set up 2x per week. TAT 8-10 days.

Additional Information:
Histamine is a mediator of the allergic response. Histamine release causes itching, flushing, hives, vomiting, syncope, and even shock. In addition, some patients with gastric carcinoids may exhibit high concentrations of Histamine.

This test was performed using a kit that has not been approved or cleared by the FDA. The analytical performance characteristics of this test have been determined by Quest Diagnostics Nichols Institute.

This test should not be used for diagnosis without confirmation by other medically established means.

COLLECTION

Patient Preparation:
Patient should avoid taking allergy causing drugs, antihistamines, oral corticosteroids and substances which block H2 receptors 24 hours prior to collection.

Sample Type:
24 hour urine collection

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container

Amount to Collect:
Entire 24 hour urine output

Preferred Volume:
10 mL urine

Minimum Volume:
2 mL urine

Remarks:
Refrigerate specimen during collection. Protect sample from light

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 2 weeks, frozen at -20C 2 weeks.

Unacceptable Conditions:
Container not refrigerated during collection or not protected from light

PROCESSING

Test Code:
HISTU

Test Group:
Histamine

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Process immediately. Aliquot 10 mL. Record total volume on both test request form and specimen container. Transport refrigerated. Order Quest # 6825N

Preferred Volume:
10 mL urine

Minimum Volume:
2 mL urine

Unacceptable Conditions:
Container not refrigerated during collection or not protected from light

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 2 weeks, frozen at -20C 2 weeks.

RESULT INTERPRETATION

Units:
mg/24 hours

Reference Interval:
Normal: 0.006 - 0.131 mg/24 hours

Additional Information:
Histamine is a mediator of the allergic response. Histamine release causes itching, flushing, hives, vomiting, syncope, and even shock. In addition, some patients with gastric carcinoids may exhibit high concentrations of Histamine.

This test was performed using a kit that has not been approved or cleared by the FDA. The analytical performance characteristics of this test have been determined by Quest Diagnostics Nichols Institute.

This test should not be used for diagnosis without confirmation by other medically established means.

ADMINISTRATIVE

CPT Codes:
82570-90, 83088-90

LOINC Codes:
9410-2

COMPLETE VIEW

Available Stat:
No

Test Code:
HISTU

Test Group:
Histamine

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Radioimmunoassay

Patient Preparation:
Patient should avoid taking allergy causing drugs, antihistamines, oral corticosteroids and substances which block H2 receptors 24 hours prior to collection.

Remarks:
Refrigerate specimen during collection. Protect sample from light

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container

Amount to Collect:
Entire 24 hour urine output

Sample Type:
24 hour urine collection

Preferred Volume:
10 mL urine

Minimum Volume:
2 mL urine

Unacceptable Conditions:
Container not refrigerated during collection or not protected from light

Specimen Preparation:
Process immediately. Aliquot 10 mL. Record total volume on both test request form and specimen container. Transport refrigerated. Order Quest # 6825N

Units:
mg/24 hours

Reference Interval:

Normal: 0.006 - 0.131 mg/24 hours

Stability (from collection to initiation):

Room temperature 2 days, refrigerated 2 weeks, frozen at -20C 2 weeks.

Reported:

Set up 2x per week. TAT 8-10 days.

Additional Information:

Histamine is a mediator of the allergic response. Histamine release causes itching, flushing, hives, vomiting, syncope, and even shock. In addition, some patients with gastric carcinoids may exhibit high concentrations of Histamine.

This test was performed using a kit that has not been approved or cleared by the FDA. The analytical performance characteristics of this test have been determined by Quest Diagnostics Nichols Institute.

This test should not be used for diagnosis without confirmation by other medically established means.

CPT Codes:

82570-90, 83088-90

LOINC Codes:

9410-2

Histone Antibody

HISTO

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
EIA

Reported:
3-5 days

COLLECTION

Sample Type:
Serum

Collect:
Red top or Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Frozen 1 month

PROCESSING

Test Code:
HISTO

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot serum and freeze. Forward to CB.

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Frozen 1 month

RESULT INTERPRETATION

Units:
U

Reference Interval:
< 1.0 U

ADMINISTRATIVE

CPT Codes:
83516-90

COMPLETE VIEW

Available Stat:
No

Test Code:
HISTO

Performing Lab:
Quest

Sendout:
Yes

Methodology:
EIA

Collect:
Red top or Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Specimen Preparation:
Aliquot serum and freeze. Forward to CB.

Units:
U

Reference Interval:
< 1.0 U

Stability (from collection to initiation):
Frozen 1 month

Reported:
3-5 days

CPT Codes:
83516-90

Histoplasma capsulatum Antibody, by Complement Fixation

HICFB

ORDERING

Available Stat:
No

Performing Lab:
Focus via Quest

Methodology:
Complemnent fixation

Reported:
Test set up Monday - Friday, Turn around time 3-5 days

Additional Information:
Patients should be screened by immunodiffusion before requesting complement fixation. Titers to both mycelial and yeast phase antigens are reported, yeast phase antigen being more sensitive but less specific than mycelial phase antigen. Cross reactions frequently occur with Blastomyces and Coccidioides.

COLLECTION

Sample Type:
Serum

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Remarks:
Collect samples prior to performing fungal skin testing which can significantly increase antibody titers in sensitized individuals making results of this test uninterpretable.

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen at -20C 1 month.

Unacceptable Conditions:
Hemolysis, lipemia

Rejection Criteria:
Hemolysis, lipemia

PROCESSING

Test Code:
HICFB

Test Group:
Histoplasma

Sendout:
Yes

Performing Lab:
Focus via Quest

Specimen Preparation:
Order Quest test # 938X. For B&T patients order LabCorp test # 164319

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Hemolysis, lipemia

Rejection Criteria:
Hemolysis, lipemia

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen at -20C 1 month.

RESULT INTERPRETATION

Units:
Titer

Reference Interval:
< 1:8

Additional Information:
Patients should be screened by immunodiffusion before requesting complement fixation. Titers to both mycelial and yeast phase antigens are reported, yeast phase antigen being more sensitive but less specific than mycelial phase antigen. Cross reactions frequently occur with Blastomyces and Coccidioides.

ADMINISTRATIVE

CPT Codes:
86698-90 x2

LOINC Codes:
20573-2

COMPLETE VIEW

Available Stat:
No

Test Code:
HICFB

Test Group:
Histoplasma

Performing Lab:
Focus via Quest

Sendout:
Yes

Methodology:
Complemnent fixation

Remarks:
Collect samples prior to performing fungal skin testing which can significantly increase antibody titers in sensitized individuals making results of this test uninterpretable.

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Rejection Criteria:
Hemolysis, lipemia

Unacceptable Conditions:
Hemolysis, lipemia

Specimen Preparation:
Order Quest test # 938X. For B&T patients order LabCorp test # 164319

Units:
Titer

Reference Interval:
< 1:8

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen at -20C 1 month.

Reported:
Test set up Monday - Friday, Turn around time 3-5 days

Additional Information:
Patients should be screened by immunodiffusion before requesting complement fixation. Titers to both mycelial and yeast phase antigens are reported, yeast phase antigen being more sensitive but less specific than mycelial phase antigen. Cross reactions frequently occur with Blastomyces and Coccidioides.

CPT Codes:
86698-90 x2

LOINC Codes:
20573-2

Histoplasma capsulatum Antigen

HISTAG

ORDERING

Available Stat:
No

Performing Lab:
Mira Vista via Quest Diagnostics

Performed:
Monday-Friday

Methodology:
Enzyme Immunoassay (EIA)

Reported:
1-3 days

Additional Information:
Urine is the most sensitive specimen for diagnosis.

Sensitivity:
Disseminated infection: 92%
Severe pulmonary infection: 80%
Self-limited pulmonary infection: 34%
Chronic pulmonary infection: 14%

Synonyms:

- H. capsulatum

COLLECTION

Sample Type:
Urine, plasma, serum, CSF, BAL, other body fluids

Collect:
Sterile leak-proof container, EDTA Lavender top, NA Green top, SST gold top

Amount to Collect:
0.5 mL urine
2.5 mL blood
0.8 mL CSF
0.5 mL BAL/Body fluids

Preferred Volume:
0.5 mL urine
1.2 mL plasma or serum
0.8 mL CSF
0.5 mL BAL/Body fluids

Minimum Volume:
Urine, BAL or other body fluids: 0.5 mL
CSF: 0.8 mL
Serum or plasma: 1.2 mL

Stability (from collection to initiation):
Room temperature: 14 days
Refrigerated: 14 days
Frozen: Indefinite

Storage/Transport Temperature:
Frozen

Unacceptable Conditions:
If specimen is too viscous to pipette • Tissue • Sputum • Bronchial brushings • Stool • FNA • Biopsy • Tracheal or bone marrow aspirate stored in transport media fixative or isolator tubes

PROCESSING

Test Code:
HISTAG

Sendout:
Yes

Performing Lab:
Mira Vista via Quest Diagnostics

Specimen Preparation:
Refrigerate sample. Order Quest test code #34441X

Preferred Volume:
0.5 mL urine
1.2 mL plasma or serum
0.8 mL CSF
0.5 mL BAL/Body fluids

Minimum Volume:
Urine, BAL or other body fluids: 0.5 mL
CSF: 0.8 mL
Serum or plasma: 1.2 mL

Unacceptable Conditions:
If specimen is too viscous to pipette • Tissue • Sputum • Bronchial brushings • Stool • FNA • Biopsy • Tracheal or bone marrow aspirate stored in transport media fixative or isolator tubes

Stability (from collection to initiation):
Room temperature: 14 days
Refrigerated: 14 days
Frozen: Indefinite

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Units:
ng/mL

Reference Interval:
None Detected

Additional Information:
Urine is the most sensitive specimen for diagnosis.

Sensitivity:
Disseminated infection: 92%
Severe pulmonary infection: 80%
Self-limited pulmonary infection: 34%
Chronic pulmonary infection: 14%

Interpretive Data:
Interfering substances and cross-reactivities include sodium hydroxide and sputolysin. Cross-reactivity occurs between blastomycosis and histoplasmosis and in paracoccidioidomycosis, penicillosis, coccidioidomycosis, aspergillosis and sporotrichosis.

Positive: 0.20-20.00 ng/mL
Positive Above the Limit of Quantification: Results greater than 20.00 ng/mL fall outside the linear range of the assay. These results are positive, but not accurately quantifiable.

ADMINISTRATIVE

CPT Codes:
87385-90

LOINC Codes:
13971-7

COMPLETE VIEW

Available Stat:
No

Test Code:
HISTAG

Performing Lab:
Mira Vista via Quest Diagnostics

Sendout:
Yes

Performed:
Monday-Friday

Methodology:
Enzyme Immunoassay (EIA)

Collect:
Sterile leak-proof container, EDTA Lavender top, NA Green top, SST gold top

Amount to Collect:
0.5 mL urine
2.5 mL blood
0.8 mL CSF
0.5 mL BAL/Body fluids

Sample Type:
Urine, plasma, serum, CSF, BAL, other body fluids

Preferred Volume:
0.5 mL urine
1.2 mL plasma or serum
0.8 mL CSF
0.5 mL BAL/Body fluids

Minimum Volume:
Urine, BAL or other body fluids: 0.5 mL
CSF: 0.8 mL
Serum or plasma: 1.2 mL

Unacceptable Conditions:
If specimen is too viscous to pipette • Tissue • Sputum • Bronchial brushings • Stool • FNA • Biopsy • Tracheal or bone marrow aspirate stored in transport media fixative or isolator tubes

Specimen Preparation:
Refrigerate sample. Order Quest test code #34441X

Units:
ng/mL

Reference Interval:
None Detected

Interpretive Data:
Interfering substances and cross-reactivities include sodium hydroxide and sputolysin. Cross-reactivity occurs between blastomycosis and histoplasmosis and in paracoccidioidomycosis, penicillosis, coccidioidomycosis, aspergillosis and sporotrichosis.

Positive: 0.20-20.00 ng/mL
Positive Above the Limit of Quantification: Results greater than 20.00 ng/mL fall outside the linear range of the assay. These results are positive, but not accurately quantifiable.

Synonyms:

- H. capsulatum

Storage/Transport Temperature:
Frozen

Stability (from collection to initiation):
Room temperature: 14 days
Refrigerated: 14 days
Frozen: Indefinite

Reported:
1-3 days

Additional Information:
Urine is the most sensitive specimen for diagnosis.

Sensitivity:
Disseminated infection: 92%
Severe pulmonary infection: 80%
Self-limited pulmonary infection: 34%
Chronic pulmonary infection: 14%

CPT Codes:
87385-90

LOINC Codes:
13971-7

HIV Antibody and Antigen Combination Test

HIVAA

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday - Friday (day shift only)

Methodology:
Chemiluminescent Immunoassay

Reported:
3-5 days (3-5 additional days for confirmation of positives)

Additional Information:
This test detects antibodies to HIV-1 and HIV-2 along with the p24 antigen. Reactive results will be tested secondarily with an immunoassay to differentiate HIV-1 antibodies from HIV-2 antibodies. Indeterminate or negative results on the secondary assay will be reflex tested for HIV nucleic acid (HIV-1 NAT, sendout test). Positive screening with negative or equivocal secondary testing could indicate acute HIV infection or a false positive result. This testing methodology follows the CDC recommendations published in June 2014 (for further information, see http://www.cdc.gov/hiv/guidelines/testing.html).

Note: Per the CDC recommendations, HIV-1 Western blot testing is generally not indicated with the availability of the HIV-1 NAT test. HIV-1 NAT can be ordered separately in cases where a false positive screening result is suspected.

Reflex Testing:
HIV-1/2 Antibody Differentiation will automatically be performed on all positive samples at an additional charge. Indeterminate or negative results on the secondary assay will be reflex to HIV-1 NAT testing (send out test).

Synonyms:

- Human Immunodeficiency virus:HIV-1, HIV-2 Antibody & HIV-1 p24 Antigen

COLLECTION

Sample Type:
Serum

Collect:
Gold Top or Red Top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Remarks:
For tests not ordered directly via APEX, the ordering provider should document patient consent in the medical record

Stability (from collection to initiation):
Room temperature 3 days

Unacceptable Conditions:
Grossly hemolyzed samples

PROCESSING

Test Code:
HIVAA

Test Group:
HIV

Performing Lab:
Immunology

Specimen Preparation:
Refrigerate samples.

Preferred Volume:
0.5 mL serum

Unacceptable Conditions:
Grossly hemolyzed samples

Stability (from collection to initiation):
Room temperature 3 days

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
This test detects antibodies to HIV-1 and HIV-2 along with the p24 antigen. Reactive results will be tested secondarily with an immunoassay to differentiate HIV-1 antibodies from HIV-2 antibodies. Indeterminate or negative results on the secondary assay will be reflex tested for HIV nucleic acid (HIV-1 NAT, sendout test). Positive screening with negative or equivocal secondary testing could indicate acute HIV infection or a false positive result. This testing methodology follows the CDC recommendations published in June 2014 (for further information, see http://www.cdc.gov/hiv/guidelines/testing.html).

Note: Per the CDC recommendations, HIV-1 Western blot testing is generally not indicated with the availability of the HIV-1 NAT test. HIV-1 NAT can be ordered separately in cases where a false positive screening result is suspected.

Interpretive Data:

Assay interpretation for secondary testing:

HIV-1 Antibody Result	HIV-2 Antibody Result	Assay Interpretation
Nonreactive	Nonreactive	HIV ANTIBODY NEGATIVE
Indeterminate	Nonreactive	HIV-1 INDETERMINATE [a]
Nonreactive	Indeterminate	HIV-2 INDETERMINATE [b]
Indeterminate	Indeterminate	HIV INDETERMINATE [c]
Reactive	Nonreactive	HIV-1 POSITIVE
Reactive	Indeterminate	HIV-1 POSITIVE
Nonreactive	Reactive	HIV-2 POSITIVE
Indeterminate	Reactive	HIV-2 POSITIVE
Reactive	Reactive	HIV POSITIVE Untypable (undifferentiated): Antibodies to HIV-1 and HIV-2 confirmed in the sample. This may occur in an HIV-2 positive sample with significant cross-reactivity to HIV-1, or may be due to co-infection with both HIV-1 and HIV-2 (rare).* *Note: Differentiation features managed by proprietary algorithm.

[a] HIV-1 band(s) detected but did not meet the criteria for HIV-1 Positivity. No HIV-2 bands were detected.
[b] HIV-2 band(s) detected but did not meet the criteria for HIV-2 Positivity. No HIV-1 bands were detected.
[c] HIV band(s) detected but did not meet the criteria for HIV-1 Positivity or HIV-2 Positivity.

ADMINISTRATIVE

CPT Codes:
87389

LOINC Codes:
56888-1

COMPLETE VIEW

Available Stat:
No

Test Code:
HIVAA

Test Group:
HIV

Performing Lab:
Immunology

Performed:
Monday - Friday (day shift only)

Methodology:
Chemiluminescent Immunoassay

Remarks:
For tests not ordered directly via APEX, the ordering provider should document patient consent in the medical record

Collect:
Gold Top or Red Top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Unacceptable Conditions:
Grossly hemolyzed samples

Specimen Preparation:
Refrigerate samples.

Reference Interval:
Negative

Interpretive Data:

Assay interpretation for secondary testing:

HIV-1 Antibody Result	HIV-2 Antibody Result	Assay Interpretation
Nonreactive	Nonreactive	HIV ANTIBODY NEGATIVE
Indeterminate	Nonreactive	HIV-1 INDETERMINATE [a]
Nonreactive	Indeterminate	HIV-2 INDETERMINATE [b]
Indeterminate	Indeterminate	HIV INDETERMINATE [c]
Reactive	Nonreactive	HIV-1 POSITIVE
Reactive	Indeterminate	HIV-1 POSITIVE
Nonreactive	Reactive	HIV-2 POSITIVE
Indeterminate	Reactive	HIV-2 POSITIVE
Reactive	Reactive	HIV POSITIVE Untypable (undifferentiated): Antibodies to HIV-1 and HIV-2 confirmed in the sample. This may occur in an HIV-2 positive sample with significant cross-reactivity to HIV-1, or may be due to co-infection with both HIV-1 and HIV-2 (rare).* *Note: Differentiation features managed by proprietary algorithm.

[a] HIV-1 band(s) detected but did not meet the criteria for HIV-1 Positivity. No HIV-2 bands were detected.
[b] HIV-2 band(s) detected but did not meet the criteria for HIV-2 Positivity. No HIV-1 bands were detected.
[c] HIV band(s) detected but did not meet the criteria for HIV-1 Positivity or HIV-2 Positivity.

Synonyms:

- Human Immunodeficiency virus:HIV-1, HIV-2 Antibody & HIV-1 p24 Antigen

Stability (from collection to initiation):
Room temperature 3 days

Reported:
3-5 days (3-5 additional days for confirmation of positives)

Reflex Testing:
HIV-1/2 Antibody Differentiation will automatically be performed on all positive samples at an additional charge. Indeterminate or negative results on the secondary assay will be reflex to HIV-1 NAT testing (send out test).

Additional Information:
This test detects antibodies to HIV-1 and HIV-2 along with the p24 antigen. Reactive results will be tested secondarily with an immunoassay to differentiate HIV-1 antibodies from HIV-2 antibodies. Indeterminate or negative results on the secondary assay will be reflex tested for HIV nucleic acid (HIV-1 NAT, sendout test). Positive screening with negative or equivocal secondary testing could indicate acute HIV infection or a false positive result. This testing methodology follows the CDC recommendations published in June 2014 (for further information, see http://www.cdc.gov/hiv/guidelines/testing.html).

Note: Per the CDC recommendations, HIV-1 Western blot testing is generally not indicated with the availability of the HIV-1 NAT test. HIV-1 NAT can be ordered separately in cases where a false positive screening result is suspected.

CPT Codes:
87389

LOINC Codes:
56888-1

HIV Genotyping

MOLT

ORDERING

Available Stat:
No

Performing Lab:
Monogram Bioscience

Methodology:
PCR/ABI

Additional Information:
Note: Patients must have a viral load of at least 500 copies/mL for genotyping to be performed.

Testing recommnedations:

Drug-Resistance Testing (Last updated February 12, 2013; last reviewed February 12, 2013: http://aidsinfo.nih.gov/guidelines)

Panel's Recommendations:
· HIV drug-resistance testing is recommended in persons with HIV infection at entry into care regardless of whether antiretroviral therapy (ART) will be initiated immediately or deferred (AII). If therapy is deferred, repeat testing should be considered at the time of ART initiation (CIII).
· Genotypic testing is recommended as the preferred resistance testing to guide therapy in antiretroviral (ARV)-na•ve patients (AIII).
· Standard genotypic drug-resistance testing in ARV-naive persons involves testing for mutations in the reverse transcriptase (RT) and protease (PR) genes. If transmitted integrase strand transfer inhibitor (INSTI) resistance is a concern, providers may wish to supplement standard genotypic resistance testing with an INSTI genotype test (CIII).
· HIV drug-resistance testing should be performed to assist in the selection of active drugs when changing ARV regimens in persons with virologic failure and HIV RNA levels >1,000 copies/mL (AI). In persons with HIV RNA levels >500 but <1,000 copies/mL, testing may be unsuccessful but should still be considered (BII).
· Drug-resistance testing should also be performed when managing suboptimal viral load reduction (AII).
· In persons failing INSTI-based regimens, genotypic testing for INSTI resistance should be performed to determine whether to include a drug from this class in subsequent regimens (AII).
· Drug-resistance testing in the setting of virologic failure should be performed while the person is taking prescribed ARV drugs or, if not possible, within 4 weeks after discontinuing therapy (AII).
· Genotypic testing is recommended as the preferred resistance testing to guide therapy in patients with suboptimal virologic responses or virologic failure while on first or second regimens (AII).
· The addition of phenotypic to genotypic testing is generally preferred for persons with known or suspected complex drugresistance mutation patterns, particularly to protease inhibitors (PIs) (BIII).
· Genotypic resistance testing is recommended for all pregnant women before initiation of ART (AIII) and for those entering pregnancy with detectable HIV RNA levels while on therapy (AI)

Rating of Recommendations	A = Strong	B = Moderate	C = Optional
Rating of Evidence	I = Data from randomized controlled trials	II = Data from well-designed nonrandomized trials or observational	
cohort studies with long-term clinical outcomes	III = Expert opinion		

Synonyms:

- PCR

COLLECTION

Sample Type:
EDTA Plasma

Collect:
Lavender top

Amount to Collect:
6 mL blood

Preferred Volume:
3 mL plasma

Minimum Volume:
3 mL plasma

Remarks:
Note: If both genotyping and phenotyping are requested for B&T patients, TWO separate tubes should be drawn.

PROCESSING

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Test Group:
HIV

Sendout:
Yes

Performing Lab:
Monogram Bioscience

Specimen Preparation:
Centrifuge sample @ 100-1200g x 10-15 min. and separate plasma within 6 hours of sample collection. Transfer plasma to capped plastic tube and freeze at -20C. Do not thaw sample after freezing. Ship frozen with dry ice.

Note: If both genotyping and phenotyping are requested for B&T patients, aliquot the two tubes separately and freeze at -20C.

Preferred Volume:
3 mL plasma

Minimum Volume:
3 mL plasma

RESULT INTERPRETATION

Additional Information:
Note: Patients must have a viral load of at least 500 copies/mL for genotyping to be performed.

Testing recommnedations:

Drug-Resistance Testing (Last updated February 12, 2013; last reviewed February 12, 2013: http://aidsinfo.nih.gov/guidelines)

Panel's Recommendations:
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· Genotypic testing is recommended as the preferred resistance testing to guide therapy in antiretroviral (ARV)-na•ve patients (AIII).
· Standard genotypic drug-resistance testing in ARV-naive persons involves testing for mutations in the reverse transcriptase (RT) and protease (PR) genes. If transmitted integrase strand transfer inhibitor (INSTI) resistance is a concern, providers may wish to supplement standard genotypic resistance testing with an INSTI genotype test (CIII).
· HIV drug-resistance testing should be performed to assist in the selection of active drugs when changing ARV regimens in persons with virologic failure and HIV RNA levels >1,000 copies/mL (AI). In persons with HIV RNA levels >500 but <1,000 copies/mL, testing may be unsuccessful but should still be considered (BII).
· Drug-resistance testing should also be performed when managing suboptimal viral load reduction (AII).
· In persons failing INSTI-based regimens, genotypic testing for INSTI resistance should be performed to determine whether to include a drug from this class in subsequent regimens (AII).
· Drug-resistance testing in the setting of virologic failure should be performed while the person is taking prescribed ARV drugs or, if not possible, within 4 weeks after discontinuing therapy (AII).
· Genotypic testing is recommended as the preferred resistance testing to guide therapy in patients with suboptimal virologic responses or virologic failure while on first or second regimens (AII).
· The addition of phenotypic to genotypic testing is generally preferred for persons with known or suspected complex drugresistance mutation patterns, particularly to protease inhibitors (PIs) (BIII).
· Genotypic resistance testing is recommended for all pregnant women before initiation of ART (AIII) and for those entering pregnancy with detectable HIV RNA levels while on therapy (AI)

Rating of Recommendations	A = Strong	B = Moderate	C = Optional
Rating of Evidence	I = Data from randomized controlled trials	II = Data from well-designed nonrandomized trials or observational	
cohort studies with long-term clinical outcomes	III = Expert opinion		

COMPLETE VIEW

Available Stat:
No

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Test Group:
HIV

Performing Lab:
Monogram Bioscience

Sendout:
Yes

Methodology:
PCR/ABI

Remarks:
Note: If both genotyping and phenotyping are requested for B&T patients, TWO separate tubes should be drawn.

Collect:
Lavender top

Amount to Collect:
6 mL blood

Sample Type:
EDTA Plasma

Preferred Volume:
3 mL plasma

Minimum Volume:
3 mL plasma

Specimen Preparation:
Centrifuge sample @ 100-1200g x 10-15 min. and separate plasma within 6 hours of sample collection. Transfer plasma to capped plastic tube and freeze at -20C. Do not thaw sample after freezing. Ship frozen with dry ice.

Note: If both genotyping and phenotyping are requested for B&T patients, aliquot the two tubes separately and freeze at -20C.

Synonyms:

- PCR

Additional Information:
Note: Patients must have a viral load of at least 500 copies/mL for genotyping to be performed.

Testing recommnedations:

Drug-Resistance Testing (Last updated February 12, 2013; last reviewed February 12, 2013: http://aidsinfo.nih.gov/guidelines)

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· Standard genotypic drug-resistance testing in ARV-naive persons involves testing for mutations in the reverse transcriptase (RT) and protease (PR) genes. If transmitted integrase strand transfer inhibitor (INSTI) resistance is a concern, providers may wish to supplement standard genotypic resistance testing with an INSTI genotype test (CIII).
· HIV drug-resistance testing should be performed to assist in the selection of active drugs when changing ARV regimens in persons with virologic failure and HIV RNA levels >1,000 copies/mL (AI). In persons with HIV RNA levels >500 but <1,000 copies/mL, testing may be unsuccessful but should still be considered (BII).
· Drug-resistance testing should also be performed when managing suboptimal viral load reduction (AII).
· In persons failing INSTI-based regimens, genotypic testing for INSTI resistance should be performed to determine whether to include a drug from this class in subsequent regimens (AII).
· Drug-resistance testing in the setting of virologic failure should be performed while the person is taking prescribed ARV drugs or, if not possible, within 4 weeks after discontinuing therapy (AII).
· Genotypic testing is recommended as the preferred resistance testing to guide therapy in patients with suboptimal virologic responses or virologic failure while on first or second regimens (AII).
· The addition of phenotypic to genotypic testing is generally preferred for persons with known or suspected complex drugresistance mutation patterns, particularly to protease inhibitors (PIs) (BIII).
· Genotypic resistance testing is recommended for all pregnant women before initiation of ART (AIII) and for those entering pregnancy with detectable HIV RNA levels while on therapy (AI)

Rating of Recommendations	A = Strong	B = Moderate	C = Optional
Rating of Evidence	I = Data from randomized controlled trials	II = Data from well-designed nonrandomized trials or observational	
cohort studies with long-term clinical outcomes	III = Expert opinion		

HIV Phenotyping

MOLT

ORDERING

Available Stat:
No

Performing Lab:
Monogram Biosciences

Methodology:
Culture

Additional Information:
HIV susceptibility testing (genotyping or phenotyping) should be reserved for patients who are: 1. Failing treatment requiring a change in regimen (prior to change in regimen) 2. Pregnant or 3. Have acute/recent HIV infection (w/in 3-6 months) in areas with high levels of transmission of resistance viruses (usually to AZT/3TC). Phenotyping requires a viral load > 500 copies/mL.

Reference: Hirsch MS et al. JAMA 2000, 283(10): 2442-4

COLLECTION

Sample Type:
EDTA plasma

Collect:
Lavender top

Amount to Collect:
6 mL blood

Preferred Volume:
3 mL plasma

Minimum Volume:
3 mL plasma

Remarks:
Note: If both genotyping and phenotyping are requested for B&T patients, TWO separate tubes should be drawn.

PROCESSING

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Test Group:
HIV

Sendout:
Yes

Performing Lab:
Monogram Biosciences

Specimen Preparation:
Centrifuge sample @ 100-1200g x 10-15 min. and separate plasma within 6 hours of sample collection. Transfer plasma to capped plastic tube and freeze at -20C. Do not thaw sample after freezing. Ship frozen with dry ice.

Note: If both genotyping and phenotyping are requested for B&T patients, aliquot the two tubes separately and freeze at -20C.

Preferred Volume:
3 mL plasma

Minimum Volume:
3 mL plasma

RESULT INTERPRETATION

Reference Interval:
See Additional Information

Additional Information:

HIV susceptibility testing (genotyping or phenotyping) should be reserved for patients who are: 1. Failing treatment requiring a change in regimen (prior to change in regimen) 2. Pregnant or 3. Have acute/recent HIV infection (w/in 3-6 months) in areas with high levels of transmission of resistance viruses (usually to AZT/3TC). Phenotyping requires a viral load > 500 copies/mL.

Reference: Hirsch MS et al. JAMA 2000, 283(10): 2442-4

COMPLETE VIEW

Available Stat:
No

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Test Group:
HIV

Performing Lab:
Monogram Biosciences

Sendout:
Yes

Methodology:
Culture

Remarks:
Note: If both genotyping and phenotyping are requested for B&T patients, TWO separate tubes should be drawn.

Collect:
Lavender top

Amount to Collect:
6 mL blood

Sample Type:
EDTA plasma

Preferred Volume:
3 mL plasma

Minimum Volume:
3 mL plasma

Specimen Preparation:
Centrifuge sample @ 100-1200g x 10-15 min. and separate plasma within 6 hours of sample collection. Transfer plasma to capped plastic tube and freeze at -20C. Do not thaw sample after freezing. Ship frozen with dry ice.

Note: If both genotyping and phenotyping are requested for B&T patients, aliquot the two tubes separately and freeze at -20C.

Reference Interval:
See Additional Information

Additional Information:

HIV susceptibility testing (genotyping or phenotyping) should be reserved for patients who are: 1. Failing treatment requiring a change in regimen (prior to change in regimen) 2. Pregnant or 3. Have acute/recent HIV infection (w/in 3-6 months) in areas with high levels of transmission of resistance viruses (usually to AZT/3TC). Phenotyping requires a viral load > 500 copies/mL.

Reference: Hirsch MS et al. JAMA 2000, 283(10): 2442-4

HIV Rapid Antibody Screen

HIVR

ORDERING

Approval Required:
Testing Limited to OB Service and Employee Health

Available Stat:
Yes

Performing Lab:
Mission Bay Hospital Lab

Performed:
Test available 24 hours per day 7 days per week

Methodology:
OraQuick ADVANCE Qualitative Immunoassay

Reported:
1 hour

Note: Samples originating from Parnassus may exceed the 1-hour TAT.

Additional Information:
The Screening HIV Antibody test is only offered in the following situations:

1. High-risk OB patients in whom a prenatal HIV antibody test was not performed and when delivery is expected within the next 24 hours.
2. Testing of patients after a healthcare worker has had a needlestick or body fluid exposure.

Positive results are automatically forwarded to California public health per regulations. However, this does not absolve the ordering provider from any additional reporting if such is required.

Reflex Testing:
If positive a HIV differentiation using the 'HIV-1/2 Antibody Differentiation" test will automatically be performed at a separate charge.

Synonyms:

- HIV Ab
- Rapid HIV screen

COLLECTION

Sample Type:
EDTA whole blood & serum

Collect:
Lavender top & Red top

Amount to Collect:
0.5 mL blood (LAV) & 3 mL (Red)

Preferred Volume:
0.5 mL blood (EDTA) & 1 mL serum

Remarks:
Testing is limited to OB service, and Employee Health. Consent should be documented in the patient or employee record as applicable. Include contact information (pager #) for phoning results on the request.

Stability (from collection to initiation):
Room temperature or refrigerated: 5 days

Unacceptable Conditions:
Samples NOT received from OB or Employee Health.

PROCESSING

Test Code:
HIVR

Test Group:
HIV

Performing Lab:
Mission Bay Hospital Lab

Specimen Preparation:
Refer all Parnassus samples to Central Processing pneumatic tube station #150 or #250 Phone x18279 or deliver samples to Central Processing on the 5th floor.

Refer all Mission bay samples to Mission Bay Hospital Lab, pneumatic tube station #21 Phone x42146

Preferred Volume:
0.5 mL blood (EDTA) & 1 mL serum

Unacceptable Conditions:
Samples NOT received from OB or Employee Health.

Stability (from collection to initiation):
Room temperature or refrigerated: 5 days

RESULT INTERPRETATION

Reference Interval:
Nonreactive

Critical Values:
All results will be phoned

Additional Information:
The Screening HIV Antibody test is only offered in the following situations:

1. High-risk OB patients in whom a prenatal HIV antibody test was not performed and when delivery is expected within the next 24 hours.
2. Testing of patients after a healthcare worker has had a needlestick or body fluid exposure.

Positive results are automatically forwarded to California public health per regulations. However, this does not absolve the ordering provider from any additional reporting if such is required.

ADMINISTRATIVE

CPT Codes:
86703

LOINC Codes:
49580-4

COMPLETE VIEW

Approval Required:
Testing Limited to OB Service and Employee Health

Available Stat:
Yes

Test Code:
HIVR

Test Group:
HIV

Performing Lab:
Mission Bay Hospital Lab

Performed:
Test available 24 hours per day 7 days per week

Methodology:
OraQuick ADVANCE Qualitative Immunoassay

Remarks:
Testing is limited to OB service, and Employee Health. Consent should be documented in the patient or employee record as applicable. Include contact information (pager #) for phoning results on the request.

Collect:
Lavender top & Red top

Amount to Collect:
0.5 mL blood (LAV) & 3 mL (Red)

Sample Type:
EDTA whole blood & serum

Preferred Volume:
0.5 mL blood (EDTA) & 1 mL serum

Unacceptable Conditions:
Samples NOT received from OB or Employee Health.

Specimen Preparation:

Refer all Parnassus samples to Central Processing pneumatic tube station #150 or #250 Phone x18279 or deliver samples to Central Processing on the 5th floor.

Refer all Mission bay samples to Mission Bay Hospital Lab, pneumatic tube station #21 Phone x42146

Reference Interval:

Nonreactive

Critical Values:

All results will be phoned

Synonyms:

- HIV Ab
- Rapid HIV screen

Stability (from collection to initiation):

Room temperature or refrigerated: 5 days

Reported:

1 hour

Note: Samples originating from Parnassus may exceed the 1-hour TAT.

Reflex Testing:

If positive a HIV differentiation using the 'HIV-1/2 Antibody Differentiation" test will automatically be performed at a separate charge.

Additional Information:

The Screening HIV Antibody test is only offered in the following situations:

1. High-risk OB patients in whom a prenatal HIV antibody test was not performed and when delivery is expected within the next 24 hours.
2. Testing of patients after a healthcare worker has had a needlestick or body fluid exposure.

Positive results are automatically forwarded to California public health per regulations. However, this does not absolve the ordering provider from any additional reporting if such is required.

CPT Codes:

86703

LOINC Codes:

49580-4

HIV-1 DNA, Qualitative - for patients < 24 months of age

MOLT

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
PCR

Reported:
Set up: Tues-Sat; Report available: next day.

Additional Information:
This test is performed ONLY on neonates and infants up to 24 months with perinatal HIV exposure, not for disease monitoring. The test detects viral DNA that has integrated into the host genome within white blood cells rather than free RNA. In general, this test is considered interchangeable with HIV-1 RNA measured by PCR, but the minimum blood volume required is lower (1 mL whole blood vs. 1.1 mL plasma). The sensitivity of either test is low during the first month of life, and repeat testing at 1-2 months of age is recommended.

Click here for the CDC definition of HIV infection in patients < 18 months of age

Synonyms:

- Neonatal HIV screen

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top, Yellow (ACD) acceptable

Amount to Collect:
1 mL blood

Preferred Volume:
1 mL blood

Minimum Volume:
0.5 mL blood

Stability (from collection to initiation):
Room temperature: 6 days
Refrigerated: 6 days
Frozen: Unacceptable

Storage/Transport Temperature:
Room temperature

Rejection Criteria:
Hemolysis • Received frozen • Heparinized whole blood

PROCESSING

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Test Group:
HIV

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Do NOT centrifuge. Keep at room temperature. Complete form including specimen number, age, sex and date only; do not include patient name or hospital number. Order Quest # 98376P.

Preferred Volume:
1 mL blood

Minimum Volume:
0.5 mL blood

Rejection Criteria:
Hemolysis • Received frozen • Heparinized whole blood

Stability (from collection to initiation):
Room temperature: 6 days
Refrigerated: 6 days
Frozen: Unacceptable

Storage/Transport Temperature:
Room temperature

RESULT INTERPRETATION

Reference Interval:
Not detected

Additional Information:
This test is performed ONLY on neonates and infants up to 24 months with perinatal HIV exposure, not for disease monitoring. The test detects viral DNA that has integrated into the host genome within white blood cells rather than free RNA. In general, this test is considered interchangeable with HIV-1 RNA measured by PCR, but the minimum blood volume required is lower (1 mL whole blood vs. 1.1 mL plasma). The sensitivity of either test is low during the first month of life, and repeat testing at 1-2 months of age is recommended.

Click here for the CDC definition of HIV infection in patients < 18 months of age

ADMINISTRATIVE

CPT Codes:
87535

LOINC Codes:
44871-2

COMPLETE VIEW

Available Stat:
No

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Test Group:
HIV

Performing Lab:
Quest

Sendout:
Yes

Methodology:
PCR

Collect:
Lavender top, Yellow (ACD) acceptable

Amount to Collect:
1 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
1 mL blood

Minimum Volume:
0.5 mL blood

Rejection Criteria:
Hemolysis • Received frozen • Heparinized whole blood

Specimen Preparation:
Do NOT centrifuge. Keep at room temperature. Complete form including specimen number, age, sex and date only; do not include patient name or hospital number. Order Quest # 98376P.

Reference Interval:
Not detected

Synonyms:

- Neonatal HIV screen

Storage/Transport Temperature:
Room temperature

Stability (from collection to initiation):
Room temperature: 6 days
Refrigerated: 6 days
Frozen: Unacceptable

Reported:
Set up: Tues-Sat; Report available: next day.

Additional Information:
This test is performed ONLY on neonates and infants up to 24 months with perinatal HIV exposure, not for disease monitoring. The test detects viral DNA that has integrated into the host genome within white blood cells rather than free RNA. In general, this test is considered interchangeable with HIV-1 RNA measured by PCR, but the minimum blood volume required is lower (1 mL whole blood vs. 1.1 mL plasma). The sensitivity of either test is low during the first month of life, and repeat testing at 1-2 months of age is recommended.

Click here for the CDC definition of HIV infection in patients < 18 months of age

CPT Codes:
87535

LOINC Codes:
44871-2

HIV-1 RNA, CSF

HIVRC

ORDERING

Available Stat:
No

Performing Lab:
Focus via Quest

Methodology:
PCR

Reported:
3-5 days

Additional Information:
This test is intended for use in conjunction with clinical presentation and other laboratory markers of disease progress for the clinical management of HIV-1 infected patients. The test can be used to assess patient prognosis by measuring the baseline HIV-1 RNA level or to monitor the effects of antiretroviral therapy by measuring changes in EDTA plasma HIV-1 RNA levels during the course of antiretroviral treatment.

COLLECTION

Sample Type:
CSF

Collect:
CSF tube

Amount to Collect:
3 mL CSF

Preferred Volume:
3 mL CSF

Minimum Volume:
1.1 mL CSF

Stability (from collection to initiation):
Room temperature 1 day, refrigerated 6 days, frozen 42 days

Rejection Criteria:
Specimen collected using heparin as anticoagulant. Leaking, uncapped or broken containers.

PROCESSING

Test Code:
HIVRC

Test Group:
HIV

Sendout:
Yes

Performing Lab:
Focus via Quest

Specimen Preparation:
Aliquot and freeze. Transport to CB frozen. Order Quest test code 16186.

Preferred Volume:
3 mL CSF

Minimum Volume:
1.1 mL CSF

Rejection Criteria:
Specimen collected using heparin as anticoagulant. Leaking, uncapped or broken containers.

Stability (from collection to initiation):
Room temperature 1 day, refrigerated 6 days, frozen 42 days

RESULT INTERPRETATION

Units:
Copies/mL & Log copies/mL

Reference Interval:
< 20 copies/mL
< 1.30 log copies/mL

Additional Information:
This test is intended for use in conjunction with clinical presentation and other laboratory markers of disease progress for the clinical management of HIV-1 infected patients. The test can be used to assess patient prognosis by measuring the baseline HIV-1 RNA level or to monitor the effects of antiretroviral therapy by measuring changes in EDTA plasma HIV-1 RNA levels during the course of antiretroviral treatment.

ADMINISTRATIVE

CPT Codes:
87536-90

LOINC Codes:
41497-9, 41498-7

COMPLETE VIEW

Available Stat:
No

Test Code:
HIVRC

Test Group:
HIV

Performing Lab:
Focus via Quest

Sendout:
Yes

Methodology:
PCR

Collect:
CSF tube

Amount to Collect:
3 mL CSF

Sample Type:
CSF

Preferred Volume:
3 mL CSF

Minimum Volume:
1.1 mL CSF

Rejection Criteria:
Specimen collected using heparin as anticoagulant. Leaking, uncapped or broken containers.

Specimen Preparation:
Aliquot and freeze. Transport to CB frozen. Order Quest test code 16186.

Units:
Copies/mL & Log copies/mL

Reference Interval:
< 20 copies/mL
< 1.30 log copies/mL

Stability (from collection to initiation):
Room temperature 1 day, refrigerated 6 days, frozen 42 days

Reported:
3-5 days

Additional Information:
This test is intended for use in conjunction with clinical presentation and other laboratory markers of disease progress for the clinical management of HIV-1 infected patients. The test can be used to assess patient prognosis by measuring the baseline HIV-1 RNA level or to monitor the effects of antiretroviral therapy by measuring changes in EDTA plasma HIV-1 RNA levels during the course of antiretroviral treatment.

CPT Codes:
87536-90

LOINC Codes:
41497-9, 41498-7

HIV-1 RNA, Quantitative

HIVRT

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Methodology:
RT-PCR

Reported:
Performed 2x per week. Turnaround time: 3-7 days.

Additional Information:
This test is FDA approved for monitoring patients with a known diagnosis of HIV. This test is generally not used to establish a diagnosis of HIV. However, in the setting of acute HIV, if the antibody test is negative or equivocal, a high viral load is often present. If ordered for diagnostic purposes the provider should sign in the attestation area of the ID Serology and Molecular Testing requisition to document that patient consent was obtained.

High off-scale results are routinely reported as > 2,000,000 copies/mL or > 6.3 log copies/mL.

Low level results where HIV RNA is detected by the assay but not quantifiable are reported as 'Detected' with a result <20 copies/mL or <1.30 log copies/mL.

'<20 copies/mL, Not Detected' or '<1.30 log copies/mL, Not Detected' is reported when no HIV RNA can be detected by the assay. This result should not imply the patient is not infected with HIV. Viral loads less than 20 copies/mL will not be reliably detected by this assay. Correlation with clinical findings and serologic results are recommended.

Positive results are automatically forwarded to California public health per regulations. However, this does not absolve the ordering provider from any additional reporting if such is required.

COLLECTION

Sample Type:
EDTA Plasma

Collect:
Pearl White top preferred, Lavender top acceptable

Amount to Collect:
8.5 mL blood

Preferred Volume:
3 mL plasma

Minimum Volume:
1.5 mL plasma (this volume is insufficient for repeat testing)

Stability (from collection to initiation):
Room temperature 6 hours, refrigerated 1 day, frozen at -20C 35 days

Unacceptable Conditions:
Heparinized samples

PROCESSING

Test Code:
HIVRT

Test Group:
HIV

Performing Lab:
Immunology

Specimen Preparation:
Centrifuge and freeze Pearl White tube within 6 hours at -70C.

If Lavender top received, centrifuge and separate plasma within 6 hours of collection into a 10mL tube with white cap. Freeze plasma at -70C.

Preferred Volume:
3 mL plasma

Minimum Volume:
1.5 mL plasma (this volume is insufficient for repeat testing)

Unacceptable Conditions:
Heparinized samples

Stability (from collection to initiation):
Room temperature 6 hours, refrigerated 1 day, frozen at -20C 35 days

RESULT INTERPRETATION

Units:
copies/mL or log copies/mL

Reference Interval:
< 20 copies/mL
< 1.30 log copies/mL

Additional Information:
This test is FDA approved for monitoring patients with a known diagnosis of HIV. This test is generally not used to establish a diagnosis of HIV. However, in the setting of acute HIV, if the antibody test is negative or equivocal, a high viral load is often present. If ordered for diagnostic purposes the provider should sign in the attestation area of the ID Serology and Molecular Testing requisition to document that patient consent was obtained.

High off-scale results are routinely reported as > 2,000,000 copies/mL or > 6.3 log copies/mL.

Low level results where HIV RNA is detected by the assay but not quantifiable are reported as 'Detected' with a result <20 copies/mL or <1.30 log copies/mL.

'<20 copies/mL, Not Detected' or '<1.30 log copies/mL, Not Detected' is reported when no HIV RNA can be detected by the assay. This result should not imply the patient is not infected with HIV. Viral loads less than 20 copies/mL will not be reliably detected by this assay. Correlation with clinical findings and serologic results are recommended.

Positive results are automatically forwarded to California public health per regulations. However, this does not absolve the ordering provider from any additional reporting if such is required.

ADMINISTRATIVE

CPT Codes:
87536

COMPLETE VIEW

Available Stat:
No

Test Code:
HIVRT

Test Group:
HIV

Performing Lab:
Immunology

Methodology:
RT-PCR

Collect:
Pearl White top preferred, Lavender top acceptable

Amount to Collect:
8.5 mL blood

Sample Type:
EDTA Plasma

Preferred Volume:
3 mL plasma

Minimum Volume:
1.5 mL plasma (this volume is insufficient for repeat testing)

Unacceptable Conditions:
Heparinized samples

Specimen Preparation:
Centrifuge and freeze Pearl White tube within 6 hours at -70C.

If Lavender top received, centrifuge and separate plasma within 6 hours of collection into a 10mL tube with white cap. Freeze plasma at -70C.

Units:
copies/mL or log copies/mL

Reference Interval:

< 20 copies/mL
< 1.30 log copies/mL

Stability (from collection to initiation):

Room temperature 6 hours, refrigerated 1 day, frozen at -20C 35 days

Reported:

Performed 2x per week. Turnaround time: 3-7 days.

Additional Information:

This test is FDA approved for monitoring patients with a known diagnosis of HIV. This test is generally not used to establish a diagnosis of HIV. However, in the setting of acute HIV, if the antibody test is negative or equivocal, a high viral load is often present. If ordered for diagnostic purposes the provider should sign in the attestation area of the ID Serology and Molecular Testing requisition to document that patient consent was obtained.

High off-scale results are routinely reported as > 2,000,000 copies/mL or > 6.3 log copies/mL.

Low level results where HIV RNA is detected by the assay but not quantifiable are reported as 'Detected' with a result <20 copies/mL or <1.30 log copies/mL.

'<20 copies/mL, Not Detected' or '<1.30 log copies/mL, Not Detected' is reported when no HIV RNA can be detected by the assay. This result should not imply the patient is not infected with HIV. Viral loads less than 20 copies/mL will not be reliably detected by this assay. Correlation with clinical findings and serologic results are recommended.

Positive results are automatically forwarded to California public health per regulations. However, this does not absolve the ordering provider from any additional reporting if such is required.

CPT Codes:

87536

HLA Antibody Specificity - Class I

HTSL1 (Sunquest: ILLS1)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Luminex-based

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Additional Information:
This test assigns cPRA (calculated PRA) and determines specific HLA Class I antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring.In addition to solid organ testing protocols, this test can be requested for evaluation of refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

Reflex Testing:
Yes

Synonyms:

- Class I Single Antigen Testing by Luminex, Single Antigen Specificity Class I

COLLECTION

Sample Type:
Serum

Collect:
Red top x 2

Amount to Collect:
12 mL blood

Preferred Volume:
6 mL serum

Remarks:
For additional collection information, please refer to the ITL Sample Collection Guide here

ITL (415) 476-3387

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

PROCESSING

Test Code:
HTSL1 (Sunquest: ILLS1)

Test Group:
HLA Antibody Testing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Preferred Volume:
6 mL serum

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

RESULT INTERPRETATION

Additional Information:
This test assigns cPRA (calculated PRA) and determines specific HLA Class I antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring.In addition to solid organ testing protocols, this test can be requested for evaluation of refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

ADMINISTRATIVE

CPT Codes:
86832

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTSL1 (Sunquest: ILLS1)

Test Group:
HLA Antibody Testing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Luminex-based

Remarks:
For additional collection information, please refer to the ITL Sample Collection Guide here

ITL (415) 476-3387

Collect:
Red top x 2

Amount to Collect:
12 mL blood

Sample Type:
Serum

Preferred Volume:
6 mL serum

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Synonyms:

- Class I Single Antigen Testing by Luminex, Single Antigen Specificity Class I

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Reflex Testing:
Yes

Additional Information:
This test assigns cPRA (calculated PRA) and determines specific HLA Class I antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring.In addition to solid organ testing protocols, this test can be requested for evaluation of refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

CPT Codes:
86832

HLA Antibody Specificity - Class II

HTLS2 (Sunquest: ILLS2)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Luminex-based

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Additional Information:
This test assigns cPRA (calculated PRA) and determines specific Class II antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring. This test is NOT for evaluation of transfusion-related fever or refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

Reflex Testing:
Yes

Synonyms:

- Class II Single Antigen Testing by Luminex, Single Antigen Specificity Class II

COLLECTION

Sample Type:
Serum

Collect:
Red top x2

Amount to Collect:
12 mL blood

Preferred Volume:
6 mL serum

Remarks:
For additional collection information, please refer to the ITL Sample Collection Guide here

ITL (415) 476-3387

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

PROCESSING

Test Code:
HTLS2 (Sunquest: ILLS2)

Test Group:
HLA Antibody Testing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Preferred Volume:
6 mL serum

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

RESULT INTERPRETATION

Additional Information:
This test assigns cPRA (calculated PRA) and determines specific Class II antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring. This test is NOT for evaluation of transfusion-related fever or refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

ADMINISTRATIVE

CPT Codes:
86833

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTLS2 (Sunquest: ILLS2)

Test Group:
HLA Antibody Testing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Luminex-based

Remarks:
For additional collection information, please refer to the ITL Sample Collection Guide here

ITL (415) 476-3387

Collect:
Red top x2

Amount to Collect:
12 mL blood

Sample Type:
Serum

Preferred Volume:
6 mL serum

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Synonyms:

- Class II Single Antigen Testing by Luminex, Single Antigen Specificity Class II

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Reflex Testing:
Yes

Additional Information:
This test assigns cPRA (calculated PRA) and determines specific Class II antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring. This test is NOT for evaluation of transfusion-related fever or refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

CPT Codes:
86833

HLA Antibody Testing - Class I PRA

HTPRA1 (Sunquest: ILPRA1)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Luminex-based

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Additional Information:
This test detects sensitization to HLA Class I antigens through blood transfusion, organ transplantation, pregnancy, etc. It is reported as a percentage of positive cells in a panel.In addition to solid organ testing protocols, this test can be requested for evaluation of refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

Reflex Testing:
Yes

Synonyms:

- Class I PRA by Luminex, PRA Class I

COLLECTION

Sample Type:
Serum

Collect:
Red top x 2

Amount to Collect:
12 mL blood

Preferred Volume:
6 mL serum

Minimum Volume:
1.25 mL serum

Remarks:
For additional collection information, please refer to the ITL Sample Collection Guide here

ITL (415) 476-3387

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

PROCESSING

Test Code:
HTPRA1 (Sunquest: ILPRA1)

Test Group:
HLA Antibody Testing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Preferred Volume:
6 mL serum

Minimum Volume:
1.25 mL serum

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

RESULT INTERPRETATION

Additional Information:
This test detects sensitization to HLA Class I antigens through blood transfusion, organ transplantation, pregnancy, etc. It is reported as a percentage of positive cells in a panel.In addition to solid organ testing protocols, this test can be requested for evaluation of refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

ADMINISTRATIVE

CPT Codes:
86830

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTPRA1 (Sunquest: ILPRA1)

Test Group:
HLA Antibody Testing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Luminex-based

Remarks:
For additional collection information, please refer to the ITL Sample Collection Guide here

ITL (415) 476-3387

Collect:
Red top x 2

Amount to Collect:
12 mL blood

Sample Type:
Serum

Preferred Volume:
6 mL serum

Minimum Volume:
1.25 mL serum

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Synonyms:

- Class I PRA by Luminex, PRA Class I

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Reflex Testing:
Yes

Additional Information:
This test detects sensitization to HLA Class I antigens through blood transfusion, organ transplantation, pregnancy, etc. It is reported as a percentage of positive cells in a panel.In addition to solid organ testing protocols, this test can be requested for evaluation of refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

CPT Codes:
86830

HLA Antibody Testing - Class II PRA

HTPRA2 (Sunquest: ILPRA2)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Luminex-based

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Additional Information:
This test detects sensitization to HLA Class I antigens through blood transfusion, organ transplantation, pregnancy, etc. It is reported as a percentage of positive cells in a panel.In addition to solid organ testing protocols, this test can be requested for evaluation of refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

Reflex Testing:
Yes

Synonyms:

- Class I PRA by Luminex, PRA Class II

COLLECTION

Sample Type:
Serum

Collect:
Red top

Amount to Collect:
12 mL blood

Preferred Volume:
6 mL serum

Minimum Volume:
1.25 mL serum

Remarks:
For additional collection information, please refer to the ITL Sample Collection Guide here

ITL (415) 476-3387

PROCESSING

Test Code:
HTPRA2 (Sunquest: ILPRA2)

Test Group:
HLA Antibody Testing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Preferred Volume:
6 mL serum

Minimum Volume:
1.25 mL serum

RESULT INTERPRETATION

Additional Information:
This test detects sensitization to HLA Class I antigens through blood transfusion, organ transplantation, pregnancy, etc. It is reported as a percentage of positive cells in a panel.In addition to solid organ testing protocols, this test can be requested for evaluation of refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

ADMINISTRATIVE

CPT Codes:
86831

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTPRA2 (Sunquest: ILPRA2)

Test Group:
HLA Antibody Testing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Luminex-based

Remarks:
For additional collection information, please refer to the ITL Sample Collection Guide here

ITL (415) 476-3387

Collect:
Red top

Amount to Collect:
12 mL blood

Sample Type:
Serum

Preferred Volume:
6 mL serum

Minimum Volume:
1.25 mL serum

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Synonyms:

- Class I PRA by Luminex, PRA Class II

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Reflex Testing:
Yes

Additional Information:
This test detects sensitization to HLA Class I antigens through blood transfusion, organ transplantation, pregnancy, etc. It is reported as a percentage of positive cells in a panel.In addition to solid organ testing protocols, this test can be requested for evaluation of refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

CPT Codes:
86831

HLA C1Q Fixing Antibody - Class I

HTC1QAB1 (Sunquest: ILC1Q1)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Luminex-based

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Additional Information:
This test assigns cPRA (calculated PRA) and determines specific Class II antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring.

This test is NOT for evaluation of transfusion-related fever or refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

Reflex Testing:
Yes

Synonyms:

- Class II Single Antigen Testing by Luminex, Single Antigen Specificity Class II

COLLECTION

Sample Type:
Serum

Collect:
Red top x2

Amount to Collect:
12 mL blood

Preferred Volume:
6 mL serum

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

PROCESSING

Test Code:
HTC1QAB1 (Sunquest: ILC1Q1)

Test Group:
HLA Antibody Testing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Preferred Volume:
6 mL serum

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

RESULT INTERPRETATION

Additional Information:

This test assigns cPRA (calculated PRA) and determines specific Class II antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring.

This test is NOT for evaluation of transfusion-related fever or refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

ADMINISTRATIVE

CPT Codes:

86833

COMPLETE VIEW

Available Stat:

Yes

Test Code:

HTC1QAB1 (Sunquest: ILC1Q1)

Test Group:

HLA Antibody Testing

Performing Lab:

Immunogenetics & Transplantation Laboratory (ITL)

Sendout:

Yes

Methodology:

Luminex-based

Remarks:

SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Collect:

Red top x2

Amount to Collect:

12 mL blood

Sample Type:

Serum

Preferred Volume:

6 mL serum

Unacceptable Conditions:

Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

Specimen Preparation:

Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Synonyms:

- Class II Single Antigen Testing by Luminex, Single Antigen Specificity Class II

Stability (from collection to initiation):

If kept at ambient temperature, can be good for up to 72 hours

Reported:

Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Reflex Testing:

Yes

Additional Information:

This test assigns cPRA (calculated PRA) and determines specific Class II antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring.

This test is NOT for evaluation of transfusion-related fever or refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

CPT Codes:

86833

HLA C1Q Fixing Antibody - Class II

HTC1QAB2 (Sunquest: ILC1Q2)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Luminex-based

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Additional Information:
This test assigns cPRA (calculated PRA) and determines specific Class II antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring. This test is NOT for evaluation of transfusion-related fever or refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

Reflex Testing:
Yes

Synonyms:

- Class II Single Antigen Testing by Luminex, Single Antigen Specificity Class II

COLLECTION

Sample Type:
Serum

Collect:
Red top x2

Amount to Collect:
12 mL blood

Preferred Volume:
6 mL serum

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

PROCESSING

Test Code:
HTC1QAB2 (Sunquest: ILC1Q2)

Test Group:
HLA Antibody Testing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Preferred Volume:
6 mL serum

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

RESULT INTERPRETATION

Additional Information:
This test assigns cPRA (calculated PRA) and determines specific Class II antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring. This test is NOT for evaluation of transfusion-related fever or refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

ADMINISTRATIVE

CPT Codes:
86833

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTC1QAB2 (Sunquest: ILC1Q2)

Test Group:
HLA Antibody Testing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Luminex-based

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Collect:
Red top x2

Amount to Collect:
12 mL blood

Sample Type:
Serum

Preferred Volume:
6 mL serum

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Synonyms:

- Class II Single Antigen Testing by Luminex, Single Antigen Specificity Class II

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Reflex Testing:
Yes

Additional Information:
This test assigns cPRA (calculated PRA) and determines specific Class II antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring. This test is NOT for evaluation of transfusion-related fever or refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

CPT Codes:
86833

HLA Celiac

ILCEL

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Molecular - SSP/SSOP

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 8 working days.

COLLECTION

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Remarks:
Please see ITL Sample Collection Guide here.

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours. For other specimens, contact ITL at 6-3387.

Rejection Criteria:
WBC count too low (<1,000)

PROCESSING

Test Code:
HTCELIAC (Sunquest: ILCEL)

Test Group:
HLA Typing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Rejection Criteria:
WBC count too low (<1,000)

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours. For other specimens, contact ITL at 6-3387.

ADMINISTRATIVE

CPT Codes:
81373

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTCELIAC (Sunquest: ILCEL)

Test Group:
HLA Typing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Molecular - SSP/SSOP

Remarks:
Please see ITL Sample Collection Guide here.

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Rejection Criteria:
WBC count too low (<1,000)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours. For other specimens, contact ITL at 6-3387.

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 8 working days.

CPT Codes:
81373

HLA Class I Typing - Intermediate resolution

HTSSP (Sunquest: ILC1IR)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Molecular -SBT

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

COLLECTION

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

Unacceptable Conditions:
WBC count too low (<1,000)

PROCESSING

Test Code:
HTSSP (Sunquest: ILC1IR)

Test Group:
HLA Typing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Unacceptable Conditions:
WBC count too low (<1,000)

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

ADMINISTRATIVE

CPT Codes:
81382

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTSSP (Sunquest: ILC1IR)

Test Group:
HLA Typing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Molecular -SBT

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Unacceptable Conditions:
WBC count too low (<1,000)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

CPT Codes:
81382

HLA Class II Typing - Intermediate resolution

HTEXG (Sunquest: ILC2IR)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Molecular -SBT

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

COLLECTION

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

Unacceptable Conditions:
WBC count too low (<1,000)

PROCESSING

Test Code:
HTEXG (Sunquest: ILC2IR)

Test Group:
HLA Typing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Unacceptable Conditions:
WBC count too low (<1,000)

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

ADMINISTRATIVE

CPT Codes:
81382

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTEXG (Sunquest: ILC2IR)

Test Group:
HLA Typing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Molecular -SBT

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Unacceptable Conditions:
WBC count too low (<1,000)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

CPT Codes:
81382

HLA-A High Resolution Typing

HTSEA (Sunquest: ILSEA)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Molecular -SBT

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

COLLECTION

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

Unacceptable Conditions:
WBC count too low (<1,000)

PROCESSING

Test Code:
HTSEA (Sunquest: ILSEA)

Test Group:
HLA Typing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Unacceptable Conditions:
WBC count too low (<1,000)

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

ADMINISTRATIVE

CPT Codes:
81380

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTSEA (Sunquest: ILSEA)

Test Group:
HLA Typing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Molecular -SBT

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Unacceptable Conditions:
WBC count too low (<1,000)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

CPT Codes:
81380

HLA-A Typing - Intermediate Resolution

HTALD (Sunquest: ILALD)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Molecular - SSP/SSOP

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 8 working days.

Synonyms:

- HLA-A Typing by SSP/SSOP

COLLECTION

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours. For other specimens, contact ITL at 6-3387.

Unacceptable Conditions:
WBC count too low (<1,000). For other specimens, contact ITL at 6-3387.

PROCESSING

Test Code:
HTALD (Sunquest: ILALD)

Test Group:
HLA Typing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Unacceptable Conditions:
WBC count too low (<1,000). For other specimens, contact ITL at 6-3387.

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours. For other specimens, contact ITL at 6-3387.

ADMINISTRATIVE

CPT Codes:
81373

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTALD (Sunquest: ILALD)

Test Group:
HLA Typing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Molecular - SSP/SSOP

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Unacceptable Conditions:
WBC count too low (<1,000). For other specimens, contact ITL at 6-3387.

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Synonyms:

- HLA-A Typing by SSP/SSOP

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours. For other specimens, contact ITL at 6-3387.

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 8 working days.

CPT Codes:
81373

HLA-A2 Typing

ILA2

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Molecular - SSP/SSOP

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 8 working days.

COLLECTION

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Remarks:
Please see ITL Sample Collection Guide here.

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours. For other specimens, contact ITL at 6-3387.

Rejection Criteria:
WBC count too low (<1,000)

PROCESSING

Test Code:
HTA2 (Sunquest: ILA2)

Test Group:
HLA Typing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Rejection Criteria:
WBC count too low (<1,000)

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours. For other specimens, contact ITL at 6-3387.

ADMINISTRATIVE

CPT Codes:
81373

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTA2 (Sunquest: ILA2)

Test Group:
HLA Typing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Molecular - SSP/SSOP

Remarks:
Please see ITL Sample Collection Guide here.

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Rejection Criteria:
WBC count too low (<1,000)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours. For other specimens, contact ITL at 6-3387.

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 8 working days.

CPT Codes:
81373

HLA-A68 Typing

ILA68

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Molecular - SSP/SSOP

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 8 working days.

COLLECTION

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Remarks:
Please see ITL Sample Collection Guide here.

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours. For other specimens, contact ITL at 6-3387.

Rejection Criteria:
WBC count too low (<1,000)

PROCESSING

Test Code:
HTA68 (Sunquest: ILA68)

Test Group:
HLA Typing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Rejection Criteria:
WBC count too low (<1,000)

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours. For other specimens, contact ITL at 6-3387.

ADMINISTRATIVE

CPT Codes:
81373

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTA68 (Sunquest: ILA68)

Test Group:
HLA Typing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Molecular - SSP/SSOP

Remarks:
Please see ITL Sample Collection Guide here.

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Rejection Criteria:
WBC count too low (<1,000)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours. For other specimens, contact ITL at 6-3387.

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 8 working days.

CPT Codes:
81373

HLA-ABC Typing - Intermediate Resolution

ILSSP

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Molecular - SSP/SSOP

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 8 working days.

Synonyms:

- Class I Typing by SSP/SSOP, HLA Typing Class I

COLLECTION

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Stability (from collection to initiation):
If kept at ambient temperature, can be good up to 72 hours

Unacceptable Conditions:
WBC count too low (<1,000)

PROCESSING

Test Code:
ILSSP

Test Group:
HLA Typing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Unacceptable Conditions:
WBC count too low (<1,000)

Stability (from collection to initiation):
If kept at ambient temperature, can be good up to 72 hours

ADMINISTRATIVE

CPT Codes:
81372

COMPLETE VIEW

Available Stat:
Yes

Test Code:
ILSSP

Test Group:
HLA Typing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Molecular - SSP/SSOP

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Unacceptable Conditions:
WBC count too low (<1,000)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Synonyms:

- Class I Typing by SSP/SSOP, HLA Typing Class I

Stability (from collection to initiation):
If kept at ambient temperature, can be good up to 72 hours

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 8 working days.

CPT Codes:
81372

HLA-B High Resolution Typing

HTSEB (Sunquest: ILSEB)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Molecular -SBT

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

COLLECTION

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

Unacceptable Conditions:
WBC count too low (<1,000)

PROCESSING

Test Code:
HTSEB (Sunquest: ILSEB)

Test Group:
HLA Typing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Unacceptable Conditions:
WBC count too low (<1,000)

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

ADMINISTRATIVE

CPT Codes:
81380

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTSEB (Sunquest: ILSEB)

Test Group:
HLA Typing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Molecular -SBT

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Unacceptable Conditions:
WBC count too low (<1,000)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

CPT Codes:
81380

HLA-B Typing - Intermediate Resolution

HTBLD (Sunquest: ILBLD)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Molecular - SSP/SSOP

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 8 working days.

Synonyms:

- HLA-B Typing by SSP/SSOP

COLLECTION

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours. For other specimens, contact ITL at 6-3387.

Unacceptable Conditions:
WBC count too low (<1,000). For other specimens, contact ITL at 6-3387.

PROCESSING

Test Code:
HTBLD (Sunquest: ILBLD)

Test Group:
HLA Typing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Unacceptable Conditions:
WBC count too low (<1,000). For other specimens, contact ITL at 6-3387.

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours. For other specimens, contact ITL at 6-3387.

ADMINISTRATIVE

CPT Codes:
81373

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTBLD (Sunquest: ILBLD)

Test Group:
HLA Typing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Molecular - SSP/SSOP

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Unacceptable Conditions:
WBC count too low (<1,000). For other specimens, contact ITL at 6-3387.

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Synonyms:

- HLA-B Typing by SSP/SSOP

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours. For other specimens, contact ITL at 6-3387.

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 8 working days.

CPT Codes:
81373

HLA-B*1502 Typing

HT1502 (Sunquest: IL1502)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Molecular - SSP/SSOP/SBT

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Synonyms:

- HLA-B High Resolution Typing for Carbamazepine sensitivity

COLLECTION

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

Unacceptable Conditions:
WBC count too low (<1,000)

PROCESSING

Test Code:
HT1502 (Sunquest: IL1502)

Test Group:
HLA Typing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Unacceptable Conditions:
WBC count too low (<1,000)

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

ADMINISTRATIVE

CPT Codes:
81381

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HT1502 (Sunquest: IL1502)

Test Group:
HLA Typing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Molecular - SSP/SSOP/SBT

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Unacceptable Conditions:
WBC count too low (<1,000)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Synonyms:

- HLA-B High Resolution Typing for Carbamazepine sensitivity

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

CPT Codes:
81381

HLA-B*5701 Typing

HT5701 (Sunquest: IL5701)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Molecular - SSP/SSOP/SBT

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Synonyms:

- HLA-B High Resolution Typing for Abacavir sensitivity

COLLECTION

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

Unacceptable Conditions:
WBC count too low (<1,000)

PROCESSING

Test Code:
HT5701 (Sunquest: IL5701)

Test Group:
HLA Typing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Unacceptable Conditions:
WBC count too low (<1,000)

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

ADMINISTRATIVE

CPT Codes:
81381

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HT5701 (Sunquest: IL5701)

Test Group:
HLA Typing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Molecular - SSP/SSOP/SBT

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Unacceptable Conditions:
WBC count too low (<1,000)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Synonyms:

- HLA-B High Resolution Typing for Abacavir sensitivity

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

CPT Codes:
81381

HLA-B*5801 Typing

IL5801

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Molecular -SBT

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

COLLECTION

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Remarks:
Please see ITL Sample Collection Guide here.

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

Rejection Criteria:
WBC count too low (<1,000)

PROCESSING

Test Code:
HT5801 (Sunquest: IL5801)

Test Group:
HLA Typing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Rejection Criteria:
WBC count too low (<1,000)

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

ADMINISTRATIVE

CPT Codes:
81380

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HT5801 (Sunquest: IL5801)

Test Group:
HLA Typing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Molecular -SBT

Remarks:
Please see ITL Sample Collection Guide here.

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Rejection Criteria:
WBC count too low (<1,000)

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

CPT Codes:
81380

HLA-B27 Typing

HTB27 (Sunquest: ILB27)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Molecular - SSP/SSOP

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 8 working days.

Synonyms:

- HLA Typing for Ankylosing Spondylitis

COLLECTION

Sample Type:
ACD anticoagulated whole blood

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Preferred Volume:
8.5 mL blood

Minimum Volume:
1 mL blood

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

Unacceptable Conditions:
WBC count too low (<1,000)

PROCESSING

Test Code:
HTB27 (Sunquest: ILB27)

Test Group:
HLA Typing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Preferred Volume:
8.5 mL blood

Minimum Volume:
1 mL blood

Unacceptable Conditions:
WBC count too low (<1,000)

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

ADMINISTRATIVE

CPT Codes:
81374

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTB27 (Sunquest: ILB27)

Test Group:
HLA Typing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Molecular - SSP/SSOP

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Sample Type:
ACD anticoagulated whole blood

Preferred Volume:
8.5 mL blood

Minimum Volume:
1 mL blood

Unacceptable Conditions:
WBC count too low (<1,000)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Synonyms:

- HLA Typing for Ankylosing Spondylitis

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 8 working days.

CPT Codes:
81374

HLA-B51-Typing

ILB51

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Molecular -SBT

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

COLLECTION

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Remarks:
Please see ITL Sample Collection Guide here.

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

Rejection Criteria:
WBC count too low (<1,000)

PROCESSING

Test Code:
HTB51 (Sunquest: ILB51)

Test Group:
HLA Typing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Rejection Criteria:
WBC count too low (<1,000)

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

ADMINISTRATIVE

CPT Codes:
81380

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTB51 (Sunquest: ILB51)

Test Group:
HLA Typing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Molecular -SBT

Remarks:
Please see ITL Sample Collection Guide here.

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Rejection Criteria:
WBC count too low (<1,000)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

CPT Codes:
81380

HLA-C High Resolution Typing

HTSEC (Sunquest: ILSEC)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Molecular -SBT

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

COLLECTION

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

Unacceptable Conditions:
WBC count too low (<1,000)

PROCESSING

Test Code:
HTSEC (Sunquest: ILSEC)

Test Group:
HLA Typing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Unacceptable Conditions:
WBC count too low (<1,000)

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

ADMINISTRATIVE

CPT Codes:
81380

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTSEC (Sunquest: ILSEC)

Test Group:
HLA Typing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Molecular -SBT

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Unacceptable Conditions:
WBC count too low (<1,000)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

CPT Codes:
81380

HLA-C Typing - Intermediate Resolution

HTCLD (Sunquest: ILCLD)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Molecular - SSP/SSOP

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 8 working days.

Synonyms:

- HLA-C Typing by SSP/SSOP, HLA-Cw Typing

COLLECTION

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours. For other specimens, contact ITL at 6-3387.

Unacceptable Conditions:
WBC count too low (<1,000)

PROCESSING

Test Code:
HTCLD (Sunquest: ILCLD)

Test Group:
HLA Typing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Unacceptable Conditions:
WBC count too low (<1,000)

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours. For other specimens, contact ITL at 6-3387.

ADMINISTRATIVE

CPT Codes:
81373

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTCLD (Sunquest: ILCLD)

Test Group:
HLA Typing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Molecular - SSP/SSOP

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Unacceptable Conditions:
WBC count too low (<1,000)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Synonyms:

- HLA-C Typing by SSP/SSOP, HLA-Cw Typing

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours. For other specimens, contact ITL at 6-3387.

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 8 working days.

CPT Codes:
81373

HLA-Comprehensive High Resolution Typing

ILCOM

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Molecular -SBT

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days

COLLECTION

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Remarks:
Please see ITL Sample Collection Guide here .

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

Rejection Criteria:
WBC count too low (<1,000)

PROCESSING

Test Code:
HTCOMPHLA (Sunquest: ILCOM)

Test Group:
HLA Typing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Rejection Criteria:
WBC count too low (<1,000)

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

ADMINISTRATIVE

CPT Codes:
81380

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTCOMPHLA (Sunquest: ILCOM)

Test Group:
HLA Typing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Molecular -SBT

Remarks:
Please see ITL Sample Collection Guide here .

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Rejection Criteria:
WBC count too low (<1,000)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days

CPT Codes:
81380

HLA-DPA1 High Resolution Typing

HTDPA (Sunquest: ILDPA)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Molecular -SBT

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

COLLECTION

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

Unacceptable Conditions:
WBC count too low (<1,000)

PROCESSING

Test Code:
HTDPA (Sunquest: ILDPA)

Test Group:
HLA Typing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Unacceptable Conditions:
WBC count too low (<1,000)

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

ADMINISTRATIVE

CPT Codes:
81382

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTDPA (Sunquest: ILDPA)

Test Group:
HLA Typing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Molecular -SBT

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Unacceptable Conditions:
WBC count too low (<1,000)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

CPT Codes:
81382

HLA-DPB1 High Resolution Typing

HTDPB (Sunquest: ILDPB)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Molecular -SBT

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

COLLECTION

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

Unacceptable Conditions:
WBC count too low (<1,000)

PROCESSING

Test Code:
HTDPB (Sunquest: ILDPB)

Test Group:
HLA Typing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Unacceptable Conditions:
WBC count too low (<1,000)

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

ADMINISTRATIVE

CPT Codes:
81382

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTDPB (Sunquest: ILDPB)

Test Group:
HLA Typing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Molecular -SBT

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Unacceptable Conditions:
WBC count too low (<1,000)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

CPT Codes:
81382

HLA-DQA1 High Resolution Typing

HTDQA (Sunquest: ILDQA)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Molecular -SBT

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

COLLECTION

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

Unacceptable Conditions:
WBC count too low (<1,000)

PROCESSING

Test Code:
HTDQA (Sunquest: ILDQA)

Test Group:
HLA Typing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Unacceptable Conditions:
WBC count too low (<1,000)

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

ADMINISTRATIVE

CPT Codes:
81382

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTDQA (Sunquest: ILDQA)

Test Group:
HLA Typing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Molecular -SBT

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Unacceptable Conditions:
WBC count too low (<1,000)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

CPT Codes:
81382

HLA-DQB1 High Resolution Typing

HTDQB (Sunquest: ILDQB)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Molecular -SBT

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

COLLECTION

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

Unacceptable Conditions:
WBC count too low (<1,000)

PROCESSING

Test Code:
HTDQB (Sunquest: ILDQB)

Test Group:
HLA Typing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Unacceptable Conditions:
WBC count too low (<1,000)

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

ADMINISTRATIVE

CPT Codes:
81382

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTDQB (Sunquest: ILDQB)

Test Group:
HLA Typing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Molecular -SBT

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Unacceptable Conditions:
WBC count too low (<1,000)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

CPT Codes:
81382

HLA-DR/DQ Typing - Intermediate Resolution

ILEXG

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Molecular - SSP/SSOP

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 8 working days.

Synonyms:

- Class II Typing by SSP/SSOP

COLLECTION

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Stability (from collection to initiation):
If kept at ambient temperature, can be good up to 72 hours

Unacceptable Conditions:
WBC count too low (<1,000)

PROCESSING

Test Code:
ILEXG

Test Group:
HLA Typing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Unacceptable Conditions:
WBC count too low (<1,000)

Stability (from collection to initiation):
If kept at ambient temperature, can be good up to 72 hours

ADMINISTRATIVE

CPT Codes:
81375

COMPLETE VIEW

Available Stat:
Yes

Test Code:
ILEXG

Test Group:
HLA Typing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Molecular - SSP/SSOP

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Unacceptable Conditions:
WBC count too low (<1,000)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Synonyms:

- Class II Typing by SSP/SSOP

Stability (from collection to initiation):
If kept at ambient temperature, can be good up to 72 hours

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 8 working days.

CPT Codes:
81375

HLA-DRB1 High Resolution Typing

HTSED (Sunquest: ILSED)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Molecular -SBT

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

COLLECTION

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

Unacceptable Conditions:
WBC count too low (<1,000)

PROCESSING

Test Code:
HTSED (Sunquest: ILSED)

Test Group:
HLA Typing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Unacceptable Conditions:
WBC count too low (<1,000)

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

ADMINISTRATIVE

CPT Codes:
81382

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTSED (Sunquest: ILSED)

Test Group:
HLA Typing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Molecular -SBT

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Sample Type:
ACD anticoagulated whole blood; contact ITL at 6-3887 for other specimens such as amniotic fluid, bone marrow aspirate, buccal mucosa, cord blood, cultured cells, DNA, whole blood spotted on filter paper, etc.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Unacceptable Conditions:
WBC count too low (<1,000)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

CPT Codes:
81382

HLA-DRB3/4/5 High Resolution Typing

ILDRB

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Molecular -SSP/SBT

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

COLLECTION

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Remarks:
Please see ITL Sample Collection Guide here.

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

Rejection Criteria:
WBC count too low (<1,000)

PROCESSING

Test Code:
HTDRB345 (Sunquest: ILDRB)

Test Group:
HLA Typing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Rejection Criteria:
WBC count too low (<1,000)

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

ADMINISTRATIVE

CPT Codes:
81382

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTDRB345 (Sunquest: ILDRB)

Test Group:
HLA Typing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Molecular -SSP/SBT

Remarks:
Please see ITL Sample Collection Guide here.

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Preferred Volume:
8.5 mL blood; for other specimens, contact ITL at 6-3887

Minimum Volume:
1 mL blood; for other specimens, contact ITL at 6-3887

Rejection Criteria:
WBC count too low (<1,000)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge. For other specimens, contact ITL at 6-3387.

Stability (from collection to initiation):
If kept at ambient temperature, can be good for >72 hours

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

CPT Codes:
81382

Hold SNP Array

HSNPA

ORDERING

Approval Required:
Yes, if not ordered by Genetics, Neurology or Neonatal Intensive Care Unit faculty or fellows. Requests on inpatients require approval from Cytogenetics/Array staff. Insurance authorization required for outpatients.

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics (Microarray)

Performed:
N/A

Methodology:
N/A

Additional Information:
The sample will be retained for two (2) weeks from the time of collection pending receipt of the payer authorization. If authorization is not received by the laboratory in that time frame the sample will be discarded.

This test should be ordered only when:
(1) The patient is present to have their sample collected and it would be problematic for the patient to return AND there has not yet been authorization received from the patient's insurer that they will reimburse for a SNP array to be performed.
(2) If routine chromosome analysis is desired prior to performing the array as this will obviate the need to collect another sample for array testing.

For questions, contact the microarray laboratory at 514-8964

Microarray results are reported based on the human genome build 19 (hg19/GRCh37). Cases prior December 1st, 2011, were reported based on hg18/NCBI36. Which human genome build is used must be noted when looking up regions in publicly available databases.

Limitations
Genomic aberrations that may not be detected by SNP array assay include:
- Balanced rearrangement (i.e. balanced translocation, insertion or inversion) and tetraploidy resulted from endoduplication.
- Low level (<30%) mosaicism for unbalanced rearrangements and aneuploidy
- Nucleotide sequence changes (i.e. point mutation or small insertion/deletion below the level of detection or cut-off thresholds)
Imbalances of regions not represented on the array
- Genomic changes in mixed samples (i.e. prenatal samples with maternal cell contamination)

Synonyms:

- Hold for authorization
- Hold for approval
- Hold for insurance authorization
- Hold for insurance approval
- Microarray

COLLECTION

Sample Type:
EDTA or Heparinized whole blood, Extracted DNA

Collect:
Lavender top preferred, Dark Green top acceptable

Amount to Collect:
Adult: 5 mL blood
Infant/child: 3 mL blood

Preferred Volume:
Adult: 5 mL blood
Infant/Child: 3 mL blood
Extracted DNA: 10 µg (mcg)

Minimum Volume:
Adult: 2 mL blood
Infant/Child: 2 mL blood
Extracted DNA: 10 µg (mcg)

Remarks:

Insurance pre-authorization required for outpatients

Only collect samples Monday - Friday and avoid holidays.

Do not collect sample in lithium heparin (Lt. Green top).

Transport sample at room temperature as soon as possible to lab. If transport is delayed refrigerate sample.

Note: Samples will only be held for 2 weeks pending insurance authorization.

Stability (from collection to initiation):

Room temperature 4 days, refrigerated 2 weeks.

Unacceptable Conditions:

Unlabeled sample, insufficient sample, clotted samples, samples received in Lithium-heparin (Lt. Green top)

PROCESSING

Test Code:

HSNPA

Test Group:

Microarray

Performing Lab:

Medical Genomics - Cytogenetics (Microarray)

Specimen Preparation:

Refrigerate samples **DO NOT CENTRIFUGE OR FREEZE.** Transport asap to China Basin Cytogenetics

For questions, contact the microarray laboratory at 514-8964

Preferred Volume:

Adult: 5 mL blood
Infant/Child: 3 mL blood
Extracted DNA: 10 µg (mcg)

Minimum Volume:

Adult: 2 mL blood
Infant/Child: 2 mL blood
Extracted DNA: 10 µg (mcg)

Unacceptable Conditions:

Unlabeled sample, insufficient sample, clotted samples, samples received in Lithium-heparin (Lt. Green top)

Stability (from collection to initiation):

Room temperature 4 days, refrigerated 2 weeks.

RESULT INTERPRETATION

Reference Interval:

Normal

Additional Information:

The sample will be retained for two (2) weeks from the time of collection pending receipt of the payer authorization. If authorization is not received by the laboratory in that time frame the sample will be discarded.

This test should be ordered only when:
(1) The patient is present to have their sample collected and it would be problematic for the patient to return AND there has not yet been authorization received from the patient's insurer that they will reimburse for a SNP array to be performed.
(2) If routine chromosome analysis is desired prior to performing the array as this will obviate the need to collect another sample for array testing.

For questions, contact the microarray laboratory at 514-8964

Microarray results are reported based on the human genome build 19 (hg19/GRCh37). Cases prior December 1st, 2011, were reported based on hg18/NCBI36. Which human genome build is used must be noted when looking up regions in publicly available databases.

Limitations
Genomic aberrations that may not be detected by SNP array assay include:
- Balanced rearrangement (i.e. balanced translocation, insertion or inversion) and tetraploidy resulted from endoduplication.
- Low level (<30%) mosaicism for unbalanced rearrangements and aneuploidy
- Nucleotide sequence changes (i.e. point mutation or small insertion/deletion below the level of detection or cut-off thresholds)
Imbalances of regions not represented on the array
- Genomic changes in mixed samples (i.e. prenatal samples with maternal cell contamination)

COMPLETE VIEW

Approval Required:
Yes, if not ordered by Genetics, Neurology or Neonatal Intensive Care Unit faculty or fellows. Requests on inpatients require approval from Cytogenetics/Array staff. Insurance authorization required for outpatients.

Available Stat:
No

Test Code:
HSNPA

Test Group:
Microarray

Performing Lab:
Medical Genomics - Cytogenetics (Microarray)

Performed:
N/A

Methodology:
N/A

Remarks:
Insurance pre-authorization required for outpatients

Only collect samples Monday - Friday and avoid holidays.

Do not collect sample in lithium heparin (Lt. Green top).

Transport sample at room temperature as soon as possible to lab. If transport is delayed refrigerate sample.

Note: Samples will only be held for 2 weeks pending insurance authorization.

Collect:
Lavender top preferred, Dark Green top acceptable

Amount to Collect:
Adult: 5 mL blood
Infant/child: 3 mL blood

Sample Type:
EDTA or Heparinized whole blood, Extracted DNA

Preferred Volume:
Adult: 5 mL blood
Infant/Child: 3 mL blood
Extracted DNA: 10 µg (mcg)

Minimum Volume:
Adult: 2 mL blood
Infant/Child: 2 mL blood
Extracted DNA: 10 µg (mcg)

Unacceptable Conditions:
Unlabeled sample, insufficient sample, clotted samples, samples received in Lithium-heparin (Lt. Green top)

Specimen Preparation:
Refrigerate samples **DO NOT CENTRIFUGE OR FREEZE.** Transport asap to China Basin Cytogenetics

For questions, contact the microarray laboratory at 514-8964

Reference Interval:
Normal

Synonyms:

- Hold for authorization
- Hold for approval
- Hold for insurance authorization
- Hold for insurance approval
- Microarray

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 2 weeks.

Additional Information:

The sample will be retained for two (2) weeks from the time of collection pending receipt of the payer authorization. If authorization is not received by the laboratory in that time frame the sample will be discarded.

This test should be ordered only when:
(1) The patient is present to have their sample collected and it would be problematic for the patient to return AND there has not yet been authorization received from the patient's insurer that they will reimburse for a SNP array to be performed.
(2) If routine chromosome analysis is desired prior to performing the array as this will obviate the need to collect another sample for array testing.

For questions, contact the microarray laboratory at 514-8964

Microarray results are reported based on the human genome build 19 (hg19/GRCh37). Cases prior December 1st, 2011, were reported based on hg18/NCBI36. Which human genome build is used must be noted when looking up regions in publicly available databases.

Limitations
Genomic aberrations that may not be detected by SNP array assay include:
- Balanced rearrangement (i.e. balanced translocation, insertion or inversion) and tetraploidy resulted from endoduplication.
- Low level (<30%) mosaicism for unbalanced rearrangements and aneuploidy
- Nucleotide sequence changes (i.e. point mutation or small insertion/deletion below the level of detection or cut-off thresholds)
Imbalances of regions not represented on the array
- Genomic changes in mixed samples (i.e. prenatal samples with maternal cell contamination)

Hold Specimen

HSFD

ORDERING

Available Stat:
No

Performing Lab:
Central Processing

Additional Information:
If sample storage instructions are not included, sample will be stored refrigerated at 2-8C. Specimens are held for 2 weeks only. HSFD covers cost of materials and preliminary processing, such as centrifugation, aliquotting, storage and record-keeping.

COLLECTION

Sample Type:
blood, urine, CSF or other body fluid

Collect:
CSF tube, Gold top, Red top, Light Green top, Dark Green top, Lavender top, Blue top, urine container

Amount to Collect:
5 mL blood

PROCESSING

Test Code:
HSFD

Performing Lab:
Central Processing

Specimen Preparation:
If sample type is blood, spin sample first and aliquot plasma or serum. Please follow instructions included with the order on how to store sample. Order should indicate either frozen, refrigerated or room temperature storage requirement.

RESULT INTERPRETATION

Additional Information:
If sample storage instructions are not included, sample will be stored refrigerated at 2-8C. Specimens are held for 2 weeks only. HSFD covers cost of materials and preliminary processing, such as centrifugation, aliquotting, storage and record-keeping.

ADMINISTRATIVE

CPT Codes:
99001

COMPLETE VIEW

Available Stat:
No

Test Code:
HSFD

Performing Lab:
Central Processing

Collect:
CSF tube, Gold top, Red top, Light Green top, Dark Green top, Lavender top, Blue top, urine container

Amount to Collect:
5 mL blood

Sample Type:
blood, urine, CSF or other body fluid

Specimen Preparation:
If sample type is blood, spin sample first and aliquot plasma or serum. Please follow instructions included with the order on how to store sample. Order should indicate either frozen, refrigerated or room temperature storage requirement.

Additional Information:

If sample storage instructions are not included, sample will be stored refrigerated at 2-8C. Specimens are held for 2 weeks only. HSFD covers cost of materials and preliminary processing, such as centrifugation, aliquotting, storage and record-keeping.

CPT Codes:

99001

Hold specimen frozen

HSFZ

ORDERING

Available Stat:
No

Performing Lab:
Parnassus, Mission Bay and Mt. Zion Central Processing

Additional Information:
If sample storage instructions are not included, sample will be stored refrigerated at 2-8C.

Specimens are held for 2 weeks only.

HSFZ covers cost of materials and preliminary processing, such as centrifugation, aliquotting, storage and record-keeping.

COLLECTION

Sample Type:
Blood, urine, CSF or other body fluid

Collect:
CSF tube, Gold top, Red top, Light Green top, Dark Green top, Lavender top, Blue top, urine container

PROCESSING

Test Code:
HSFZ

Performing Lab:
Parnassus, Mission Bay and Mt. Zion Central Processing

Specimen Preparation:
If sample type is blood, spin sample first and aliquot plasma or serum.
Please follow instructions included with the order on how to store sample. Order should indicate either frozen, refrigerated or room temperature storage requirement.

RESULT INTERPRETATION

Additional Information:
If sample storage instructions are not included, sample will be stored refrigerated at 2-8C.

Specimens are held for 2 weeks only.

HSFZ covers cost of materials and preliminary processing, such as centrifugation, aliquotting, storage and record-keeping.

ADMINISTRATIVE

CPT Codes:
99001

COMPLETE VIEW

Available Stat:
No

Test Code:
HSFZ

Performing Lab:
Parnassus, Mission Bay and Mt. Zion Central Processing

Collect:
CSF tube, Gold top, Red top, Light Green top, Dark Green top, Lavender top, Blue top, urine container

Sample Type:
Blood, urine, CSF or other body fluid

Specimen Preparation:
If sample type is blood, spin sample first and aliquot plasma or serum.
Please follow instructions included with the order on how to store sample. Order should indicate either frozen, refrigerated or room temperature storage requirement.

Additional Information:

If sample storage instructions are not included, sample will be stored refrigerated at 2-8C.

Specimens are held for 2 weeks only.

HSFZ covers cost of materials and preliminary processing, such as centrifugation, aliquotting, storage and record-keeping.

CPT Codes:

99001

Hold specimen refrigerated

HSRF

ORDERING

Available Stat:
No

Performing Lab:
Parnassus, Mission Bay and Mt. Zion Central Processing

Additional Information:
If sample storage instructions are not included, sample will be stored refrigerated at 2-8C.

Specimens are held for 2 weeks only.

HSRF covers cost of materials and preliminary processing, such as centrifugation, aliquotting, storage and record-keeping.

COLLECTION

Sample Type:
Blood, urine, CSF or other body fluid

Collect:
CSF tube, Gold top, Red top, Light Green top, Dark Green top, Lavender top, Blue top, urine container

PROCESSING

Test Code:
HSRF

Performing Lab:
Parnassus, Mission Bay and Mt. Zion Central Processing

Specimen Preparation:
If sample type is blood, spin sample first and aliquot plasma or serum.

Please follow instructions included with the order on how to store sample. Order should indicate either frozen, refrigerated or room temperature storage requirement.

RESULT INTERPRETATION

Additional Information:
If sample storage instructions are not included, sample will be stored refrigerated at 2-8C.

Specimens are held for 2 weeks only.

HSRF covers cost of materials and preliminary processing, such as centrifugation, aliquotting, storage and record-keeping.

ADMINISTRATIVE

CPT Codes:
99001

COMPLETE VIEW

Available Stat:
No

Test Code:
HSRF

Performing Lab:
Parnassus, Mission Bay and Mt. Zion Central Processing

Collect:
CSF tube, Gold top, Red top, Light Green top, Dark Green top, Lavender top, Blue top, urine container

Sample Type:
Blood, urine, CSF or other body fluid

Specimen Preparation:
If sample type is blood, spin sample first and aliquot plasma or serum.

Please follow instructions included with the order on how to store sample. Order should indicate either frozen, refrigerated or room temperature storage requirement.

Additional Information:

If sample storage instructions are not included, sample will be stored refrigerated at 2-8C.

Specimens are held for 2 weeks only.

HSRF covers cost of materials and preliminary processing, such as centrifugation, aliquotting, storage and record-keeping.

CPT Codes:

99001

Hold Specimen Room Temperature

HDRT

ORDERING

Available Stat:
No

Performing Lab:
Parnassus, Mission Bay and Mt. Zion Central Processing

Additional Information:
If sample storage instructions are not included, sample will be stored refrigerated at 2-8C.

Specimens are held for 2 weeks only.

HDRT covers cost of materials and preliminary processing, such as centrifugation, aliquotting, storage and record-keeping.

COLLECTION

Sample Type:
Blood, urine, CSF or other body fluid

Collect:
CSF tube, Gold top, Red top, Light Green top, Dark Green top, Lavender top, Blue top, urine container

PROCESSING

Test Code:
HDRT

Performing Lab:
Parnassus, Mission Bay and Mt. Zion Central Processing

Specimen Preparation:
If sample type is blood, spin sample first and aliquot plasma or serum.
Please follow instructions included with the order on how to store sample. Order should indicate either frozen, refrigerated or room temperature storage requirement.

RESULT INTERPRETATION

Additional Information:
If sample storage instructions are not included, sample will be stored refrigerated at 2-8C.

Specimens are held for 2 weeks only.

HDRT covers cost of materials and preliminary processing, such as centrifugation, aliquotting, storage and record-keeping.

ADMINISTRATIVE

CPT Codes:
99001

COMPLETE VIEW

Available Stat:
No

Test Code:
HDRT

Performing Lab:
Parnassus, Mission Bay and Mt. Zion Central Processing

Collect:
CSF tube, Gold top, Red top, Light Green top, Dark Green top, Lavender top, Blue top, urine container

Sample Type:
Blood, urine, CSF or other body fluid

Specimen Preparation:
If sample type is blood, spin sample first and aliquot plasma or serum.
Please follow instructions included with the order on how to store sample. Order should indicate either frozen, refrigerated or room temperature storage requirement.

Additional Information:

If sample storage instructions are not included, sample will be stored refrigerated at 2-8C.

Specimens are held for 2 weeks only.

HDRT covers cost of materials and preliminary processing, such as centrifugation, aliquotting, storage and record-keeping.

CPT Codes:

99001

Homocysteine, Total

HCYS

ORDERING

Available Stat:
No

Performing Lab:
China Basin Chemistry

Performed:
Wednesday and Saturday; for expedited testing, see additional information section below.

Methodology:
Chemiluminescent Microparticle Immunoassay-Abbott Architect i2000

Reported:
1-4 days; for expedited testing, see additional information section below.

Additional Information:
Note: if an inborn error of metabolism is suspected, email Clinlab.chemistry@ucsf.edu with the patient MRN and name to let the lab know that you are sending a sample for same day homocysteine testing. Draw the patient sample and deliver it to the lab. Samples should arrive at the lab by noon on weekdays, or 10am on weekends and holidays for results to be reported by 4pm.

Elevated levels are a risk factor for coronary artery disease and vascular thrombosis. The test for total plasma homocysteine may be used to screen for conditions causing homocystinuria. However, for cystinuria, order quantitative urine cystine.

Homocystinuria due to severe homozygous defects in the cystathionine beta synthase gene (or rare defects in other genes involved in the metabolism of sulfur-containing amino acids) may be associated with plasma homocysteine levels > 100 umol/L. Note that renal disease or deficiency in vitamin B12 or folate may also lead to similar elevations, although the C677T MTHFR mutation does not.

Homocysteine is measured as the sum of free homocysteine, homocysteine released by reduction from disulfides such as homocystine and cysteine-homocysteine, and homocysteine bound to serum proteins. "Total" homocysteine is sometimes signified by the abbreviations tHcy or Hcys or the term "Homocyst(e)ine".

Patients taking methotrexate, nicotinic acid, theophylline, nitrous oxide or L-dopa can have elevated serum or plasma homocysteine levels. S-adenosyl-methionine cross reacts in the Hcy assay (see lab procedure link)

Reference ranges for adults based on manufacturer's reference range, results of the National Health and Nutrition Examination Survey reported by Ganji and Kafai (Am J Clin Nutrition, 84:989-994, 2006), and in- house testing of laboratory personnel. Reference ranges for children based on the results of the CALIPER program using the Abbott Architect method for determining homocysteine (Bailey et al, Clinical Chemistry, 2013). Hyperhomocysteinemia is classified as moderate (15 - 30 umol/L), intermediate (30 - 100 umol/L), or severe (>100 umol/L). For further information on homocysteine testing, see Refsum et al, Annual Rev Medicine 49:31-62, 1998 and Maron et al, Clin Lab Med 26:591-609, 2006

Synonyms:

- Homocysteine, Total
- Homocystine

COLLECTION

Patient Preparation:
An 8 hour fast before specimen collection is recommended because a protein-rich meal may increase results by 15%-20%.

Sample Type:
Heparinized Plasma (serum acceptable)

Collect:
Light Green top on ice (Gold top on ice acceptable)

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.5 mL serum or plasma

Remarks:

Chill tube on ice before collection and transport on ice to lab.

If sample is not collected on ice, release of homocysteine from erythrocytes may increase levels by approximately 10% per hour at room temperature. (Clin Chem 50:3-32, 2004)

PROCESSING

Test Code:

HCYS

Performing Lab:

China Basin Chemistry

Specimen Preparation:

Centrifuge immediately, aliquot and refrigerate plasma or serum.

If sample was not received on ice, append the ETC "ICEH" or the following comment: "Specimen not received on ice, may cause falsely elevated result in some cases."

Preferred Volume:

1 mL serum or plasma

Minimum Volume:

0.5 mL serum or plasma

RESULT INTERPRETATION

Units:

umol/L

Reference Interval:

Age	Male & Female
5 days to <1 year	3-10 umol/L
1-11 years	3-8 umol/L
12-14 years	5-10 umol/L
15-18 years	5-13 umol/L
19-70 years	4-14 umol/L
>70 years	6-20 umol/L

Additional Information:

Note: if an inborn error of metabolism is suspected, email Clinlab.chemistry@ucsf.edu with the patient MRN and name to let the lab know that you are sending a sample for same day homocysteine testing. Draw the patient sample and deliver it to the lab. Samples should arrive at the lab by noon on weekdays, or 10am on weekends and holidays for results to be reported by 4pm.

Elevated levels are a risk factor for coronary artery disease and vascular thrombosis. The test for total plasma homocysteine may be used to screen for conditions causing homocystinuria. However, for cystinuria, order quantitative urine cystine.

Homocystinuria due to severe homozygous defects in the cystathionine beta synthase gene (or rare defects in other genes involved in the metabolism of sulfur-containing amino acids) may be associated with plasma homocysteine levels > 100 umol/L. Note that renal disease or deficiency in vitamin B12 or folate may also lead to similar elevations, although the C677T MTHFR mutation does not.

Homocysteine is measured as the sum of free homocysteine, homocysteine released by reduction from disulfides such as homocystine and cysteine-homocysteine, and homocysteine bound to serum proteins. "Total" homocysteine is sometimes signified by the abbreviations tHcy or Hcys or the term "Homocyst(e)ine".

Patients taking methotrexate, nicotinic acid, theophylline, nitrous oxide or L-dopa can have elevated serum or plasma homocysteine levels. S-adenosyl-methionine cross reacts in the Hcy assay (see lab procedure link)

Reference ranges for adults based on manufacturer's reference range, results of the National Health and Nutrition Examination Survey reported by Ganji and Kafai (Am J Clin Nutrition, 84:989-994, 2006), and in- house testing of laboratory personnel. Reference ranges for children based on the results of the CALIPER program using the Abbott Architect method for determining homocysteine (Bailey et al, Clinical Chemistry, 2013). Hyperhomocysteinemia is classified as moderate (15 - 30 umol/L), intermediate (30 - 100 umol/L), or severe (>100 umol/L). For further information on homocysteine testing, see Refsum et al, Annual Rev Medicine 49:31-62, 1998 and Maron et al, Clin Lab Med 26:591-609, 2006

ADMINISTRATIVE

CPT Codes:
83090

LOINC Codes:
13965-9

COMPLETE VIEW

Available Stat:
No

Test Code:
HCYS

Performing Lab:
China Basin Chemistry

Performed:
Wednesday and Saturday; for expedited testing, see additional information section below.

Methodology:
Chemiluminescent Microparticle Immunoassay-Abbott Architect i2000

Patient Preparation:
An 8 hour fast before specimen collection is recommended because a protein-rich meal may increase results by 15%-20%.

Remarks:
Chill tube on ice before collection and transport on ice to lab.

If sample is not collected on ice, release of homocysteine from erythrocytes may increase levels by approximately 10% per hour at room temperature. (Clin Chem 50:3-32, 2004)

Collect:
Light Green top on ice (Gold top on ice acceptable)

Amount to Collect:
2 mL blood

Sample Type:
Heparinized Plasma (serum acceptable)

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.5 mL serum or plasma

Specimen Preparation:
Centrifuge immediately, aliquot and refrigerate plasma or serum.

If sample was not received on ice, append the ETC "ICEH" or the following comment: "Specimen not received on ice, may cause falsely elevated result in some cases."

Units:
umol/L

Reference Interval:

Age	Male & Female
5 days to <1 year	3-10 umol/L
1-11 years	3-8 umol/L
12-14 years	5-10 umol/L
15-18 years	5-13 umol/L
19-70 years	4-14 umol/L
>70 years	6-20 umol/L

Synonyms:

- Homocysteine, Total
- Homocystine

Reported:
1-4 days; for expedited testing, see additional information section below.

Additional Information:

Note: if an inborn error of metabolism is suspected, email Clinlab.chemistry@ucsf.edu with the patient MRN and name to let the lab know that you are sending a sample for same day homocysteine testing. Draw the patient sample and deliver it to the lab. Samples should arrive at the lab by noon on weekdays, or 10am on weekends and holidays for results to be reported by 4pm.

Elevated levels are a risk factor for coronary artery disease and vascular thrombosis. The test for total plasma homocysteine may be used to screen for conditions causing homocystinuria. However, for cystinuria, order quantitative urine cystine.

Homocystinuria due to severe homozygous defects in the cystathionine beta synthase gene (or rare defects in other genes involved in the metabolism of sulfur-containing amino acids) may be associated with plasma homocysteine levels > 100 umol/L. Note that renal disease or deficiency in vitamin B12 or folate may also lead to similar elevations, although the C677T MTHFR mutation does not.

Homocysteine is measured as the sum of free homocysteine, homocysteine released by reduction from disulfides such as homocystine and cysteine-homocysteine, and homocysteine bound to serum proteins. "Total" homocysteine is sometimes signified by the abbreviations tHcy or Hcys or the term "Homocyst(e)ine".

Patients taking methotrexate, nicotinic acid, theophylline, nitrous oxide or L-dopa can have elevated serum or plasma homocysteine levels. S-adenosyl-methionine cross reacts in the Hcy assay (see lab procedure link)

Reference ranges for adults based on manufacturer's reference range, results of the National Health and Nutrition Examination Survey reported by Ganji and Kafai (Am J Clin Nutrition, 84:989-994, 2006), and in- house testing of laboratory personnel. Reference ranges for children based on the results of the CALIPER program using the Abbott Architect method for determining homocysteine (Bailey et al, Clinical Chemistry, 2013). Hyperhomocysteinemia is classified as moderate (15 - 30 umol/L), intermediate (30 - 100 umol/L), or severe (>100 umol/L). For further information on homocysteine testing, see Refsum et al, Annual Rev Medicine 49:31-62, 1998 and Maron et al, Clin Lab Med 26:591-609, 2006

CPT Codes:

83090

LOINC Codes:

13965-9

Homovanillic Acid, 24 hour urine

HVA

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
HPLC, ECD

Reported:
Test run Monday-Friday. Turnaround time: 3-6 days.

Additional Information:
To convert mg/d to mmol/d (SI units) multiply by 5.49.

Creatinine is assayed as a measure of completeness of urine collection. If total creatinine excretion is not within normal limits for the patient's age and sex (see entry for Creatinine) and the patient has normal renal function, the urine collection is probably incomplete and the result is invalid.

Synonyms:

- HVA

COLLECTION

Patient Preparation:
Patient should avoid alcohol, coffee, tea, tobacco and strenuous exercise and discontinue at least 2 weeks prior to testing any treatment with L-DOPA, which interferes in the assay.

Sample Type:
24 hour urine collection

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container, 30mL 6N HCL

Amount to Collect:
Entire 24 hour urine output

Preferred Volume:
10 mL urine

Minimum Volume:
5 mL urine

Remarks:
Refrigerate container during collection.

Unacceptable Conditions:
Container not refrigerated during collection.

PROCESSING

Test Code:
HVA

Test Group:
Homovanillic

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate a 10 mL aliquot of the well-mixed collection. The final pH should be < 3. Record the total urine volume on the test request and on the aliquot. Order Quest #39527

Preferred Volume:
10 mL urine

Minimum Volume:
5 mL urine

Unacceptable Conditions:
Container not refrigerated during collection.

RESULT INTERPRETATION

Units:
mg/24 h

Reference Interval:

3-8 years	0.5-6.7 mg/d
9-12 years	1.1-6.8 mg/d
13-17 years	1.4-7.2 mg/d
> 17 years	1.6-7.5 mg/d

Additional Information:
To convert mg/d to mmol/d (SI units) multiply by 5.49.

Creatinine is assayed as a measure of completeness of urine collection. If total creatinine excretion is not within normal limits for the patient's age and sex (see entry for Creatinine) and the patient has normal renal function, the urine collection is probably incomplete and the result is invalid.

ADMINISTRATIVE

CPT Codes:
83150-90

LOINC Codes:
2436-4

COMPLETE VIEW

Available Stat:
No

Test Code:
HVA

Test Group:
Homovanillic

Performing Lab:
Quest

Sendout:
Yes

Methodology:
HPLC, ECD

Patient Preparation:
Patient should avoid alcohol, coffee, tea, tobacco and strenuous exercise and discontinue at least 2 weeks prior to testing any treatment with L-DOPA, which interferes in the assay.

Remarks:
Refrigerate container during collection.

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container, 30mL 6N HCL

Amount to Collect:
Entire 24 hour urine output

Sample Type:
24 hour urine collection

Preferred Volume:
10 mL urine

Minimum Volume:
5 mL urine

Unacceptable Conditions:
Container not refrigerated during collection.

Specimen Preparation:
Refrigerate a 10 mL aliquot of the well-mixed collection. The final pH should be < 3. Record the total urine volume on the test request and on the aliquot. Order Quest #39527

Units:
mg/24 h

Reference Interval:

3-8 years	0.5-6.7 mg/d
9-12 years	1.1-6.8 mg/d
13-17 years	1.4-7.2 mg/d
> 17 years	1.6-7.5 mg/d

Synonyms:

- HVA

Reported:

Test run Monday-Friday. Turnaround time: 3-6 days.

Additional Information:

To convert mg/d to mmol/d (SI units) multiply by 5.49.

Creatinine is assayed as a measure of completeness of urine collection. If total creatinine excretion is not within normal limits for the patient's age and sex (see entry for Creatinine) and the patient has normal renal function, the urine collection is probably incomplete and the result is invalid.

CPT Codes:

83150-90

LOINC Codes:

2436-4

Homovanillic Acid, random urine

HVAR

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
HPLC, ECD

Reported:
Test run four days a week. Reports in two days.

Additional Information:
Homovanillic acid (HVA, 4-hydroxy-3-methoxyphenylacetic acid) has been identified as the principal urinary metabolite of dopa and dopamine. HVA is excreted in free form in relatively large amounts, and is frequently measured to support a diagnosis of neuroblastoma and malignant pheochromocytoma. HVA has been used to monitor chronic lead exposure and response to medication during the treatment of Parkinson's disease.

Synonyms:

- HVA

COLLECTION

Patient Preparation:
It is preferable for the patient to be off medications for three days prior to collection. However, common antihypertensives (diuretics, ACE inhibitors, calcium channel blockers, alpha and beta blockers) cause minimal or no interference. Patient should avoid alcohol, coffee, tea, tobacco and strenuous exercise prior to collection.

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
See preferred volume

Preferred Volume:
10 mL urine

Minimum Volume:
5 mL urine

PROCESSING

Test Code:
HVAR

Test Group:
Homovanillic

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Preferably the sample should be acidified with 6N HCl (or boric acid) to pH < 3. Quest will accept samples from IMMEDIATELY after collection at -20C. Ship frozen. Order Quest Test #84855N.

Samples for Brown & Toland patients MUST be acidified or LabCorp will reject. Order test # 120246

Preferred Volume:
10 mL urine

Minimum Volume:
5 mL urine

RESULT INTERPRETATION

Units:
mg/g creatinine

Reference Interval:

Homovanillic acid in random urine:

Birth-6 months	9.1-36 mg/g creatinine
7-11 months	11.2-33 mg/g creatinine
1-2 years	8.5-38 mg/g creatinine
3-8 years	2.1-23 mg/g creatinine
9-12 years	1.1-12 mg/g creatinine
>= 18 year olds	1.4-5.3 mg/g creatinine

Creatinine in random urine:

Birth-6 months	0.02-0.32 g/L
7-11 months	0.02-0.36 g/L
1-2 years	0.02-1.28 g/L
3-8 years	0.2-1.49 g/L
9-12 years	0.02-1.83 g/L
>= 18 year olds	0.27-3.00 g/L

Additional Information:

Homovanillic acid (HVA, 4-hydroxy-3-methoxyphenylacetic acid) has been identified as the principal urinary metabolite of dopa and dopamine. HVA is excreted in free form in relatively large amounts, and is frequently measured to support a diagnosis of neuroblastoma and malignant pheochromocytoma. HVA has been used to monitor chronic lead exposure and response to medication during the treatment of Parkinson's disease.

ADMINISTRATIVE

CPT Codes:

83150-90

LOINC Codes:

11146-8

COMPLETE VIEW

Available Stat:

No

Test Code:

HVAR

Test Group:

Homovanillic

Performing Lab:

Quest

Sendout:

Yes

Methodology:

HPLC, ECD

Patient Preparation:

It is preferable for the patient to be off medications for three days prior to collection. However, common antihypertensives (diuretics, ACE inhibitors, calcium channel blockers, alpha and beta blockers) cause minimal or no interference. Patient should avoid alcohol, coffee, tea, tobacco and strenuous exercise prior to collection.

Collect:

Urine cup

Amount to Collect:

See preferred volume

Sample Type:

Random urine

Preferred Volume:

10 mL urine

Minimum Volume:

5 mL urine

Specimen Preparation:

Preferably the sample should be acidified with 6N HCl (or boric acid) to pH < 3. Quest will accept samples from IMMEDIATELY after collection at -20C. Ship frozen. Order Quest Test #84855N.

Samples for Brown & Toland patients MUST be acidified or LabCorp will reject. Order test # 120246

Units:

mg/g creatinine

Reference Interval:

Homovanillic acid in random urine:

Birth-6 months	9.1-36 mg/g creatinine
7-11 months	11.2-33 mg/g creatinine
1-2 years	8.5-38 mg/g creatinine
3-8 years	2.1-23 mg/g creatinine
9-12 years	1.1-12 mg/g creatinine
>= 18 year olds	1.4-5.3 mg/g creatinine

Creatinine in random urine:

Birth-6 months	0.02-0.32 g/L
7-11 months	0.02-0.36 g/L
1-2 years	0.02-1.28 g/L
3-8 years	0.2-1.49 g/L
9-12 years	0.02-1.83 g/L
>= 18 year olds	0.27-3.00 g/L

Synonyms:

- HVA

Reported:

Test run four days a week. Reports in two days.

Additional Information:

Homovanillic acid (HVA, 4-hydroxy-3-methoxyphenylacetic acid) has been identified as the principal urinary metabolite of dopa and dopamine. HVA is excreted in free form in relatively large amounts, and is frequently measured to support a diagnosis of neuroblastoma and malignant pheochromocytoma. HVA has been used to monitor chronic lead exposure and response to medication during the treatment of Parkinson's disease.

CPT Codes:

83150-90

LOINC Codes:

11146-8

HSV DNA, Qualitative for Non-CSF samples

ORDERING

Available Stat:
No

Performed:
DAILY

Methodology:
Real time PCR detection and thermal melt analysis

Reported:
1 day

Additional Information:
The assay may not detect co-infection of HSV 1 and HSV 2 in specimens where the two virus types are not equally represented.

Synonyms:

- HERPES, HSV

COLLECTION

Sample Type:
Swab from cutaneous or mucocutaneous lesion
Blood

Collect:
Flocked swab in universal transport medium(UTM)
Lavender top (EDTA)

Amount to Collect:
1 flocked swab
1 mL blood

Preferred Volume:
1 flocked swab
1 mL blood

Minimum Volume:
1 flocked swab
1 mL blood

Remarks:
Unroof lesion and swab fluid of vesicle and base of lesion to obtain cells. Immediately place swab in UTM.If testing of BAL/bronchial wash, body fluids, or tissue is required, order Herpes Simples Virus PCR, Quantitative

Stability (from collection to initiation):
Room Temp, Refrigerated 7 days, Frozen 1 month

Rejection Criteria:
Samples not received in suitable container/transport medium. Unsuitable specimen types.

PROCESSING

Preferred Volume:
1 flocked swab
1 mL blood

Minimum Volume:
1 flocked swab
1 mL blood

Rejection Criteria:
Samples not received in suitable container/transport medium. Unsuitable specimen types.

Stability (from collection to initiation):
Room Temp, Refrigerated 7 days, Frozen 1 month

RESULT INTERPRETATION

Reference Interval:
Not detected

Additional Information:
The assay may not detect co-infection of HSV 1 and HSV 2 in specimens where the two virus types are not equally represented.

ADMINISTRATIVE

CPT Codes:
87529

LOINC Codes:
20444-6

COMPLETE VIEW

Available Stat:
No

Performed:
DAILY

Methodology:
Real time PCR detection and thermal melt analysis

Remarks:
Unroof lesion and swab fluid of vesicle and base of lesion to obtain cells. Immediately place swab in UTM.If testing of BAL/bronchial wash, body fluids, or tissue is required, order Herpes Simples Virus PCR, Quantitative

Collect:
Flocked swab in universal transport medium(UTM)
Lavender top (EDTA)

Amount to Collect:
1 flocked swab
1 mL blood

Sample Type:
Swab from cutaneous or mucocutaneous lesion
Blood

Preferred Volume:
1 flocked swab
1 mL blood

Minimum Volume:
1 flocked swab
1 mL blood

Rejection Criteria:
Samples not received in suitable container/transport medium. Unsuitable specimen types.

Reference Interval:
Not detected

Synonyms:

- HERPES, HSV

Stability (from collection to initiation):
Room Temp, Refrigerated 7 days, Frozen 1 month

Reported:
1 day

Additional Information:
The assay may not detect co-infection of HSV 1 and HSV 2 in specimens where the two virus types are not equally represented.

CPT Codes:
87529

LOINC Codes:
20444-6

HSV DNA, skin lesion/blood

P378

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
DAILY

Methodology:
Real time PCR detection and thermal melt analysis

Reported:
1 day

Additional Information:
The assay may not detect co-infection of HSV 1 and HSV 2 in specimens where the two virus types are not equally represented.

Synonyms:

- HERPES, HSV

COLLECTION

Sample Type:
Swab from cutaneous or mucocutaneous lesion

Plasma

Collect:
Flocked swab in Universal Transport Medium (UTM) or Viral Holding Media (VTM).

Lavender top (blood)

Amount to Collect:
1 flocked swab or 3 mL of blood

Preferred Volume:
1 flocked swab or 1 mL plasma

Minimum Volume:
1 flocked swab or 0.25 mL plasma

Remarks:
Unroof lesion and swab fluid of vesicle and base of lesion to obtain cells. Immediately place swab in UTM.

If testing of BAL/bronchial wash, body fluids, or tissue is required, order Herpes Simples Virus PCR, Quantitative.

Do not draw blood from heparin containing lines.

Stability (from collection to initiation):
Room Temp, Refrigerated 5 days, Frozen 1 month

Unacceptable Conditions:
Samples not received in suitable container/transport medium. Unsuitable specimen types

PROCESSING

Test Code:
P378

Performing Lab:
Microbiology

Preferred Volume:
1 flocked swab or 1 mL plasma

Minimum Volume:
1 flocked swab or 0.25 mL plasma

Unacceptable Conditions:
Samples not received in suitable container/transport medium. Unsuitable specimen types

Stability (from collection to initiation):
Room Temp, Refrigerated 5 days, Frozen 1 month

RESULT INTERPRETATION

Reference Interval:
Not detected

Additional Information:
The assay may not detect co-infection of HSV 1 and HSV 2 in specimens where the two virus types are not equally represented.

ADMINISTRATIVE

CPT Codes:
87529 x 2

LOINC Codes:
20444-6

COMPLETE VIEW

Available Stat:
No

Test Code:
P378

Performing Lab:
Microbiology

Performed:
DAILY

Methodology:
Real time PCR detection and thermal melt analysis

Remarks:
Unroof lesion and swab fluid of vesicle and base of lesion to obtain cells. Immediately place swab in UTM.

If testing of BAL/bronchial wash, body fluids, or tissue is required, order Herpes Simples Virus PCR, Quantitative.

Do not draw blood from heparin containing lines.

Collect:
Flocked swab in Universal Transport Medium (UTM) or Viral Holding Media (VTM).

Lavender top (blood)

Amount to Collect:
1 flocked swab or 3 mL of blood

Sample Type:
Swab from cutaneous or mucocutaneous lesion

Plasma

Preferred Volume:
1 flocked swab or 1 mL plasma

Minimum Volume:
1 flocked swab or 0.25 mL plasma

Unacceptable Conditions:
Samples not received in suitable container/transport medium. Unsuitable specimen types

Reference Interval:
Not detected

Synonyms:

- HERPES, HSV

Stability (from collection to initiation):
Room Temp, Refrigerated 5 days, Frozen 1 month

Reported:
1 day

Additional Information:
The assay may not detect co-infection of HSV 1 and HSV 2 in specimens where the two virus types are not equally represented.

CPT Codes:
87529 x 2

LOINC Codes:
20444-6

Human Chorionic Gonadotropin for Pregnancy, Plasma/Serum, Quantitative < 18 year old (Pediatric)

HCGPP

ORDERING

Available Stat:
Yes, for ectopic R/O only

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Parnassus and Mission Bay: 24 hrs per day, 7 days a week
Mt. Zion: 0700-2300, 5 days a week

Methodology:
Chemiluminescent Microparticle Immunoassay (CMIA) - Abbott Architect

Reported:
STAT 1 hour, Routine same or next day.

Additional Information:
Be sure that you are selecting the appropriate test for pediatric vs. adult patients. Two tests are offered so that the results can be appropriately filtered to appear in MyChart.

Refer to the hCG test for adult patients for additional information on assay performance characterisitics and assay interferences.

Synonyms:

- HCG
- Beta-HCG
- b-HCG
- gonadotropin tests
- choriogonadotropin
- UCG
- pregnancy test
- ectopic pregancy test

COLLECTION

Sample Type:
Serum or plasma

Collect:
Lt Green top preferred
Gold top acceptable

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

Remarks:
Be sure that you are selecting the appropriate test for pediatric vs. adult patients. Two tests are offered so that the results can be appropriately filtered to appear in MyChart.

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 7 days, frozen at -20C 12 months

PROCESSING

Test Code:
HCGPP

Test Group:
HCG

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 7 days, frozen at -20C 12 months

RESULT INTERPRETATION

Units:
IU/L

Reference Interval:
Negative < 5 IU/L

Results of 5 IU/L or greater are flagged

According to the assay manufacturer, results of 5 - 24 are inconclusive and results of 25 or more are considered positive.

Separate from pregnancy testing, studies in older age groups suggest the following reference range cutoffs

Premenopausal (<41 years of age)	< 5 IU/L
Perimenopausal (41-55 years of age)	< 8 IU/L
Postmenopausal (>54 yeas of age)	< 14 IU/L

8% of postmenopausal women have hCG concentrations in the range of 5-14 IU/L

Reference intervals in pregnancy

Weeks post last menstrual period	2.5th percentile	97.5th percentile
1-10	202	231,000
11-15	22,536	234,990
16-22	8,007	50,064
23-40	1,600	49,413

Reference intervals adopted from assay manufacturer, Patel KK et al. Clin Biochem. 2017 Mar;50(4-5):234-237 and Snyder JA. Clin Chem 2005; 51:1830-1835. and Grenache CG JALM Sept 2020

Additional Information:
Be sure that you are selecting the appropriate test for pediatric vs. adult patients. Two tests are offered so that the results can be appropriately filtered to appear in MyChart.

Refer to the hCG test for adult patients for additional information on assay performance characterisitics and assay interferences.

ADMINISTRATIVE

CPT Codes:
84702

LOINC Codes:
19080-1

COMPLETE VIEW

Available Stat:
Yes, for ectopic R/O only

Test Code:
HCGPP

Test Group:
HCG

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Parnassus and Mission Bay: 24 hrs per day, 7 days a week
Mt. Zion: 0700-2300, 5 days a week

Methodology:
Chemiluminescent Microparticle Immunoassay (CMIA) - Abbott Architect

Remarks:
Be sure that you are selecting the appropriate test for pediatric vs. adult patients. Two tests are offered so that the results can be appropriately filtered to appear in MyChart.

Collect:
Lt Green top preferred
Gold top acceptable

Amount to Collect:
1 mL blood

Sample Type:
Serum or plasma

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

Units:
IU/L

Reference Interval:
Negative < 5 IU/L

Results of 5 IU/L or greater are flagged

According to the assay manufacturer, results of 5 - 24 are inconclusive and results of 25 or more are considered positive.

Separate from pregnancy testing, studies in older age groups suggest the following reference range cutoffs

Premenopausal (<41 years of age)	< 5 IU/L
Perimenopausal (41-55 years of age)	< 8 IU/L
Postmenopausal (>54 yeas of age)	< 14 IU/L

8% of postmenopausal women have hCG concentrations in the range of 5-14 IU/L

Reference intervals in pregnancy

Weeks post last menstrual period	2.5th percentile	97.5th percentile
1-10	202	231,000
11-15	22,536	234,990
16-22	8,007	50,064
23-40	1,600	49,413

Reference intervals adopted from assay manufacturer, Patel KK et al. Clin Biochem. 2017 Mar;50(4-5):234-237 and Snyder JA. Clin Chem 2005; 51:1830-1835. and Grenache CG JALM Sept 2020

Synonyms:

- HCG
- Beta-HCG
- b-HCG
- gonadotropin tests
- choriogonadotropin
- UCG
- pregnancy test
- ectopic pregancy test

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 7 days, frozen at -20C 12 months

Reported:
STAT 1 hour, Routine same or next day.

Additional Information:
Be sure that you are selecting the appropriate test for pediatric vs. adult patients. Two tests are offered so that the results can be appropriately filtered to appear in MyChart.

Refer to the hCG test for adult patients for additional information on assay performance characterisitics and assay interferences.

CPT Codes:
84702

LOINC Codes:
19080-1

Human Chorionic Gonadotropin for Pregnancy, Plasma/Serum, Quantitative, ≥18 year old (Adult)

HCGPA

ORDERING

Available Stat:
Yes, for ectopic R/O only

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Parnassus and Mission Bay: 24 hrs per day, 7 days a week
Mt. Zion: 0700-2300, 5 days a week

Methodology:
Chemiluminescent Microparticle Immunoassay (CMIA)

Reported:
STAT 1 hour, Routine same or next day.

Additional Information:
Be sure that you are selecting the appropriate test for pediatric vs. adult patients. Two tests are offered so that the results can be appropriately filtered to appear in MyChart.

Assay Information:
This hCG assay is calibrated against the 4th International Standard and provides good detection of hCG, hyperglycosylated hCG, and hCG beta; marginal detection of nicked hCG, nicked hyperglycosylated hCG, asialo hCG, and nicked hCG beta; poor detection of nicked hCG missing CTP and of beta-core fragment. This assay is reported to be resistant to producing falsely low results caused by the hook effect.

While normal pregnancy is the main cause of increased serum hCG levels, increases in serum hCG may also occur in this hCG for pregnancy assay caused by immunoassay interferences, neoplastic processes including gestational trophoblastic disease and non-trophoblastic malignancies, and production of hCG by the pituitary gland. Non-trophoblastic tumors where increased hCG may occur include seminiferous and nonseminiferous testicular tumors and benign or malignant non-testicular teratomas. Increased hCG in modest amounts may occasionally occur in hepatic, neuroendocrine, breast, ovarian, pancreatic, cervical, and gastric cancers.

In cases where increases in hCG due to conditions other than pregnancy are suspected, an hCG for tumor assay can be ordered which detects additional forms of hCG not always detected in the hCG for pregnancy assay. While this pregnancy assay may be useful for monitoring some patients with trophoblastic disease producing forms of hCG detected in the pregnancy test, the hCG for tumor assay provides a more sensitive assay for this purpose.

Diagnosing pregnancy:

This assay is suitable for pregnancy testing at or slightly before the time of the first missed menstrual period. During the first six weeks of normal pregnancy, serum levels of hCG can be expected to double every 1.5-2.5 days. To confirm pregnancy, it may be helpful to repeat the test after 3-5 days. hCG levels vary widely between individuals, and "normal" ranges during different stages of gestation are difficult to define.

Levels in an ectopic pregnancy are often lower than in normal intrauterine pregnancy.

WARNING: Causes of increased hCG levels other than pregnancy:

1. Increased hCG levels can also occur in non-pregnant peri-menopausal or post-menopausal women, in patients with gestational trophoblastic disease or other tumors, following previous injection of hCG, and in patients with heterophile antibodies or other substances that cause false positive elevations in hCG immunoassays.

2. Non-pregnant peri-menopausal women 41 - 55 years of age may have hCG levels up to 8 IU/L and post-menopausal women > 54 years of age can have hCG levels up to at least 14 IU/L and these women also generally have FSH levels > 20 IU/L. In patients between 41 and 55 years of age with hCG levels of 5 - 14 IU/L, an FSH level >= 45 IU/L indicates that pregnancy is unlikely. Increased hCG levels due to pituitary hCG in peri-menopausal and post-menopausal women can be suppressed by treatment for 3 weeks with a high-progesterone oral contraceptive pill.

3. If gestational trophoblastic disease or non-trophoblastic tumor is suspected, an elevated serum hCG should be confirmed by urine hCG testing.

WARNING: False positives:

An elevated serum hCG with a negative urine hCG suggests the possibility of a false-positive result in the serum assay and should not be relied upon for diagnosis of gestational trophoblastic disease or tumor.

Increased serum hCG with negative urine hCG can also occur in very early pregnancy or abnormal pregnancy such as ectopic pregnancy, blighted ovum, or miscarriage.

In addition to a negative urine hCG test, characteristics of false-positive serum measurements may include low-level positive results (generally < 1000 IU/L and usually < 150 IU/L) that fail to show substantial changes in time with serial testing.

A negative serum result obtained by a different testing methodology should also increase suspicion for a false-positive initial test.

Therefore, when a false-positive serum hCG result is suspected, the following options should be considered:

1. Check of urine hCG (see HCG for Pregnancy, Urine). Urine hCG should be elevated in trophoblastic disease.

2. Measure serum hCG levels over several days or weeks and check for a trend in values. False positive results may show little variation over time. In contrast, hCG levels will increase during uncomplicated gestation or decrease after evacuation of trophoblastic tissue.

3. To investigate the possibility of heterophile antibody interference in the hCG assay, place an order for a chemistry special study" (orderable from the Apex test menu) in addition to an order for a regular hCG assay. This will alert the Chemistry section of the laboratory to investigate for possible interferences in the hCG assay. The investigation will include performance of heterophile antibody blocking studies and dilution studies and testing of the sample in several different hCG assays

References:Patel KK et al. Establishing reference intervals for hCG in postmenopausal women. Clin Biochem. 2017 Mar;50(4-5):234-237.
Snyder JA. Clin Chem 2005; 51:1830-1835
Cole LA, et al. Total hCG tests. Clinica Chimica Acta 412 (2011) 2216-2222
Cole LA, et al. Selecting an appropriate hCG test for managing gestational trophoblastic disease and cancer. J Reprod Med 2004; 49:545-553.
Stenman U-H, et al. The classification, functions and clinical use of different isoforms of HCG. Hum Rep Update 2006; 12:769-784.
Braunstein GD. False-positive serum human chorionic gonadotropin results: Causes, characteristics, and recognition. AJOG Reviews 2002; 187:217-224.
Cole LA. "Background" hCG in healthy, non-pregnant women. Clin Chem 2005; 51:1765-1766
Nerenz RD, Song H, Gronowski AM. Screening method to evaluate point-of-care human chorionic gonadotropin (hCG) devices for susceptibility to the hook effect by hCG core fragment: evaluation of 11 devices. Clin Chem. 2014 Apr;60(4):667-74.

Synonyms:

- HCG
- Beta-HCG
- b-HCG
- gonadotropin tests
- choriogonadotropin
- UCG
- pregnancy test
- ectopic pregnancy test

COLLECTION

Sample Type:
Serum or plasma

Collect:
Lt. Green top preferred
Gold top acceptable

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.5 mL serum

Remarks:
Be sure that you are selecting the appropriate test for pediatric vs. adult patients. Two tests are offered so that the results can be appropriately filtered to appear in MyChart.

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 7 days, frozen at -20C 12 months

PROCESSING

Test Code:
HCGPA

Test Group:
HCG

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 7 days, frozen at -20C 12 months

RESULT INTERPRETATION

Units:
IU/L

Reference Interval:
Negative < 5 IU/L

Results of 5 IU/L or greater are flagged

According to the assay manufacturer, results of 5 - 24 are inconclusive and results of 25 or more are considered positive.

Separate from pregnancy testing, studies in older age groups suggest the following reference range cutoffs

Premenopausal (<41 years of age)	< 5 IU/L
Perimenopausal (41-55 years of age)	< 8 IU/L
Postmenopausal (>54 yeas of age)	< 14 IU/L

8% of postmenopausal women have hCG concentrations in the range of 5-14 IU/L

Reference intervals in pregnancy

Weeks post last menstrual period	2.5th percentile	97.5th percentile
1-10	202	231,000
11-15	22,536	234,990
16-22	8,007	50,064
23-40	1,600	49,413

Reference intervals adopted from assay manufacturer, Patel KK et al. Clin Biochem. 2017 Mar;50(4-5):234-237 and Snyder JA. Clin Chem 2005; 51:1830-1835. and Grenache CG JALM Sept 2020

Additional Information:
Be sure that you are selecting the appropriate test for pediatric vs. adult patients. Two tests are offered so that the results can be appropriately filtered to appear in MyChart.

Assay Information:
This hCG assay is calibrated against the 4th International Standard and provides good detection of hCG, hyperglycosylated hCG, and hCG beta; marginal detection of nicked hCG, nicked hyperglycosylated hCG, asialo hCG, and nicked hCG beta; poor detection of nicked hCG missing CTP and of beta-core fragment. This assay is reported to be resistant to producing falsely low results caused by the hook effect.

While normal pregnancy is the main cause of increased serum hCG levels, increases in serum hCG may also occur in this hCG for pregnancy assay caused by immunoassay interferences, neoplastic processes including gestational trophoblastic disease and non-trophoblastic malignancies, and production of hCG by the pituitary gland. Non-trophoblastic tumors where increased hCG may occur include seminiferous and nonseminiferous testicular tumors and benign or malignant non-testicular teratomas. Increased hCG in modest amounts may occasionally occur in hepatic, neuroendocrine, breast, ovarian, pancreatic, cervical, and gastric cancers.

In cases where increases in hCG due to conditions other than pregnancy are suspected, an hCG for tumor assay can be ordered which detects additional forms of hCG not always detected in the hCG for pregnancy assay. While this pregnancy assay may be useful for monitoring some patients with trophoblastic disease producing forms of hCG detected in the pregnancy test, the hCG for tumor assay provides a more sensitive assay for this purpose.

Diagnosing pregnancy:

This assay is suitable for pregnancy testing at or slightly before the time of the first missed menstrual period. During the first six weeks of normal pregnancy, serum levels of hCG can be expected to double every 1.5-2.5 days. To confirm pregnancy, it may be helpful to repeat the test after 3-5 days. hCG levels vary widely between individuals, and "normal" ranges during different stages of gestation are difficult to define.

Levels in an ectopic pregnancy are often lower than in normal intrauterine pregnancy.

WARNING: Causes of increased hCG levels other than pregnancy:

1. Increased hCG levels can also occur in non-pregnant peri-menopausal or post-menopausal women, in patients with gestational trophoblastic disease or other tumors, following previous injection of hCG, and in patients with heterophile antibodies or other substances that cause false positive elevations in hCG immunoassays.

2. Non-pregnant peri-menopausal women 41 - 55 years of age may have hCG levels up to 8 IU/L and post-menopausal women > 54 years of age can have hCG levels up to at least 14 IU/L and these women also generally have FSH levels > 20 IU/L. In patients between 41 and 55 years of age with hCG levels of 5 - 14 IU/L, an FSH level >= 45 IU/L indicates that pregnancy is unlikely. Increased hCG levels due to pituitary hCG in peri-menopausal and post-menopausal women can be suppressed by treatment for 3 weeks with a high-progesterone oral contraceptive pill.

3. If gestational trophoblastic disease or non-trophoblastic tumor is suspected, an elevated serum hCG should be confirmed by urine hCG testing.

WARNING: False positives:

An elevated serum hCG with a negative urine hCG suggests the possibility of a false-positive result in the serum assay and should not be relied upon for diagnosis of gestational trophoblastic disease or tumor.

Increased serum hCG with negative urine hCG can also occur in very early pregnancy or abnormal pregnancy such as ectopic pregnancy, blighted ovum, or miscarriage.

In addition to a negative urine hCG test, characteristics of false-positive serum measurements may include low-level positive results (generally < 1000 IU/L and usually < 150 IU/L) that fail to show substantial changes in time with serial testing.

A negative serum result obtained by a different testing methodology should also increase suspicion for a false-positive initial test.

Therefore, when a false-positive serum hCG result is suspected, the following options should be considered:

1. Check of urine hCG (see HCG for Pregnancy, Urine). Urine hCG should be elevated in trophoblastic disease.

2. Measure serum hCG levels over several days or weeks and check for a trend in values. False positive results may show little variation over time. In contrast, hCG levels will increase during uncomplicated gestation or decrease after evacuation of trophoblastic tissue.

3. To investigate the possibility of heterophile antibody interference in the hCG assay, place an order for a chemistry special study" (orderable from the Apex test menu) in addition to an order for a regular hCG assay. This will alert the Chemistry section of the laboratory to investigate for possible interferences in the hCG assay. The investigation will include performance of heterophile antibody blocking studies and dilution studies and testing of the sample in several different hCG assays

References:Patel KK et al. Establishing reference intervals for hCG in postmenopausal women. Clin Biochem. 2017 Mar;50(4-5):234-237.
Snyder JA. Clin Chem 2005; 51:1830-1835
Cole LA, et al. Total hCG tests. Clinica Chimica Acta 412 (2011) 2216-2222
Cole LA, et al. Selecting an appropriate hCG test for managing gestational trophoblastic disease and cancer. J Reprod Med 2004; 49:545-553.
Stenman U-H, et al. The classification, functions and clinical use of different isoforms of HCG. Hum Rep Update 2006; 12:769-784.
Braunstein GD. False-positive serum human chorionic gonadotropin results: Causes, characteristics, and recognition. AJOG Reviews 2002; 187:217-224.
Cole LA. "Background" hCG in healthy, non-pregnant women. Clin Chem 2005; 51:1765-1766
Nerenz RD, Song H, Gronowski AM. Screening method to evaluate point-of-care human chorionic gonadotropin (hCG) devices for susceptibility to the hook effect by hCG core fragment: evaluation of 11 devices. Clin Chem. 2014 Apr;60(4):667-74.

ADMINISTRATIVE

CPT Codes:
84702

LOINC Codes:
19080-1

COMPLETE VIEW

Available Stat:
Yes, for ectopic R/O only

Test Code:
HCGPA

Test Group:
HCG

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Parnassus and Mission Bay: 24 hrs per day, 7 days a week
Mt. Zion: 0700-2300, 5 days a week

Methodology:
Chemiluminescent Microparticle Immunoassay (CMIA)

Remarks:
Be sure that you are selecting the appropriate test for pediatric vs. adult patients. Two tests are offered so that the results can be appropriately filtered to appear in MyChart.

Collect:
Lt. Green top preferred
Gold top acceptable

Amount to Collect:
1 mL blood

Sample Type:
Serum or plasma

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.5 mL serum

Units:
IU/L

Reference Interval:
Negative < 5 IU/L

Results of 5 IU/L or greater are flagged

According to the assay manufacturer, results of 5 - 24 are inconclusive and results of 25 or more are considered positive.

Separate from pregnancy testing, studies in older age groups suggest the following reference range cutoffs

Premenopausal (<41 years of age)	< 5 IU/L
Perimenopausal (41-55 years of age)	< 8 IU/L
Postmenopausal (>54 yeas of age)	< 14 IU/L

8% of postmenopausal women have hCG concentrations in the range of 5-14 IU/L

Reference intervals in pregnancy

Weeks post last menstrual period	2.5th percentile	97.5th percentile
1-10	202	231,000
11-15	22,536	234,990
16-22	8,007	50,064
23-40	1,600	49,413

Reference intervals adopted from assay manufacturer, Patel KK et al. Clin Biochem. 2017 Mar;50(4-5):234-237 and Snyder JA. Clin Chem 2005; 51:1830-1835. and Grenache CG JALM Sept 2020

Synonyms:

- HCG
- Beta-HCG
- b-HCG
- gonadotropin tests
- choriogonadotropin
- UCG
- pregnancy test
- ectopic pregnancy test

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 7 days, frozen at -20C 12 months

Reported:
STAT 1 hour, Routine same or next day.

Additional Information:

Be sure that you are selecting the appropriate test for pediatric vs. adult patients. Two tests are offered so that the results can be appropriately filtered to appear in MyChart.

Assay Information:

This hCG assay is calibrated against the 4th International Standard and provides good detection of hCG, hyperglycosylated hCG, and hCG beta; marginal detection of nicked hCG, nicked hyperglycosylated hCG, asialo hCG, and nicked hCG beta; poor detection of nicked hCG missing CTP and of beta-core fragment. This assay is reported to be resistant to producing falsely low results caused by the hook effect.

While normal pregnancy is the main cause of increased serum hCG levels, increases in serum hCG may also occur in this hCG for pregnancy assay caused by immunoassay interferences, neoplastic processes including gestational trophoblastic disease and non-trophoblastic malignancies, and production of hCG by the pituitary gland. Non-trophoblastic tumors where increased hCG may occur include seminiferous and nonseminiferous testicular tumors and benign or malignant non-testicular teratomas. Increased hCG in modest amounts may occasionally occur in hepatic, neuroendocrine, breast, ovarian, pancreatic, cervical, and gastric cancers.

In cases where increases in hCG due to conditions other than pregnancy are suspected, an hCG for tumor assay can be ordered which detects additional forms of hCG not always detected in the hCG for pregnancy assay. While this pregnancy assay may be useful for monitoring some patients with trophoblastic disease producing forms of hCG detected in the pregnancy test, the hCG for tumor assay provides a more sensitive assay for this purpose.

Diagnosing pregnancy:

This assay is suitable for pregnancy testing at or slightly before the time of the first missed menstrual period. During the first six weeks of normal pregnancy, serum levels of hCG can be expected to double every 1.5-2.5 days. To confirm pregnancy, it may be helpful to repeat the test after 3-5 days. hCG levels vary widely between individuals, and "normal" ranges during different stages of gestation are difficult to define.

Levels in an ectopic pregnancy are often lower than in normal intrauterine pregnancy.

WARNING: Causes of increased hCG levels other than pregnancy:

1. Increased hCG levels can also occur in non-pregnant peri-menopausal or post-menopausal women, in patients with gestational trophoblastic disease or other tumors, following previous injection of hCG, and in patients with heterophile antibodies or other substances that cause false positive elevations in hCG immunoassays.

2. Non-pregnant peri-menopausal women 41 - 55 years of age may have hCG levels up to 8 IU/L and post-menopausal women > 54 years of age can have hCG levels up to at least 14 IU/L and these women also generally have FSH levels > 20 IU/L. In patients between 41 and 55 years of age with hCG levels of 5 - 14 IU/L, an FSH level >= 45 IU/L indicates that pregnancy is unlikely. Increased hCG levels due to pituitary hCG in peri-menopausal and post-menopausal women can be suppressed by treatment for 3 weeks with a high-progesterone oral contraceptive pill.

3. If gestational trophoblastic disease or non-trophoblastic tumor is suspected, an elevated serum hCG should be confirmed by urine hCG testing.

WARNING: False positives:

An elevated serum hCG with a negative urine hCG suggests the possibility of a false-positive result in the serum assay and should not be relied upon for diagnosis of gestational trophoblastic disease or tumor.

Increased serum hCG with negative urine hCG can also occur in very early pregnancy or abnormal pregnancy such as ectopic pregnancy, blighted ovum, or miscarriage.

In addition to a negative urine hCG test, characteristics of false-positive serum measurements may include low-level positive results (generally < 1000 IU/L and usually < 150 IU/L) that fail to show substantial changes in time with serial testing.

A negative serum result obtained by a different testing methodology should also increase suspicion for a false-positive initial test.

Therefore, when a false-positive serum hCG result is suspected, the following options should be considered:

1. Check of urine hCG (see HCG for Pregnancy, Urine). Urine hCG should be elevated in trophoblastic disease.

2. Measure serum hCG levels over several days or weeks and check for a trend in values. False positive results may show little variation over time. In contrast, hCG levels will increase during uncomplicated gestation or decrease after evacuation of trophoblastic tissue.

3. To investigate the possibility of heterophile antibody interference in the hCG assay, place an order for a chemistry special study" (orderable from the Apex test menu) in addition to an order for a regular hCG assay. This will alert the Chemistry section of the laboratory to investigate for possible interferences in the hCG assay. The investigation will include performance of heterophile antibody blocking studies and dilution studies and testing of the sample in several different hCG

assays

References:Patel KK et al. Establishing reference intervals for hCG in postmenopausal women. Clin Biochem. 2017 Mar;50(4-5):234-237.
Snyder JA. Clin Chem 2005; 51:1830-1835
Cole LA, et al. Total hCG tests. Clinica Chimica Acta 412 (2011) 2216-2222
Cole LA, et al. Selecting an appropriate hCG test for managing gestational trophoblastic disease and cancer. J Reprod Med 2004; 49:545-553.
Stenman U-H, et al. The classification, functions and clinical use of different isoforms of HCG. Hum Rep Update 2006; 12:769-784.
Braunstein GD. False-positive serum human chorionic gonadotropin results: Causes, characteristics, and recognition. AJOG Reviews 2002; 187:217-224.
Cole LA. "Background" hCG in healthy, non-pregnant women. Clin Chem 2005; 51:1765-1766
Nerenz RD, Song H, Gronowski AM. Screening method to evaluate point-of-care human chorionic gonadotropin (hCG) devices for susceptibility to the hook effect by hCG core fragment: evaluation of 11 devices. Clin Chem. 2014 Apr;60(4):667-74.

CPT Codes:

84702

LOINC Codes:

19080-1

Human Chorionic Gonadotropin for Pregnancy, Urine < 18 year old

HCGUPE

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Cardinal Health HCG Combo Rapid Test

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
This is the only test routinely covered by MediCal in the absence of a demonstrated ectopic pregnancy, choriocarcinoma or hydatidiform mole.

A number of conditions other than pregnancy, including trophoblastic disease and certain nontrophoblastic neoplasms, cause elevated levels of hCG. These diagnoses should be considered if appropriate to the clinical evidence.

If a urine specimen is too diluted (low specific gravity), it may not contain representative levels of hCG. If pregnancy is suspected, ask the patient to collect first morning urine 48 to 72 hours later and repeat the test.

Because of the high sensitivity of the assay, specimens tested as positive during the initial days after conception may later be negative due to natural termination of the pregnancy.

A definitive clinical diagnosis should not be based on the results of a single test but should be made by the physician after evaluation. Blood specimens may be sent to the Clinical Laboratories for confirmatory testing.

Note, this assay kit is different than that used in POCT.

Synonyms:

- HCG
- Beta-HCG
- b-HCG
- gonadotropin tests Choriogonadotropin
- UCG
- urine pregnancy test
- dipstick pregnancy test

COLLECTION

Sample Type:
Random urine (First morning void preferred)

Collect:
Urine cup preferred but urine may be collected in any clean, dry, plastic or glass container

Amount to Collect:
10 mL urine

Preferred Volume:
10 mL urine

Minimum Volume:
1 mL urine

Remarks:
Urine specimens may be collected in any clean, dry, plastic or glass container.

Specimens collected at any time may be used, however, the first morning urine generally contains the highest hCG concentration and is the best sample.

Stability (from collection to initiation):
Refrigerated 48 hours.

PROCESSING

Test Code:
HCGUPE

Test Group:
HCG

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology

Preferred Volume:
10 mL urine

Minimum Volume:
1 mL urine

Stability (from collection to initiation):
Refrigerated 48 hours.

RESULT INTERPRETATION

Reference Interval:
Negative (non-pregnant)

Additional Information:
This is the only test routinely covered by MediCal in the absence of a demonstrated ectopic pregnancy, choriocarcinoma or hydatidiform mole.

A number of conditions other than pregnancy, including trophoblastic disease and certain nontrophoblastic neoplasms, cause elevated levels of hCG. These diagnoses should be considered if appropriate to the clinical evidence.

If a urine specimen is too diluted (low specific gravity), it may not contain representative levels of hCG. If pregnancy is suspected, ask the patient to collect first morning urine 48 to 72 hours later and repeat the test.

Because of the high sensitivity of the assay, specimens tested as positive during the initial days after conception may later be negative due to natural termination of the pregnancy.

A definitive clinical diagnosis should not be based on the results of a single test but should be made by the physician after evaluation. Blood specimens may be sent to the Clinical Laboratories for confirmatory testing.

Note, this assay kit is different than that used in POCT.

ADMINISTRATIVE

CPT Codes:
81025

LOINC Codes:
2106-3

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HCGUPE

Test Group:
HCG

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Cardinal Health HCG Combo Rapid Test

Remarks:
Urine specimens may be collected in any clean, dry, plastic or glass container.

Specimens collected at any time may be used, however, the first morning urine generally contains the highest hCG concentration and is the best sample.

Collect:
Urine cup preferred but urine may be collected in any clean, dry, plastic or glass container

Amount to Collect:
10 mL urine

Sample Type:
Random urine (First morning void preferred)

Preferred Volume:
10 mL urine

Minimum Volume:
1 mL urine

Reference Interval:
Negative (non-pregnant)

Synonyms:

- HCG
- Beta-HCG
- b-HCG
- gonadotropin tests Choriogonadotropin
- UCG
- urine pregnancy test
- dipstick pregnancy test

Stability (from collection to initiation):
Refrigerated 48 hours.

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
This is the only test routinely covered by MediCal in the absence of a demonstrated ectopic pregnancy, choriocarcinoma or hydatidiform mole.

A number of conditions other than pregnancy, including trophoblastic disease and certain nontrophoblastic neoplasms, cause elevated levels of hCG. These diagnoses should be considered if appropriate to the clinical evidence.

If a urine specimen is too diluted (low specific gravity), it may not contain representative levels of hCG. If pregnancy is suspected, ask the patient to collect first morning urine 48 to 72 hours later and repeat the test.

Because of the high sensitivity of the assay, specimens tested as positive during the initial days after conception may later be negative due to natural termination of the pregnancy.

A definitive clinical diagnosis should not be based on the results of a single test but should be made by the physician after evaluation. Blood specimens may be sent to the Clinical Laboratories for confirmatory testing.

Note, this assay kit is different than that used in POCT.

CPT Codes:
81025

LOINC Codes:
2106-3

Human Chorionic Gonadotropin for Pregnancy, Urine >= 18 year old

HCGUA

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Hematology: 24-hours per day, 7-days per week
Berkeley Outpatient Center: Test available Mon-Fri (0800-1630)

Methodology:
Cardinal Health HCG Combo Rapid Test

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
This is the only test routinely covered by MediCal in the absence of a demonstrated ectopic pregnancy, choriocarcinoma or hydatidiform mole.

A number of conditions other than pregnancy, including trophoblastic disease and certain nontrophoblastic neoplasms, cause elevated levels of hCG. These diagnoses should be considered if appropriate to the clinical evidence.

If a urine specimen is too diluted (low specific gravity), it may not contain representative levels of hCG. If pregnancy is suspected, ask the patient to collect first morning urine 48 to 72 hours later and repeat the test.

Because of the high sensitivity of the assay, specimens tested as positive during the initial days after conception may later be negative due to natural termination of the pregnancy.

A definitive clinical diagnosis should not be based on the results of a single test but should be made by the physician after evaluation. Blood specimens may be sent to the Clinical Laboratories for confirmatory testing.

Note, this assay kit is different than that used in POCT.

Synonyms:

- HCG
- Beta-HCG
- b-HCG
- gonadotropin tests Choriogonadotropin
- UCG
- urine pregnancy test
- dipstick pregnancy test

COLLECTION

Sample Type:
Random urine (First morning void preferred)

Collect:
Urine cup preferred but urine may be collected in any clean, dry, plastic or glass container

Amount to Collect:
10 mL urine

Preferred Volume:
10 mL urine

Minimum Volume:
1 mL urine

Remarks:
Urine specimens may be collected in any clean, dry, plastic or glass container.

Specimens collected at any time may be used, however, the first morning urine generally contains the highest hCG concentration and is the best sample.

Stability (from collection to initiation):
Refrigerated 48 hours.

PROCESSING

Test Code:
HCGUA

Test Group:
HCG

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center

Preferred Volume:
10 mL urine

Minimum Volume:
1 mL urine

Stability (from collection to initiation):
Refrigerated 48 hours.

RESULT INTERPRETATION

Reference Interval:
Negative (non-pregnant)

Additional Information:
This is the only test routinely covered by MediCal in the absence of a demonstrated ectopic pregnancy, choriocarcinoma or hydatidiform mole.

A number of conditions other than pregnancy, including trophoblastic disease and certain nontrophoblastic neoplasms, cause elevated levels of hCG. These diagnoses should be considered if appropriate to the clinical evidence.

If a urine specimen is too diluted (low specific gravity), it may not contain representative levels of hCG. If pregnancy is suspected, ask the patient to collect first morning urine 48 to 72 hours later and repeat the test.

Because of the high sensitivity of the assay, specimens tested as positive during the initial days after conception may later be negative due to natural termination of the pregnancy.

A definitive clinical diagnosis should not be based on the results of a single test but should be made by the physician after evaluation. Blood specimens may be sent to the Clinical Laboratories for confirmatory testing.

Note, this assay kit is different than that used in POCT.

ADMINISTRATIVE

CPT Codes:
81025

LOINC Codes:
2106-3

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HCGUA

Test Group:
HCG

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Hematology: 24-hours per day, 7-days per week
Berkeley Outpatient Center: Test available Mon-Fri (0800-1630)

Methodology:
Cardinal Health HCG Combo Rapid Test

Remarks:
Urine specimens may be collected in any clean, dry, plastic or glass container.

Specimens collected at any time may be used, however, the first morning urine generally contains the highest hCG concentration and is the best sample.

Collect:
Urine cup preferred but urine may be collected in any clean, dry, plastic or glass container

Amount to Collect:
10 mL urine

Sample Type:
Random urine (First morning void preferred)

Preferred Volume:
10 mL urine

Minimum Volume:
1 mL urine

Reference Interval:
Negative (non-pregnant)

Synonyms:

- HCG
- Beta-HCG
- b-HCG
- gonadotropin tests Choriogonadotropin
- UCG
- urine pregnancy test
- dipstick pregnancy test

Stability (from collection to initiation):
Refrigerated 48 hours.

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
This is the only test routinely covered by MediCal in the absence of a demonstrated ectopic pregnancy, choriocarcinoma or hydatidiform mole.

A number of conditions other than pregnancy, including trophoblastic disease and certain nontrophoblastic neoplasms, cause elevated levels of hCG. These diagnoses should be considered if appropriate to the clinical evidence.

If a urine specimen is too diluted (low specific gravity), it may not contain representative levels of hCG. If pregnancy is suspected, ask the patient to collect first morning urine 48 to 72 hours later and repeat the test.

Because of the high sensitivity of the assay, specimens tested as positive during the initial days after conception may later be negative due to natural termination of the pregnancy.

A definitive clinical diagnosis should not be based on the results of a single test but should be made by the physician after evaluation. Blood specimens may be sent to the Clinical Laboratories for confirmatory testing.

Note, this assay kit is different than that used in POCT.

CPT Codes:
81025

LOINC Codes:
2106-3

Human Chorionic Gonadotropin for Tumor, CSF

BHCGC

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
ICMA

Reported:
Test run Tuesday. Turnaround time: 2-9 days.

Additional Information:
This test was developed and its performance characteristics determined by Mayo Medical Laboratories. It has not been approved by the U.S. Food and Drug Administration.

Synonyms:

- HCG
- Beta-HCG
- b-HCG

COLLECTION

Sample Type:
CSF

Collect:
CSF tube or sterile collection tube

Amount to Collect:
See preferred volume

Preferred Volume:
1 mL CSF

Minimum Volume:
0.2 mL CSF

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

PROCESSING

Test Code:
BHCGC

Test Group:
HCG

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Freeze specimen at -20C. Order MAYO# 8877. Call MCS for pickup

Preferred Volume:
1 mL CSF

Minimum Volume:
0.2 mL CSF

RESULT INTERPRETATION

Units:
IU/L

Reference Interval:
< 1.5 IU/L

Additional Information:
This test was developed and its performance characteristics determined by Mayo Medical Laboratories. It has not been approved by the U.S. Food and Drug Administration.

ADMINISTRATIVE

CPT Codes:
84702-90

COMPLETE VIEW

Available Stat:
No

Test Code:
BHCGC

Test Group:
HCG

Performing Lab:
Mayo

Sendout:
Yes

Methodology:
ICMA

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Collect:
CSF tube or sterile collection tube

Amount to Collect:
See preferred volume

Sample Type:
CSF

Preferred Volume:
1 mL CSF

Minimum Volume:
0.2 mL CSF

Specimen Preparation:
Freeze specimen at -20C. Order MAYO# 8877. Call MCS for pickup

Units:
IU/L

Reference Interval:
< 1.5 IU/L

Synonyms:

- HCG
- Beta-HCG
- b-HCG

Reported:
Test run Tuesday. Turnaround time: 2-9 days.

Additional Information:
This test was developed and its performance characteristics determined by Mayo Medical Laboratories. It has not been approved by the U.S. Food and Drug Administration.

CPT Codes:
84702-90

Human Herpes virus 7, DNA

HHV7

ORDERING

Available Stat:
No

Performing Lab:
Viracor

Methodology:
Real time PCR

Reported:
Performed Monday-Friday. Turnaround 4-6 days

Additional Information:
Assay range: 100-1.0x10^8 copies/mL

Synonyms:

- HHV7 PCR
- Human Herpes virus 7, PCR
- HHV-7

COLLECTION

Sample Type:
EDTA whole blood, Unfixed tissue, CSF, Marrow, BAL

Collect:
Lavender top, CSF tube or sterile collection tube

Amount to Collect:
3 mL blood

Preferred Volume:
3 mL blood

Minimum Volume:
2 mL blood

Remarks:
Tissue specimens should be placed in sterile saline to keep moist.

Unacceptable Conditions:
Improperly submitted samples

PROCESSING

Test Code:
HHV7

Test Group:
Herpes

Sendout:
Yes

Performing Lab:
Viracor

Specimen Preparation:
Whole Blood (Plasma): Separate plasma from cells. Transfer 2 mL plasma to a sterile container. (Min: 0.5 mL). Send Frozen.

CSF: Transfer 2 mL CSF to a sterile container. (Min: 0.5 mL). Send Frozen.

Bone Marrow: Do not centrifuge. Send original tube ambient.

BAL: Transfer 2 mL BAL to sterile container. (Min: 0.5 mL). Send Frozen.

Tissue: Send 5 mg fresh tissue frozen.

Preferred Volume:
3 mL blood

Minimum Volume:
2 mL blood

Unacceptable Conditions:
Improperly submitted samples

RESULT INTERPRETATION

Units:
copies/mL

Additional Information:
Assay range: 100-1.0x10^8 copies/mL

ADMINISTRATIVE

CPT Codes:
87799-90

LOINC Codes:
49399-9

COMPLETE VIEW

Available Stat:
No

Test Code:
HHV7

Test Group:
Herpes

Performing Lab:
Viracor

Sendout:
Yes

Methodology:
Real time PCR

Remarks:
Tissue specimens should be placed in sterile saline to keep moist.

Collect:
Lavender top, CSF tube or sterile collection tube

Amount to Collect:
3 mL blood

Sample Type:
EDTA whole blood, Unfixed tissue, CSF, Marrow, BAL

Preferred Volume:
3 mL blood

Minimum Volume:
2 mL blood

Unacceptable Conditions:
Improperly submitted samples

Specimen Preparation:
Whole Blood (Plasma): Separate plasma from cells. Transfer 2 mL plasma to a sterile container. (Min: 0.5 mL). Send Frozen.

CSF: Transfer 2 mL CSF to a sterile container. (Min: 0.5 mL). Send Frozen.

Bone Marrow: Do not centrifuge. Send original tube ambient.

BAL: Transfer 2 mL BAL to sterile container. (Min: 0.5 mL). Send Frozen.

Tissue: Send 5 mg fresh tissue frozen.

Units:
copies/mL

Synonyms:

- HHV7 PCR
- Human Herpes virus 7, PCR
- HHV-7

Reported:
Performed Monday-Friday. Turnaround 4-6 days

Additional Information:
Assay range: 100-1.0x10^8 copies/mL

CPT Codes:
87799-90

LOINC Codes:
49399-9

Human Herpes virus 8, DNA

HHV8

ORDERING

Available Stat:
No

Performing Lab:
Viracor

Methodology:
Real time PCR

Additional Information:
Assay range: 100-1.0x10^8 copies/mL

Synonyms:

- HHV8 PCR
- Human Herpes virus 8, PCR
- HHV-8

COLLECTION

Sample Type:
EDTA whole blood, Unfixed tissue, CSF, BAL

Collect:
Lavender top, CSF tube or sterile collection tube

Amount to Collect:
3 mL blood

Preferred Volume:
3 mL blood

Minimum Volume:
2 mL blood

PROCESSING

Test Code:
HHV8

Test Group:
Herpes

Sendout:
Yes

Performing Lab:
Viracor

Specimen Preparation:
Keep non-CSF samples at room temperature and ship at room temperature. Samples should be received at Viracor within 96 hours of collection.CSF must be frozen transported to China Basin and then shipped on dry ice to ViraCor.

Preferred Volume:
3 mL blood

Minimum Volume:
2 mL blood

RESULT INTERPRETATION

Units:
copies/mL

Reference Interval:
Not detected

Additional Information:
Assay range: 100-1.0x10^8 copies/mL

ADMINISTRATIVE

CPT Codes:
87799-90

LOINC Codes:
49403-9

COMPLETE VIEW

Available Stat:
No

Test Code:
HHV8

Test Group:
Herpes

Performing Lab:
Viracor

Sendout:
Yes

Methodology:
Real time PCR

Collect:
Lavender top, CSF tube or sterile collection tube

Amount to Collect:
3 mL blood

Sample Type:
EDTA whole blood, Unfixed tissue, CSF, BAL

Preferred Volume:
3 mL blood

Minimum Volume:
2 mL blood

Specimen Preparation:
Keep non-CSF samples at room temperature and ship at room temperature. Samples should be received at Viracor within 96 hours of collection.CSF must be frozen transported to China Basin and then shipped on dry ice to ViraCor.

Units:
copies/mL

Reference Interval:
Not detected

Synonyms:

- HHV8 PCR
- Human Herpes virus 8, PCR
- HHV-8

Additional Information:
Assay range: 100-1.0x10^8 copies/mL

CPT Codes:
87799-90

LOINC Codes:
49403-9

Human Herpesvirus 6, DNA

HHV6

ORDERING

Available Stat:
No

Performing Lab:
UCSF Microbiology

Performed:
3 times per week

Methodology:
Real time PCR

Reported:
1-4 days

Synonyms:

- HHV-6 PCR
- Human Herpes virus 6, PCR
- HHV6

COLLECTION

Sample Type:
Plasma

Collect:
EDTA (lavender) tube

Amount to Collect:
3 mL blood

Preferred Volume:
1.2 mL plasma

Minimum Volume:
0.6 mL plasma

Remarks:
CSF, BAL, and unfixed tissue should be collected and submitted in a sterile tube or container. Bone marrow should be collected in an EDTA (lavender) tube.

Stability (from collection to initiation):
EDTA (lavender) tube: 6 hours

Storage/Transport Temperature:
EDTA (lavender tube: Room temp. Plasma: Frozen.

Unacceptable Conditions:
grossly hemolyzed specimens, heparin tubes

PROCESSING

Test Code:
HHV6

Test Group:
Herpes

Sendout:
CSF, BAL, and tissue should be frozen. Bone marrow should be uncentrifuged and ambient.

Performing Lab:
UCSF Microbiology

Specimen Preparation:
Separate plasma from cells within 6 hours. Freeze plasma at -80 deg C.

Preferred Volume:
1.2 mL plasma

Minimum Volume:
0.6 mL plasma

Unacceptable Conditions:
grossly hemolyzed specimens, heparin tubes

Stability (from collection to initiation):
EDTA (lavender) tube: 6 hours

Storage/Transport Temperature:
EDTA (lavender tube: Room temp. Plasma: Frozen.

RESULT INTERPRETATION

Units:
International Units per milliliter (IU/mL)

Reference Interval:
Not detected

Interpretive Data:
Reportable range: 1,250 IU/mL - 12,500,000 IU/mL. Lab developed test.

ADMINISTRATIVE

CPT Codes:
87533

LDT or Modified FDA:
Yes

LOINC Codes:
29495-9

COMPLETE VIEW

Available Stat:
No

Test Code:
HHV6

Test Group:
Herpes

Performing Lab:
UCSF Microbiology

Sendout:
CSF, BAL, and tissue should be frozen. Bone marrow should be uncentrifuged and ambient.

Performed:
3 times per week

Methodology:
Real time PCR

Remarks:
CSF, BAL, and unfixed tissue should be collected and submitted in a sterile tube or container. Bone marrow should be collected in an EDTA (lavender) tube.

Collect:
EDTA (lavender) tube

Amount to Collect:
3 mL blood

Sample Type:
Plasma

Preferred Volume:
1.2 mL plasma

Minimum Volume:
0.6 mL plasma

Unacceptable Conditions:
grossly hemolyzed specimens, heparin tubes

Specimen Preparation:
Separate plasma from cells within 6 hours. Freeze plasma at -80 deg C.

Units:
International Units per milliliter (IU/mL)

Reference Interval:
Not detected

Interpretive Data:
Reportable range: 1,250 IU/mL - 12,500,000 IU/mL. Lab developed test.

Synonyms:

- HHV-6 PCR
- Human Herpes virus 6, PCR
- HHV6

Storage/Transport Temperature:
EDTA (lavender tube: Room temp. Plasma: Frozen.

Stability (from collection to initiation):
EDTA (lavender) tube: 6 hours

Reported:
1-4 days

CPT Codes:
87533

LDT or Modified FDA:
Yes

LOINC Codes:
29495-9

Human Papilloma Virus High-Risk DNA w/Genotypes 16/18 (aka HPV)

HPVHRG, HPVPRY

ORDERING

Ordering Recommendations:

1. For Primary HPV testing and later reflex to Cytology (with additional charge) if HPV result is Positive or Indeterminate, use this order in Apex and bring collected thin prep sample to Clinical Labs:
"Primary HPV w/ Reflex Cytology (aka HPV) - Lab 2203"

2. For HPV testing ONLY without any reflex testing, use this order in Apex and bring collected thin prep sample to Clinical Labs:
"HPV High Risk with Genotype 16/18 - Lab 6193"

3. For Cytology testing and co-test or reflex to HPV (with additional charge), use this order in Apex and bring sample to Pathology/Cytology Lab:
"Gynecologic Cytology - Path,Cyt - Lab 7012B"

To add on HPV to a sample already sent for Cytology testing, please call Cytology lab (Anatomic Pathology) at 353-7455. DO NOT place order in Apex.

Available Stat:
No

Performing Lab:
Immunology

Performed:
Twice a week

Methodology:
PCR

Reported:
1-5 days

Additional Information:
In 2018, the United States Preventive Services Task Force (USPSTF) recommends testing women between the ages of 30 and 65 for cervical cancer with one of the following methods:
- Every 5 years with high-risk HPV testing alone
- Every 5 years with cytology and high-risk HPV co-testing
- Every 3 years with cytology alone

Testing may be indicated outside of the above guidelines with clinical management may be affected or in other situations per clinical discretion.

Synonyms:

- HPV
- Cervical cancer
- Pap smear
- Papanicolaou smear
- HPVHRG
- HPVPRY

COLLECTION

Sample Type:
Cervical brush sample in preservative

Collect:
ThinPrep PreservCyt solution

Minimum Volume:
Sample in 4 mL preservative

Remarks:
Place the cervical brush in the Cytyc ThinPrep PreservCyt solution

Unacceptable Conditions:
Specimen not received in required preservative

PROCESSING

Test Code:
HPVHRG - Human Papilloma Virus High-Risk DNA w/Genotypes 16/18 (aka HPV)
HPVPRY - Primary HPV w/ Reflex Cytology

Performing Lab:
Immunology

Specimen Preparation:
Store at room temperature until processed. Do not centrifuge the sample. Forward to Immunology at room temperature.

To add on HPVHRG to a sample already sent for Cytology testing, provider will need to call Cytology lab (Anatomic Pathology) at 353-7455. DO NOT place order in Apex.

If only HPVHRG is required without Cytology, provider can order the HPVHRG in Apex and send the sample to Clinical Labs directly.

To order Primary HPV testing provider can order Primary HPV w/ Reflex Cytology (HPVPRY) in Apex and send the sample to Clinical Labs directly. Positive or indeterminate HPV sample will be sent to Cytology lab for reflex testing with additional charge.

Minimum Volume:
Sample in 4 mL preservative

Unacceptable Conditions:
Specimen not received in required preservative

RESULT INTERPRETATION

Reference Interval:
HPV DNA, Genotype 16: Not Detected
HPV DNA, Genotype 18: Not Detected
HPV DNA, High Risk(Non 16/18): Not Detected

Additional Information:
In 2018, the United States Preventive Services Task Force (USPSTF) recommends testing women between the ages of 30 and 65 for cervical cancer with one of the following methods:
- Every 5 years with high-risk HPV testing alone
- Every 5 years with cytology and high-risk HPV co-testing
- Every 3 years with cytology alone

Testing may be indicated outside of the above guidelines with clinical management may be affected or in other situations per clinical discretion.

ADMINISTRATIVE

CPT Codes:
87624

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
1. For Primary HPV testing and later reflex to Cytology (with additional charge) if HPV result is Positive or Indeterminate, use this order in Apex and bring collected thin prep sample to Clinical Labs:
"Primary HPV w/ Reflex Cytology (aka HPV) - Lab 2203"

2. For HPV testing ONLY without any reflex testing, use this order in Apex and bring collected thin prep sample to Clinical Labs:
"HPV High Risk with Genotype 16/18 - Lab 6193"

3. For Cytology testing and co-test or reflex to HPV (with additional charge), use this order in Apex and bring sample to Pathology/Cytology Lab:
"Gynecologic Cytology - Path,Cyt - Lab 7012B"

To add on HPV to a sample already sent for Cytology testing, please call Cytology lab (Anatomic Pathology) at 353-7455. DO NOT place order in Apex.

Test Code:
HPVHRG - Human Papilloma Virus High-Risk DNA w/Genotypes 16/18 (aka HPV)
HPVPRY - Primary HPV w/ Reflex Cytology

Performing Lab:
Immunology

Performed:
Twice a week

Methodology:
PCR

Remarks:
Place the cervical brush in the Cytyc ThinPrep PreservCyt solution

Collect:
ThinPrep PreservCyt solution

Sample Type:
Cervical brush sample in preservative

Minimum Volume:
Sample in 4 mL preservative

Unacceptable Conditions:
Specimen not received in required preservative

Specimen Preparation:
Store at room temperature until processed. Do not centrifuge the sample. Forward to Immunology at room temperature.

To add on HPVHRG to a sample already sent for Cytology testing, provider will need to call Cytology lab (Anatomic Pathology) at 353-7455. DO NOT place order in Apex.

If only HPVHRG is required without Cytology, provider can order the HPVHRG in Apex and send the sample to Clinical Labs directly.

To order Primary HPV testing provider can order Primary HPV w/ Reflex Cytology (HPVPRY) in Apex and send the sample to Clinical Labs directly. Positive or indeterminate HPV sample will be sent to Cytology lab for reflex testing with additional charge.

Reference Interval:
HPV DNA, Genotype 16: Not Detected
HPV DNA, Genotype 18: Not Detected
HPV DNA, High Risk(Non 16/18): Not Detected

Synonyms:

- HPV
- Cervical cancer
- Pap smear
- Papanicolaou smear
- HPVHRG
- HPVPRY

Reported:
1-5 days

Additional Information:
In 2018, the United States Preventive Services Task Force (USPSTF) recommends testing women between the ages of 30 and 65 for cervical cancer with one of the following methods:
- Every 5 years with high-risk HPV testing alone
- Every 5 years with cytology and high-risk HPV co-testing
- Every 3 years with cytology alone
Testing may be indicated outside of the above guidelines with clinical management may be affected or in other situations per clinical discretion.

CPT Codes:
87624

Human T-Lymphotropic Virus (HTLV) Types I/II Antibodies by ELISA with Reflex to HTLV-I/II Confirmation by Western Blot

HTLVB

ORDERING

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Mon, Wed-Sat

Methodology:
Qualitative Enzyme-Linked Immunosorbent Assay/Qualitative Western Blot

Reported:
1-3 days

Reflex Testing:
Positive results are reflexed to Western blot

Synonyms:

- HTLV 1, 2 western blot confirmation
- HTLV 1/2
- HTLV Types 1 & 2 confirmation
- HTLV Types 1 & 2 confirmation

COLLECTION

Sample Type:
Serum of plasma

Collect:
Serum Separator Tube (SST). Also acceptable: Light Blue (Sodium Citrate), Green (Sodium or Lithium Heparin) or Lavender (EDTA).

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.5 mL serum or plasma

Stability (from collection to initiation):
After separation from cells: Ambient: Unacceptable; Refrigerated: 1 week; Frozen: Indefinitely (avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Specimens containing particulate material.

PROCESSING

Test Code:
HTLVB

ARUP Test Code:
0051164

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate from cells ASAP or within 2 hours of collection. Transfer 0.5 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.5 mL)

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.5 mL serum or plasma

Unacceptable Conditions:
Specimens containing particulate material.

Stability (from collection to initiation):
After separation from cells: Ambient: Unacceptable; Refrigerated: 1 week; Frozen: Indefinitely (avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:

Components	Reference Interval
HTLV I/II Antibodies by ELISA	Negative

Interpretive Data:
This assay should not be used for blood donor screening, associated re-entry protocols, or for screening Human Cell, Tissues and Cellular and Tissue-Based Products (HCT/P).

ADMINISTRATIVE

CPT Codes:
86790; if reflexed, add 86689

LOINC:

- 29901-6

COMPLETE VIEW

Available Stat:
No

Test Code:
HTLVB

ARUP Test Code:
0051164

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Mon, Wed-Sat

Methodology:
Qualitative Enzyme-Linked Immunosorbent Assay/Qualitative Western Blot

Collect:
Serum Separator Tube (SST). Also acceptable: Light Blue (Sodium Citrate), Green (Sodium or Lithium Heparin) or Lavender (EDTA).

Amount to Collect:
1 mL blood

Sample Type:
Serum of plasma

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.5 mL serum or plasma

Unacceptable Conditions:
Specimens containing particulate material.

Specimen Preparation:
Separate from cells ASAP or within 2 hours of collection. Transfer 0.5 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.5 mL)

Reference Interval:

Components	Reference Interval
HTLV I/II Antibodies by ELISA	Negative

Interpretive Data:

This assay should not be used for blood donor screening, associated re-entry protocols, or for screening Human Cell, Tissues and Cellular and Tissue-Based Products (HCT/P).

Synonyms:

- HTLV 1, 2 western blot confirmation
- HTLV 1/2
- HTLV Types 1 & 2 confirmation
- HTLV Types 1 & 2 confirmation

Storage/Transport Temperature:

Refrigerated.

Stability (from collection to initiation):

After separation from cells: Ambient: Unacceptable; Refrigerated: 1 week; Frozen: Indefinitely (avoid repeated freeze/thaw cycles)

Reported:

1-3 days

Reflex Testing:

Positive results are reflexed to Western blot

CPT Codes:

86790; if reflexed, add 86689

LOINC:

- 29901-6

Notes:

If HTLV I/II screen is repeatedly reactive, then HTLV I/II Confirmation by Western Blot will be added. Additional charges apply.

*Performed and Reported times indicated are for screening of the anti-HTLV. Refer to Human T-Lymphotropic Virus Types I/II Antibodies, Western Blot (0020642) for additional information regarding Performed and Reported times.

Huntington's Disease Triplet Repeat

HUNT

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Molecular Diagnostics

Performed:
Run once per 1-2 weeks or as needed

Methodology:
PCR and capillary electrophoresis. Reflex to genomic Southern blot, if homozygosity is detected by PCR.

Reported:
10-14 days

Additional Information:
The results for this test will not be available in APEX to safeguard patient confidentiality. All Huntington's results are referred to Genetic Counselor Jamie C. Fong and must be obtained from her at (415) 476-8613.

Results are reported as in the Table below following recommendations from the American College of Medical Genetics and Genomics (Bean L, Bayrak-Toydemir P. Genet. Med 16:1-7, 2014, PMID: 25356969).

CAG repeat size	Interpretation
Less than 27	Normal allele
27 - 35	Normal mutable allele
36 - 39	HD allele with reduced penetrance
> 39	HD allele with full penetrance

This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Synonyms:

- Huntington chorea
- HTT

COLLECTION

Sample Type:
EDTA, citrated or ACD whole blood

Collect:
Lavender top preferred, Blue top and Yellow (ACD) tops acceptable

Amount to Collect:
3 mL blood

Preferred Volume:
3 mL blood

Remarks:
All patients must receive genetic counseling prior to pre-symptomatic Huntingtons testing. The name of the genetic counselor who provided counseling must be included on the test requisition.

If collecting in citrate, check the expiration date on the label of the blue top vacutainer before drawing the patient.

Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Unacceptable Conditions:
Inadequate sample. Samples collected in heparin.

PROCESSING

Test Code:
HUNT

Performing Lab:
Medical Genomics - Molecular Diagnostics

Specimen Preparation:
Do not centrifuge the specimen. Store at room temperature. Refrigerated samples are acceptable.

Preferred Volume:
3 mL blood

Unacceptable Conditions:
Inadequate sample. Samples collected in heparin.

RESULT INTERPRETATION

Reference Interval:
Normal, CAG repeat sizes less than 27.

Additional Information:
The results for this test will not be available in APEX to safeguard patient confidentiality. All Huntington's results are referred to Genetic Counselor Jamie C. Fong and must be obtained from her at (415) 476-8613.

Results are reported as in the Table below following recommendations from the American College of Medical Genetics and Genomics (Bean L, Bayrak-Toydemir P. Genet. Med 16:1-7, 2014, PMID: 25356969).

CAG repeat size	Interpretation
Less than 27	Normal allele
27 - 35	Normal mutable allele
36 - 39	HD allele with reduced penetrance
> 39	HD allele with full penetrance

This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

ADMINISTRATIVE

CPT Codes:
81271, 81274

LDT or Modified FDA:
Yes

LOINC Codes:
53782-9

COMPLETE VIEW

Available Stat:
No

Test Code:
HUNT

Performing Lab:
Medical Genomics - Molecular Diagnostics

Performed:
Run once per 1-2 weeks or as needed

Methodology:
PCR and capillary electrophoresis. Reflex to genomic Southern blot, if homozygosity is detected by PCR.

Remarks:
All patients must receive genetic counseling prior to pre-symptomatic Huntingtons testing. The name of the genetic counselor who provided counseling must be included on the test requisition.

If collecting in citrate, check the expiration date on the label of the blue top vacutainer before drawing the patient.

Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Collect:
Lavender top preferred, Blue top and Yellow (ACD) tops acceptable

Amount to Collect:
3 mL blood

Sample Type:
EDTA, citrated or ACD whole blood

Preferred Volume:
3 mL blood

Unacceptable Conditions:
Inadequate sample. Samples collected in heparin.

Specimen Preparation:
Do not centrifuge the specimen. Store at room temperature. Refrigerated samples are acceptable.

Reference Interval:
Normal, CAG repeat sizes less than 27.

Synonyms:

- Huntington chorea
- HTT

Reported:
10-14 days

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Additional Information:
The results for this test will not be available in APEX to safeguard patient confidentiality. All Huntington's results are referred to Genetic Counselor Jamie C. Fong and must be obtained from her at (415) 476-8613.

Results are reported as in the Table below following recommendations from the American College of Medical Genetics and Genomics (Bean L, Bayrak-Toydemir P. Genet. Med 16:1-7, 2014, PMID: 25356969).

CAG repeat size	Interpretation
Less than 27	Normal allele
27 - 35	Normal mutable allele
36 - 39	HD allele with reduced penetrance
> 39	HD allele with full penetrance

This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

CPT Codes:
81271, 81274

LDT or Modified FDA:
Yes

LOINC Codes:
53782-9

Hydroxyprogesterone, 17-

17HP

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
LC/MS/MS

Reported:
Test run six days a week. Turnaround 3-6 days

Additional Information:
To convert ng/dL to nmol/L (SI units) multiply by 0.0303.

17-Hydroxyprogesterone is elevated in patients with Congenital Adrenal Hyperplasia (CAH). CAH is a group of autosomal recessive diseases characterized by a deficiency of cortisol and an excess of ACTH concentration.

17 Hydroxyprogesterone is also useful in monitoring cortisol replacement therapy and in evaluating infertility and adrenal and ovarian neoplasms.

Synonyms:

- 17-OH-progesterone

COLLECTION

Sample Type:
Serum

Collect:
Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Remarks:
Collect in red top tube only, Gold top is not acceptable

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 1 week, frozen at -20C 2 years.

Unacceptable Conditions:
Collected in Gold top

PROCESSING

Test Code:
17HP

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Order Quest # 17180.

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Collected in Gold top

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 1 week, frozen at -20C 2 years.

RESULT INTERPRETATION

Units:
ng/dL

Reference Interval:

Premature Infants (31 - 35 weeks)	<= 360 ng/dL
Term Infants (3 days)	<= 420 ng/dL

Pediatric:

1 - 12 months	11 - 170 ng/dL
1 - 4 years	4 - 115 ng/dL
5 - 9 years	<= 90 ng/dL
10 - 13 years	<= 169 ng/dL
14 - 17 years	16 - 283 ng/dL

Pregnancy:

First Trimester	78 - 457 ng/dL
Second Trimester	90 - 357 ng/dL
Third Trimester	44 - 578 ng/dL

>= 18 year old males:

8-30 years	32-307 ng/dL
31-40 years	42-196 ng/dL
41-50 years	33-195 ng/dL
51-60 years	37-129 ng/dL

>= 18 year old females:	
Follicular phase	<= 185 ng/dL
Mid-cycle phase	<= 225 ng/dL
Luteal phase	<= 285 ng/dL
Postmenopausal	<= 45 ng/dL

Additional Information:
To convert ng/dL to nmol/L (SI units) multiply by 0.0303.

17-Hydroxyprogesterone is elevated in patients with Congenital Adrenal Hyperplasia (CAH). CAH is a group of autosomal recessive diseases characterized by a deficiency of cortisol and an excess of ACTH concentration.

17 Hydroxyprogesterone is also useful in monitoring cortisol replacement therapy and in evaluating infertility and adrenal and ovarian neoplasms.

ADMINISTRATIVE

CPT Codes:
83498-90

LOINC Codes:
1668-3

COMPLETE VIEW

Available Stat:
No

Test Code:
17HP

Performing Lab:
Quest

Sendout:
Yes

Methodology:
LC/MS/MS

Remarks:
Collect in red top tube only, Gold top is not acceptable

Collect:
Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Collected in Gold top

Specimen Preparation:
Order Quest # 17180.

Units:
ng/dL

Reference Interval:

Premature Infants (31 - 35 weeks)	<= 360 ng/dL
Term Infants (3 days)	<= 420 ng/dL

Pediatric:

1 - 12 months	11 - 170 ng/dL
1 - 4 years	4 - 115 ng/dL
5 - 9 years	<= 90 ng/dL
10 - 13 years	<= 169 ng/dL
14 - 17 years	16 - 283 ng/dL

Pregnancy:

First Trimester	78 - 457 ng/dL
Second Trimester	90 - 357 ng/dL
Third Trimester	44 - 578 ng/dL

>= 18 year old males:

8-30 years	32-307 ng/dL
31-40 years	42-196 ng/dL
41-50 years	33-195 ng/dL
51-60 years	37-129 ng/dL

>= 18 year old females:	
Follicular phase	<= 185 ng/dL
Mid-cycle phase	<= 225 ng/dL
Luteal phase	<= 285 ng/dL
Postmenopausal	<= 45 ng/dL

Synonyms:

- 17-OH-progesterone

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 1 week, frozen at -20C 2 years.

Reported:
Test run six days a week. Turnaround 3-6 days

Additional Information:

To convert ng/dL to nmol/L (SI units) multiply by 0.0303.

17-Hydroxyprogesterone is elevated in patients with Congenital Adrenal Hyperplasia (CAH). CAH is a group of autosomal recessive diseases characterized by a deficiency of cortisol and an excess of ACTH concentration.

17 Hydroxyprogesterone is also useful in monitoring cortisol replacement therapy and in evaluating infertility and adrenal and ovarian neoplasms.

CPT Codes:

83498-90

LOINC Codes:

1668-3

Hypersensitivity Pneumonitis Panel

HPTA

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Immunodiffusion

Reported:
Test performed Tuesday-Friday. Turnaround time: 2-6 days.

Additional Information:
Immunodiffusion panel detects primarily IgG antibodies to the antigens of Micropolyspora faeni, Thermoactinomyces vulgaris, T. candidus, Aspergillus fumigatus Saccharomonas viridis and avian (pigeon) serum.

Synonyms:

- Thermophilic actinomyces
- Aspergillus fumigatus, Micropolyspora faeni, Pigeon serum, T. candidis, T. vulgaris, S. viridis
- farmers lung serology

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL serum

Minimum Volume:
0.5 mL serum

PROCESSING

Test Code:
HPTA

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate. Order Quest # 14978X.

Preferred Volume:
2 mL serum

Minimum Volume:
0.5 mL serum

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
Immunodiffusion panel detects primarily IgG antibodies to the antigens of Micropolyspora faeni, Thermoactinomyces vulgaris, T. candidus, Aspergillus fumigatus Saccharomonas viridis and avian (pigeon) serum.

ADMINISTRATIVE

CPT Codes:
86331-90, 86606-90, 86609-90 x 4

LOINC Codes:
35577-6

COMPLETE VIEW

Available Stat:
No

Test Code:
HPTA

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Immunodiffusion

Collect:
Gold top

Amount to Collect:
4 mL blood

Sample Type:
Serum

Preferred Volume:
2 mL serum

Minimum Volume:
0.5 mL serum

Specimen Preparation:
Refrigerate. Order Quest # 14978X.

Reference Interval:
Negative

Synonyms:

- Thermophilic actinomyces
- Aspergillus fumigatus, Micropolyspora faeni, Pigeon serum, T. candidis, T. vulgaris, S. viridis
- farmers lung serology

Reported:
Test performed Tuesday-Friday. Turnaround time: 2-6 days.

Additional Information:
Immunodiffusion panel detects primarily IgG antibodies to the antigens of Micropolyspora faeni, Thermoactinomyces vulgaris, T. candidus, Aspergillus fumigatus Saccharomonas viridis and avian (pigeon) serum.

CPT Codes:
86331-90, 86606-90, 86609-90 x 4

LOINC Codes:
35577-6

Hypoglycemia Panel (Sulfonylureas), Serum or Plasma

SULFO

ORDERING

Ordering Recommendations:
Preferred test to evaluate if etiology of hypoglycemia is sulfonylurea ingestion.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Varies

Methodology:
Qualitative High Performance Liquid Chromatography-Tandem Mass Spectrometry

Reported:
8-11 days

Synonyms:

- Amaryl (Glimepiride)
- Diabinese (Chlorpropamide)
- Diabinese{R} (Sulfonylurea Hypoglycemics Panel (Qualitative), Serum or Plasma)
- Dymelor (Acetohexamide)
- Glucotrol (Glipizide)
- Meglitinides
- Micronase (Glyburide)
- Orinase (Tolbutamide)
- Prandin (Regaglinide)
- Starlix (Nateglinide)
- Tolinase (Tolazamide)
- Amaryl
- DiaBeta
- Diabinese
- Glucotrol
- Glynase
- Micronase
- Orinase
- Prandin
- Starlix
- Sulfonylureas
- Tolinase

COLLECTION

Sample Type:
Serum of plasma

Collect:
Plain red or gray (sodium fluoride/potassium oxalate)

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

Stability (from collection to initiation):
Ambient: 48 hours; Refrigerated: 28 days; Frozen: 24 months

Storage/Transport Temperature:
Frozen. Also acceptable: Refrigerated

Unacceptable Conditions:
Separator tubes.

PROCESSING

Test Code:
SULFO

ARUP Test Code:
3005636

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP standard transport tube. (Min: 0.3 mL)
Test is not performed at ARUP; separate specimens must be submitted when multiple tests are ordered.

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

Unacceptable Conditions:
Separator tubes.

Stability (from collection to initiation):
Ambient: 48 hours; Refrigerated: 28 days; Frozen: 24 months

Storage/Transport Temperature:
Frozen. Also acceptable: Refrigerated

RESULT INTERPRETATION

Reference Interval:
By report

ADMINISTRATIVE

CPT Codes:
80377 (Alt Code: G0480)

LOINC:

- 9629-7
- 10540-3
- 49702-4
- 4061-8
- 10539-5
- 3474-4
- 40465-7
- 38542-7

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Preferred test to evaluate if etiology of hypoglycemia is sulfonylurea ingestion.

Test Code:
SULFO

ARUP Test Code:
3005636

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Varies

Methodology:
Qualitative High Performance Liquid Chromatography-Tandem Mass Spectrometry

Collect:
Plain red or gray (sodium fluoride/potassium oxalate)

Amount to Collect:
2 mL blood

Sample Type:
Serum of plasma

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

Unacceptable Conditions:
Separator tubes.

Specimen Preparation:
Separate from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP standard transport tube. (Min: 0.3 mL)
Test is not performed at ARUP; separate specimens must be submitted when multiple tests are ordered.

Reference Interval:
By report

Synonyms:

- Amaryl (Glimepiride)
- Diabinese (Chlorpropamide)
- Diabinese{R} (Sulfonylurea Hypoglycemics Panel (Qualitative), Serum or Plasma)
- Dymelor (Acetohexamide)
- Glucotrol (Glipizide)
- Meglitinides
- Micronase (Glyburide)
- Orinase (Tolbutamide)
- Prandin (Regaglinide)
- Starlix (Nateglinide)
- Tolinase (Tolazamide)
- Amaryl
- DiaBeta
- Diabinese
- Glucotrol
- Glynase
- Micronase
- Orinase
- Prandin
- Starlix
- Sulfonylureas
- Tolinase

Storage/Transport Temperature:
Frozen. Also acceptable: Refrigerated

Stability (from collection to initiation):
Ambient: 48 hours; Refrigerated: 28 days; Frozen: 24 months

Reported:
8-11 days

CPT Codes:
80377 (Alt Code: G0480)

LOINC:

- 9629-7
- 10540-3
- 49702-4
- 4061-8
- 10539-5
- 3474-4
- 40465-7
- 38542-7

Ibuprofen

IBUP

ORDERING

Available Stat:
No

Performing Lab:
MDTX via Quest

Methodology:
HPLC

Reported:
Test performed daily. Turnaround time: 3-5 days.

Additional Information:
For patients with Cystic Fibrosis.

Synonyms:

- Advil

COLLECTION

Sample Type:
Serum (plasma acceptable)

Collect:
Red top (Lavender or Dark Green top OK; Gold top **NOT** acceptable)

Amount to Collect:
4 mL blood

Preferred Volume:
2 ml serum or plasma

Minimum Volume:
1 mL serum or plasma

Unacceptable Conditions:
Collected in Gold top

PROCESSING

Test Code:
IBUP

Sendout:
Yes

Performing Lab:
MDTX via Quest

Specimen Preparation:
Refrigerate. Order Quest # 5136

Preferred Volume:
2 ml serum or plasma

Minimum Volume:
1 mL serum or plasma

Unacceptable Conditions:
Collected in Gold top

RESULT INTERPRETATION

Units:
mg/L

Reference Interval:
Normal: 0-49 mg/L
Potentially toxic: 50-74 mg/L
Toxic: > 75 mg/L

Critical Values:
Quest Priority-1: >= 100 mg/L

Additional Information:
For patients with Cystic Fibrosis.

ADMINISTRATIVE

CPT Codes:
80299-90

LOINC Codes:
35614-7

COMPLETE VIEW

Available Stat:
No

Test Code:
IBUP

Performing Lab:
MDTX via Quest

Sendout:
Yes

Methodology:
HPLC

Collect:
Red top (Lavender or Dark Green top OK; Gold top **NOT** acceptable)

Amount to Collect:
4 mL blood

Sample Type:
Serum (plasma acceptable)

Preferred Volume:
2 ml serum or plasma

Minimum Volume:
1 mL serum or plasma

Unacceptable Conditions:
Collected in Gold top

Specimen Preparation:
Refrigerate. Order Quest # 5136

Units:
mg/L

Reference Interval:
Normal: 0-49 mg/L
Potentially toxic: 50-74 mg/L
Toxic: > 75 mg/L

Critical Values:
Quest Priority-1: >= 100 mg/L

Synonyms:

- Advil

Reported:
Test performed daily. Turnaround time: 3-5 days.

Additional Information:
For patients with Cystic Fibrosis.

CPT Codes:
80299-90

LOINC Codes:
35614-7

Ig Heavy-Chain Gene Rearrangement

MOLT

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
PCR

Reported:
Test set up Monday and Wednesday. Turnaround time: 8-10 days.

Additional Information:
Primarily used to confirm clonality in suspected B-cell lymphoma. Note clonal rearrangements of the Ig heavy chain gene is strongly supportive of a B-cell lineage but may be seen in rare T-cell lymphoma. This test was developed and its performance characteristics determined by Quest Diagnostics-Nichols Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration.

Synonyms:

- PCR

COLLECTION

Sample Type:
EDTA whole blood, Marrow, fresh frozen or formalin fixed tissue

Collect:
Lavender top

Amount to Collect:
5 mL blood

Preferred Volume:
5 mL blood

Minimum Volume:
1 mL blood

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 1 week

PROCESSING

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Do NOT centrifuge blood-keep at room temperature; freeze tissue at -70C. Order Quest # 14868X.

Preferred Volume:
5 mL blood

Minimum Volume:
1 mL blood

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 1 week

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
Primarily used to confirm clonality in suspected B-cell lymphoma. Note clonal rearrangements of the Ig heavy chain gene is strongly supportive of a B-cell lineage but may be seen in rare T-cell lymphoma. This test was developed and its performance characteristics determined by Quest Diagnostics-Nichols Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration.

ADMINISTRATIVE

CPT Codes:
83890-90, 83898-90 x3, 83909-90 x3, 83912-90

COMPLETE VIEW

Available Stat:
No

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Performing Lab:
Quest

Sendout:
Yes

Methodology:
PCR

Collect:
Lavender top

Amount to Collect:
5 mL blood

Sample Type:
EDTA whole blood, Marrow, fresh frozen or formalin fixed tissue

Preferred Volume:
5 mL blood

Minimum Volume:
1 mL blood

Specimen Preparation:
Do NOT centrifuge blood-keep at room temperature; freeze tissue at -70C. Order Quest # 14868X.

Reference Interval:
Negative

Synonyms:

- PCR

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 1 week

Reported:
Test set up Monday and Wednesday. Turnaround time: 8-10 days.

Additional Information:
Primarily used to confirm clonality in suspected B-cell lymphoma. Note clonal rearrangements of the Ig heavy chain gene is strongly supportive of a B-cell lineage but may be seen in rare T-cell lymphoma. This test was developed and its performance characteristics determined by Quest Diagnostics-Nichols Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration.

CPT Codes:
83890-90, 83898-90 x3, 83909-90 x3, 83912-90

IgA, serum

IGA

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift)

Methodology:
Turbidimetry

Reported:
1-3 days

Additional Information:
Reference:
Lockitch G., Halstead AC, Quiglesy G, MacCallum C. Age and Sex Specific Pediatric Reference Intervals: Study Design Methods Illustrated by Measurement of Serum Proteins with Behring LN Nephelometer. Clin Chem 1988; 34:1618-1621.

Synonyms:

- Alpha chain

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Refrigerated 7 days; Frozen for longer stability

Storage/Transport Temperature:
Refrigerated

Unacceptable Conditions:
Lipemic and grossly hemolyzed samples

PROCESSING

Test Code:
IGA

Performing Lab:
Immunology

Specimen Preparation:
Refrigerated

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Lipemic and grossly hemolyzed samples

Stability (from collection to initiation):
Refrigerated 7 days; Frozen for longer stability

Storage/Transport Temperature:
Refrigerated

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:

Age	mg/dL
<1 years	0-83
1-3 years	20-100
4-6 years	27-195
7-9 years	34-305
10-11 years	53-204
12-13 years	58-358
14-15 years	47-249
16-19 years	61-348
>19 years	85-499

Additional Information:
Reference:
Lockitch G., Halstead AC, Quiglesy G, MacCallum C. Age and Sex Specific Pediatric Reference Intervals: Study Design Methods Illustrated by Measurement of Serum Proteins with Behring LN Nephelometer. Clin Chem 1988; 34:1618-1621.

ADMINISTRATIVE

CPT Codes:
82784

LOINC Codes:
2458-8

COMPLETE VIEW

Available Stat:
No

Test Code:
IGA

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift)

Methodology:
Turbidimetry

Collect:
Gold top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Lipemic and grossly hemolyzed samples

Specimen Preparation:
Refrigerated

Units:
mg/dL

Reference Interval:

Age	mg/dL
<1 years	0-83
1-3 years	20-100
4-6 years	27-195
7-9 years	34-305
10-11 years	53-204
12-13 years	58-358
14-15 years	47-249
16-19 years	61-348
>19 years	85-499

Synonyms:

- Alpha chain

Storage/Transport Temperature:
Refrigerated

Stability (from collection to initiation):
Refrigerated 7 days; Frozen for longer stability

Reported:
1-3 days

Additional Information:
Reference:
Lockitch G., Halstead AC, Quiglesy G, MacCallum C. Age and Sex Specific Pediatric Reference Intervals: Study Design Methods Illustrated by Measurement of Serum Proteins with Behring LN Nephelometer. Clin Chem 1988; 34:1618-1621.

CPT Codes:
82784

LOINC Codes:
2458-8

IgD, serum

IGD

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Nephelometry

Reported:
Set of 2x per week, Turnaround time 5-7 days.

Additional Information:
IgD molecular weight 185 kD is one of the 5 classes of human immunoglobulins. IgD accounts for less than 1% of the total plasma immunoglobulins. Very high serum IgD concenrations are found in the multiple myeloma patients. Raised levels are also found in the hyperimmunoglobulinemia IgD syndrome (HIDS).

Synonyms:

- Immunoglobulin D

COLLECTION

Sample Type:
Serum

Collect:
Red top, Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 7 days, frozen 3 weeks.

PROCESSING

Test Code:
IGD

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze serum and send frozen. Order Quest test #541X, if B/T patients, order LabCorp test #002162.

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 7 days, frozen 3 weeks.

RESULT INTERPRETATION

Units:
mg/L

Reference Interval:
< 179 mg/L

Additional Information:
IgD molecular weight 185 kD is one of the 5 classes of human immunoglobulins. IgD accounts for less than 1% of the total plasma immunoglobulins. Very high serum IgD concenrations are found in the multiple myeloma patients. Raised levels are also found in the hyperimmunoglobulinemia IgD syndrome (HIDS).

ADMINISTRATIVE

CPT Codes:
82784-90

COMPLETE VIEW

Available Stat:
No

Test Code:
IGD

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Nephelometry

Collect:
Red top, Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Specimen Preparation:
Freeze serum and send frozen. Order Quest test #541X, if B/T patients, order LabCorp test #002162.

Units:
mg/L

Reference Interval:
< 179 mg/L

Synonyms:

- Immunoglobulin D

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 7 days, frozen 3 weeks.

Reported:
Set of 2x per week, Turnaround time 5-7 days.

Additional Information:
IgD molecular weight 185 kD is one of the 5 classes of human immunoglobulins. IgD accounts for less than 1% of the total plasma immunoglobulins. Very high serum IgD concenrations are found in the multiple myeloma patients. Raised levels are also found in the hyperimmunoglobulinemia IgD syndrome (HIDS).

CPT Codes:
82784-90

IgE, serum, total

IGE

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Tuesday (day shift)

Methodology:
Rate nephelometry

Reported:
1-8 days

Additional Information:
Young children without allergic symptoms can be expected to have values which are 10-20% of adult levels. Children with high IgE levels have an increased incidence of symptoms consistent with atopic allergy.

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Lipemic samples.

PROCESSING

Test Code:
IGE

Performing Lab:
Immunology

Specimen Preparation:
Freeze at -20C

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Lipemic samples.

RESULT INTERPRETATION

Units:
IU/mL

Reference Interval:

Age	IU/mL
0-12 months	0-24 IU/mL
1-3 years	2-149 IU/mL
4-10 years	8-279 IU/mL
11-15 years	5-295 IU/mL
>=16 years	< 165 IU/mL

Note:
Pediatric reference ranges have not been validated by the UCSF Clinical Laboratories.

Pediatric reference ranges are from : Soldin, SJ, et al. 1995. Pediatric Reference Ranges on the Abbott IMx for FSH, LH, Prolactin, TSH, T4, T3, free T4, free T3, T-Uptake, IgE, and Ferritin. Clinical Biochemistry, Vol. 28, No. 6, pp. 603-606

Additional Information:
Young children without allergic symptoms can be expected to have values which are 10-20% of adult levels. Children with high IgE levels have an increased incidence of symptoms consistent with atopic allergy.

ADMINISTRATIVE

CPT Codes:
82785

LOINC Codes:
19113-0

COMPLETE VIEW

Available Stat:
No

Test Code:
IGE

Performing Lab:
Immunology

Performed:
Tuesday (day shift)

Methodology:
Rate nephelometry

Collect:
Gold top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Lipemic samples.

Specimen Preparation:
Freeze at -20C

Units:
IU/mL

Reference Interval:

Age	IU/mL
0-12 months	0-24 IU/mL
1-3 years	2-149 IU/mL
4-10 years	8-279 IU/mL
11-15 years	5-295 IU/mL
>=16 years	< 165 IU/mL

Note:
Pediatric reference ranges have not been validated by the UCSF Clinical Laboratories.

Pediatric reference ranges are from : Soldin, SJ, et al. 1995. Pediatric Reference Ranges on the Abbott IMx for FSH, LH, Prolactin, TSH, T4, T3, free T4, free T3, T-Uptake, IgE, and Ferritin. Clinical Biochemistry, Vol. 28, No. 6, pp. 603-606

Reported:
1-8 days

Additional Information:
Young children without allergic symptoms can be expected to have values which are 10-20% of adult levels. Children with high IgE levels have an increased incidence of symptoms consistent with atopic allergy.

CPT Codes:
82785

LOINC Codes:
19113-0

IgE, Specific

IGES

ORDERING

Available Stat:
No

Performing Lab:
ARUP

Performed:
Mon-Fri

Methodology:
Quantitative ImmunoCAP Fluorescent Enzyme Immunoassay

Reported:
2-3 days

Additional Information:
It is generally believed that reactivity of Class 2 or below is not an indication for immunotherapy.

A NEGATIVE RESULT CAN OCCUR IN A SENSITIZED INDIVIDUAL WHO HAS NOT BEEN EXPOSED TO A PARTICULAR ANTIGEN FOR A PROLONGED PERIOD OF TIME, AND MAY ALSO OCCUR IN AN INDIVIDUAL WHO HAS VERY RECENTLY SUFFERED A SEVERE ALLERGIC REACTION.

Due to the rise and fall of circulating antibodies to venoms and to penicillin G or V, specimens should be collected no sooner than 2-3 weeks and no later than 6 months after an insect sting or a penicillin exposure.

List of Available Allergens

Tests must be ordered individually rather than in (more expensive) panels. See ARUP website for specific allergens available.

Medicare/MediCal will not reimburse testing for specific IgE in a patient who has not previously demonstrated an elevation of total IgE.

Allergen results of 0.10-0.34 kU/L are intended for specialist use as the clinical relevance is undetermined. Even though increasing ranges are reflective of increasing concentrations of allergen-specific IgE, these concentrations may not correlate with the degree of clinical response or skin testing results when challenged with a specific allergen. The correlation of allergy laboratory results with clinical history and in vivoreactivity to specific allergens is essential. A negative test may not rule out clinical allergy or even anaphylaxis.

Synonyms:

- Allergy
- Allergen

COLLECTION

Sample Type:
Serum

Collect:
Gold or red top

Amount to Collect:
0.5 mL blood for first allergen plus 0.2 mL for each additional allergen ordered

Preferred Volume:
0.25 mL serum for first allergen plus 0.1 mL for each additional allergen ordered

Minimum Volume:
0.25 mL serum for first allergen plus 0.04 mL for each additional allergen ordered

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year

Rejection Criteria:
Hemolyzed, icteric or lipemic specimens.

PROCESSING

Test Code:
IGES

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:

Refrigerate serum.

Mark the appropriate ARUP test code from the test listing on the reference lab request slip, and order the proper Charge Group of the test in the laboratory computer.

Charge group 1 IGES1
Charge group 2 IGES2
Charge group 3 IGES3
Charge group 4 IGES4
Charge group 5 IGES5

Requests for "Egg Components" should be ordered as: Egg, White; Egg, Whole; Ovomucoid; Ovalbumin

Requests for "Milk Components" should be ordered as: Milk (Cow); Beta-lactoglobulin; Casein; Alpha-lactalbumin

Requests for "Peanut Components" are not covered by this test.

See 'Additional Information' section for list of available antigens.

Preferred Volume:
0.25 mL serum for first allergen plus 0.1 mL for each additional allergen ordered

Minimum Volume:
0.25 mL serum for first allergen plus 0.04 mL for each additional allergen ordered

Rejection Criteria:
Hemolyzed, icteric or lipemic specimens.

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year

RESULT INTERPRETATION

Units:
kU/L

Reference Interval:
< 0.10 kU/L

Additional Information:
It is generally believed that reactivity of Class 2 or below is not an indication for immunotherapy.

A NEGATIVE RESULT CAN OCCUR IN A SENSITIZED INDIVIDUAL WHO HAS NOT BEEN EXPOSED TO A PARTICULAR ANTIGEN FOR A PROLONGED PERIOD OF TIME, AND MAY ALSO OCCUR IN AN INDIVIDUAL WHO HAS VERY RECENTLY SUFFERED A SEVERE ALLERGIC REACTION.

Due to the rise and fall of circulating antibodies to venoms and to penicillin G or V, specimens should be collected no sooner than 2-3 weeks and no later than 6 months after an insect sting or a penicillin exposure.

List of Available Allergens

Tests must be ordered individually rather than in (more expensive) panels. See ARUP website for specific allergens available.

Medicare/MediCal will not reimburse testing for specific IgE in a patient who has not previously demonstrated an elevation of total IgE.

Allergen results of 0.10-0.34 kU/L are intended for specialist use as the clinical relevance is undetermined. Even though increasing ranges are reflective of increasing concentrations of allergen-specific IgE, these concentrations may not correlate with the degree of clinical response or skin testing results when challenged with a specific allergen. The correlation of allergy laboratory results with clinical history and in vivoreactivity to specific allergens is essential. A negative test may not rule out clinical allergy or even anaphylaxis.

ADMINISTRATIVE

CPT Codes:
86003

LOINC Codes:
Varies

COMPLETE VIEW

Available Stat:
No

Test Code:
IGES

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Mon-Fri

Methodology:
Quantitative ImmunoCAP Fluorescent Enzyme Immunoassay

Collect:
Gold or red top

Amount to Collect:
0.5 mL blood for first allergen plus 0.2 mL for each additional allergen ordered

Sample Type:
Serum

Preferred Volume:
0.25 mL serum for first allergen plus 0.1 mL for each additional allergen ordered

Minimum Volume:
0.25 mL serum for first allergen plus 0.04 mL for each additional allergen ordered

Rejection Criteria:
Hemolyzed, icteric or lipemic specimens.

Specimen Preparation:

Refrigerate serum.

Mark the appropriate ARUP test code from the test listing on the reference lab request slip, and order the proper Charge Group of the test in the laboratory computer.

Charge group 1 IGES1
Charge group 2 IGES2
Charge group 3 IGES3
Charge group 4 IGES4
Charge group 5 IGES5

Requests for "Egg Components" should be ordered as: Egg, White; Egg, Whole; Ovomucoid; Ovalbumin

Requests for "Milk Components" should be ordered as: Milk (Cow); Beta-lactoglobulin; Casein; Alpha-lactalbumin

Requests for "Peanut Components" are not covered by this test.

See 'Additional Information' section for list of available antigens.

Units:
kU/L

Reference Interval:
< 0.10 kU/L

Synonyms:

- Allergy
- Allergen

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year

Reported:
2-3 days

Additional Information:

It is generally believed that reactivity of Class 2 or below is not an indication for immunotherapy.

A NEGATIVE RESULT CAN OCCUR IN A SENSITIZED INDIVIDUAL WHO HAS NOT BEEN EXPOSED TO A PARTICULAR ANTIGEN FOR A PROLONGED PERIOD OF TIME, AND MAY ALSO OCCUR IN AN INDIVIDUAL WHO HAS VERY RECENTLY SUFFERED A SEVERE ALLERGIC REACTION.

Due to the rise and fall of circulating antibodies to venoms and to penicillin G or V, specimens should be collected no sooner than 2-3 weeks and no later than 6 months after an insect sting or a penicillin exposure.

List of Available Allergens

Tests must be ordered individually rather than in (more expensive) panels. See ARUP website for specific allergens available.

Medicare/MediCal will not reimburse testing for specific IgE in a patient who has not previously demonstrated an elevation of total IgE.

Allergen results of 0.10-0.34 kU/L are intended for specialist use as the clinical relevance is undetermined. Even though increasing ranges are reflective of increasing concentrations of allergen-specific IgE, these concentrations may not correlate with the degree of clinical response or skin testing results when challenged with a specific allergen. The correlation of allergy laboratory results with clinical history and in vivoreactivity to specific allergens is essential. A negative test may not rule out clinical allergy or even anaphylaxis.

CPT Codes:

86003

LOINC Codes:

Varies

IGF-1, Adult

AIGF1B

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
LC/MS

Reported:
3-5 days

Additional Information:
Insulin-like growth factor I (IGF-I, or somatomedin C), a protein involved in stimulating somatic growth, is regulated principally by growth hormone (GH) and nutritional intake. IGF-I is transported in serum by several proteins; this helps maintain relatively high IGF-I plasma levels and minimizes fluctuations in serum IGF-I concentrations.

Measuring IGF-I is useful in several growth-related disorders. Dwarfism caused by deficiency of growth hormone (hypopituitarism) results in decreased serum levels of IGF-I, while acromegaly (growth hormone excess) results in elevated levels of IGF-I. IGF-I measurements are also helpful in assessing nutritional status; levels are reduced in under-nutrition and restored with a proper diet.

Synonyms:

- IGF1
- Somatomedin C

COLLECTION

Sample Type:
Serum

Collect:
Red top or Gold top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 5 days, frozen 1 week, frozen at -70C 3 weeks

PROCESSING

Test Code:
AIGF1

Test Group:
IGF1

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze aliquot and send to China Basin for sendout

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 5 days, frozen 1 week, frozen at -70C 3 weeks

RESULT INTERPRETATION

Units:
ng/mL

Reference Interval:

18-19.9 years	108-548
20-24.9 years	83-456
25-29.9 years	63-373
30-39.9 years	53-331
40-49.9 years	52-328
50-59.9 years	50-317
60-69.9 years	41-279
70-79.9 years	34-245
>80 years	34-246

Additional Information:
Insulin-like growth factor I (IGF-I, or somatomedin C), a protein involved in stimulating somatic growth, is regulated principally by growth hormone (GH) and nutritional intake. IGF-I is transported in serum by several proteins; this helps maintain relatively high IGF-I plasma levels and minimizes fluctuations in serum IGF-I concentrations.

Measuring IGF-I is useful in several growth-related disorders. Dwarfism caused by deficiency of growth hormone (hypopituitarism) results in decreased serum levels of IGF-I, while acromegaly (growth hormone excess) results in elevated levels of IGF-I. IGF-I measurements are also helpful in assessing nutritional status; levels are reduced in under-nutrition and restored with a proper diet.

ADMINISTRATIVE

CPT Codes:
84305-90

COMPLETE VIEW

Available Stat:
No

Test Code:
AIGF1

Test Group:
IGF1

Performing Lab:
Quest

Sendout:
Yes

Methodology:
LC/MS

Collect:
Red top or Gold top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Specimen Preparation:
Freeze aliquot and send to China Basin for sendout

Units:
ng/mL

Reference Interval:

18-19.9 years	108-548
20-24.9 years	83-456
25-29.9 years	63-373
30-39.9 years	53-331
40-49.9 years	52-328
50-59.9 years	50-317
60-69.9 years	41-279
70-79.9 years	34-245
>80 years	34-246

Synonyms:

- IGF1
- Somatomedin C

Stability (from collection to initiation):

Room temperature 2 days, refrigerated 5 days, frozen 1 week, frozen at -70C 3 weeks

Reported:

3-5 days

Additional Information:

Insulin-like growth factor I (IGF-I, or somatomedin C), a protein involved in stimulating somatic growth, is regulated principally by growth hormone (GH) and nutritional intake. IGF-I is transported in serum by several proteins; this helps maintain relatively high IGF-I plasma levels and minimizes fluctuations in serum IGF-I concentrations.

Measuring IGF-I is useful in several growth-related disorders. Dwarfism caused by deficiency of growth hormone (hypopituitarism) results in decreased serum levels of IGF-I, while acromegaly (growth hormone excess) results in elevated levels of IGF-I. IGF-I measurements are also helpful in assessing nutritional status; levels are reduced in under-nutrition and restored with a proper diet.

CPT Codes:

84305-90

IGF-I, Pediatric

PIGF1

ORDERING

Available Stat:
No

Performing Lab:
Esoterix

Methodology:
Blocking RIA after acid:alcohol extraction

Reported:
Test performed Monday-Saturday. Turnaround time: 3-5 days.

Additional Information:
This send-out assay is primarily reserved for testing in pediatric patients with suspected or complex endocrine abnormalities. For adult patients see "IGF-I" (test code IGF1). It requires approval if ordered in patients over the age of 20

Synonyms:

- Somatomedin C
- IGF-1 ultrasensitive

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.1 mL serum

PROCESSING

Test Code:
PIGF1

Test Group:
IGF1

Sendout:
Yes

Performing Lab:
Esoterix

Specimen Preparation:
Aliquot serum and freeze. Ship frozen to China Basin

Preferred Volume:
1 mL serum

Minimum Volume:
0.1 mL serum

RESULT INTERPRETATION

Units:
ng/mL

Reference Interval:
Newborns and Infants

Age	Term (ng/mL)	Preterm (ng/mL)
Birth	15-109	21-93
1 day-2 months	15-109	23-163
3-4 months	7-124	23-171
5-6 months	7-93	15-132

7-12 months	15-101	15-179

Children

Age	Male Range (ng/mL)	Female Range (ng/mL)
1-2 years	30-122	56-144

Male Pubertal Ranges by Tanner Stage

Age	Tanner 1 (ng/mL)	Tanner 2 & 3 (ng/mL)	Tanner 4 & 5 (ng/mL)
3 years	20-141		
4 years	25-157		
5 years	30-174		
6 years	37-192		
7 years	44-211		
8 years	52-231	39-264	
9 years	61-252	52-304	
10 years	71-275	67-347	
11 years	82-299	86-393	277-673
12 years	93-324	106-443	265-652
13 years	106-350	130-497	241-612
14 years	120-377	156-554	220-574
15 years	127-391	185-616	199-537
16 years		201-648	180-501
17 years			161-467
18 years			144-434

Female Pubertal ranges by Tanner Stage

Age	Tanner 1 ng/mL)	Tanner 2 (ng/mL)	Tanner 3 (ng/mL)	Tanner 4 & 5 (ng/mL)
3 years	26-162			
4 years	32-179			
5 years	39-198			
6 years	47-217			
7 years	55-238			
8 years	64-259	89-369		
9 years	74-282	96-399	192-568	
10 years	85-306	104-431	192-568	279-664
11 years	97-332	112-466	192-568	268-646
12 years	110-358	121-504	192-568	248-612
13 years		131-545	192-568	229-579
14 years		136-566	192-568	211-547
15 years			192-568	194-516
16 years				177-487
17 years				162-458
18 years				147-430

Adults

Age	Male (ng/mL)	Female (ng/mL)
19-20 years	281-510	217-475
21-30 years	155-432	87-368
31-40 years	132-333	106-368
41-50 years	121-237	118-298
51-60 years	68-245	53-287

61-70 years	60-220	75-263
71-80 years	36-215	54-205

Additional Information:
This send-out assay is primarily reserved for testing in pediatric patients with suspected or complex endocrine abnormalities. For adult patients see "IGF-I" (test code IGF1). It requires approval if ordered in patients over the age of 20

ADMINISTRATIVE

CPT Codes:
84305-90

LOINC Codes:
2484-4

COMPLETE VIEW

Available Stat:
No

Test Code:
PIGF1

Test Group:
IGF1

Performing Lab:
Esoterix

Sendout:
Yes

Methodology:
Blocking RIA after acid:alcohol extraction

Collect:
Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.1 mL serum

Specimen Preparation:
Aliquot serum and freeze. Ship frozen to China Basin

Units:
ng/mL

Reference Interval:
Newborns and Infants

Age	Term (ng/mL)	Preterm (ng/mL)
Birth	15-109	21-93
1 day-2 months	15-109	23-163
3-4 months	7-124	23-171
5-6 months	7-93	15-132
7-12 months	15-101	15-179

Children

Age	Male Range (ng/mL)	Female Range (ng/mL)
1-2 years	30-122	56-144

Male Pubertal Ranges by Tanner Stage

Age	Tanner 1 (ng/mL)	Tanner 2 & 3 (ng/mL)	Tanner 4 & 5 (ng/mL)
3 years	20-141		
4 years	25-157		

5 years	30-174		
6 years	37-192		
7 years	44-211		
8 years	52-231	39-264	
9 years	61-252	52-304	
10 years	71-275	67-347	
11 years	82-299	86-393	277-673
12 years	93-324	106-443	265-652
13 years	106-350	130-497	241-612
14 years	120-377	156-554	220-574
15 years	127-391	185-616	199-537
16 years		201-648	180-501
17 years			161-467
18 years			144-434

Female Pubertal ranges by Tanner Stage

Age	Tanner 1 ng/mL)	Tanner 2 (ng/mL)	Tanner 3 (ng/mL)	Tanner 4 & 5 (ng/mL)
3 years	26-162			
4 years	32-179			
5 years	39-198			
6 years	47-217			
7 years	55-238			
8 years	64-259	89-369		
9 years	74-282	96-399	192-568	
10 years	85-306	104-431	192-568	279-664
11 years	97-332	112-466	192-568	268-646
12 years	110-358	121-504	192-568	248-612
13 years		131-545	192-568	229-579
14 years		136-566	192-568	211-547
15 years			192-568	194-516
16 years				177-487
17 years				162-458
18 years				147-430

Adults

Age	Male (ng/mL)	Female (ng/mL)
19-20 years	281-510	217-475
21-30 years	155-432	87-368
31-40 years	132-333	106-368
41-50 years	121-237	118-298
51-60 years	68-245	53-287
61-70 years	60-220	75-263
71-80 years	36-215	54-205

Synonyms:

- Somatomedin C
- IGF-1 ultrasensitive

Reported:

Test performed Monday-Saturday. Turnaround time: 3-5 days.

Additional Information:

This send-out assay is primarily reserved for testing in pediatric patients with suspected or complex endocrine abnormalities. For adult patients see "IGF-I" (test code IGF1). It requires approval if ordered in patients over the age of 20

CPT Codes:
84305-90

LOINC Codes:
2484-4

IgG Index, CSF

IGGI, IGGIS

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Thursday (day shift)

Methodology:
Rate nephelometry

Reported:
1-8 days

Additional Information:

Index = (CSF IgG/Albumin)/ (serum IgG/Albumin)

Reference range data applies only to lumbar CSF.

Contamination of CSF with blood due to a traumatic LP can significantly elevate the IgG index.

CSF IgG, albumin and index reference ranges from: Tietz Textbook of Clinical Chemistry; 3rd ed., 1999, and Fishman, R.A., Cerebrospinal Fluid in Diseases of the Nervous System; 2nd ed., 1992. See also Oligoclonal bands.

Immunoelectrophoresis is not offered on CSF.

the CSF IgG Synthesis Rate does not provide any additional information and is less sensitive than the CSF IgG Index. As such the Clinical Laboratories does not calculate or report the CSF IgG Synthesis Rate.

References:

McMillan SA, et al. 1996. Evaluation of formulae for CSF IgG synthesis using data obtained from two methods: importance of receiver operator characteristic curve analysis. J. Clin. Pathol. 49:24-28.
McMillan SA, et al. 2000. Evaluation of the clinical utility of cerebrospinal fluid (CSF) indices of inflammatory markers in multiple sclerosis. Acta Neurol. Scand. 101:239-243.

Synonyms:

- CSF IgG Synthesis Rate

COLLECTION

Sample Type:
CSF **AND** Serum

Collect:
CSF tube or sterile collection tube and Gold top

Amount to Collect:
1 mL CSF **AND** 1 mL blood

Preferred Volume:
1 mL CSF **AND** 0.5 mL serum

Minimum Volume:
0.5 ML CSF **AND** 0.5 mL serum

Remarks:
Both CSF and serum samples required, preferably collected at the same time (not more than 72 hours). CSF specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Unacceptable Conditions:
Lipemic samples

PROCESSING

Test Code:
IGGI and IGGIS

Test Group:
IgG

Performing Lab:
Immunology

Specimen Preparation:
Order IGGI for CSF and IGGIS for serum. Freeze samples at -20oC

Preferred Volume:
1 mL CSF **AND** 0.5 mL serum

Minimum Volume:
0.5 ML CSF **AND** 0.5 mL serum

Unacceptable Conditions:
Lipemic samples

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:

CSF IgG	0.3-4.3 mg/dL
CSF Albumin	5.4-31.8 mg/dL
Serum IgG (> 10 year old)	672-1760 mg/dL
Serum Albumin (> 18 year old)	3600-4800 mg/dL
IgG Index, CSF	0.3-0.6

Additional Information:

Index = (CSF IgG/Albumin)/ (serum IgG/Albumin)

Reference range data applies only to lumbar CSF.

Contamination of CSF with blood due to a traumatic LP can significantly elevate the IgG index.

CSF IgG, albumin and index reference ranges from: Tietz Textbook of Clinical Chemistry; 3rd ed., 1999, and Fishman, R.A., Cerebrospinal Fluid in Diseases of the Nervous System; 2nd ed., 1992. See also Oligoclonal bands.

Immunoelectrophoresis is not offered on CSF.

the CSF IgG Synthesis Rate does not provide any additional information and is less sensitive than the CSF IgG Index. As such the Clinical Laboratories does not calculate or report the CSF IgG Synthesis Rate.

References:
McMillan SA, et al. 1996. Evaluation of formulae for CSF IgG synthesis using data obtained from two methods: importance of receiver operator characteristic curve analysis. J. Clin. Pathol. 49:24-28.
McMillan SA, et al. 2000. Evaluation of the clinical utility of cerebrospinal fluid (CSF) indices of inflammatory markers in multiple sclerosis. Acta Neurol. Scand. 101:239-243.

ADMINISTRATIVE

CPT Codes:
82784; 82040; 83883; 82784

COMPLETE VIEW

Available Stat:
No

Test Code:
IGGI and IGGIS

Test Group:
IgG

Performing Lab:
Immunology

Performed:
Thursday (day shift)

Methodology:
Rate nephelometry

Remarks:
Both CSF and serum samples required, preferably collected at the same time (not more than 72 hours). CSF specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Collect:
CSF tube or sterile collection tube and Gold top

Amount to Collect:
1 mL CSF **AND** 1 mL blood

Sample Type:
CSF **AND** Serum

Preferred Volume:
1 mL CSF **AND** 0.5 mL serum

Minimum Volume:
0.5 ML CSF **AND** 0.5 mL serum

Unacceptable Conditions:
Lipemic samples

Specimen Preparation:
Order IGGI for CSF and IGGIS for serum. Freeze samples at -20oC

Units:
mg/dL

Reference Interval:

CSF IgG	0.3-4.3 mg/dL
CSF Albumin	5.4-31.8 mg/dL
Serum IgG (> 10 year old)	672-1760 mg/dL
Serum Albumin (> 18 year old)	3600-4800 mg/dL
IgG Index, CSF	0.3-0.6

Synonyms:

- CSF IgG Synthesis Rate

Reported:
1-8 days

Additional Information:

Index = (CSF IgG/Albumin)/ (serum IgG/Albumin)

Reference range data applies only to lumbar CSF.

Contamination of CSF with blood due to a traumatic LP can significantly elevate the IgG index.

CSF IgG, albumin and index reference ranges from: Tietz Textbook of Clinical Chemistry; 3rd ed., 1999, and Fishman, R.A., Cerebrospinal Fluid in Diseases of the Nervous System; 2nd ed., 1992. See also Oligoclonal bands.

Immunoelectrophoresis is not offered on CSF.

the CSF IgG Synthesis Rate does not provide any additional information and is less sensitive than the CSF IgG Index. As such the Clinical Laboratories does not calculate or report the CSF IgG Synthesis Rate.

References:
McMillan SA, et al. 1996. Evaluation of formulae for CSF IgG synthesis using data obtained from two methods: importance of receiver operator characteristic curve analysis. J. Clin. Pathol. 49:24-28.
McMillan SA, et al. 2000. Evaluation of the clinical utility of cerebrospinal fluid (CSF) indices of inflammatory markers in multiple sclerosis. Acta Neurol. Scand. 101:239-243.

CPT Codes:
82784; 82040; 83883; 82784

IgG, serum

IGG

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift)

Methodology:
Turbidimetry

Reported:
1-3 days

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Refrigerated 8 days; Frozen for longer stability

Storage/Transport Temperature:
Refrigerated

Unacceptable Conditions:
Lipemic and grossly hemolyzed samples

PROCESSING

Test Code:
IGG

Test Group:
IgG

Performing Lab:
Immunology

Specimen Preparation:
Refrigerated

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Lipemic and grossly hemolyzed samples

Stability (from collection to initiation):
Refrigerated 8 days; Frozen for longer stability

Storage/Transport Temperature:
Refrigerated

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:

Years	mg/dL
0-2	327-1270
2-4	468-1250
4-6	532-1340
6-8	454-1360
8-10	568-1360
10-12	568-1490
12-14	664-1490
14-18	550-1440
>18	610-1616

ADMINISTRATIVE

CPT Codes:
82784

LOINC Codes:
2465-3

COMPLETE VIEW

Available Stat:
No

Test Code:
IGG

Test Group:
IgG

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift)

Methodology:
Turbidimetry

Collect:
Gold top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Lipemic and grossly hemolyzed samples

Specimen Preparation:
Refrigerated

Units:
mg/dL

Reference Interval:

Years	mg/dL
0-2	327-1270
2-4	468-1250
4-6	532-1340
6-8	454-1360
8-10	568-1360
10-12	568-1490
12-14	664-1490
14-18	550-1440
>18	610-1616

Storage/Transport Temperature:
Refrigerated

Stability (from collection to initiation):
Refrigerated 8 days; Frozen for longer stability

Reported:
1-3 days

CPT Codes:
82784

LOINC Codes:
2465-3

IGL Break-apart Rearrangement FISH

IGL22, BIGL22

ORDERING

Available Stat:
No

Performing Lab:
Cytogenetics

Performed:
Monday - Friday, 9 am to 5 pm

Methodology:
FISH

Reported:
7-14 days

Synonyms:

- IGL22
- BIGL22
- 22q11 break-apart FISH

COLLECTION

Sample Type:
Blood and bone marrow

Collect:
Blood and bone marrow aspirate: Dark green top
Bone marrow core: Sterile container

Amount to Collect:
See Preferred Volume

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Room temperature

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen

PROCESSING

Test Code:
Blood: BIGL22
Bone marrow: IGL22

Performing Lab:
Cytogenetics

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Room temperature

ADMINISTRATIVE

CPT Codes:
88271x2, 88275x1

COMPLETE VIEW

Available Stat:
No

Test Code:
Blood: BIGL22
Bone marrow: IGL22

Performing Lab:
Cytogenetics

Performed:
Monday - Friday, 9 am to 5 pm

Methodology:
FISH

Collect:
Blood and bone marrow aspirate: Dark green top
Bone marrow core: Sterile container

Amount to Collect:
See Preferred Volume

Sample Type:
Blood and bone marrow

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen

Synonyms:

- IGL22
- BIGL22
- 22q11 break-apart FISH

Storage/Transport Temperature:
Room temperature

Stability (from collection to initiation):
2 days

Reported:
7-14 days

CPT Codes:
88271x2, 88275x1

IgM, serum

IGM

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift)

Methodology:
Turbidimetry

Reported:
1-3 days

Additional Information:
Garcia-Prat M, Vila-Pijoan G, Martos Gutierrez S, et al. Age-specific pediatric reference ranges for immunoglobulins and complement proteins on the Optilite™ automated turbidimetric analyzer. J Clin Lab Anal. 2018;32:e22420. https://doi.org/10.1002/jcla.22420.

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Refrigerated 14 days; Frozen for longer stability

Storage/Transport Temperature:
Refrigerated

Unacceptable Conditions:
Lipemic and grossly hemolyzed samples

PROCESSING

Test Code:
IGM

Performing Lab:
Immunology

Specimen Preparation:
Refrigerated

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Lipemic and grossly hemolyzed samples

Stability (from collection to initiation):
Refrigerated 14 days; Frozen for longer stability

Storage/Transport Temperature:
Refrigerated

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:

Years	mg/dL
0-2	21-215
3-4	26-155
5-9	26-188
10-14	47-252
15-18	26-232
>18	35-242

Additional Information:

Garcia-Prat M, Vila-Pijoan G, Martos Gutierrez S, et al. Age-specific pediatric reference ranges for immunoglobulins and complement proteins on the Optilite™ automated turbidimetric analyzer. J Clin Lab Anal. 2018;32:e22420. https://doi.org/10.1002/jcla.22420.

ADMINISTRATIVE

CPT Codes:
82784

LOINC Codes:
2472-9

COMPLETE VIEW

Available Stat:
No

Test Code:
IGM

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift)

Methodology:
Turbidimetry

Collect:
Gold top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Lipemic and grossly hemolyzed samples

Specimen Preparation:
Refrigerated

Units:
mg/dL

Reference Interval:

Years	mg/dL
0-2	21-215
3-4	26-155
5-9	26-188
10-14	47-252
15-18	26-232
>18	35-242

Storage/Transport Temperature:
Refrigerated

Stability (from collection to initiation):
Refrigerated 14 days; Frozen for longer stability

Reported:

1-3 days

Additional Information:

Garcia-Prat M, Vila-Pijoan G, Martos Gutierrez S, et al. Age-specific pediatric reference ranges for immunoglobulins and complement proteins on the Optilite™ automated turbidimetric analyzer. J Clin Lab Anal. 2018;32:e22420. https://doi.org/10.1002/jcla.22420.

CPT Codes:

82784

LOINC Codes:

2472-9

IL-18

IL18

ORDERING

Available Stat:
No

Performing Lab:
Machaon

Methodology:
ELISA

Reported:
< 1 week

Synonyms:

- Interleukin 18

COLLECTION

Sample Type:
Plasma

Collect:
EDTA Lavender-top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Stability (from collection to initiation):
Frozen (-20C): 2 weeks
Frozen (-80C): 6 months

Storage/Transport Temperature:
Frozen

Unacceptable Conditions:
Grossly hemolyzed samples are not suitable for use in this assay. The extent of interference from lipemia and icterus is unknown.

PROCESSING

Test Code:
IL18

Sendout:
Yes

Performing Lab:
Machaon

Specimen Preparation:
Aliquot and freeze plasma.

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Grossly hemolyzed samples are not suitable for use in this assay. The extent of interference from lipemia and icterus is unknown.

Stability (from collection to initiation):
Frozen (-20C): 2 weeks
Frozen (-80C): 6 months

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Units:
pg/mL

Reference Interval:
82-344pg/mL

Interpretive Data:
IL-18 is a marker of monocyte-related inflammation and is commonly used to characterize hyperinflammation syndromes, where elevations are associated with HLH, MAS and other hyperinflammatory syndromes. This test can measure levels of IL-18 up to 100,000pg/mL.

ADMINISTRATIVE

CPT Codes:
83520

LOINC Codes:
33823-6

COMPLETE VIEW

Available Stat:
No

Test Code:
IL18

Performing Lab:
Machaon

Sendout:
Yes

Methodology:
ELISA

Collect:
EDTA Lavender-top

Amount to Collect:
2 mL blood

Sample Type:
Plasma

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Grossly hemolyzed samples are not suitable for use in this assay. The extent of interference from lipemia and icterus is unknown.

Specimen Preparation:
Aliquot and freeze plasma.

Units:
pg/mL

Reference Interval:
82-344pg/mL

Interpretive Data:
IL-18 is a marker of monocyte-related inflammation and is commonly used to characterize hyperinflammation syndromes, where elevations are associated with HLH, MAS and other hyperinflammatory syndromes. This test can measure levels of IL-18 up to 100,000pg/mL.

Synonyms:

- Interleukin 18

Storage/Transport Temperature:
Frozen

Stability (from collection to initiation):
Frozen (-20C): 2 weeks
Frozen (-80C): 6 months

Reported:
< 1 week

CPT Codes:
83520

LOINC Codes:
33823-6

Imipramine

IMIP

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Liquid Chromatography Tandem Mass Spectrometry

Reported:
Test run Monday-Saturday. Turnaround: 2-5 days.

Additional Information:
Imipramine is a tricyclic antidepressant drug used to treat depression. Therapeutic drug monitoring is used to optimize dose and avoid toxicity.

COLLECTION

Sample Type:
Serum

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
6 mL blood

Preferred Volume:
3 mL serum

Minimum Volume:
1.5 mL serum

Unacceptable Conditions:
Collected in Gold top

PROCESSING

Test Code:
IMIP

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Separate serum promptly. Freeze at -20C. Order Quest # 887

Preferred Volume:
3 mL serum

Minimum Volume:
1.5 mL serum

Unacceptable Conditions:
Collected in Gold top

RESULT INTERPRETATION

Units:
µg/L (mcg/L)

Reference Interval:
Therapeutic: 150-250 µg/L for the SUM of active drugs.
Toxic: >= 500 µg/L

Critical Values:
Quest Priority-1: >= 600 µg/L

Additional Information:
Imipramine is a tricyclic antidepressant drug used to treat depression. Therapeutic drug monitoring is used to optimize dose and avoid toxicity.

ADMINISTRATIVE

CPT Codes:
80174-90

LOINC Codes:
3690-5

COMPLETE VIEW

Available Stat:
No

Test Code:
IMIP

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Liquid Chromatography Tandem Mass Spectrometry

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
6 mL blood

Sample Type:
Serum

Preferred Volume:
3 mL serum

Minimum Volume:
1.5 mL serum

Unacceptable Conditions:
Collected in Gold top

Specimen Preparation:
Separate serum promptly. Freeze at -20C. Order Quest # 887

Units:
µg/L (mcg/L)

Reference Interval:
Therapeutic: 150-250 µg/L for the SUM of active drugs.
Toxic: >= 500 µg/L

Critical Values:
Quest Priority-1: >= 600 µg/L

Reported:
Test run Monday-Saturday. Turnaround: 2-5 days.

Additional Information:
Imipramine is a tricyclic antidepressant drug used to treat depression. Therapeutic drug monitoring is used to optimize dose and avoid toxicity.

CPT Codes:
80174-90

LOINC Codes:
3690-5

Immature Platelet Fraction

IPF

ORDERING

Available Stat:
No

Performing Lab:
Parnassus, Mission Bay, and Mount Zion Hematology

Performed:
24 hours per day 7 days per week.

Reported:
4 hours

COLLECTION

Sample Type:
Blood

Collect:
Lavender top

Amount to Collect:
3 mL

Preferred Volume:
3 mL

Minimum Volume:
1 mL (or 250 µL in a Mapp Tube)

Stability (from collection to initiation):
24 Hours at Room Temperature and 48 Hours at Refrigerated Temperature (2-8ºC)

Rejection Criteria:
1. Clotted specimens are not acceptable.
2. IPF % will not be reported if platelet <10 x10e9/L.
3. IPF % will not be reported if platelet clumping is observed.

PROCESSING

Test Code:
IPF

Performing Lab:
Parnassus, Mission Bay, and Mount Zion Hematology

Preferred Volume:
3 mL

Minimum Volume:
1 mL (or 250 µL in a Mapp Tube)

Rejection Criteria:
1. Clotted specimens are not acceptable.
2. IPF % will not be reported if platelet <10 x10e9/L.
3. IPF % will not be reported if platelet clumping is observed.

Stability (from collection to initiation):
24 Hours at Room Temperature and 48 Hours at Refrigerated Temperature (2-8ºC)

RESULT INTERPRETATION

Units:
%

Reference Interval:
1.0% - 7.3%

ADMINISTRATIVE

CPT Codes:
85055

LOINC Codes:
71693-6

COMPLETE VIEW

Available Stat:
No

Test Code:
IPF

Performing Lab:
Parnassus, Mission Bay, and Mount Zion Hematology

Performed:
24 hours per day 7 days per week.

Collect:
Lavender top

Amount to Collect:
3 mL

Sample Type:
Blood

Preferred Volume:
3 mL

Minimum Volume:
1 mL (or 250 µL in a Mapp Tube)

Rejection Criteria:
1. Clotted specimens are not acceptable.
2. IPF % will not be reported if platelet <10 x10e9/L.
3. IPF % will not be reported if platelet clumping is observed.

Units:
%

Reference Interval:
1.0% - 7.3%

Stability (from collection to initiation):
24 Hours at Room Temperature and 48 Hours at Refrigerated Temperature (2-8ºC)

Reported:
4 hours

CPT Codes:
85055

LOINC Codes:
71693-6

Immune Cell Function

ICF

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Luminometer

Reported:
2-3 days

Additional Information:
This measurement of cellular mediated immunity may be valuable in a variety of applications including transplantation, management of infectious diseases (e.g., HIV, HCV), autoimmunity, cancer, as well as vaccine and drug development

Synonyms:

- Immunknow
- Cylex

COLLECTION

Sample Type:
Heparinized whole blood

Collect:
Dark green top

Amount to Collect:
1 mL blood

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Remarks:
Must be collected from 7 am to noon Monday - Thursday. Do NOT collect on Friday, Saturday, Sunday or UCSF observed holidays.

Stability (from collection to initiation):
Room temperature 30 hours

PROCESSING

Test Code:
ICF

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Keep sample at room temperarture. Ship immediately to China Basin

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Stability (from collection to initiation):
Room temperature 30 hours

RESULT INTERPRETATION

Units:
ng/mL ATP

Reference Interval:
<= 225 ng/mL ATP: Low Immune Cell Response
226-524 ng/mL ATP: Moderate Immune Cell Response
>= 525 ng/mL ATP: Strong Immune Cell Response

Additional Information:
This measurement of cellular mediated immunity may be valuable in a variety of applications including transplantation, management of infectious diseases (e.g., HIV, HCV), autoimmunity, cancer, as well as vaccine and drug development

ADMINISTRATIVE

CPT Codes:
86352-90

COMPLETE VIEW

Available Stat:
No

Test Code:
ICF

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Luminometer

Remarks:
Must be collected from 7 am to noon Monday - Thursday. Do NOT collect on Friday, Saturday, Sunday or UCSF observed holidays.

Collect:
Dark green top

Amount to Collect:
1 mL blood

Sample Type:
Heparinized whole blood

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Specimen Preparation:
Keep sample at room temperarture. Ship immediately to China Basin

Units:
ng/mL ATP

Reference Interval:
<= 225 ng/mL ATP: Low Immune Cell Response
226-524 ng/mL ATP: Moderate Immune Cell Response
>= 525 ng/mL ATP: Strong Immune Cell Response

Synonyms:

- Immunknow
- Cylex

Stability (from collection to initiation):
Room temperature 30 hours

Reported:
2-3 days

Additional Information:
This measurement of cellular mediated immunity may be valuable in a variety of applications including transplantation, management of infectious diseases (e.g., HIV, HCV), autoimmunity, cancer, as well as vaccine and drug development

CPT Codes:
86352-90

Immune Complexes

IC

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
ELISA (C1q binding)

Reported:
Test performed Tuesday, Thursday. Turnaround time: 2-6 days.

Synonyms:

- C1q
- Raji cell assay

COLLECTION

Sample Type:
Serum

Collect:
Red top (on ice) (Gold top **NOT** acceptable)

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Remarks:
Deliver IMMEDIATELY to lab. Only serum drawn within 30 minutes or immediately separated, stored and transported at <= 60C (dry ice) is suitable for assay.

Stability (from collection to initiation):
Refrigerated 2 days, frozen at -20C 1 year.

Unacceptable Conditions:
Collected in Gold top. Received at room temperature or > 30 after collection if unseparated from cells

Rejection Criteria:
Thawed serum or plasma received

PROCESSING

Test Code:
IC

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Separate immediately under refrigeration. Freeze at -60C in plastic tube and ship on dry ice. Order Quest # 36735

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Unacceptable Conditions:
Collected in Gold top. Received at room temperature or > 30 after collection if unseparated from cells

Rejection Criteria:
Thawed serum or plasma received

Stability (from collection to initiation):
Refrigerated 2 days, frozen at -20C 1 year.

RESULT INTERPRETATION

Units:
µg Eq/mL (mcg Eq/mL)

Reference Interval:
Negative: <= 25.1 µg Eq/mL (mcg Eq/mL)

ADMINISTRATIVE

CPT Codes:
86332-90

LOINC Codes:
44392-9

COMPLETE VIEW

Available Stat:
No

Test Code:
IC

Performing Lab:
Quest

Sendout:
Yes

Methodology:
ELISA (C1q binding)

Remarks:
Deliver IMMEDIATELY to lab. Only serum drawn within 30 minutes or immediately separated, stored and transported at <= 60C (dry ice) is suitable for assay.

Collect:
Red top (on ice) (Gold top **NOT** acceptable)

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Rejection Criteria:
Thawed serum or plasma received

Unacceptable Conditions:
Collected in Gold top. Received at room temperature or > 30 after collection if unseparated from cells

Specimen Preparation:
Separate immediately under refrigeration. Freeze at -60C in plastic tube and ship on dry ice. Order Quest # 36735

Units:
µg Eq/mL (mcg Eq/mL)

Reference Interval:
Negative: <= 25.1 µg Eq/mL (mcg Eq/mL)

Synonyms:

- C1q
- Raji cell assay

Stability (from collection to initiation):
Refrigerated 2 days, frozen at -20C 1 year.

Reported:
Test performed Tuesday, Thursday. Turnaround time: 2-6 days.

CPT Codes:
86332-90

LOINC Codes:
44392-9

Immunofixation Electrophoresis, 24 hour (or timed) urine

IFEUTM

ORDERING

Available Stat:
No

Performing Lab:
China Basin Chemistry

Performed:
Monday-Friday (day shift)

Methodology:
Immunofixation electrophoresis by Helena SPIFE 4000

Reported:
2-4 days

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Synonyms:

- paraprotein
- IFE
- Bence Jones

COLLECTION

Sample Type:
24 hour (or timed) urine collection

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container

Amount to Collect:
Entire 24 hour (or timed) urine output

Preferred Volume:
Submit entire volume collected to processing. The processing section will preferably aliquot 5 mL for the assay.

Minimum Volume:
1 mL urine

Stability (from collection to initiation):
Refrigerated 1 week.
Frozen (-20°C): 1 month

PROCESSING

Test Code:
IFEUTM

Test Group:
IFE

Performing Lab:
China Basin Chemistry

Specimen Preparation:
Order IFEUTM and AAUV for timed urines.

Preferred Volume:
Submit entire volume collected to processing. The processing section will preferably aliquot 5 mL for the assay.

Minimum Volume:
1 mL urine

Stability (from collection to initiation):
Refrigerated 1 week.
Frozen (-20°C): 1 month

RESULT INTERPRETATION

Reference Interval:
Negative. No paraproteins present.

ADMINISTRATIVE

CPT Codes:
86335

LOINC Codes:
13440-3

COMPLETE VIEW

Available Stat:
No

Test Code:
IFEUTM

Test Group:
IFE

Performing Lab:
China Basin Chemistry

Performed:
Monday-Friday (day shift)

Methodology:
Immunofixation electrophoresis by Helena SPIFE 4000

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container

Amount to Collect:
Entire 24 hour (or timed) urine output

Sample Type:
24 hour (or timed) urine collection

Preferred Volume:
Submit entire volume collected to processing. The processing section will preferably aliquot 5 mL for the assay.

Minimum Volume:
1 mL urine

Specimen Preparation:
Order IFEUTM and AAUV for timed urines.

Reference Interval:
Negative. No paraproteins present.

Synonyms:

- paraprotein
- IFE
- Bence Jones

Stability (from collection to initiation):
Refrigerated 1 week.
Frozen (-20°C): 1 month

Reported:
2-4 days

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

CPT Codes:
86335

LOINC Codes:
13440-3

Immunofixation Electrophoresis, Random urine

IFEU

ORDERING

Available Stat:
No

Performing Lab:
China Basin Chemistry

Performed:
Monday-Friday (day shift)

Methodology:
Immunofixation electrophoresis by Helena SPIFE4000

Reported:
2-4 days

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Synonyms:

- paraprotein
- IFE
- Bence Jones

COLLECTION

Sample Type:
Random urine

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container

Amount to Collect:
Entire random urine

Preferred Volume:
5 mL urine

Minimum Volume:
1 mL urine

Stability (from collection to initiation):
Refrigerated 1 week.
Frozen (-20°C): 1 month

PROCESSING

Test Code:
IFEU

Test Group:
IFE

Performing Lab:
China Basin Chemistry

Preferred Volume:
5 mL urine

Minimum Volume:
1 mL urine

Stability (from collection to initiation):
Refrigerated 1 week.
Frozen (-20°C): 1 month

RESULT INTERPRETATION

Reference Interval:
Negative. No paraproteins present.

ADMINISTRATIVE

CPT Codes:
86335

LOINC Codes:
13440-3

COMPLETE VIEW

Available Stat:
No

Test Code:
IFEU

Test Group:
IFE

Performing Lab:
China Basin Chemistry

Performed:
Monday-Friday (day shift)

Methodology:
Immunofixation electrophoresis by Helena SPIFE4000

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container

Amount to Collect:
Entire random urine

Sample Type:
Random urine

Preferred Volume:
5 mL urine

Minimum Volume:
1 mL urine

Reference Interval:
Negative. No paraproteins present.

Synonyms:

- paraprotein
- IFE
- Bence Jones

Stability (from collection to initiation):
Refrigerated 1 week.
Frozen (-20°C): 1 month

Reported:
2-4 days

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

CPT Codes:
86335

LOINC Codes:
13440-3

Immunofixation Electrophoresis, serum

IFE

ORDERING

Available Stat:
No

Performing Lab:
China Basin Chemistry

Performed:
Monday-Friday (day shift)

Methodology:
Electrophoresis by Helena SPIFE4000

Reported:
2-4 days

Additional Information:
Should be ordered after a screening Protein Electrophoresis. To characterize immunoglobulin class and light chain type of paraproteins. Will also detect small amounts of paraprotein despite normal Serum Protein Electrophoresis. Will only be performed for Cryoglobulin after an assay for Cryoglobulin, Quantitative, has demonstrated a cryoprecipitate sufficient in amount for a successful analysis.

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Synonyms:

- Paraprotein
- IFE

COLLECTION

Sample Type:
Serum

Collect:
Gold or Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Refrigerated 1 week.

Unacceptable Conditions:
Plasma sample received

PROCESSING

Test Code:
IFE

Test Group:
IFE

Performing Lab:
China Basin Chemistry

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Plasma sample received

Stability (from collection to initiation):
Refrigerated 1 week.

RESULT INTERPRETATION

Reference Interval:
Negative. No paraproteins present.

Additional Information:
Should be ordered after a screening Protein Electrophoresis. To characterize immunoglobulin class and light chain type of paraproteins. Will also detect small amounts of paraprotein despite normal Serum Protein Electrophoresis. Will only be performed for Cryoglobulin after an assay for Cryoglobulin, Quantitative, has demonstrated a cryoprecipitate sufficient in amount for a successful analysis.

ADMINISTRATIVE

CPT Codes:
86334

LOINC Codes:
25700-6

COMPLETE VIEW

Available Stat:
No

Test Code:
IFE

Test Group:
IFE

Performing Lab:
China Basin Chemistry

Performed:
Monday-Friday (day shift)

Methodology:
Electrophoresis by Helena SPIFE4000

Collect:
Gold or Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Plasma sample received

Reference Interval:
Negative. No paraproteins present.

Synonyms:

- Paraprotein
- IFE

Stability (from collection to initiation):
Refrigerated 1 week.

Reported:
2-4 days

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Additional Information:
Should be ordered after a screening Protein Electrophoresis. To characterize immunoglobulin class and light chain type of paraproteins. Will also detect small amounts of paraprotein despite normal Serum Protein Electrophoresis. Will only be performed for Cryoglobulin after an assay for Cryoglobulin, Quantitative, has demonstrated a cryoprecipitate sufficient in amount for a successful analysis.

CPT Codes:
86334

LOINC Codes:
25700-6

Immunoglobulin G Subclasses (1, 2, 3, 4)

IGGSUB

ORDERING

Ordering Recommendations:
Aid as second order test for evaluation of patients suspected of humoral immunodeficiency or combined immunodeficiency (humoral or cellular).

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative Immunoturbidimetry

Reported:
1-3 days

Synonyms:

- Gamma-Globulins, Quantitative
- IgG 1, 2, 3, 4
- IgG Subclasses
- Subclasses, IgG

COLLECTION

Collect:
Serum separator tube.

Stability (from collection to initiation):
After separation from cells: Ambient: Unacceptable; Refrigerated: 14 days; Frozen: 6 months

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Grossly hemolyzed or lipemic specimens

PROCESSING

Test Code:
IGGSUB

ARUP Test Code:
0050577

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate serum from cells ASAP or within 2 hours of collection. Transfer 2 mL serum to an ARUP Standard Transport Tube. (Min: 1 mL)

Unacceptable Conditions:
Grossly hemolyzed or lipemic specimens

Stability (from collection to initiation):
After separation from cells: Ambient: Unacceptable; Refrigerated: 14 days; Frozen: 6 months

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:

Components	Reference Interval
Immunoglobulin G Subclass 1	

Age	Reference Interval (mg/dL)
0-2 years	167-900
3-4 years	313-941
5-9 years	363-1276
10-14 years	316-1076
15-18 years	325-894
19 years and older	240-1118

Immunoglobulin G Subclass 2	

Age	Reference Interval (mg/dL)
0-2 years	55-359
3-4 years	72-287
5-9 years	27-398
10-14 years	86-509
15-18 years	156-625
19 years and older	124-549

Immunoglobulin G Subclass 3	

Age	Reference Interval (mg/dL)
0-2 years	34-85
3-4 years	25-117
5-9 years	17-169
10-14 years	14-201
15-18 years	34-246
19 years and older	21-134

Immunoglobulin G Subclass 4	

Age	Reference Interval (mg/dL)
0-2 years	1-34
3-4 years	1-65
5-9 years	0-168
10-14 years	1-103
15-18 years	2-170
19 years and older	1-123

Interpretive Data:

The total IgG (mg/dL) can be derived from the sum of the subclass IgG1, IgG2, IgG3, and IgG4 values. However, a confirmatory and more precise total IgG is available by the immunoturbidimetric method of quantitation for total IgG. Refer to test Immunoglobulin G, Serum (0050350).

ADMINISTRATIVE

CPT Codes:

82787 x4

LOINC:

- 2469-5
- 2466-1
- 2467-9
- 2468-7

COMPLETE VIEW

Available Stat:

No

Ordering Recommendations:
Aid as second order test for evaluation of patients suspected of humoral immunodeficiency or combined immunodeficiency (humoral or cellular).

Test Code:
IGGSUB

ARUP Test Code:
0050577

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative Immunoturbidimetry

Collect:
Serum separator tube.

Unacceptable Conditions:
Grossly hemolyzed or lipemic specimens

Specimen Preparation:
Separate serum from cells ASAP or within 2 hours of collection. Transfer 2 mL serum to an ARUP Standard Transport Tube. (Min: 1 mL)

Reference Interval:

Components	Reference Interval
Immunoglobulin G Subclass 1	

Age	Reference Interval (mg/dL)
0-2 years	167-900
3-4 years	313-941
5-9 years	363-1276
10-14 years	316-1076
15-18 years	325-894
19 years and older	240-1118

Immunoglobulin G Subclass 2	

Age	Reference Interval (mg/dL)
0-2 years	55-359
3-4 years	72-287
5-9 years	27-398
10-14 years	86-509
15-18 years	156-625
19 years and older	124-549

Immunoglobulin G Subclass 3	

Age	Reference Interval (mg/dL)
0-2 years	34-85
3-4 years	25-117
5-9 years	17-169
10-14 years	14-201
15-18 years	34-246
19 years and older	21-134

Immunoglobulin G Subclass 4	

Age	Reference Interval (mg/dL)
0-2 years	1-34
3-4 years	1-65
5-9 years	0-168
10-14 years	1-103
15-18 years	2-170
19 years and older	1-123

Interpretive Data:

The total IgG (mg/dL) can be derived from the sum of the subclass IgG1, IgG2, IgG3, and IgG4 values. However, a confirmatory and more precise total IgG is available by the immunoturbidimetric method of quantitation for total IgG. Refer to test Immunoglobulin G, Serum (0050350).

Synonyms:

- Gamma-Globulins, Quantitative
- IgG 1, 2, 3, 4
- IgG Subclasses
- Subclasses, IgG

Storage/Transport Temperature:

Refrigerated.

Stability (from collection to initiation):

After separation from cells: Ambient: Unacceptable; Refrigerated: 14 days; Frozen: 6 months

Reported:

1-3 days

CPT Codes:

82787 x4

LOINC:

- 2469-5
- 2466-1
- 2467-9
- 2468-7

Immunology Hold

IMMH

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Additional Information:
This 'test' is only available to transplant services.

Prior to transplant, a blood sample from recipients can be obtained and the plasma stored frozen by the Immunology Laboratory for 90 days after collection.

The stored sample can be used to verify the pre-transplant baseline of the recipient if the patient has laboratory evidence of infection post transplant.

COLLECTION

Sample Type:
Plasma

Collect:
Lavender top

Amount to Collect:
6 mL blood

Preferred Volume:
3 mL plasma

Minimum Volume:
3 mL plasma

PROCESSING

Test Code:
IMMH

Performing Lab:
Immunology

Specimen Preparation:
Spin sample within 6 hours, separate and store plasma at -70. Forward frozen sample to Immunology. Samples will be discarded after 90 days if no test request is received.

Preferred Volume:
3 mL plasma

Minimum Volume:
3 mL plasma

RESULT INTERPRETATION

Additional Information:
This 'test' is only available to transplant services.

Prior to transplant, a blood sample from recipients can be obtained and the plasma stored frozen by the Immunology Laboratory for 90 days after collection.

The stored sample can be used to verify the pre-transplant baseline of the recipient if the patient has laboratory evidence of infection post transplant.

COMPLETE VIEW

Available Stat:
No

Test Code:
IMMH

Performing Lab:
Immunology

Collect:
Lavender top

Amount to Collect:
6 mL blood

Sample Type:
Plasma

Preferred Volume:
3 mL plasma

Minimum Volume:
3 mL plasma

Specimen Preparation:
Spin sample within 6 hours, separate and store plasma at -70. Forward frozen sample to Immunology. Samples will be discarded after 90 days if no test request is received.

Additional Information:
This 'test' is only available to transplant services.

Prior to transplant, a blood sample from recipients can be obtained and the plasma stored frozen by the Immunology Laboratory for 90 days after collection.

The stored sample can be used to verify the pre-transplant baseline of the recipient if the patient has laboratory evidence of infection post transplant.

Infliximab and Antibodies to Infliximab Quantitation

IFXAN

ORDERING

Ordering Recommendations:
Use to monitor infliximab or infliximab biosimilar therapy.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative Electrochemiluminescence Immunoassay (ECLIA) with Acid Dissociation

Reported:
3-7 days

Synonyms:

- Anti-TNF-alpha Drug
- Human Anti-Chimeric Antibody
- IFD
- Infliximab level
- Infliximab/HACA measurement
- Remicade
- TNFa antibody
- Inflectra
- Infliximab-abda
- Infliximab-dyyb
- Renflexis
- Avsola
- Ixifi

COLLECTION

Patient Preparation:
Collect specimen before next scheduled dose of infliximab or infliximab biosimilar (trough specimen). Avoid exposure to biotin (vitamin B7) for 12 hours prior to specimen collection.

Sample Type:
Serum

Collect:
Serum separator tube.

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.1 mL serum

Stability (from collection to initiation):
After separation from cells: Ambient: 2 days; Refrigerated: 2 weeks; Frozen: 1 month (avoid repeated freeze/thaw cycles).

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Grossly hemolyzed, icteric, or lipemic specimens.

PROCESSING

Test Code:
IFXAN

ARUP Test Code:
3016779

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate serum from cells ASAP. Transfer 1 mL serum to an ARUP standard transport tube. (Min 0.1 mL)

Preferred Volume:
1 mL serum

Minimum Volume:
0.1 mL serum

Unacceptable Conditions:
Grossly hemolyzed, icteric, or lipemic specimens.

Stability (from collection to initiation):
After separation from cells: Ambient: 2 days; Refrigerated: 2 weeks; Frozen: 1 month (avoid repeated freeze/thaw cycles).

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Interpretive Data:
Infliximab Quantitation:

Limit of Quantitation = 0.5 ug/mL.

Results of 0.5 ug/mL or higher indicate the detection of infliximab or infliximab biosimilar. Therapeutic level may vary depending on the disease being treated.

Antibodies to Infliximab Quantitation:

Limit of Quantitation = 20 ng/mL.

Results of 20 ng/mL or higher indicate the detection of antibodies against infliximab or an infliximab biosimilar. Interpret in the context of infliximab or infliximab biosimilar trough concentration to determine clinical significance and impact on treatment efficacy.

ADMINISTRATIVE

CPT Codes:
80230; 82397

LOINC:

- 86897-6
- 86896-8

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Use to monitor infliximab or infliximab biosimilar therapy.

Test Code:
IFXAN

ARUP Test Code:
3016779

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative Electrochemiluminescence Immunoassay (ECLIA) with Acid Dissociation

Patient Preparation:
Collect specimen before next scheduled dose of infliximab or infliximab biosimilar (trough specimen). Avoid exposure to biotin (vitamin B7) for 12 hours prior to specimen collection.

Collect:
Serum separator tube.

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.1 mL serum

Unacceptable Conditions:
Grossly hemolyzed, icteric, or lipemic specimens.

Specimen Preparation:
Separate serum from cells ASAP. Transfer 1 mL serum to an ARUP standard transport tube. (Min 0.1 mL)

Interpretive Data:
Infliximab Quantitation:

Limit of Quantitation = 0.5 ug/mL.

Results of 0.5 ug/mL or higher indicate the detection of infliximab or infliximab biosimilar. Therapeutic level may vary depending on the disease being treated.

Antibodies to Infliximab Quantitation:

Limit of Quantitation = 20 ng/mL.

Results of 20 ng/mL or higher indicate the detection of antibodies against infliximab or an infliximab biosimilar. Interpret in the context of infliximab or infliximab biosimilar trough concentration to determine clinical significance and impact on treatment efficacy.

Synonyms:

- Anti-TNF-alpha Drug
- Human Anti-Chimeric Antibody
- IFD
- Infliximab level
- Infliximab/HACA measurement
- Remicade
- TNFa antibody
- Inflectra
- Infliximab-abda
- Infliximab-dyyb
- Renflexis
- Avsola
- Ixifi

Storage/Transport Temperature:
Refrigerated.

Stability (from collection to initiation):
After separation from cells: Ambient: 2 days; Refrigerated: 2 weeks; Frozen: 1 month (avoid repeated freeze/thaw cycles).

Reported:
3-7 days

CPT Codes:
80230; 82397

LOINC:

- 86897-6
- 86896-8

Influenza A virus antibody

FLUA

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Complement fixation

Reported:
Performed 5x per week. Turnaround 3-5 days

Additional Information:
Influenza Type A and B viruses cause seasonal outbreaks of "the flu". Each winter, approximately 10-20% of the population are infected. Both Type A and B are included in the flu vaccine.

Single titers of >= 1:64 indicative of recent infection. Titers of 1:8 to 1:32 may be indicative of either past or recent infection, since CF antibody levels persist for only a few months. A four-fold or greater increase in titer between acute and convalescent specimens confirms the diagnosis.

See also entry for Viral Serology and Respiratory Virus DFA

Synonyms:

- flu A

COLLECTION

Sample Type:
Serum

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 1 week, frozen at -20C 1 month

PROCESSING

Test Code:
FLUA

Test Group:
Influenza

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate serum. Order Quest #52290P

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 1 week, frozen at -20C 1 month

RESULT INTERPRETATION

Units:
titer

Reference Interval:
Negative titer < 1:8

Additional Information:
Influenza Type A and B viruses cause seasonal outbreaks of "the flu". Each winter, approximately 10-20% of the population are infected. Both Type A and B are included in the flu vaccine.

Single titers of >= 1:64 indicative of recent infection. Titers of 1:8 to 1:32 may be indicative of either past or recent infection, since CF antibody levels persist for only a few months. A four-fold or greater increase in titer between acute and convalescent specimens confirms the diagnosis.

See also entry for Viral Serology and Respiratory Virus DFA

ADMINISTRATIVE

CPT Codes:
86710-90

LOINC Codes:
5229-0

COMPLETE VIEW

Available Stat:
No

Test Code:
FLUA

Test Group:
Influenza

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Complement fixation

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Specimen Preparation:
Refrigerate serum. Order Quest #52290P

Units:
titer

Reference Interval:
Negative titer < 1:8

Synonyms:

- flu A

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 1 week, frozen at -20C 1 month

Reported:
Performed 5x per week. Turnaround 3-5 days

Additional Information:

Influenza Type A and B viruses cause seasonal outbreaks of "the flu". Each winter, approximately 10-20% of the population are infected. Both Type A and B are included in the flu vaccine.

Single titers of >= 1:64 indicative of recent infection. Titers of 1:8 to 1:32 may be indicative of either past or recent infection, since CF antibody levels persist for only a few months. A four-fold or greater increase in titer between acute and convalescent specimens confirms the diagnosis.

See also entry for Viral Serology and Respiratory Virus DFA

CPT Codes:

86710-90

LOINC Codes:

5229-0

Influenza A/B/RSV RNA

P372

ORDERING

Ordering Recommendations:
IDMP guidelines for the diagnosis and management of influenza.

Available Stat:
Yes

Performing Lab:
Microbiology

Performed:
Daily, all shifts

Methodology:
Real-time PCR

Reported:
1 day

Reflex Testing:
Samples other than NP swabs are not validated for the the PCR testing. Therefore if samples other than NP swab are received the order will be converted to an Respiratory Virus panel PCR (test code P350) and that test will be performed an billed for.

COLLECTION

Sample Type:
Nasopharyngeal swab - preferred
Nasopharyngeal/Oropharyngeal swab
Anterior Nares/Oropharyngeal swab
Anteriror Nares swab - Sensitivity may be reduced based on this sample type.

Collect:
Nasopharyngeal swab: Flocked swab in Universal Transport Medium (UTM) or Viral Holding Media (VTM), preferred. Swabs in liquid Amies elution medium (E-swab), Aptima kits, and Abbott Multi Collect kits are also acceptable.

Combined Nasopharyngeal Swab/Oropharyngeal Swab are acceptable.

Other samples: Clean container

Amount to Collect:
1 flocked swab in Universal Transport Medium

Preferred Volume:
1 flocked swab in Universal Transport Medium

Minimum Volume:
1 flocked swab in Universal Transport Medium

Remarks:
Nasopharyngeal swab: Use flocked swab/Universal Transport Medium for collection. Insert swab into the nostril, gently rotating the swab inward until resistance is met at the level of the turbinates. Rotate the swab a few times against the nasopharyngeal wall (approximately 10 sec) and then withdraw swab. Insert swab into container with Universal Transport Medium. Break end of swab so top of vial can be screwed on securely. Appropriately label specimen and send to the laboratory.

Stability (from collection to initiation):
Refrigerated 24 hours, frozen 1 month

Unacceptable Conditions:
Nasopharyngeal swab not collected using flocked swab/UTM or VHM kit, E-swab, Aptima, or Abbott Multi Collect kit

PROCESSING

Test Code:
P372

Performing Lab:
Microbiology

Preferred Volume:
1 flocked swab in Universal Transport Medium

Minimum Volume:
1 flocked swab in Universal Transport Medium

Unacceptable Conditions:
Nasopharyngeal swab not collected using flocked swab/UTM or VHM kit, E-swab, Aptima, or Abbott Multi Collect kit

Stability (from collection to initiation):
Refrigerated 24 hours, frozen 1 month

RESULT INTERPRETATION

Reference Interval:
Not detected

Critical Values:
Positive results on inpatients and patients currently in the Emergency Department

ADMINISTRATIVE

CPT Codes:
87631

LOINC Codes:
77022-2, 76078-5,76080-1

COMPLETE VIEW

Available Stat:
Yes

Ordering Recommendations:
IDMP guidelines for the diagnosis and management of influenza.

Test Code:
P372

Performing Lab:
Microbiology

Performed:
Daily, all shifts

Methodology:
Real-time PCR

Remarks:
Nasopharyngeal swab: Use flocked swab/Universal Transport Medium for collection. Insert swab into the nostril, gently rotating the swab inward until resistance is met at the level of the turbinates. Rotate the swab a few times against the nasopharyngeal wall (approximately 10 sec) and then withdraw swab. Insert swab into container with Universal Transport Medium. Break end of swab so top of vial can be screwed on securely. Appropriately label specimen and send to the laboratory.

Collect:
Nasopharyngeal swab: Flocked swab in Universal Transport Medium (UTM) or Viral Holding Media (VTM), preferred. Swabs in liquid Amies elution medium (E-swab), Aptima kits, and Abbott Multi Collect kits are also acceptable.

Combined Nasopharyngeal Swab/Oropharyngeal Swab are acceptable.

Other samples: Clean container

Amount to Collect:
1 flocked swab in Universal Transport Medium

Sample Type:
Nasopharyngeal swab - preferred
Nasopharyngeal/Oropharyngeal swab
Anterior Nares/Oropharyngeal swab
Anteriror Nares swab - Sensitivity may be reduced based on this sample type.

Preferred Volume:
1 flocked swab in Universal Transport Medium

Minimum Volume:
1 flocked swab in Universal Transport Medium

Unacceptable Conditions:
Nasopharyngeal swab not collected using flocked swab/UTM or VHM kit, E-swab, Aptima, or Abbott Multi Collect kit

Reference Interval:
Not detected

Critical Values:
Positive results on inpatients and patients currently in the Emergency Department

Stability (from collection to initiation):
Refrigerated 24 hours, frozen 1 month

Reported:
1 day

Reflex Testing:
Samples other than NP swabs are not validated for the the PCR testing. Therefore if samples other than NP swab are received the order will be converted to an Respiratory Virus panel PCR (test code P350) and that test will be performed an billed for.

CPT Codes:
87631

LOINC Codes:
77022-2, 76078-5,76080-1

Influenza B antibody

FLUB

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Complement fixation

Reported:
Performed 5x per week. Turnaround 3-5 days

Additional Information:
Influenza Type A and B viruses cause seasonal outbreaks of "the flu". Each winter, approximately 10-20% of the population are infected. Both Type A and B are included in the flu vaccine.

Single titers of >= 1:64 indicative of recent infection. Titers of 1:8 to 1:32 may be indicative of either past or recent infection, since CF antibody levels persist for only a few months. A four-fold or greater increase in titer between acute and convalescent specimens confirms the diagnosis. See also entry for Viral Serology and Respiratory Virus DFA

Synonyms:

- Flu B

COLLECTION

Sample Type:
Serum

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen at -20C 1 month.

PROCESSING

Test Code:
FLUB

Test Group:
Influenza

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate serum at 4C. Order Quest test #52308P

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen at -20C 1 month.

RESULT INTERPRETATION

Units:
titer

Reference Interval:
Negative titer < 1:8

Additional Information:

Influenza Type A and B viruses cause seasonal outbreaks of "the flu". Each winter, approximately 10-20% of the population are infected. Both Type A and B are included in the flu vaccine.

Single titers of >= 1:64 indicative of recent infection. Titers of 1:8 to 1:32 may be indicative of either past or recent infection, since CF antibody levels persist for only a few months. A four-fold or greater increase in titer between acute and convalescent specimens confirms the diagnosis. See also entry for Viral Serology and Respiratory Virus DFA

ADMINISTRATIVE

CPT Codes:
86710-90

LOINC Codes:
5230-8

COMPLETE VIEW

Available Stat:
No

Test Code:
FLUB

Test Group:
Influenza

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Complement fixation

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Specimen Preparation:
Refrigerate serum at 4C. Order Quest test #52308P

Units:
titer

Reference Interval:
Negative titer < 1:8

Synonyms:

- Flu B

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen at -20C 1 month.

Reported:
Performed 5x per week. Turnaround 3-5 days

Additional Information:

Influenza Type A and B viruses cause seasonal outbreaks of "the flu". Each winter, approximately 10-20% of the population are infected. Both Type A and B are included in the flu vaccine.

Single titers of >= 1:64 indicative of recent infection. Titers of 1:8 to 1:32 may be indicative of either past or recent infection, since CF antibody levels persist for only a few months. A four-fold or greater increase in titer between acute and convalescent specimens confirms the diagnosis. See also entry for Viral Serology and Respiratory Virus DFA

CPT Codes:
86710-90

LOINC Codes:
5230-8

Inhibin A

INHNA

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Enzyme immunoassay

Reported:
3-5 days

Additional Information:
Inhibin A is useful as an indicator of gonadal function, and ovarian response to hMg or to FSH stimulation. Inhibin A, produced by the placenta, is used along with other maternal serum biochemical markers to improve sensitivity of the screen for Down syndrome risk.

COLLECTION

Sample Type:
Serum

Collect:
Red top, Gold top

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 1 week, frozen 4 weeks.

PROCESSING

Test Code:
INHNA

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
liquot and freeze sample. Ship to CB frozen.

Preferred Volume:
2 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 1 week, frozen 4 weeks.

RESULT INTERPRETATION

Units:
pg/mL

Additional Information:
Inhibin A is useful as an indicator of gonadal function, and ovarian response to hMg or to FSH stimulation. Inhibin A, produced by the placenta, is used along with other maternal serum biochemical markers to improve sensitivity of the screen for Down syndrome risk.

ADMINISTRATIVE

CPT Codes:
86336-90

COMPLETE VIEW

Available Stat:
No

Test Code:
INHNA

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Enzyme immunoassay

Collect:
Red top, Gold top

Amount to Collect:
4 mL blood

Sample Type:
Serum

Preferred Volume:
2 mL serum

Minimum Volume:
0.5 mL serum

Specimen Preparation:
liquot and freeze sample. Ship to CB frozen.

Units:
pg/mL

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 1 week, frozen 4 weeks.

Reported:
3-5 days

Additional Information:
Inhibin A is useful as an indicator of gonadal function, and ovarian response to hMg or to FSH stimulation. Inhibin A, produced by the placenta, is used along with other maternal serum biochemical markers to improve sensitivity of the screen for Down syndrome risk.

CPT Codes:
86336-90

Inhibin B

INHNB

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Immunoassay

Reported:
5-7 days

Additional Information:
Inhibin B is the major circulating inhibin in males. It is also detectable in women during menstrual cycles,particularly prior to ovulation. The measurement of inhibin B serves as an endocrine marker for monitoring male and female gonadal function.

COLLECTION

Sample Type:
Serum

Collect:
Red top or Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 1 week, frozen 4 weeks

PROCESSING

Test Code:
INHNB

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 1 week, frozen 4 weeks

RESULT INTERPRETATION

Additional Information:
Inhibin B is the major circulating inhibin in males. It is also detectable in women during menstrual cycles,particularly prior to ovulation. The measurement of inhibin B serves as an endocrine marker for monitoring male and female gonadal function.

ADMINISTRATIVE

CPT Codes:
82397-90

COMPLETE VIEW

Available Stat:
No

Test Code:
INHNB

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Immunoassay

Collect:
Red top or Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Specimen Preparation:
Freeze serum

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 1 week, frozen 4 weeks

Reported:
5-7 days

Additional Information:
Inhibin B is the major circulating inhibin in males. It is also detectable in women during menstrual cycles,particularly prior to ovulation. The measurement of inhibin B serves as an endocrine marker for monitoring male and female gonadal function.

CPT Codes:
82397-90

Inhibitor Screen for Partial Thromboplastin Time

PTTIS

ORDERING

Approval Required:
No. However, the PTT Inhibitor Screen will only be performed if the PTT is 20% above the upper limit of normal.

Available Stat:
No

Performing Lab:
Parnassus Hematology

Performed:
Monday-Friday 0800-1400

Reported:
Same day or next weekday

Additional Information:
PTT Inhibitor Screen will only be performed if the PTT is 20% above the upper limit of normal. If the test is ordered on a sample that does not meet this criteria, the inhibitor screen cannot yield a positive result. "Test not Indicated" will be sent.

The PTT Inhibitor Screen may be of limited value in a number of clinical settings and alternative tests are recommended:

For the evaluation of lupus anticoagulant as cause of a prolonged PTT, specific tests are suggested [Russell's Viper Venom Test (RVVTM) and Lupus anticoagulant by Hexa (HEXA)].

For the evaluation of thrombin inhibitors as cause of a prolonged PTT, a Thrombin Time may be useful.

Screening for Factor 8, Factor 9, or Factor 11 inhibitors, the Modified Inhibitor Titer (MODIT) is suggested.

Reflex Testing:
If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

Synonyms:

- PTT Mixing Study, Inhibitor Screen, Factor Inhibitor Screen

COLLECTION

Sample Type:
Citrated plasma

Collect:
Blue top filled to full extent of vacuum X 3

Amount to Collect:
9 ml blood

Preferred Volume:
4 mL plasma

Minimum Volume:
2 mL plasma

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

For patients with Hct's >= 55% please contact Hematology (Parnassus: 3-1747, Mission Bay 6-1094) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Stability (from collection to initiation):
4 hours

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer.

PROCESSING

Test Code:
PTTIS

Test Group:
Inhibitor screen

Performing Lab:
Parnassus Hematology

Specimen Preparation:
Deliver sample to the Hematology Lab ASAP.

Preferred Volume:
4 mL plasma

Minimum Volume:
2 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer.

Stability (from collection to initiation):
4 hours

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
PTT Inhibitor Screen will only be performed if the PTT is 20% above the upper limit of normal. If the test is ordered on a sample that does not meet this criteria, the inhibitor screen cannot yield a positive result. "Test not Indicated" will be sent.

The PTT Inhibitor Screen may be of limited value in a number of clinical settings and alternative tests are recommended:

For the evaluation of lupus anticoagulant as cause of a prolonged PTT, specific tests are suggested [Russell's Viper Venom Test (RVVTM) and Lupus anticoagulant by Hexa (HEXA)].

For the evaluation of thrombin inhibitors as cause of a prolonged PTT, a Thrombin Time may be useful.

Screening for Factor 8, Factor 9, or Factor 11 inhibitors, the Modified Inhibitor Titer (MODIT) is suggested.

ADMINISTRATIVE

CPT Codes:
85730, 85732 x2

LDT or Modified FDA:
Yes

COMPLETE VIEW

Approval Required:
No. However, the PTT Inhibitor Screen will only be performed if the PTT is 20% above the upper limit of normal.

Available Stat:
No

Test Code:
PTTIS

Test Group:
Inhibitor screen

Performing Lab:
Parnassus Hematology

Performed:
Monday-Friday 0800-1400

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

For patients with Hct's >= 55% please contact Hematology (Parnassus: 3-1747, Mission Bay 6-1094) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Collect:
Blue top filled to full extent of vacuum X 3

Amount to Collect:
9 ml blood

Sample Type:
Citrated plasma

Preferred Volume:
4 mL plasma

Minimum Volume:
2 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer.

Specimen Preparation:
Deliver sample to the Hematology Lab ASAP.

Reference Interval:
Negative

Synonyms:

- PTT Mixing Study, Inhibitor Screen, Factor Inhibitor Screen

Stability (from collection to initiation):
4 hours

Reported:
Same day or next weekday

Reflex Testing:
If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

Additional Information:
PTT Inhibitor Screen will only be performed if the PTT is 20% above the upper limit of normal. If the test is ordered on a sample that does not meet this criteria, the inhibitor screen cannot yield a positive result. "Test not Indicated" will be sent.

The PTT Inhibitor Screen may be of limited value in a number of clinical settings and alternative tests are recommended:

For the evaluation of lupus anticoagulant as cause of a prolonged PTT, specific tests are suggested [Russell's Viper Venom Test (RVVTM) and Lupus anticoagulant by Hexa (HEXA)].

For the evaluation of thrombin inhibitors as cause of a prolonged PTT, a Thrombin Time may be useful.

Screening for Factor 8, Factor 9, or Factor 11 inhibitors, the Modified Inhibitor Titer (MODIT) is suggested.

CPT Codes:
85730, 85732 x2

LDT or Modified FDA:
Yes

Inhibitor Screen for Prothrombin Time

PTIS

ORDERING

Approval Required:
No. However, the PT Inhibitor Screen will only be performed if the PT is >19.0 sec.

Available Stat:
No

Performing Lab:
Parnassus Hematology

Performed:
Monday-Friday 0800-1400

Reported:
Same day or next weekday

Additional Information:
PT Inhibitor Screen will only be performed if the PT is >19.0 sec. If the test is ordered on a sample that does not meet this criteria, the inhibitor screen cannot yield a positive result. “Test not Indicated" will be sent.

PT inhibitors are unusual. If clinically indicated, obtaining fibrinogen, as well as factor activity assays for factors 2, 5, 7, and 10 may be considered even without performing the PT Inhibitor Screen.

Reflex Testing:
If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

Synonyms:

- PT Mixing Study, Inhibitor Screen, Factor Inhibitor Screen

COLLECTION

Sample Type:
Citrated plasma

Collect:
Blue top filled to full extent of vacuum X 2

Amount to Collect:
6 ml blood

Preferred Volume:
3 mL plasma

Minimum Volume:
2 mL plasma

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

For patients with Hct's >= 55% please contact Hematology (Parnassus: 3-1747, Mission Bay 6-1094) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Stability (from collection to initiation):
4 hours

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer.

PROCESSING

Test Code:
PTIS

Test Group:
Inhibitor screen

Performing Lab:
Parnassus Hematology

Specimen Preparation:
Deliver sample to the Hematology Lab ASAP.

Preferred Volume:
3 mL plasma

Minimum Volume:
2 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer.

Stability (from collection to initiation):
4 hours

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
PT Inhibitor Screen will only be performed if the PT is >19.0 sec. If the test is ordered on a sample that does not meet this criteria, the inhibitor screen cannot yield a positive result. “Test not Indicated" will be sent.

PT inhibitors are unusual. If clinically indicated, obtaining fibrinogen, as well as factor activity assays for factors 2, 5, 7, and 10 may be considered even without performing the PT Inhibitor Screen.

ADMINISTRATIVE

CPT Codes:
85610, 85611 x2

LDT or Modified FDA:
Yes

COMPLETE VIEW

Approval Required:
No. However, the PT Inhibitor Screen will only be performed if the PT is >19.0 sec.

Available Stat:
No

Test Code:
PTIS

Test Group:
Inhibitor screen

Performing Lab:
Parnassus Hematology

Performed:
Monday-Friday 0800-1400

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

For patients with Hct's >= 55% please contact Hematology (Parnassus: 3-1747, Mission Bay 6-1094) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Collect:
Blue top filled to full extent of vacuum X 2

Amount to Collect:
6 ml blood

Sample Type:
Citrated plasma

Preferred Volume:
3 mL plasma

Minimum Volume:
2 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer.

Specimen Preparation:
Deliver sample to the Hematology Lab ASAP.

Reference Interval:
Negative

Synonyms:

- PT Mixing Study, Inhibitor Screen, Factor Inhibitor Screen

Stability (from collection to initiation):
4 hours

Reported:
Same day or next weekday

Reflex Testing:
If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

Additional Information:
PT Inhibitor Screen will only be performed if the PT is >19.0 sec. If the test is ordered on a sample that does not meet this criteria, the inhibitor screen cannot yield a positive result. “Test not Indicated" will be sent.

PT inhibitors are unusual. If clinically indicated, obtaining fibrinogen, as well as factor activity assays for factors 2, 5, 7, and 10 may be considered even without performing the PT Inhibitor Screen.

CPT Codes:
85610, 85611 x2

LDT or Modified FDA:
Yes

Insect Venom IgG Antibody

MOLT

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
RAST

Additional Information:
Assays are available for antibody to venoms from Honey bee (NI# 67272N), Paper wasp (NI# 67314N), White-faced hornet (NI# 74179N), Yellow hornet (NI# 67397N) and Yellow jacket (NI# 77685N). These assays are not approved by FDA for clinical use.

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
2 mL blood for each venom to be tested

Preferred Volume:
1 mL serum for each venom to be tested

Minimum Volume:
0.3 mL serum for each venom

Remarks:
Indicate insect type suspected if known on requisition (Honey bee, Paper wasp, White-faced hornet, Yellow hornet, Yellow jacket)

PROCESSING

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate. Order Quest # specified for insect thought to be the source of risk; if the provocative insect is unknown, order all of the assays.

Preferred Volume:
1 mL serum for each venom to be tested

Minimum Volume:
0.3 mL serum for each venom

RESULT INTERPRETATION

Reference Interval:
Interpretation:

< 1.0-3.4 mg/L: Low level of IgG antibody indicatcating a significant risk of reaction in patients with a history of systemic anaphylaxis from hymenoptera sting and/or positive skin test to venom.

>= 3.5 mg/L: Moderate level of IgG antibody to venom associated with a reduced risk, depending on history.

Additional Information:
Assays are available for antibody to venoms from Honey bee (NI# 67272N), Paper wasp (NI# 67314N), White-faced hornet (NI# 74179N), Yellow hornet (NI# 67397N) and Yellow jacket (NI# 77685N). These assays are not approved by FDA for clinical use.

ADMINISTRATIVE

CPT Codes:
83520-90 for each venom tested

COMPLETE VIEW

Available Stat:
No

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Performing Lab:
Quest

Sendout:
Yes

Methodology:
RAST

Remarks:
Indicate insect type suspected if known on requisition (Honey bee, Paper wasp, White-faced hornet, Yellow hornet, Yellow jacket)

Collect:
Gold top

Amount to Collect:
2 mL blood for each venom to be tested

Sample Type:
Serum

Preferred Volume:
1 mL serum for each venom to be tested

Minimum Volume:
0.3 mL serum for each venom

Specimen Preparation:
Refrigerate. Order Quest # specified for insect thought to be the source of risk; if the provocative insect is unknown, order all of the assays.

Reference Interval:
Interpretation:

< 1.0-3.4 mg/L: Low level of IgG antibody indicatcating a significant risk of reaction in patients with a history of systemic anaphylaxis from hymenoptera sting and/or positive skin test to venom.

>= 3.5 mg/L: Moderate level of IgG antibody to venom associated with a reduced risk, depending on history.

Additional Information:
Assays are available for antibody to venoms from Honey bee (NI# 67272N), Paper wasp (NI# 67314N), White-faced hornet (NI# 74179N), Yellow hornet (NI# 67397N) and Yellow jacket (NI# 77685N). These assays are not approved by FDA for clinical use.

CPT Codes:
83520-90 for each venom tested

Insulin

INS

ORDERING

Available Stat:
No

Performing Lab:
China Basin Chemistry

Performed:
Wednesdays (day shift)

Methodology:
Chemiluminescent Microparticle Immunoassay (Abbott Architect i2000)

Reported:
3-10 days.

Additional Information:
Method changed from Siemens Centaur XP platform to Abbott Architect i2000 platform on 9/14/2017.

The Architect Insulin calibrators are referenced to the World Health Organization (WHO) Insulin 1st International Reference Preparation, 66/304.

Assay cross reactivity with insulin analogs

	Roche Diagnostics	Abbott Labs used at UCSF
Human insulin	100%	100%
Aspart	~ 0%	~65%
Lispro	~ 0%	~85%
Glulisine	~ 0%	~5-10%
Detemir	~0%	~75%
Glargine metabolites	~20%	~110%

Source: Heurtault B, et al. Clin Chem Lab Med 2014; 52(3): 355–362

Synonyms:

- Insulin

COLLECTION

Patient Preparation:
An overnight fast is required prior to specimen collection or reference ranges will not apply.

Sample Type:
Serum

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.15 mL serum

Stability (from collection to initiation):
Stable for 30 days when frozen at -20°C or colder.

PROCESSING

Test Code:
INS

Performing Lab:
China Basin Chemistry

Specimen Preparation:
Centrifuge promptly. Freeze serum at -20C.

Preferred Volume:
1 mL serum

Minimum Volume:
0.15 mL serum

Stability (from collection to initiation):
Stable for 30 days when frozen at -20°C or colder.

RESULT INTERPRETATION

Units:
mU/L

Reference Interval:
Fasting: 3.0 - 19.0 mU/L

Reference range was adopted from ARUP Laboratory based on correlation studies.

Note: if patient was not fasting, the normal ranges may not apply.

Additional Information:
Method changed from Siemens Centaur XP platform to Abbott Architect i2000 platform on 9/14/2017.

The Architect Insulin calibrators are referenced to the World Health Organization (WHO) Insulin 1st International Reference Preparation, 66/304.

Assay cross reactivity with insulin analogs

	Roche Diagnostics	Abbott Labs used at UCSF
Human insulin	100%	100%
Aspart	~ 0%	~65%
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Glulisine	~ 0%	~5-10%
Detemir	~0%	~75%
Glargine metabolites	~20%	~110%

Source: Heurtault B, et al. Clin Chem Lab Med 2014; 52(3): 355–362

ADMINISTRATIVE

CPT Codes:
83525

LOINC Codes:
20448-7

COMPLETE VIEW

Available Stat:
No

Test Code:
INS

Performing Lab:
China Basin Chemistry

Performed:
Wednesdays (day shift)

Methodology:
Chemiluminescent Microparticle Immunoassay (Abbott Architect i2000)

Patient Preparation:
An overnight fast is required prior to specimen collection or reference ranges will not apply.

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.15 mL serum

Specimen Preparation:
Centrifuge promptly. Freeze serum at -20C.

Units:
mU/L

Reference Interval:
Fasting: 3.0 - 19.0 mU/L

Reference range was adopted from ARUP Laboratory based on correlation studies.

Note: if patient was not fasting, the normal ranges may not apply.

Synonyms:

- Insulin

Stability (from collection to initiation):
Stable for 30 days when frozen at -20°C or colder.

Reported:
3-10 days.

Additional Information:

Method changed from Siemens Centaur XP platform to Abbott Architect i2000 platform on 9/14/2017.

The Architect Insulin calibrators are referenced to the World Health Organization (WHO) Insulin 1st International Reference Preparation, 66/304.

Assay cross reactivity with insulin analogs

	Roche Diagnostics	Abbott Labs used at UCSF
Human insulin	100%	100%
Aspart	~ 0%	~65%
Lispro	~ 0%	~85%
Glulisine	~ 0%	~5-10%
Detemir	~0%	~75%
Glargine metabolites	~20%	~110%

Source: Heurtault B, et al. Clin Chem Lab Med 2014; 52(3): 355–362

CPT Codes:

83525

LOINC Codes:

20448-7

Insulin Autoantibody

INHS

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Radio Binding Assay

Reported:
Test performed Wednesday. Turnaround 3-10 days

Synonyms:

- Anti-insulin antibody

COLLECTION

Sample Type:
Serum

Collect:
Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Stability (from collection to initiation):
Room temperature 4 weeks, refrigerated 4 weeks, frozen at -20C 4 weeks.

PROCESSING

Test Code:
INHS

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Order Quest # 52324P

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Stability (from collection to initiation):
Room temperature 4 weeks, refrigerated 4 weeks, frozen at -20C 4 weeks.

RESULT INTERPRETATION

Units:
U/mL

Reference Interval:
< 0.4 U/mL

ADMINISTRATIVE

CPT Codes:
86337-90

LOINC Codes:
13633-3

COMPLETE VIEW

Available Stat:
No

Test Code:
INHS

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Radio Binding Assay

Collect:
Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Specimen Preparation:
Order Quest # 52324P

Units:
U/mL

Reference Interval:
< 0.4 U/mL

Synonyms:

- Anti-insulin antibody

Stability (from collection to initiation):
Room temperature 4 weeks, refrigerated 4 weeks, frozen at -20C 4 weeks.

Reported:
Test performed Wednesday. Turnaround 3-10 days

CPT Codes:
86337-90

LOINC Codes:
13633-3

Insulin, C-peptide

CPEP

ORDERING

Available Stat:
No

Performing Lab:
China Basin Chemistry

Performed:
Wednesday (day shift)

Methodology:
Chemiluminescent Microparticle Immunoassay (Abbott Architect i2000)

Reported:
1-7 days

Additional Information:
Method changed from Siemens Centaur XP platform to Abbott Architect i2000 platform on 9/14/2017. Please note that the reference ranges have changed.

The Architect C-Peptide Calibrators are established against a set of Internal Reference Calibrators, which are traceable to the WHO International Reference Reagent for C-Peptide of human insulin for immunoassay, code 84/510, established 1986, from the National Institute for Biological Standards and Control (NIBSC).

The specificity of the ARCHITECT C-peptide assay is designed to have <= 0.01% cross-reactivity when tested with compounds listed in the table below. For proinsulin the assay is designed to have <= 40% cross-reactivity.

Substance	Concentration (ng/mL)	Cross-reactivity (%)
Human Insulin	8660	0
Glucagon	10000	0
Human Proinsulin	100	12.8
Secretin	15000	0
Somatomedin-C (IFG-1)	1000	0

Synonyms:

- C-peptide

COLLECTION

Patient Preparation:
Overnight fast is required before specimen collection.

Sample Type:
Serum

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.15 mL serum

Remarks:
Deliver to lab immediately. Call physician if patient is not fasting to see if the specimen is acceptable.

Stability (from collection to initiation):
Room temperature: Stable for 24 hours
Refrigerated (2-8°C): Stable for 48 hours
Frozen at -20°C or colder: Stable for 3 months

Avoid more than 3 freeze/thaw cycles.

PROCESSING

Test Code:
CPEP

Performing Lab:
China Basin Chemistry

Specimen Preparation:
Centrifuge promptly. Freeze serum at -20C.

Preferred Volume:
1 mL serum

Minimum Volume:
0.15 mL serum

Stability (from collection to initiation):
Room temperature: Stable for 24 hours
Refrigerated (2-8°C): Stable for 48 hours
Frozen at -20°C or colder: Stable for 3 months

Avoid more than 3 freeze/thaw cycles.

RESULT INTERPRETATION

Units:
ng/mL

Reference Interval:
Fasting: 0.8-3.5 ng/mL

Reference range was adopted from ARUP and verified in-house using sample collected by 25 fasting lab donors.

Note: If patient was not fasting, the normal ranges may not apply.

Additional Information:
Method changed from Siemens Centaur XP platform to Abbott Architect i2000 platform on 9/14/2017. Please note that the reference ranges have changed.

The Architect C-Peptide Calibrators are established against a set of Internal Reference Calibrators, which are traceable to the WHO International Reference Reagent for C-Peptide of human insulin for immunoassay, code 84/510, established 1986, from the National Institute for Biological Standards and Control (NIBSC).

The specificity of the ARCHITECT C-peptide assay is designed to have <= 0.01% cross-reactivity when tested with compounds listed in the table below. For proinsulin the assay is designed to have <= 40% cross-reactivity.

Substance	Concentration (ng/mL)	Cross-reactivity (%)
Human Insulin	8660	0
Glucagon	10000	0
Human Proinsulin	100	12.8
Secretin	15000	0
Somatomedin-C (IFG-1)	1000	0

ADMINISTRATIVE

CPT Codes:
84681

LOINC Codes:
1986-9

COMPLETE VIEW

Available Stat:
No

Test Code:
CPEP

Performing Lab:
China Basin Chemistry

Performed:
Wednesday (day shift)

Methodology:
Chemiluminescent Microparticle Immunoassay (Abbott Architect i2000)

Patient Preparation:
Overnight fast is required before specimen collection.

Remarks:
Deliver to lab immediately. Call physician if patient is not fasting to see if the specimen is acceptable.

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.15 mL serum

Specimen Preparation:
Centrifuge promptly. Freeze serum at -20C.

Units:
ng/mL

Reference Interval:
Fasting: 0.8-3.5 ng/mL

Reference range was adopted from ARUP and verified in-house using sample collected by 25 fasting lab donors.

Note: If patient was not fasting, the normal ranges may not apply.

Synonyms:

- C-peptide

Stability (from collection to initiation):
Room temperature: Stable for 24 hours
Refrigerated (2-8°C): Stable for 48 hours
Frozen at -20°C or colder: Stable for 3 months

Avoid more than 3 freeze/thaw cycles.

Reported:
1-7 days

Additional Information:
Method changed from Siemens Centaur XP platform to Abbott Architect i2000 platform on 9/14/2017. Please note that the reference ranges have changed.

The Architect C-Peptide Calibrators are established against a set of Internal Reference Calibrators, which are traceable to the WHO International Reference Reagent for C-Peptide of human insulin for immunoassay, code 84/510, established 1986, from the National Institute for Biological Standards and Control (NIBSC).

The specificity of the ARCHITECT C-peptide assay is designed to have <= 0.01% cross-reactivity when tested with compounds listed in the table below. For proinsulin the assay is designed to have <= 40% cross-reactivity.

Substance	Concentration (ng/mL)	Cross-reactivity (%)
Human Insulin	8660	0
Glucagon	10000	0
Human Proinsulin	100	12.8
Secretin	15000	0
Somatomedin-C (IFG-1)	1000	0

CPT Codes:
84681

LOINC Codes:
1986-9

Insulin-Like Growth Factor 2 (IGF-2)

IGF2

ORDERING

Ordering Recommendations:
May be used as an adjunct to IGF-1 in diagnosis of growth disorders.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Tue

Methodology:
Quantitative Enzyme-Linked Immunosorbent Assay (ELISA)

Reported:
1-8 days

Synonyms:

- IGF-2 (Insulin-Like Growth Factor II)

COLLECTION

Sample Type:
Serum

Collect:
Plain Red or Serum Separator Tube (SST).

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Stability (from collection to initiation):
Ambient: 24 hours; Refrigerated: 2 days; Frozen: 2 months (Avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

Unacceptable Conditions:
Moderately or grossly hemolyzed or severely lipemic specimens

PROCESSING

Test Code:
IGF2

ARUP Test Code:
2013599

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Allow specimen to clot completely at room temperature. Separate from cells ASAP or within 2 hours of collection. Transfer 0.5 mL serum to an ARUP Standard Transport Tube (Min: 0.2 mL). Freeze Immediately.

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Unacceptable Conditions:
Moderately or grossly hemolyzed or severely lipemic specimens

Stability (from collection to initiation):
Ambient: 24 hours; Refrigerated: 2 days; Frozen: 2 months (Avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

RESULT INTERPRETATION

Reference Interval:

Prepubertal (0-11 years old)	127-473 ng/mL
Postpubertal (12 years and older)	180-580 ng/mL

Interpretive Data:
Refer to report.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:
83520

LOINC:

- 2485-1

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
May be used as an adjunct to IGF-1 in diagnosis of growth disorders.

Test Code:
IGF2

ARUP Test Code:
2013599

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Tue

Methodology:
Quantitative Enzyme-Linked Immunosorbent Assay (ELISA)

Collect:
Plain Red or Serum Separator Tube (SST).

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Unacceptable Conditions:
Moderately or grossly hemolyzed or severely lipemic specimens

Specimen Preparation:
Allow specimen to clot completely at room temperature. Separate from cells ASAP or within 2 hours of collection. Transfer 0.5 mL serum to an ARUP Standard Transport Tube (Min: 0.2 mL). Freeze Immediately.

Reference Interval:

Prepubertal (0-11 years old)	127-473 ng/mL
Postpubertal (12 years and older)	180-580 ng/mL

Interpretive Data:

Refer to report.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Synonyms:

- IGF-2 (Insulin-Like Growth Factor II)

Storage/Transport Temperature:

CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

Stability (from collection to initiation):

Ambient: 24 hours; Refrigerated: 2 days; Frozen: 2 months (Avoid repeated freeze/thaw cycles)

Reported:

1-8 days

CPT Codes:

83520

LOINC:

- 2485-1

Insulin-Like Growth Factor Binding Protein-3 (IGFBP-3)

BP3

ORDERING

Ordering Recommendations:
Not a first-line test in the evaluation of growth disorders. Aids in workup of suspected anterior hypopituitarism.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative Chemiluminescent Immunoassay

Reported:
1-2 days

Synonyms:

- IGF Binding Protein-3
- IGFBP-3
- IGFBP3
- Insulin-Like Growth Factor Binding Protein-3
- Somatomedin C binding protein

COLLECTION

Sample Type:
Serum

Collect:
Serum separator tube. Also acceptable: Green (sodium heparin).

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
After separation from cells: Ambient: 24 hours; Refrigerated: 1 week; Frozen: 1 year

Storage/Transport Temperature:
Frozen.

Unacceptable Conditions:
Tissue or urine. Grossly hemolyzed or lipemic specimens.

PROCESSING

Test Code:
BP3

ARUP Test Code:
0070060

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transfer 0.5 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.3 mL)

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Tissue or urine. Grossly hemolyzed or lipemic specimens.

Stability (from collection to initiation):
After separation from cells: Ambient: 24 hours; Refrigerated: 1 week; Frozen: 1 year

Storage/Transport Temperature:
Frozen.

RESULT INTERPRETATION

Units:
ng/mL

Reference Interval:

Components	Reference Interval
IGF Binding Protein 3	

Age	Male (ng/mL)	Female (ng/mL)
0-12 months	1039-3169	1039-3169
1-3 years	972-4123	1590-4225
4-5 years	1843-4968	2169-4790
6-7 years	1838-4968	2188-4996
8-9 years	1932-5858	2072-5504
10-11 years	1828-6592	2456-6992
12-13 years	2134-6598	2838-6846
14-15 years	2330-6550	2654-6680
16-17 years	2380-6400	2756-6908
18-19 years	2340-6632	2700-6492
20-24 years	2404-5948	3032-5992
25-29 years	2614-5792	2926-5858
30-34 years	2500-5806	2878-6650
35-39 years	2474-5208	2786-6084
40-44 years	2360-5560	2514-6014
45-49 years	2314-5700	2838-4954
50-54 years	2528-5050	2562-5596
55-59 years	2482-5460	2574-5914
60-64 years	2592-4770	2684-5130
65 years and older	2698-5680	2462-5274
Tanner Stage I	1878-6190	2314-6086
Tanner Stage II	2112-6208	2732-6738
Tanner Stage III	2372-6602	2870-7068
Tanner Stage IV & V	2336-6414	2756-7232

ADMINISTRATIVE

CPT Codes:
82397

LOINC:

- 2483-6

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Not a first-line test in the evaluation of growth disorders. Aids in workup of suspected anterior hypopituitarism.

Test Code:
BP3

ARUP Test Code:
0070060

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative Chemiluminescent Immunoassay

Collect:
Serum separator tube. Also acceptable: Green (sodium heparin).

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Tissue or urine. Grossly hemolyzed or lipemic specimens.

Specimen Preparation:
Transfer 0.5 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.3 mL)

Units:
ng/mL

Reference Interval:

Components	Reference Interval		
IGF Binding Protein 3	**Age**	**Male (ng/mL)**	**Female (ng/mL)**
	0-12 months	1039-3169	1039-3169
	1-3 years	972-4123	1590-4225
	4-5 years	1843-4968	2169-4790
	6-7 years	1838-4968	2188-4996
	8-9 years	1932-5858	2072-5504
	10-11 years	1828-6592	2456-6992
	12-13 years	2134-6598	2838-6846
	14-15 years	2330-6550	2654-6680
	16-17 years	2380-6400	2756-6908
	18-19 years	2340-6632	2700-6492
	20-24 years	2404-5948	3032-5992
	25-29 years	2614-5792	2926-5858
	30-34 years	2500-5806	2878-6650
	35-39 years	2474-5208	2786-6084
	40-44 years	2360-5560	2514-6014
	45-49 years	2314-5700	2838-4954
	50-54 years	2528-5050	2562-5596
	55-59 years	2482-5460	2574-5914
	60-64 years	2592-4770	2684-5130
	65 years and older	2698-5680	2462-5274
	Tanner Stage I	1878-6190	2314-6086
	Tanner Stage II	2112-6208	2732-6738
	Tanner Stage III	2372-6602	2870-7068
	Tanner Stage IV & V	2336-6414	2756-7232

Synonyms:

- IGF Binding Protein-3
- IGFBP-3
- IGFBP3
- Insulin-Like Growth Factor Binding Protein-3
- Somatomedin C binding protein

Storage/Transport Temperature:
Frozen.

Stability (from collection to initiation):
After separation from cells: Ambient: 24 hours; Refrigerated: 1 week; Frozen: 1 year

Reported:
1-2 days

CPT Codes:
82397

LOINC:

- 2483-6

Intact Fibroblast Growth Factor 23 (FGF23), Serum

FGF23

ORDERING

Ordering Recommendations:
May assist in the evaluation of inherited or acquired disorders of mineral metabolism such as hypophosphatemia rickets, tumor-induced osteomalacia, and familial tumoral calcinosis with hyperphosphatemia.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Varies

Methodology:
Quantitative Chemiluminescent Immunoassay (CLIA)

Reported:
6-11 days

Synonyms:

- Autosomal Dominant Hypophosphatemic Rickets
- Familial Tumoral Calcinosis with Hyperphosphatemia
- FGF23
- Intact-FGF23
- Oncogenic Osteomalacia
- Phosphatonin
- X-linked Hypophosphatemia

COLLECTION

Sample Type:
Serum

Collect:
Serum separator tube (SST). Also acceptable: Plain red.

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.25 mL serum

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 2 weeks; Frozen: 3 months

Storage/Transport Temperature:
Frozen. Also acceptable: Refrigerated.

PROCESSING

Test Code:
FGF23

ARUP Test Code:
3003816

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transfer 0.5 mL serum to an ARUP standard transport tube. (Min: 0.25 mL)
Test is not performed at ARUP; separate specimens must be submitted when multiple tests are ordered.

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.25 mL serum

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 2 weeks; Frozen: 3 months

Storage/Transport Temperature:
Frozen. Also acceptable: Refrigerated.

RESULT INTERPRETATION

Reference Interval:
By Report

ADMINISTRATIVE

CPT Codes:
83520

LOINC:

- 54390-0

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
May assist in the evaluation of inherited or acquired disorders of mineral metabolism such as hypophosphatemia rickets, tumor-induced osteomalacia, and familial tumoral calcinosis with hyperphosphatemia.

Test Code:
FGF23

ARUP Test Code:
3003816

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Varies

Methodology:
Quantitative Chemiluminescent Immunoassay (CLIA)

Collect:
Serum separator tube (SST). Also acceptable: Plain red.

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.25 mL serum

Specimen Preparation:
Transfer 0.5 mL serum to an ARUP standard transport tube. (Min: 0.25 mL)
Test is not performed at ARUP; separate specimens must be submitted when multiple tests are ordered.

Reference Interval:
By Report

Synonyms:

- Autosomal Dominant Hypophosphatemic Rickets
- Familial Tumoral Calcinosis with Hyperphosphatemia
- FGF23
- Intact-FGF23
- Oncogenic Osteomalacia
- Phosphatonin
- X-linked Hypophosphatemia

Storage/Transport Temperature:
Frozen. Also acceptable: Refrigerated.

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 2 weeks; Frozen: 3 months

Reported:
6-11 days

CPT Codes:
83520

LOINC:

- 54390-0

Interleukin-6

IL6

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
EIA

Reported:
Run Friday. Turnaround time 1-7 days

Synonyms:

- IL-6
- IL6

COLLECTION

Sample Type:
Serum

Collect:
Gold or Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature 24 hours, refrigerated 48 hours, frozen at -20C 3 months. Order Quest test # 34473X

PROCESSING

Test Code:
IL6

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Separate and freeze serum or plasma at -20C. Transport frozen.

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature 24 hours, refrigerated 48 hours, frozen at -20C 3 months. Order Quest test # 34473X

RESULT INTERPRETATION

Units:
pg/mL

Reference Interval:
0.31-5.00 pg/mL

ADMINISTRATIVE

CPT Codes:
83529-90

LOINC Codes:
26881-3

COMPLETE VIEW

Available Stat:
No

Test Code:
IL6

Performing Lab:
Quest

Sendout:
Yes

Methodology:
EIA

Collect:
Gold or Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Specimen Preparation:
Separate and freeze serum or plasma at -20C. Transport frozen.

Units:
pg/mL

Reference Interval:
0.31-5.00 pg/mL

Synonyms:

- IL-6
- IL6

Stability (from collection to initiation):
Room temperature 24 hours, refrigerated 48 hours, frozen at -20C 3 months. Order Quest test # 34473X

Reported:
Run Friday. Turnaround time 1-7 days

CPT Codes:
83529-90

LOINC Codes:
26881-3

Intracellular Kappa & Lambda Light Chains

ICKL

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday - Friday (Day shift only)

Methodology:
Flow cytometry

Reported:
Preliminary result available from laboratory in 2-4 days. Written interpretive report sent within 7 days.

Additional Information:
This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. Only some of the reagents used have been cleared or approved by the U.S. Food and Drug Administration.

COLLECTION

Sample Type:
EDTA whole blood, Bone Marrow, Unfixed tissue, Body Fluid, FNA

Collect:
Lavender top

Amount to Collect:
3 mL blood, Contact Immunology x3-1712 for other sample types

Preferred Volume:
3 mL blood, Contact Immunology x3-1712 for other sample types

Minimum Volume:
Contact Immunology x3-1712

Remarks:
Maintain samples at room temperature and transport to laboratory as soon as possible, esp. for FNA samples

Unacceptable Conditions:
Frozen, fixed samples or those stored at inappropriate temperatures

PROCESSING

Test Code:
ICKL

Performing Lab:
Immunology

Specimen Preparation:
Typically ordered by Immunology only, if order received on a requisition contact Immunology to confirm.

Hold bone marrow specimens at room temperature, but refrigerate fine needle aspirates in special holding medium. Do NOT centrifuge. Each specimen should be assigned its own accession number.

If specimens are delivered after 1200 hours on Friday, weekends or on a holiday contact the resident on call

Preferred Volume:
3 mL blood, Contact Immunology x3-1712 for other sample types

Minimum Volume:
Contact Immunology x3-1712

Unacceptable Conditions:
Frozen, fixed samples or those stored at inappropriate temperatures

RESULT INTERPRETATION

Reference Interval:
Positive

Additional Information:
This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. Only some of the reagents used have been cleared or approved by the U.S. Food and Drug Administration.

ADMINISTRATIVE

CPT Codes:
88346 X 2

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
ICKL

Performing Lab:
Immunology

Performed:
Monday - Friday (Day shift only)

Methodology:
Flow cytometry

Remarks:
Maintain samples at room temperature and transport to laboratory as soon as possible, esp. for FNA samples

Collect:
Lavender top

Amount to Collect:
3 mL blood, Contact Immunology x3-1712 for other sample types

Sample Type:
EDTA whole blood, Bone Marrow, Unfixed tissue, Body Fluid, FNA

Preferred Volume:
3 mL blood, Contact Immunology x3-1712 for other sample types

Minimum Volume:
Contact Immunology x3-1712

Unacceptable Conditions:
Frozen, fixed samples or those stored at inappropriate temperatures

Specimen Preparation:
Typically ordered by Immunology only, if order received on a requisition contact Immunology to confirm.

Hold bone marrow specimens at room temperature, but refrigerate fine needle aspirates in special holding medium. Do NOT centrifuge. Each specimen should be assigned its own accession number.

If specimens are delivered after 1200 hours on Friday, weekends or on a holiday contact the resident on call

Reference Interval:
Positive

Reported:
Preliminary result available from laboratory in 2-4 days. Written interpretive report sent within 7 days.

Additional Information:
This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. Only some of the reagents used have been cleared or approved by the U.S. Food and Drug Administration.

CPT Codes:
88346 X 2

LDT or Modified FDA:
Yes

Intrinsic Factor Blocking Antibody

IFBA

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Immunoassay

Reported:
Test performed Tuesday, Thursday, Saturday. Turnaround time: 2-6 days.

COLLECTION

Patient Preparation:
Do NOT collect samples within 48 hours following an injection of Vitamin B12, which can give a false positive result.

Sample Type:
Serum

Collect:
Red top or Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Remarks:
Do NOT collect samples within 48 hours following an injection of Vitamin B12, which can give a false positive result.

Stability (from collection to initiation):
Room temperature or refrigerated 1 week, frozen at -20C 28 days.

PROCESSING

Test Code:
IFBA

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate serum (or plasma). Order Quest # 568

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Stability (from collection to initiation):
Room temperature or refrigerated 1 week, frozen at -20C 28 days.

RESULT INTERPRETATION

Reference Interval:
Negative

ADMINISTRATIVE

CPT Codes:
86340-90

LOINC Codes:
31443-5

COMPLETE VIEW

Available Stat:
No

Test Code:
IFBA

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Immunoassay

Patient Preparation:
Do NOT collect samples within 48 hours following an injection of Vitamin B12, which can give a false positive result.

Remarks:
Do NOT collect samples within 48 hours following an injection of Vitamin B12, which can give a false positive result.

Collect:
Red top or Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Specimen Preparation:
Refrigerate serum (or plasma). Order Quest # 568

Reference Interval:
Negative

Stability (from collection to initiation):
Room temperature or refrigerated 1 week, frozen at -20C 28 days.

Reported:
Test performed Tuesday, Thursday, Saturday. Turnaround time: 2-6 days.

CPT Codes:
86340-90

LOINC Codes:
31443-5

Inversion 3p RPN1/MECOM FISH

INV3Q, BINV3Q

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Fluorescent in-Situ Hybridization

Reported:
1-2 weeks

Synonyms:

- Inversion 3q21q26.2 RPN1/MECOM FISH
- INV3Q
- BINV3Q

COLLECTION

Sample Type:
Heparinized blood or bone marrow aspirate
Bone biopsy

Collect:
Blood or marrow aspirate: Dark Green top

Amount to Collect:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow core: 1 cm

Remarks:
Mix blood and marrow aspirates well

Stability (from collection to initiation):
2 days at room temperature

Unacceptable Conditions:
Insufficient sample or not collected in heparin

PROCESSING

Test Code:
BINV3Q: Blood
INV3Q: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Specimen Preparation:
Maintain sample at room temperature; Do Not Refrigerate or freeze. Do Not centrifuge.

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow core: 1 cm

Unacceptable Conditions:
Insufficient sample or not collected in heparin

Stability (from collection to initiation):
2 days at room temperature

ADMINISTRATIVE

CPT Codes:
88271 x2, 88275

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BINV3Q: Blood
INV3Q: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Fluorescent in-Situ Hybridization

Remarks:
Mix blood and marrow aspirates well

Collect:
Blood or marrow aspirate: Dark Green top

Amount to Collect:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Sample Type:
Heparinized blood or bone marrow aspirate
Bone biopsy

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow core: 1 cm

Unacceptable Conditions:
Insufficient sample or not collected in heparin

Specimen Preparation:
Maintain sample at room temperature; Do Not Refrigerate or freeze. Do Not centrifuge.

Synonyms:

- Inversion 3q21q26.2 RPN1/MECOM FISH
- INV3Q
- BINV3Q

Stability (from collection to initiation):
2 days at room temperature

Reported:
1-2 weeks

CPT Codes:
88271 x2, 88275

LDT or Modified FDA:
Yes

Inversion, Deletion or Translocation 16q FISH

INV16Q, BINV16

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Fluorescent in-situ hybridization (FISH)

Reported:
1-2 weeks

Synonyms:

- Inv16q, Del16q
- INV16Q
- BINV16

COLLECTION

Sample Type:
Heparinized whole blood, bone marrow, bone core

Collect:
Dark green top (Na-heparin)

Amount to Collect:
Blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow core: 2 cm

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow core: 2 cm

Remarks:
Maintain sample at room temperature.

PROCESSING

Test Code:
BINV16: Blood
INV16Q: Bone marrow

Test Group:
Oncology FISH

Performing Lab:
Medical Genomics - Cytogenetics

Specimen Preparation:
Maintain sample at room temperature

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow core: 2 cm

RESULT INTERPRETATION

Reference Interval:
No inversion, deletion or translocation identified

ADMINISTRATIVE

CPT Codes:
88271, 88275

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BINV16: Blood
INV16Q: Bone marrow

Test Group:
Oncology FISH

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Fluorescent in-situ hybridization (FISH)

Remarks:
Maintain sample at room temperature.

Collect:
Dark green top (Na-heparin)

Amount to Collect:
Blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow core: 2 cm

Sample Type:
Heparinized whole blood, bone marrow, bone core

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow core: 2 cm

Specimen Preparation:
Maintain sample at room temperature

Reference Interval:
No inversion, deletion or translocation identified

Synonyms:

- Inv16q, Del16q
- INV16Q
- BINV16

Reported:
1-2 weeks

CPT Codes:
88271, 88275

LDT or Modified FDA:
Yes

Iodine, 24 hour urine

IODI

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Inductively Coupled Plasma-Mass Spectrometry (ICP/MS)

Reported:
3-5 days

Additional Information:
Iodine is an essential element that is required for thyroid hormone production. The measurement of urinary iodine serves as an index of adequate dietary iodine intake.

COLLECTION

Sample Type:
Urine

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container

Amount to Collect:
Entire 24 hour urine output

Preferred Volume:
10 mL urine

Minimum Volume:
2 mL urine

Stability (from collection to initiation):
Room temperature 10 days, refrigerated 10 days, frozen unacceptable

PROCESSING

Test Code:
IODI

Test Group:
Iodine

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Specify the total 24-hour urine volume on the request form. Refrigerate specimen. Forward to CB.

Preferred Volume:
10 mL urine

Minimum Volume:
2 mL urine

Stability (from collection to initiation):
Room temperature 10 days, refrigerated 10 days, frozen unacceptable

RESULT INTERPRETATION

Units:
µg/24Hr (mcg/24 Hr)

Reference Interval:
70-500 µg/24Hr

Additional Information:
Iodine is an essential element that is required for thyroid hormone production. The measurement of urinary iodine serves as an index of adequate dietary iodine intake.

ADMINISTRATIVE

CPT Codes:
83789-90

COMPLETE VIEW

Available Stat:
No

Test Code:
IODI

Test Group:
Iodine

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Inductively Coupled Plasma-Mass Spectrometry (ICP/MS)

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container

Amount to Collect:
Entire 24 hour urine output

Sample Type:
Urine

Preferred Volume:
10 mL urine

Minimum Volume:
2 mL urine

Specimen Preparation:
Specify the total 24-hour urine volume on the request form. Refrigerate specimen. Forward to CB.

Units:
µg/24Hr (mcg/24 Hr)

Reference Interval:
70-500 µg/24Hr

Stability (from collection to initiation):
Room temperature 10 days, refrigerated 10 days, frozen unacceptable

Reported:
3-5 days

Additional Information:
Iodine is an essential element that is required for thyroid hormone production. The measurement of urinary iodine serves as an index of adequate dietary iodine intake.

CPT Codes:
83789-90

Iodine, Random Urine

IODUR

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Inductively Coupled Plasma/Mass Spectrometry

Reported:
3-5 days

Additional Information:
Iodine is an essential element that is required for thyroid hormone production. The measurement of urinary iodine serves as an index of adequate dietary iodine intake.

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
10 mL urine

Preferred Volume:
10 mL urine

Minimum Volume:
2 mL urine

Stability (from collection to initiation):
Room temperature 10 days, refrigerated 10 days, frozen unacceptable

PROCESSING

Test Code:
IODUR

Test Group:
Iodine

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Do not freeze

Preferred Volume:
10 mL urine

Minimum Volume:
2 mL urine

Stability (from collection to initiation):
Room temperature 10 days, refrigerated 10 days, frozen unacceptable

RESULT INTERPRETATION

Units:
µg/mL (mcg/mL)

Reference Interval:
34-523 µg/mL

Additional Information:
Iodine is an essential element that is required for thyroid hormone production. The measurement of urinary iodine serves as an index of adequate dietary iodine intake.

ADMINISTRATIVE

CPT Codes:
83789-90

COMPLETE VIEW

Available Stat:
No

Test Code:
IODUR

Test Group:
Iodine

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Inductively Coupled Plasma/Mass Spectrometry

Collect:
Urine cup

Amount to Collect:
10 mL urine

Sample Type:
Random urine

Preferred Volume:
10 mL urine

Minimum Volume:
2 mL urine

Specimen Preparation:
Do not freeze

Units:
µg/mL (mcg/mL)

Reference Interval:
34-523 µg/mL

Stability (from collection to initiation):
Room temperature 10 days, refrigerated 10 days, frozen unacceptable

Reported:
3-5 days

Additional Information:
Iodine is an essential element that is required for thyroid hormone production. The measurement of urinary iodine serves as an index of adequate dietary iodine intake.

CPT Codes:
83789-90

IRF4 Break Apart Rearrangement FISH

BIRF4, IRF4

ORDERING

Available Stat:
No

Performing Lab:
Cytogenetics

Performed:
Mon - Fri 9 am to 5 pm

Methodology:
FISH

Reported:
7~14 days

Synonyms:

- BIRF4
- 6q25 BA Rearrangement FISH
- IRF4

COLLECTION

Sample Type:
Blood, bone marrow aspirate, bone marrow core

Collect:
Blood: Dark Green top Sodium Heparin tube
Bone marrow: Dark Green top Sodium Heparin tube for bone marrow, sterile container with medium for bone core.

Amount to Collect:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Room Temperature

Unacceptable Conditions:
Clotted samples, samples received refrigerated or frozen

PROCESSING

Test Code:
Blood: BIRF4
Bone marrow: IRF4

Performing Lab:
Cytogenetics

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Clotted samples, samples received refrigerated or frozen

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Room Temperature

ADMINISTRATIVE

CPT Codes:
88271x2, 88275x1

COMPLETE VIEW

Available Stat:
No

Test Code:
Blood: BIRF4
Bone marrow: IRF4

Performing Lab:
Cytogenetics

Performed:
Mon - Fri 9 am to 5 pm

Methodology:
FISH

Collect:
Blood: Dark Green top Sodium Heparin tube
Bone marrow: Dark Green top Sodium Heparin tube for bone marrow, sterile container with medium for bone core.

Amount to Collect:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Sample Type:
Blood, bone marrow aspirate, bone marrow core

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Clotted samples, samples received refrigerated or frozen

Synonyms:

- BIRF4
- 6q25 BA Rearrangement FISH
- IRF4

Storage/Transport Temperature:
Room Temperature

Stability (from collection to initiation):
2 days

Reported:
7~14 days

CPT Codes:
88271x2, 88275x1

Iron, % Sat and Transferrin or TIBC, Plasma / Serum

FE

ORDERING

Ordering Recommendations:
Consider ordering serum ferritin in addition

Available Stat:
No

Performing Lab:
Mission Bay, Parnassus and Mt Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Iron: Ferrozine Spectrophotometric - Abbott Architect c8000 or c4000
Transferrin: Immunoturbidimetric - Abbott Architect c8000 or c4000

Reported:
1 day

Additional Information:
Note: Iron and transferrin may be ordered separately.
Saturation is calculated from the iron and transferrin levels and cannot be ordered separately.

The calculation is:
[Serum iron concentration (mcg/dL) / Transferrin concentration (mg/dL)] * 71.24

This calculation is equivalent to the following calculation:
Serum iron concentration (mcg/dL) x100 / (Transferrin concentration (mg/dL) x1.4)

Note:Transferrin saturation is not calculated by dividing the reported iron concentration/transferrin concentration. The calculation for transferrin saturation adjusts for the measurement units reported for iron and transferrin, the molecular weights, and for the number of iron binding sites in the transferrin molecule.

See also Ferritin, the level of which is the single most sensitive test for the detection of iron deficiency short of examining the bone marrow for stainable iron. A transferrin saturation of >= 45% has been employed as a screen for iron overload due to hereditary hemochromatosis, and may warrant further evaluation. See: Adams PC, et al. 2000. Population screening for hemochromatosis: a comparison of unbound iron binding capacity, transferrin saturation, and C282Y genotyping in 5211 voluntary blood donors Hepatology 31:1160-1164. Brandhagen D J, et al. 2002. Recognition and Management of hereditary hemochromatosis. Amer. Fam. Physician 65:853-860. Fletcher L M, et al. 2002. Haemochromatosis: understanding the mechanism of diseases and implications for diagnosis and patient management following the recent cloning of novel genes involved in iron metabolism. J. Intern. Med. 251:181-192.

Gadolinium MR Contrast agents including Gadodiamide (Omniscan), Gadoversetamide (Optimark), Gadopentetate Dimeglumine (Magnevist), and Gadoterdiol (Prohance), have been shown to interfere with certain colorimetric assays used in the measurement of various serum cations including iron, magnesium, and calcium. The UCSF clinical labs utilize a colorimetric assay for the measurement of both serum iron and serum magnesium that are subject to this interference and could therefore affect the % saturation calculation.
For serum iron, gadolinium containing agents (Gadodiamide, Gadoversetamide, and Gadopentetate) may produce a falsely low result (on average, 75, 78, and 88% respectively, of the actual iron concentration). See "Calcium" and "Magnesium" entries for respective interferences.

Reference: Proctor et al. Gadolinium Magnetic Resonance contrast Agents produce Analytic Interference in Multiple Serum Assays. Am J Clin Pathol. 2004;121:282-292.

Hemolysis may artifactually increase the iron concentration and could therefore also affect the % saturation calculation.

If a sample is found to have a hemolytic index of >=500 mg/dL, append ETC HEMIN (hemolysis present, may tend to increase result).

Samples containing paraproteins (monoclonal proteins) and other factors affecting sample turbidity may interfere in the transferrin assay and therefore could affect the % saturation calculation.

If a sample is found to have a lipemic/turbidity index of >=200, append ETC "TURUNK" (specimen grossly turbid, effect on most assay results unknown).

COLLECTION

Patient Preparation:
An 8 hour fast before specimen collection is preferred.

Sample Type:
Heparinized plasma (preferred) or Serum

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
3 mL blood

Preferred Volume:
1.5 mL plasma or serum

Remarks:
Avoid hemolysis.

Unacceptable Conditions:
Lipemia, hemolyzed

PROCESSING

Test Code:
FE

Test Group:
Iron

Performing Lab:
Mission Bay, Parnassus and Mt Zion Chemistry

Specimen Preparation:
Avoid contamination of Iron by pouring or using plastic pipette to transfer plasma or serum. Store at 2-8 C. Do NOT use a glass pipette.

Preferred Volume:
1.5 mL plasma or serum

Unacceptable Conditions:
Lipemia, hemolyzed

RESULT INTERPRETATION

Units:
µg/dL, mg/dL, %

Reference Interval:

Iron:

Age	Male (µg/dL)	Female (µg/dL)
0 - 13 years	16-128	16-128
14 to 18 years	31-168	20-162
>= 19 years	65-179	39-179

The adult reference ranges were adopted from: Lee et al, 2017, Generating method-specific reference ranges - a harmonious outcome? Pract Lab Med 9: 1-11.

Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, http://caliper.research.sickkids.ca/#/search

Transferrin:

Age	mg/dL
0 to < 9 weeks	104-224
9 weeks to < 1 year	107-324
>= 1 year to < 19 years	220-337
>= 19 years	182-360

Adult reference interval adopted from the previous transferrin reference interval from the China Basin Immunology Immage methodology following a method comparison study and a reference interval study performed between the Architect and the Immage.

Pediatric reference intervals adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, http://caliper.research.sickkids.ca/#/search.

Transferrin % saturation:

Age	%
0 to < 1 year	5-59
>= 1 year to < 14 years	7-39
>= 14 years to < 19 years	5-58
>= 19 years	10-47

Reference interval adopted from the previous % saturation reference interval from the China Basin Immunology Immage methodology following a method comparison study and a reference interval study performed between the Architect and the Immage.

Pediatric reference intervals adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, http://caliper.research.sickkids.ca/#/search.

Additional Information:

Note: Iron and transferrin may be ordered separately.
Saturation is calculated from the iron and transferrin levels and cannot be ordered separately.

The calculation is:
[Serum iron concentration (mcg/dL) / Transferrin concentration (mg/dL)] * 71.24

This calculation is equivalent to the following calculation:
Serum iron concentration (mcg/dL) x100 / (Transferrin concentration (mg/dL) x1.4)

Note:Transferrin saturation is not calculated by dividing the reported iron concentration/transferrin concentration. The calculation for transferrin saturation adjusts for the measurement units reported for iron and transferrin, the molecular weights, and for the number of iron binding sites in the transferrin molecule.

See also Ferritin, the level of which is the single most sensitive test for the detection of iron deficiency short of examining the bone marrow for stainable iron. A transferrin saturation of >= 45% has been employed as a screen for iron overload due to hereditary hemochromatosis, and may warrant further evaluation. See: Adams PC, et al. 2000. Population screening for hemochromatosis: a comparison of unbound iron binding capacity, transferrin saturation, and C282Y genotyping in 5211 voluntary blood donors Hepatology 31:1160-1164. Brandhagen D J, et al. 2002. Recognition and Management of hereditary hemochromatosis. Amer. Fam. Physician 65:853-860. Fletcher L M, et al. 2002. Haemochromatosis: understanding the mechanism of diseases and implications for diagnosis and patient management following the recent cloning of novel genes involved in iron metabolism. J. Intern. Med. 251:181-192.

Gadolinium MR Contrast agents including Gadodiamide (Omniscan), Gadoversetamide (Optimark), Gadopentetate Dimeglumine (Magnevist), and Gadoterdiol (Prohance), have been shown to interfere with certain colorimetric assays used in the measurement of various serum cations including iron, magnesium, and calcium. The UCSF clinical labs utilize a colorimetric assay for the measurement of both serum iron and serum magnesium that are subject to this interference and could therefore affect the % saturation calculation.
For serum iron, gadolinium containing agents (Gadodiamide, Gadoversetamide, and Gadopentetate) may produce a falsely low result (on average, 75, 78, and 88% respectively, of the actual iron concentration). See "Calcium" and "Magnesium" entries for respective interferences.

Reference: Proctor et al. Gadolinium Magnetic Resonance contrast Agents produce Analytic Interference in Multiple Serum Assays. Am J Clin Pathol. 2004;121:282-292.

Hemolysis may artifactually increase the iron concentration and could therefore also affect the % saturation calculation.

If a sample is found to have a hemolytic index of >=500 mg/dL, append ETC HEMIN (hemolysis present, may tend to increase result).

Samples containing paraproteins (monoclonal proteins) and other factors affecting sample turbidity may interfere in the transferrin assay and therefore could affect the % saturation calculation.

If a sample is found to have a lipemic/turbidity index of >=200, append ETC "TURUNK" (specimen grossly turbid, effect on most assay results unknown).

ADMINISTRATIVE

CPT Codes:
84466, 83540

LOINC Codes:
39778-6

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Consider ordering serum ferritin in addition

Test Code:
FE

Test Group:
Iron

Performing Lab:
Mission Bay, Parnassus and Mt Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Iron: Ferrozine Spectrophotometric - Abbott Architect c8000 or c4000
Transferrin: Immunoturbidimetric - Abbott Architect c8000 or c4000

Patient Preparation:
An 8 hour fast before specimen collection is preferred.

Remarks:
Avoid hemolysis.

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
3 mL blood

Sample Type:
Heparinized plasma (preferred) or Serum

Preferred Volume:
1.5 mL plasma or serum

Unacceptable Conditions:
Lipemia, hemolyzed

Specimen Preparation:
Avoid contamination of Iron by pouring or using plastic pipette to transfer plasma or serum. Store at 2-8 C. Do NOT use a glass pipette.

Units:
µg/dL, mg/dL, %

Reference Interval:
Iron:

Age	Male (µg/dL)	Female (µg/dL)
0 - 13 years	16-128	16-128
14 to 18 years	31-168	20-162
>= 19 years	65-179	39-179

The adult reference ranges were adopted from: Lee et al, 2017, Generating method-specific reference ranges - a harmonious outcome? Pract Lab Med 9: 1-11.

Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, http://caliper.research.sickkids.ca/#/search

Transferrin:

Age	mg/dL
0 to < 9 weeks	104-224
9 weeks to < 1 year	107-324
>= 1 year to < 19 years	220-337
>= 19 years	182-360

Adult reference interval adopted from the previous transferrin reference interval from the China Basin Immunology Immage methodology following a method comparison study and a reference interval study performed between the Architect and the Immage.

Pediatric reference intervals adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, http://caliper.research.sickkids.ca/#/search.

Transferrin % saturation:

Age	%
0 to < 1 year	5-59
>= 1 year to < 14 years	7-39
>= 14 years to < 19 years	5-58
>= 19 years	10-47

Reference interval adopted from the previous % saturation reference interval from the China Basin Immunology Immage methodology following a method comparison study and a reference interval study performed between the Architect and the Immage.

Pediatric reference intervals adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, http://caliper.research.sickkids.ca/#/search.

Reported:
1 day

Additional Information:

Note: Iron and transferrin may be ordered separately.
Saturation is calculated from the iron and transferrin levels and cannot be ordered separately.

The calculation is:
[Serum iron concentration (mcg/dL) / Transferrin concentration (mg/dL)] * 71.24

This calculation is equivalent to the following calculation:
Serum iron concentration (mcg/dL) x100 / (Transferrin concentration (mg/dL) x1.4)

Note:Transferrin saturation is not calculated by dividing the reported iron concentration/transferrin concentration. The calculation for transferrin saturation adjusts for the measurement units reported for iron and transferrin, the molecular weights, and for the number of iron binding sites in the transferrin molecule.

See also Ferritin, the level of which is the single most sensitive test for the detection of iron deficiency short of examining the bone marrow for stainable iron. A transferrin saturation of >= 45% has been employed as a screen for iron overload due to hereditary hemochromatosis, and may warrant further evaluation. See: Adams PC, et al. 2000. Population screening for hemochromatosis: a comparison of unbound iron binding capacity, transferrin saturation, and C282Y genotyping in 5211 voluntary blood donors Hepatology 31:1160-1164. Brandhagen D J, et al. 2002. Recognition and Management of hereditary hemochromatosis. Amer. Fam. Physician 65:853-860. Fletcher L M, et al. 2002. Haemochromatosis: understanding the mechanism of diseases and implications for diagnosis and patient management following the recent cloning of novel genes involved in iron metabolism. J. Intern. Med. 251:181-192.

Gadolinium MR Contrast agents including Gadodiamide (Omniscan), Gadoversetamide (Optimark), Gadopentetate Dimeglumine (Magnevist), and Gadoterdiol (Prohance), have been shown to interfere with certain colorimetric assays used in the measurement of various serum cations including iron, magnesium, and calcium. The UCSF clinical labs utilize a colorimetric assay for the measurement of both serum iron and serum magnesium that are subject to this interference and could therefore affect the % saturation calculation.
For serum iron, gadolinium containing agents (Gadodiamide, Gadoversetamide, and Gadopentetate) may produce a falsely low result (on average, 75, 78, and 88% respectively, of the actual iron concentration). See "Calcium" and "Magnesium" entries for respective interferences.

Reference: Proctor et al. Gadolinium Magnetic Resonance contrast Agents produce Analytic Interference in Multiple Serum Assays. Am J Clin Pathol. 2004;121:282-292.

Hemolysis may artifactually increase the iron concentration and could therefore also affect the % saturation calculation.

If a sample is found to have a hemolytic index of >=500 mg/dL, append ETC HEMIN (hemolysis present, may tend to increase result).

Samples containing paraproteins (monoclonal proteins) and other factors affecting sample turbidity may interfere in the transferrin assay and therefore could affect the % saturation calculation.

If a sample is found to have a lipemic/turbidity index of >=200, append ETC "TURUNK" (specimen grossly turbid, effect on most assay results unknown).

CPT Codes:

84466, 83540

LOINC Codes:

39778-6

Iron, liver

FEBX

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
ICP/MS

Reported:
14 days

Additional Information:
To convert µg to µmol (SI units) multiply x 0.0179

The hepatic iron index (provided for patients =12 years old) is derived from the formula µg of iron per g of dry liver weight/56 x age. Results between 1.0 and 1.9 suggest mild, nonspecific iron accumulation as may be seen in alcoholic liver disease or heterozygous hemochromatosis. Results > 1.9 indicate homozygous hemochromatosis or transfusion-related iron overload.

COLLECTION

Sample Type:
Fresh liver tissue

Collect:
Trace metal-free vial (blue label)

Amount to Collect:
See preferred volume

Preferred Volume:
0.5 x 5 mm piece of liver

Remarks:
Obtain special vial from Specimen Receiving.

PROCESSING

Test Code:
FEBX

Test Group:
Iron

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Refrigerate specimen. Order MAYO# 8350. Call MCS for pickup.

Preferred Volume:
0.5 x 5 mm piece of liver

RESULT INTERPRETATION

Units:
µg per g dry wt of liver

Reference Interval:
Males: 200-2400 µg per g dry wt of liver
Females: 400-1600 µg per g dry wt of liver

Iron Index: < 1.0

Additional Information:
To convert µg to µmol (SI units) multiply x 0.0179

The hepatic iron index (provided for patients =12 years old) is derived from the formula µg of iron per g of dry liver weight/56 x age. Results between 1.0 and 1.9 suggest mild, nonspecific iron accumulation as may be seen in alcoholic liver disease or heterozygous hemochromatosis. Results > 1.9 indicate homozygous hemochromatosis or transfusion-related iron overload.

ADMINISTRATIVE

CPT Codes:
83540-90

LOINC Codes:
57028-3

COMPLETE VIEW

Available Stat:
No

Test Code:
FEBX

Test Group:
Iron

Performing Lab:
Mayo

Sendout:
Yes

Methodology:
ICP/MS

Remarks:
Obtain special vial from Specimen Receiving.

Collect:
Trace metal-free vial (blue label)

Amount to Collect:
See preferred volume

Sample Type:
Fresh liver tissue

Preferred Volume:
0.5 x 5 mm piece of liver

Specimen Preparation:
Refrigerate specimen. Order MAYO# 8350. Call MCS for pickup.

Units:
µg per g dry wt of liver

Reference Interval:
Males: 200-2400 µg per g dry wt of liver
Females: 400-1600 µg per g dry wt of liver

Iron Index: < 1.0

Reported:
14 days

Additional Information:
To convert µg to µmol (SI units) multiply x 0.0179

The hepatic iron index (provided for patients =12 years old) is derived from the formula µg of iron per g of dry liver weight/56 x age. Results between 1.0 and 1.9 suggest mild, nonspecific iron accumulation as may be seen in alcoholic liver disease or heterozygous hemochromatosis. Results > 1.9 indicate homozygous hemochromatosis or transfusion-related iron overload.

CPT Codes:
83540-90

LOINC Codes:
57028-3

Iron, Plasma / Serum

IRON

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay and Mount Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Ferene (Abbott Architect c8000 or c4000)

Reported:
Stat 1 hour, Routine 1 day

Additional Information:
To convert µg/dL to µmol/L (SI units) multiply by x 0.179

Gadolinium MR Contrast agents including Gadodiamide (Omniscan), Gadoversetamide (Optimark), Gadopentetate Dimeglumine (Magnevist), and Gadoterdiol (Prohance), have been shown to interfere with certain colorimetric assays used in the measurement of various serum cations including iron, magnesium, and calcium. The UCSF clinical labs utilize a colorimetric assay for the measurement of both serum iron and serum magnesium that are subject to this interference and could therefore also affect the % saturation calculation.

For serum iron, gadolinium containing agents (Gadodiamide, Gadoversetamide, and Gadopentetate) may produce a falsely low result (on average, 75, 78, and 88% respectively, of the actual iron concentration). See "Calcium" and "Magnesium" entries for respective interferences.

Reference: Proctor et al. Gadolinium Magnetic Resonance contrast Agents produce Analytic Interference in Multiple Serum Assays. Am J Clin Pathol. 2004;121:282-292.

Hemolysis may artifactually increase the iron concentration and could therefore also affect the % saturation calculation.

If a sample is found to have a hemolytic index of >=500 mg/dL, append ETC HEMIN (hemolysis present, may tend to increase result).

See also Iron, % saturation and transferrin or TIBC, plasma/serum.

COLLECTION

Sample Type:
Plasma or serum

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL plasma or serum

Minimum Volume:
0.8 mL plasma or serum

Remarks:
Draw w/o hemolysis, which may artifactually increase the result. To avoid contamination, do not allow the specimen to come into contact with glass.

Stability (from collection to initiation):
Room temperature 7 days, refrigerated 3 weeks, frozen at -20C 1 year

PROCESSING

Test Code:
IRON

Test Group:
Iron

Performing Lab:
Parnassus, Mission Bay and Mount Zion Chemistry

Preferred Volume:
1 mL plasma or serum

Minimum Volume:
0.8 mL plasma or serum

Stability (from collection to initiation):
Room temperature 7 days, refrigerated 3 weeks, frozen at -20C 1 year

RESULT INTERPRETATION

Units:
µg/dL

Reference Interval:

Age	Male (µg/dL)	Female (µg/dL)
0 to 13 years	16-128	16-128
14 to 18 years	31-168	20-162
>=19 years	65-179	39-179

The adult reference ranges were adopted from: Lee et al, 2017, Generating method-specific reference ranges - a harmonious outcome? Pract Lab Med 9: 1-11.

Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, http://caliper.research.sickkids.ca/#/search

Additional Information:
To convert µg/dL to µmol/L (SI units) multiply by x 0.179

Gadolinium MR Contrast agents including Gadodiamide (Omniscan), Gadoversetamide (Optimark), Gadopentetate Dimeglumine (Magnevist), and Gadoterdiol (Prohance), have been shown to interfere with certain colorimetric assays used in the measurement of various serum cations including iron, magnesium, and calcium. The UCSF clinical labs utilize a colorimetric assay for the measurement of both serum iron and serum magnesium that are subject to this interference and could therefore also affect the % saturation calculation.

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Hemolysis may artifactually increase the iron concentration and could therefore also affect the % saturation calculation.

If a sample is found to have a hemolytic index of >=500 mg/dL, append ETC HEMIN (hemolysis present, may tend to increase result).

See also Iron, % saturation and transferrin or TIBC, plasma/serum.

ADMINISTRATIVE

CPT Codes:
83540

LOINC Codes:
2498-4

COMPLETE VIEW

Available Stat:
Yes

Test Code:
IRON

Test Group:
Iron

Performing Lab:
Parnassus, Mission Bay and Mount Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Ferene (Abbott Architect c8000 or c4000)

Remarks:
Draw w/o hemolysis, which may artifactually increase the result. To avoid contamination, do not allow the specimen to come into contact with glass.

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
2 mL blood

Sample Type:
Plasma or serum

Preferred Volume:
1 mL plasma or serum

Minimum Volume:
0.8 mL plasma or serum

Units:
µg/dL

Reference Interval:

Age	Male (µg/dL)	Female (µg/dL)
0 to 13 years	16-128	16-128
14 to 18 years	31-168	20-162
>=19 years	65-179	39-179

The adult reference ranges were adopted from: Lee et al, 2017, Generating method-specific reference ranges - a harmonious outcome? Pract Lab Med 9: 1-11.

Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, http://caliper.research.sickkids.ca/#/search

Stability (from collection to initiation):
Room temperature 7 days, refrigerated 3 weeks, frozen at -20C 1 year

Reported:
Stat 1 hour, Routine 1 day

Additional Information:
To convert µg/dL to µmol/L (SI units) multiply by x 0.179

Gadolinium MR Contrast agents including Gadodiamide (Omniscan), Gadoversetamide (Optimark), Gadopentetate Dimeglumine (Magnevist), and Gadoterdiol (Prohance), have been shown to interfere with certain colorimetric assays used in the measurement of various serum cations including iron, magnesium, and calcium. The UCSF clinical labs utilize a colorimetric assay for the measurement of both serum iron and serum magnesium that are subject to this interference and could therefore also affect the % saturation calculation.

For serum iron, gadolinium containing agents (Gadodiamide, Gadoversetamide, and Gadopentetate) may produce a falsely low result (on average, 75, 78, and 88% respectively, of the actual iron concentration). See "Calcium" and "Magnesium" entries for respective interferences.

Reference: Proctor et al. Gadolinium Magnetic Resonance contrast Agents produce Analytic Interference in Multiple Serum Assays. Am J Clin Pathol. 2004;121:282-292.

Hemolysis may artifactually increase the iron concentration and could therefore also affect the % saturation calculation.

If a sample is found to have a hemolytic index of >=500 mg/dL, append ETC HEMIN (hemolysis present, may tend to increase result).

See also Iron, % saturation and transferrin or TIBC, plasma/serum.

CPT Codes:
83540

LOINC Codes:
2498-4

Isavuconazole

ISA

ORDERING

Available Stat:
No

Performing Lab:
China Basin Chemistry

Performed:
Monday, Wednesday and Friday (excluding holidays)

In order to be run on Monday, Wednesday or Friday, samples have to be received by the lab by 5am that day.

Methodology:
Liquid chromatography-tandem mass spectrometry (LC-MS/MS)

Reported:
2-3 days

Additional Information:
Isavuconazole is an azole antifungal drug indicated for the treatment of life threatening fungal infections, specifically invasive aspergillosis and invasive mucormycosis. CYP3A4 inhibitors can significantly increase, and CYP3A4 inducers can significantly decrease, the serum concentration of isavuconazole. Isavuconazole is metabolized via CYP3A4, CYP3A5 and UGTs.

Reference:
Astellas Pharma US, Inc., CRESEMBA® Package Insert.

Synonyms:

- Cresemba
- Isavuconazonium sulfate

COLLECTION

Sample Type:
Serum

Collect:
Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Remarks:
Collect trough levels just before next dose.

Stability (from collection to initiation):
Refrigerated: 3 months
Frozen: 2 years

PROCESSING

Test Code:
ISA

Performing Lab:
China Basin Chemistry

Specimen Preparation:
Centrifuge blood and separate serum from cells as soon as possible. Keep sample refrigerated.

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Refrigerated: 3 months
Frozen: 2 years

RESULT INTERPRETATION

Units:
µg/mL (mcg/mL)

Reference Interval:
No specific therapeutic trough target has been established for isavuconazole. If help with interpretation of results is required, please contact Adult Antimicrobial Stewardship at 443-9421 or Pediatric ID/ASP Pharmacist or Provider on Voalte.

Additional Information:
Isavuconazole is an azole antifungal drug indicated for the treatment of life threatening fungal infections, specifically invasive aspergillosis and invasive mucormycosis. CYP3A4 inhibitors can significantly increase, and CYP3A4 inducers can significantly decrease, the serum concentration of isavuconazole. Isavuconazole is metabolized via CYP3A4, CYP3A5 and UGTs.

Reference:
Astellas Pharma US, Inc., CRESEMBA® Package Insert.

ADMINISTRATIVE

CPT Codes:
80299

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
ISA

Performing Lab:
China Basin Chemistry

Performed:
Monday, Wednesday and Friday (excluding holidays)

In order to be run on Monday, Wednesday or Friday, samples have to be received by the lab by 5am that day.

Methodology:
Liquid chromatography-tandem mass spectrometry (LC-MS/MS)

Remarks:
Collect trough levels just before next dose.

Collect:
Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Specimen Preparation:
Centrifuge blood and separate serum from cells as soon as possible. Keep sample refrigerated.

Units:
µg/mL (mcg/mL)

Reference Interval:
No specific therapeutic trough target has been established for isavuconazole. If help with interpretation of results is required, please contact Adult Antimicrobial Stewardship at 443-9421 or Pediatric ID/ASP Pharmacist or Provider on Voalte.

Synonyms:

- Cresemba
- Isavuconazonium sulfate

Stability (from collection to initiation):

Refrigerated: 3 months
Frozen: 2 years

Reported:

2-3 days

Additional Information:

Isavuconazole is an azole antifungal drug indicated for the treatment of life threatening fungal infections, specifically invasive aspergillosis and invasive mucormycosis. CYP3A4 inhibitors can significantly increase, and CYP3A4 inducers can significantly decrease, the serum concentration of isavuconazole. Isavuconazole is metabolized via CYP3A4, CYP3A5 and UGTs.

Reference:
Astellas Pharma US, Inc., CRESEMBA® Package Insert.

CPT Codes:

80299

LDT or Modified FDA:

Yes

Islet Cell Antigen 512 Antibody

ICA

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Radio Binding Assay

Reported:
Test performed Wednesday and Friday. Turnaround 3-6 days

Synonyms:

- IA2 Antibodies
- ICA512 Autoantibodies
- Tyrosine Phosphatase Autoantibodies

COLLECTION

Sample Type:
Serum

Collect:
Red top or Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

PROCESSING

Test Code:
ICA

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate sample. Order Quest # 86736N

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

RESULT INTERPRETATION

Units:
Index

Reference Interval:
Children and adults positive result: 0.070 or greater (Index)

ADMINISTRATIVE

CPT Codes:
83519-90

LOINC Codes:
31209-0

COMPLETE VIEW

Available Stat:
No

Test Code:
ICA

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Radio Binding Assay

Collect:
Red top or Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Specimen Preparation:
Refrigerate sample. Order Quest # 86736N

Units:
Index

Reference Interval:
Children and adults positive result: 0.070 or greater (Index)

Synonyms:

- IA2 Antibodies
- ICA512 Autoantibodies
- Tyrosine Phosphatase Autoantibodies

Reported:
Test performed Wednesday and Friday. Turnaround 3-6 days

CPT Codes:
83519-90

LOINC Codes:
31209-0

Islet Cell Cytoplasmic Antibody, IgG

ICAB

ORDERING

Ordering Recommendations:

If pursuing antibody testing to determine autoimmune diabetes mellitus (DM), perform at least two antibody tests. In most cases, use glutamic acid decarboxylase antibody in combination with another antibody test. Other antibody tests include Islet Antigen-2 (IA-2) Autoantibody (3001499), Glutamic Acid Decarboxylase Antibody (2001771), Insulin Antibody (0099228), and Zinc Transporter 8 Antibody (2006196). Most useful to establish autoimmune etiology in previously diagnosed type 1 DM. Do not use to differentiate type 1 DM from type 2 DM, for most cases.

Available Stat:

No

Performing Lab:

ARUP

Performed:

Sun-Sat

Methodology:

Semi-Quantitative Indirect Fluorescent Antibody

Reported:

1-3 days

Synonyms:

- Anti-Islet Cell Antibody
- beta cell
- Cytoplasmic Islet Cell Ab
- ICA
- Islet Cell Ab IgG

COLLECTION

Sample Type:

Serum (Gold top)

Collect:

Serum separator tube.

Amount to Collect:

2 mL blood

Preferred Volume:

1 mL serum

Minimum Volume:

0.15 mL serum

Stability (from collection to initiation):

After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:

Refrigerated.

Unacceptable Conditions:

Plasma. CSF. Contaminated, hemolyzed, or severely lipemic specimens.

PROCESSING

Test Code:

ICAB

ARUP Test Code:

0050138

Sendout:

Yes

Performing Lab:

ARUP

Specimen Preparation:

Separate serum from cells ASAP or within 2 hours of collection. Transfer1 mL serum to an ARUP Standard Transport Tube. (Min: 0.15 mL)

Preferred Volume:

1 mL serum

Minimum Volume:
0.15 mL serum

Unacceptable Conditions:
Plasma. CSF. Contaminated, hemolyzed, or severely lipemic specimens.

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:
< 1:4 No antibody detected.

Interpretive Data:
Islet cell antibodies (ICAs) are associated with type 1 diabetes (T1D), an autoimmune endocrine disorder. ICAs may be present years before the onset of clinical symptoms. To calculate Juvenile Diabetes Foundation (JDF) units: multiply the titer x 5 (1:8 8 x 5 = 40 JDF Units).

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:
86341

LOINC:

- 13927-9

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
If pursuing antibody testing to determine autoimmune diabetes mellitus (DM), perform at least two antibody tests. In most cases, use glutamic acid decarboxylase antibody in combination with another antibody test. Other antibody tests include Islet Antigen-2 (IA-2) Autoantibody (3001499), Glutamic Acid Decarboxylase Antibody (2001771), Insulin Antibody (0099228), and Zinc Transporter 8 Antibody (2006196). Most useful to establish autoimmune etiology in previously diagnosed type 1 DM. Do not use to differentiate type 1 DM from type 2 DM, for most cases.

Test Code:
ICAB

ARUP Test Code:
0050138

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Semi-Quantitative Indirect Fluorescent Antibody

Collect:
Serum separator tube.

Amount to Collect:
2 mL blood

Sample Type:
Serum (Gold top)

Preferred Volume:
1 mL serum

Minimum Volume:
0.15 mL serum

Unacceptable Conditions:
Plasma. CSF. Contaminated, hemolyzed, or severely lipemic specimens.

Specimen Preparation:

Separate serum from cells ASAP or within 2 hours of collection. Transfer1 mL serum to an ARUP Standard Transport Tube. (Min: 0.15 mL)

Reference Interval:

< 1:4 No antibody detected.

Interpretive Data:

Islet cell antibodies (ICAs) are associated with type 1 diabetes (T1D), an autoimmune endocrine disorder. ICAs may be present years before the onset of clinical symptoms. To calculate Juvenile Diabetes Foundation (JDF) units: multiply the titer x 5 (1:8 8 x 5 = 40 JDF Units).

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Synonyms:

- Anti-Islet Cell Antibody
- beta cell
- Cytoplasmic Islet Cell Ab
- ICA
- Islet Cell Ab IgG

Storage/Transport Temperature:

Refrigerated.

Stability (from collection to initiation):

After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

Reported:

1-3 days

CPT Codes:

86341

LOINC:

- 13927-9

Isohemagglutinin Titer

ISO

ORDERING

Available Stat:
No

Performing Lab:
Parnassus & Mission Bay Blood Banks

Performed:
Test performed Monday-Friday

Reported:
1-3 days.

Synonyms:

- ABO titer
- Isoagglutinin titer

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top (6 mL size preferred)

Amount to Collect:
6 mL blood

Preferred Volume:
6 mL blood

Minimum Volume:
2.0 mL blood

Remarks:
Use Blood Bank Requisition. Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Stability (from collection to initiation):
72 hours (ambient) or 7 days (refrigerated).

Unacceptable Conditions:
Unsigned, mislabeled or unlabeled sample

PROCESSING

Test Code:
ISO

Performing Lab:
Parnassus & Mission Bay Blood Banks

Preferred Volume:
6 mL blood

Minimum Volume:
2.0 mL blood

Unacceptable Conditions:
Unsigned, mislabeled or unlabeled sample

Stability (from collection to initiation):
72 hours (ambient) or 7 days (refrigerated).

ADMINISTRATIVE

CPT Codes:
86886

COMPLETE VIEW

Available Stat:
No

Test Code:
ISO

Performing Lab:
Parnassus & Mission Bay Blood Banks

Performed:
Test performed Monday-Friday

Remarks:
Use Blood Bank Requisition. Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Collect:
Lavender top (6 mL size preferred)

Amount to Collect:
6 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
6 mL blood

Minimum Volume:
2.0 mL blood

Unacceptable Conditions:
Unsigned, mislabeled or unlabeled sample

Synonyms:

- ABO titer
- Isoagglutinin titer

Stability (from collection to initiation):
72 hours (ambient) or 7 days (refrigerated).

Reported:
1-3 days.

CPT Codes:
86886

iSTAT Blood Gases and Lactate (CG4)

CG4

ORDERING

Available Stat:
Yes

Performing Lab:
Authorized Point of Care Testing site staff

Performed:
Test is only available to Mission Bay Peds ED

Methodology:
i-STAT CG4+ cartridge

COLLECTION

Sample Type:
Whole blood

Collect:
Light green top (Lithium heparin)

Amount to Collect:
0.2 mL

Preferred Volume:
0.2 mL

Minimum Volume:
0.1 mL

Stability (from collection to initiation):
Sample should be tested immediately after collection

PROCESSING

Performing Lab:
Authorized Point of Care Testing site staff

Preferred Volume:
0.2 mL

Minimum Volume:
0.1 mL

Stability (from collection to initiation):
Sample should be tested immediately after collection

RESULT INTERPRETATION

Reference Interval:

Analyte	Reference Range
pH, Arterial	7.35-7.45 mmHg
pH, Venous	7.31-7.41 mmHg
pCO2, Arterial	< 1 year: 27-41 mmHg >= 1 year: 32-48 mmHg
pCO2, Venous	< 1 year: 41-51 mmHg >= 1 year: 41-51 mmHg
pO2, Arterial	< 30 years: 80-100 mmHg >= 30 years: 83-108 mmHg
pO2, Venous	< 30 years: 35-40 mmHg >= 30 years: 35-40 mmHg
Lactate, Arterial	0.36-1.25 mmol/L
Lactate, Venous	0.90-1.70 mmol/L
TCO2, Arterial	23-27 mmol/L
TCO2, Venous	24-29 mmol/L
HCO3, Arterial	23-27 mmol/L
HC03, Venous	24-29 mmol/L
Base Excess (BE), Arterial	(-2)-(+3) mmol/L
Base Excess (BE), Venous	(-2)-(+3) mmol/L
sO2, Arterial	95-98%

Critical Values:

Analyte	Critical Value (mmHg)
pH, Arterial	<7.20 or >7.55
pH, Venous	<7.20
pCO2, Arterial	<25 or >65
pCO2, Venous	>75
pO2, Arterial	<40 or >100
pO2, Venous	<40 or >100

COMPLETE VIEW

Available Stat:
Yes

Performing Lab:
Authorized Point of Care Testing site staff

Performed:
Test is only available to Mission Bay Peds ED

Methodology:
i-STAT CG4+ cartridge

Collect:
Light green top (Lithium heparin)

Amount to Collect:
0.2 mL

Sample Type:
Whole blood

Preferred Volume:
0.2 mL

Minimum Volume:
0.1 mL

Reference Interval:

Analyte	Reference Range
pH, Arterial	7.35-7.45 mmHg
pH, Venous	7.31-7.41 mmHg
pCO2, Arterial	< 1 year: 27-41 mmHg >= 1 year: 32-48 mmHg
pCO2, Venous	< 1 year: 41-51 mmHg >= 1 year: 41-51 mmHg
pO2, Arterial	< 30 years: 80-100 mmHg >= 30 years: 83-108 mmHg
pO2, Venous	< 30 years: 35-40 mmHg >= 30 years: 35-40 mmHg
Lactate, Arterial	0.36-1.25 mmol/L
Lactate, Venous	0.90-1.70 mmol/L
TCO2, Arterial	23-27 mmol/L
TCO2, Venous	24-29 mmol/L
HCO3, Arterial	23-27 mmol/L
HC03, Venous	24-29 mmol/L
Base Excess (BE), Arterial	(-2)-(+3) mmol/L
Base Excess (BE), Venous	(-2)-(+3) mmol/L
sO2, Arterial	95-98%

Critical Values:

Analyte	Critical Value (mmHg)
pH, Arterial	<7.20 or >7.55
pH, Venous	<7.20
pCO2, Arterial	<25 or >65
pCO2, Venous	>75
pO2, Arterial	<40 or >100
pO2, Venous	<40 or >100

Stability (from collection to initiation):

Sample should be tested immediately after collection

Itraconazole

ITRC

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
HPLC

Reported:
3-5 days

Synonyms:

- Sporanox

COLLECTION

Sample Type:
Serum

Collect:
Red top

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Stability (from collection to initiation):
Frozen 2 weeks.

Unacceptable Conditions:
Collected in serum separator tube

PROCESSING

Test Code:
ITRC

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot and freeze sample. Transport frozen to CB.

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Unacceptable Conditions:
Collected in serum separator tube

Stability (from collection to initiation):
Frozen 2 weeks.

RESULT INTERPRETATION

Units:
µg/mL (mcg/mL)

Reference Interval:
< 0.1 µg/mL

ADMINISTRATIVE

CPT Codes:
80299

COMPLETE VIEW

Available Stat:
No

Test Code:
ITRC

Performing Lab:
Quest

Sendout:
Yes

Methodology:
HPLC

Collect:
Red top

Amount to Collect:
4 mL blood

Sample Type:
Serum

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Unacceptable Conditions:
Collected in serum separator tube

Specimen Preparation:
Aliquot and freeze sample. Transport frozen to CB.

Units:
µg/mL (mcg/mL)

Reference Interval:
< 0.1 µg/mL

Synonyms:

- Sporanox

Stability (from collection to initiation):
Frozen 2 weeks.

Reported:
3-5 days

CPT Codes:
80299

JAK2 (V617F) Mutation, Qualitative

JAK2

ORDERING

Ordering Recommendations:

Patients suspicious for chronic myeloproliferative disorders (PV, ET or PMF excluding CML), but having equivocal morphology and/or clinical picture. In cases suspected of PV, EPO level should be evaluated to rule out secondary erythrocytosis before JAK2 mutation test is considered; while, in cases suspicious for ET, serum iron and ferritin should be checked to rule out secondary thrombocytosis. The cases, which fulfill diagnostic criteria for PV or other MPD, are not indicated for this test because currently, JAK2 mutation has no prognostic significance and is not used as a minimal residual disease marker.

V617F is found in approximately 95% of patients with polycythemia vera. It is also found in approximately 50% of patients with essential thrombocytopenia (ET) or primary myelofibrosis (PMF). The detection of V617F complements histological findings aimed at the diagnosis of ET and PMF.

Available Stat:

No

Performing Lab:

Medical Genomics - Molecular Diagnostics

Performed:

Run 2x per week, Tuesday & Thursday, day shift only

Methodology:

PCR and allele-specific hybridization

Reported:

7-10 days

Additional Information:

Clinical Significance:
A somatic mutation in a highly conserved residue of the Janus kinase (JAK2) on chromosome 9 was detected in 80% of patients with polycythemia vera(PV), and 30-50% of patients with essential thrombocythemia (ET) or primary myelofibrosis (PMF). This point mutation in exon 14 of JAK2 alters codon 617 from a valine to a phenylalanine residue on JH2 domain of JAK2 kinase, thus disrupting auto-inhibitory property of this pseudokinase domain and leading to constitutive activation of the tyrosine kinase. This enhanced JAK2 kinase activity is thought to confer erythropoietin hypersensitivity and erythropoietin independent survival to the myeloid stem cells. Although JAK2 V617F mutation has been detected in variable percentage of patients with other type of myeloid malignancies, normal individuals tested so far are exclusively negative for the mutation.

Limitations:
This assay has 1% DNA sensitivity of the JAK2 V617F mutation in a background of 99% DNA without the mutation. A positive result is strongly supportive of a diagnosis of PV, ET or CIMF.

A negative result does not rule out the presence of V617F at a level below the sensitivity of this assay and does not exclude the presence of other mutations in the JAK2 gene.

This test was developed and its performance characteristics determined by the UCSF Clinical Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration. The FDA has determined that such clearance or approval is not necessary. Performance characteristics refer to the analytical performance of the test.

Reflex Testing:

An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Synonyms:

- V617F
- Myeloproliferative disorders
- MPD
- JAK2

COLLECTION

Sample Type:

EDTA Whole blood or bone marrow aspirate

Collect:

Lavender top (3 mL)

Amount to Collect:

Blood: 3 mL
Bone marrow aspirate: 1 mL

Preferred Volume:
Blood: 3 mL
Bone marrow aspirate: 1 mL

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 0.4 mL

Remarks:
Avoid hemolysis.

Due to stability issues these samples should only be collected Monday through noon Friday.

Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 3 days, frozen at -20C Unacceptable.

Unacceptable Conditions:
Heparinized sample submitted. Samples collected outside of stated time frames.

PROCESSING

Test Code:
JAK2

Test Group:
JAK2

Performing Lab:
Medical Genomics - Molecular Diagnostics

Specimen Preparation:
Do not centrifuge. Refrigerate sample but do not freeze. Ship refrigerated.

Preferred Volume:
Blood: 3 mL
Bone marrow aspirate: 1 mL

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 0.4 mL

Unacceptable Conditions:
Heparinized sample submitted. Samples collected outside of stated time frames.

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 3 days, frozen at -20C Unacceptable.

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
Clinical Significance:
A somatic mutation in a highly conserved residue of the Janus kinase (JAK2) on chromosome 9 was detected in 80% of patients with polycythemia vera(PV), and 30-50% of patients with essential thrombocythemia (ET) or primary myelofibrosis (PMF). This point mutation in exon 14 of JAK2 alters codon 617 from a valine to a phenylalanine residue on JH2 domain of JAK2 kinase, thus disrupting auto-inhibitory property of this pseudokinase domain and leading to constitutive activation of the tyrosine kinase. This enhanced JAK2 kinase activity is thought to confer erythropoietin hypersensitivity and erythropoietin independent survival to the myeloid stem cells. Although JAK2 V617F mutation has been detected in variable percentage of patients with other type of myeloid malignancies, normal individuals tested so far are exclusively negative for the mutation.

Limitations:
This assay has 1% DNA sensitivity of the JAK2 V617F mutation in a background of 99% DNA without the mutation. A positive result is strongly supportive of a diagnosis of PV, ET or CIMF.

A negative result does not rule out the presence of V617F at a level below the sensitivity of this assay and does not exclude the presence of other mutations in the JAK2 gene.

This test was developed and its performance characteristics determined by the UCSF Clinical Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration. The FDA has determined that such clearance or approval is not necessary. Performance characteristics refer to the analytical performance of the test.

ADMINISTRATIVE

CPT Codes:
81270

LDT or Modified FDA:
Yes

LOINC Codes:
48726-4

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Patients suspicious for chronic myeloproliferative disorders (PV, ET or PMF excluding CML), but having equivocal morphology and/or clinical picture. In cases suspected of PV, EPO level should be evaluated to rule out secondary erythrocytosis before JAK2 mutation test is considered; while, in cases suspicious for ET, serum iron and ferritin should be checked to rule out secondary thrombocytosis. The cases, which fulfill diagnostic criteria for PV or other MPD, are not indicated for this test because currently, JAK2 mutation has no prognostic significance and is not used as a minimal residual disease marker.

V617F is found in approximately 95% of patients with polycythemia vera. It is also found in approximately 50% of patients with essential thrombocytopenia (ET) or primary myelofibrosis (PMF). The detection of V617F complements histological findings aimed at the diagnosis of ET and PMF.

Test Code:
JAK2

Test Group:
JAK2

Performing Lab:
Medical Genomics - Molecular Diagnostics

Performed:
Run 2x per week, Tuesday & Thursday, day shift only

Methodology:
PCR and allele-specific hybridization

Remarks:
Avoid hemolysis.

Due to stability issues these samples should only be collected Monday through noon Friday.

Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Collect:
Lavender top (3 mL)

Amount to Collect:
Blood: 3 mL
Bone marrow aspirate: 1 mL

Sample Type:
EDTA Whole blood or bone marrow aspirate

Preferred Volume:
Blood: 3 mL
Bone marrow aspirate: 1 mL

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 0.4 mL

Unacceptable Conditions:
Heparinized sample submitted. Samples collected outside of stated time frames.

Specimen Preparation:
Do not centrifuge. Refrigerate sample but do not freeze. Ship refrigerated.

Reference Interval:
Negative

Synonyms:

- V617F
- Myeloproliferative disorders
- MPD
- JAK2

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 3 days, frozen at -20C Unacceptable.

Reported:
7-10 days

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Additional Information:
Clinical Significance:
A somatic mutation in a highly conserved residue of the Janus kinase (JAK2) on chromosome 9 was detected in 80% of patients with polycythemia vera(PV), and 30-50% of patients with essential thrombocythemia (ET) or primary myelofibrosis (PMF). This point mutation in exon 14 of JAK2 alters codon 617 from a valine to a phenylalanine residue on JH2 domain of JAK2 kinase, thus disrupting auto-inhibitory property of this pseudokinase domain and leading to constitutive activation of the tyrosine kinase. This enhanced JAK2 kinase activity is thought to confer erythropoietin hypersensitivity and erythropoietin independent survival to the myeloid stem cells. Although JAK2 V617F mutation has been detected in variable percentage of patients with other type of myeloid malignancies, normal individuals tested so far are exclusively negative for the mutation.

Limitations:
This assay has 1% DNA sensitivity of the JAK2 V617F mutation in a background of 99% DNA without the mutation. A positive result is strongly supportive of a diagnosis of PV, ET or CIMF.

A negative result does not rule out the presence of V617F at a level below the sensitivity of this assay and does not exclude the presence of other mutations in the JAK2 gene.

This test was developed and its performance characteristics determined by the UCSF Clinical Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration. The FDA has determined that such clearance or approval is not necessary. Performance characteristics refer to the analytical performance of the test.

CPT Codes:
81270

LDT or Modified FDA:
Yes

LOINC Codes:
48726-4

JAK2 Break-apart rearrangement FISH

9JAK2, B9JAK2

ORDERING

Available Stat:
No

Performing Lab:
Cytogenetics

Performed:
Monday - Friday, 9 am - 5 pm

Methodology:
FISH

Reported:
7-14 days

Synonyms:

- 9JAK2
- B9JAK2
- 9p24 Break-apart FISH

COLLECTION

Sample Type:
Blood or bone marrow

Collect:
Blood and bone marrow aspirate: Dark green top
Bone marrow core: Sterile container

Amount to Collect:
See Preferred Volume

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Room temperature

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen

PROCESSING

Test Code:
Blood: B9JAK2
Bone marrow: 9JAK2

Performing Lab:
Cytogenetics

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Room temperature

ADMINISTRATIVE

CPT Codes:
88271x2, 88275x1

COMPLETE VIEW

Available Stat:
No

Test Code:
Blood: B9JAK2
Bone marrow: 9JAK2

Performing Lab:
Cytogenetics

Performed:
Monday - Friday, 9 am - 5 pm

Methodology:
FISH

Collect:
Blood and bone marrow aspirate: Dark green top
Bone marrow core: Sterile container

Amount to Collect:
See Preferred Volume

Sample Type:
Blood or bone marrow

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen

Synonyms:

- 9JAK2
- B9JAK2
- 9p24 Break-apart FISH

Storage/Transport Temperature:
Room temperature

Stability (from collection to initiation):
2 days

Reported:
7-14 days

CPT Codes:
88271x2, 88275x1

JAK2 EXON 12 MUTATION ANALYSIS

JAK212

ORDERING

Ordering Recommendations:
Most appropriate in cases of high suspicion of polycythemia vera with negative JAK2 V617F mutation status.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Varies

Methodology:
Polymerase Chain Reaction (PCR)

Reported:
3-9 days

Synonyms:

- JAK 2 exon 12
- Janus Kinase 2 Gene
- Janus Kinase 2 Gene Sequencing
- MPN JAK2 testing
- Tyrosine Kinase Gene Sequencing

COLLECTION

Sample Type:
Blood, bone marrow or DNA

Collect:
Whole blood or bone marrow in lavender (EDTA).

Preferred Volume:
Whole Blood: 5 mL whole blood
Bone Marrow: 3 mL bone marrow
Extracted DNA: 40 uL DNA with at least 50 ng/uL concentration

Minimum Volume:
Whole Blood: 1 mL
Bone Marrow: 1 mL
Extracted DNA: 40 uL DNA with at least 50 ng/uL concentration

Stability (from collection to initiation):
Refrigerated: 7 days; Frozen: Unacceptable

Storage/Transport Temperature:
Refrigerated

Unacceptable Conditions:
Plasma, serum, FFPE tissue blocks/slides, or frozen tissue. Specimens collected in anticoagulants other than EDTA. Clotted or grossly hemolyzed specimens.

PROCESSING

Test Code:
JAK212

ARUP Test Code:
2002357

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Whole Blood: Do not freeze. Transport 5 mL whole blood. (Min: 1 mL)
Bone Marrow: Do not freeze. Transport 3 mL bone marrow. (Min: 1 mL)

Preferred Volume:
Whole Blood: 5 mL whole blood
Bone Marrow: 3 mL bone marrow
Extracted DNA: 40 uL DNA with at least 50 ng/uL concentration

Minimum Volume:
Whole Blood: 1 mL
Bone Marrow: 1 mL
Extracted DNA: 40 uL DNA with at least 50 ng/uL concentration

Unacceptable Conditions:
Plasma, serum, FFPE tissue blocks/slides, or frozen tissue. Specimens collected in anticoagulants other than EDTA.
Clotted or grossly hemolyzed specimens.

Stability (from collection to initiation):
Refrigerated: 7 days; Frozen: Unacceptable

Storage/Transport Temperature:
Refrigerated

RESULT INTERPRETATION

Interpretive Data:
Refer to report.

ADMINISTRATIVE

CPT Codes:
81279

LOINC:

- 63421-2
- 31208-2

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Most appropriate in cases of high suspicion of polycythemia vera with negative JAK2 V617F mutation status.

Test Code:
JAK212

ARUP Test Code:
2002357

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Varies

Methodology:
Polymerase Chain Reaction (PCR)

Collect:
Whole blood or bone marrow in lavender (EDTA).

Sample Type:
Blood, bone marrow or DNA

Preferred Volume:
Whole Blood: 5 mL whole blood
Bone Marrow: 3 mL bone marrow
Extracted DNA: 40 uL DNA with at least 50 ng/uL concentration

Minimum Volume:
Whole Blood: 1 mL
Bone Marrow: 1 mL
Extracted DNA: 40 uL DNA with at least 50 ng/uL concentration

Unacceptable Conditions:
Plasma, serum, FFPE tissue blocks/slides, or frozen tissue. Specimens collected in anticoagulants other than EDTA.
Clotted or grossly hemolyzed specimens.

Specimen Preparation:
Whole Blood: Do not freeze. Transport 5 mL whole blood. (Min: 1 mL)
Bone Marrow: Do not freeze. Transport 3 mL bone marrow. (Min: 1 mL)

Interpretive Data:
Refer to report.

Synonyms:

- JAK 2 exon 12
- Janus Kinase 2 Gene
- Janus Kinase 2 Gene Sequencing
- MPN JAK2 testing
- Tyrosine Kinase Gene Sequencing

Storage/Transport Temperature:
Refrigerated

Stability (from collection to initiation):
Refrigerated: 7 days; Frozen: Unacceptable

Reported:
3-9 days

CPT Codes:
81279

LOINC:

- 63421-2
- 31208-2

JC Virus Antibody with Reflex to Inhibition Assay

JCAB

ORDERING

Available Stat:
No

Performing Lab:
Focus via Quest

Methodology:
Immunoassay

Reported:
7-10 days

Additional Information:
The JC Virus (JCV) is associated with Progressive Multifocal Leukoencephalopathy (PML). Detection of antibodies to JCV in serum or plasma is a reliable indicator of exposure to JCV. The analytical performance characteristics were determined for multiple sclerosis patients.

Reflex Testing:
If the JCV Antibody result is, "INDETERMINATE", STRATIFY JCV™ Antibody Inhibition Assay will be performed at an additional charge (CPT code(s): 86711)

Synonyms:

- John Cunningham virus

COLLECTION

Sample Type:
Serum or plasma

Collect:
Gold top, red top or Lavender top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.25 mL serum or plasma

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen 3 months

PROCESSING

Test Code:
JCAB

Test Group:
JCV

Sendout:
Yes

Performing Lab:
Focus via Quest

Specimen Preparation:
Aliquot and freeze. Ship to CB frozen. Order Quest test code 91665

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.25 mL serum or plasma

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen 3 months

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
The JC Virus (JCV) is associated with Progressive Multifocal Leukoencephalopathy (PML). Detection of antibodies to JCV in serum or plasma is a reliable indicator of exposure to JCV. The analytical performance characteristics were determined for multiple sclerosis patients.

ADMINISTRATIVE

CPT Codes:
86790-90

COMPLETE VIEW

Available Stat:
No

Test Code:
JCAB

Test Group:
JCV

Performing Lab:
Focus via Quest

Sendout:
Yes

Methodology:
Immunoassay

Collect:
Gold top, red top or Lavender top

Amount to Collect:
1 mL blood

Sample Type:
Serum or plasma

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.25 mL serum or plasma

Specimen Preparation:
Aliquot and freeze. Ship to CB frozen. Order Quest test code 91665

Reference Interval:
Negative

Synonyms:

- John Cunningham virus

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen 3 months

Reported:
7-10 days

Reflex Testing:
If the JCV Antibody result is, "INDETERMINATE", STRATIFY JCV™ Antibody Inhibition Assay will be performed at an additional charge (CPT code(s): 86711)

Additional Information:
The JC Virus (JCV) is associated with Progressive Multifocal Leukoencephalopathy (PML). Detection of antibodies to JCV in serum or plasma is a reliable indicator of exposure to JCV. The analytical performance characteristics were determined for multiple sclerosis patients.

CPT Codes:
86790-90

JC Virus DNA, Quantitative

JCV

ORDERING

Available Stat:
No

Performing Lab:
Viracor

Methodology:
Real time PCR

Reported:
Test run Monday-Friday. Results Available within 24 hours of specimen receipt at Viracor.

Additional Information:
JCV is the etiologic agent of progressive multifocal leukoencephalopathy (PML) which is mainly seen in HIV patients, organt transplant patients and other immunodeficient syndromes. In addition to PML, JCV also causes nephropathy in the renal transplant setting although with considerably less frequency than BKV.

JCV should always be considered in an immunocompromised patient with progressively deteriorating CNS function. Quantitative JCV DNA PCR can be used to detect JCV in CSF in the setting of CNS disease and blood and urine in the setting of renal dysfunction. The DNA PCR can be used to track the course of the infection as well as monitor response to treatment.

Assay range: 100-1.0x10^8 copies/mL

Synonyms:

- JC virus PCR
- John Cunningham virus
- JVC

COLLECTION

Sample Type:
Preferred sample is EDTA plasma.

Testing may be performed on other sample types: serum, CSF, and random urine

Collect:
Lavender top preferred. Gold top, Red top, urine cup, CSF tube or sterile collection tube acceptable with approval.

Amount to Collect:
6 mL blood (Lavender top) or 6 mL blood (Gold or Red top), random urine (See preferred volume)

Preferred Volume:
Plasma: 3 mL
CSF: 1 mL
Urine: 5 mL
Tissue: 1mm x 1mm

Minimum Volume:
Plasma: 2 mL
CSF: 1 mL
Urine: 5 mL

Remarks:
Fresh tissue specimens must be placed in saline in a red top tube to prevent dehydration

Unacceptable Conditions:
Improperly submitted sample

PROCESSING

Test Code:
JCV

Test Group:
JCV

Sendout:
Yes

Performing Lab:
Viracor

Specimen Preparation:

Keep plasma, whole blood and urine specimens at room temperature. Ship at room temperature.

Fresh tissue specimens must be placed in saline to prevent dehydration during shipping. Ship at room temperature.

Freeze CSF and ship frozen on dry ice.

Send samples to China Basin for Medical Courier pickup at 1600 hours. Monday-Friday.

Preferred Volume:

Plasma: 3 mL
CSF: 1 mL
Urine: 5 mL
Tissue: 1mm x 1mm

Minimum Volume:

Plasma: 2 mL
CSF: 1 mL
Urine: 5 mL

Unacceptable Conditions:

Improperly submitted sample

RESULT INTERPRETATION

Units:

copies/mL

Reference Interval:

Not detected

Additional Information:

JCV is the etiologic agent of progressive multifocal leukoencephalopathy (PML) which is mainly seen in HIV patients, organt transplant patients and other immunodeficient syndromes. In addition to PML, JCV also causes nephropathy in the renal transplant setting although with considerably less frequency than BKV.

JCV should always be considered in an immunocompromised patient with progressively deteriorating CNS function. Quantitative JCV DNA PCR can be used to detect JCV in CSF in the setting of CNS disease and blood and urine in the setting of renal dysfunction. The DNA PCR can be used to track the course of the infection as well as monitor response to treatment.

Assay range: 100-1.0x10^8 copies/mL

ADMINISTRATIVE

CPT Codes:

87799-90

LOINC Codes:

49412-0

COMPLETE VIEW

Available Stat:

No

Test Code:

JCV

Test Group:

JCV

Performing Lab:

Viracor

Sendout:

Yes

Methodology:

Real time PCR

Remarks:

Fresh tissue specimens must be placed in saline in a red top tube to prevent dehydration

Collect:

Lavender top preferred. Gold top, Red top, urine cup, CSF tube or sterile collection tube acceptable with approval.

Amount to Collect:

6 mL blood (Lavender top) or 6 mL blood (Gold or Red top), random urine (See preferred volume)

Sample Type:
Preferred sample is EDTA plasma.

Testing may be performed on other sample types: serum, CSF, and random urine

Preferred Volume:
Plasma: 3 mL
CSF: 1 mL
Urine: 5 mL
Tissue: 1mm x 1mm

Minimum Volume:
Plasma: 2 mL
CSF: 1 mL
Urine: 5 mL

Unacceptable Conditions:
Improperly submitted sample

Specimen Preparation:
Keep plasma, whole blood and urine specimens at room temperature. Ship at room temperature.

Fresh tissue specimens must be placed in saline to prevent dehydration during shipping. Ship at room temperature.

Freeze CSF and ship frozen on dry ice.

Send samples to China Basin for Medical Courier pickup at 1600 hours. Monday-Friday.

Units:
copies/mL

Reference Interval:
Not detected

Synonyms:

- JC virus PCR
- John Cunningham virus
- JVC

Reported:
Test run Monday-Friday. Results Available within 24 hours of specimen receipt at Viracor.

Additional Information:
JCV is the etiologic agent of progressive multifocal leukoencephalopathy (PML) which is mainly seen in HIV patients, organt transplant patients and other immunodeficient syndromes. In addition to PML, JCV also causes nephropathy in the renal transplant setting although with considerably less frequency than BKV.

JCV should always be considered in an immunocompromised patient with progressively deteriorating CNS function. Quantitative JCV DNA PCR can be used to detect JCV in CSF in the setting of CNS disease and blood and urine in the setting of renal dysfunction. The DNA PCR can be used to track the course of the infection as well as monitor response to treatment.

Assay range: $100\text{-}1.0 \times 10^8$ copies/mL

CPT Codes:
87799-90

LOINC Codes:
49412-0

Jo-1 Antibody

JO1

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Enzyme immunoassay

Reported:
4-5 days

Additional Information:
Jo-1 Antibody is found in patients with idiopathic inflammatory myopathies including approximately one-fourth of patients with advanced polymyositis and dermatomyositis. Jo-1 Antibody is associated with pulmonary disease and arthropathy

COLLECTION

Sample Type:
Serum

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Grossly hemolyzed or lipemic samples.

PROCESSING

Test Code:
JO1

Sendout:
Yes

Performing Lab:
Quest

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Grossly hemolyzed or lipemic samples.

RESULT INTERPRETATION

Units:
AI

Reference Interval:
< 1.0 AI

Additional Information:
Jo-1 Antibody is found in patients with idiopathic inflammatory myopathies including approximately one-fourth of patients with advanced polymyositis and dermatomyositis. Jo-1 Antibody is associated with pulmonary disease and arthropathy

ADMINISTRATIVE

CPT Codes:
86235-90

COMPLETE VIEW

Available Stat:
No

Test Code:
JO1

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Enzyme immunoassay

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Grossly hemolyzed or lipemic samples.

Units:
AI

Reference Interval:
< 1.0 AI

Reported:
4-5 days

Additional Information:
Jo-1 Antibody is found in patients with idiopathic inflammatory myopathies including approximately one-fourth of patients with advanced polymyositis and dermatomyositis. Jo-1 Antibody is associated with pulmonary disease and arthropathy

CPT Codes:
86235-90

Juvenile Myelomonocytic Leukemia Associated Exon Panel

JMML

ORDERING

Available Stat:
No

Performing Lab:
UCSF Clinical Cancer Genomics Lab

Performed:
Run twice per week, day shift only

Methodology:
Targeted next generation DNA sequencing (NovaSeq)

Reported:
14 days

Additional Information:
Requisition Form

The test was validated by the UCSF Clinical Cancer Genomics Laboratory (CCGL) to confirm performance characteristics, in compliance with current guidelines for clinical implementation.

Reflex Testing:
An interpretation of this test by a laboratory physician will be automatically performed and billed for separately.

Synonyms:

- JMML Panel
- CBL exons 8/9
- KRAS exons 2/3
- NRAS exons 2/3
- PTPN11 exons 3/4/13

Supplemental Test Request Form Required:
Yes

COLLECTION

Sample Type:
Tumor sample EDTA whole blood or Bone marrow aspirate

Germline sample Buccal swab or Cultured fibroblasts

Note: Buccal swabs are required for all new patients.(CCGL - 415-502-3252)

Collect:
Lavender top (EDTA) Blood or bone marrowBuccal swab or T25 flask Germline sample

Amount to Collect:
Tumor sample
EDTA whole blood: 5 mL
Bone Marrow aspirate: 3 mL

Germline sample
Cultured fibroblasts: Confluent T25 flasks x2
Buccal swab: Collect 4-6 cytobrush/cotton swabs on each side of the mouth, place swabs in transport tubes, 2 swabs per tube.

Preferred Volume:
Tumor sample
EDTA whole blood: 5 mL
Bone Marrow aspirate: 3 mL

Germline sample
Cultured fibroblasts: Confluent T25 flasks x2
Buccal swab: Collect 4-6 cytobrush/cotton swabs on each side of the mouth, place swabs in transport tubes, 2 swabs per tube.

Minimum Volume:

Tumor sample
EDTA whole blood: 2 mL
Bone Marrow aspirate: 1 mL

Germline sample
Cultured fibroblasts: Confluent T25 flasks x2
Buccal swab: Collect 2-4 cytobrush/cotton swabs on each side of the mouth, place swabs in transport tubes, 2 swabs per tube.

Remarks:

Buccal swabs are required for new patients to determine the presence of a variant in normal vs. tumor samples. Wipe Cheek multiple times with cytobrush/cotton swabs. Transport in room temperature.

Avoid hemolysis. Due to stability issues these samples should only be collected at UCSF Monday through noon Friday.

Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

PROCESSING

Test Code:

JMML

Performing Lab:

UCSF Clinical Cancer Genomics Lab

Specimen Preparation:

DO NOT FREEZE blood or bone marrow samples. Ship samples to CCGL at Mt Zion as soon as possible.

Overnight refrigeration prior to transport is acceptable.

Preferred Volume:

Tumor sample
EDTA whole blood: 5 mL
Bone Marrow aspirate: 3 mL

Germline sample
Cultured fibroblasts: Confluent T25 flasks x2
Buccal swab: Collect 4-6 cytobrush/cotton swabs on each side of the mouth, place swabs in transport tubes, 2 swabs per tube.

Minimum Volume:

Tumor sample
EDTA whole blood: 2 mL
Bone Marrow aspirate: 1 mL

Germline sample
Cultured fibroblasts: Confluent T25 flasks x2
Buccal swab: Collect 2-4 cytobrush/cotton swabs on each side of the mouth, place swabs in transport tubes, 2 swabs per tube.

RESULT INTERPRETATION

Reference Interval:

Negative: No clinically significant variants detected.

Additional Information:

Requisition Form

The test was validated by the UCSF Clinical Cancer Genomics Laboratory (CCGL) to confirm performance characteristics, in compliance with current guidelines for clinical implementation.

Interpretive Data:

The test was validated by the UCSF Clinical Cancer Genomics Laboratory (CCGL) to confirm performance characteristics, in compliance with current guidelines for clinical implementation.

ADMINISTRATIVE

CPT Codes:

81450

LDT or Modified FDA:

Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
JMML

Performing Lab:
UCSF Clinical Cancer Genomics Lab

Performed:
Run twice per week, day shift only

Methodology:
Targeted next generation DNA sequencing (NovaSeq)

Remarks:
Buccal swabs are required for new patients to determine the presence of a variant in normal vs. tumor samples. Wipe Cheek multiple times with cytobrush/cotton swabs. Transport in room temperature.

Avoid hemolysis. Due to stability issues these samples should only be collected at UCSF Monday through noon Friday.

Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Collect:
Lavender top (EDTA) Blood or bone marrowBuccal swab or T25 flask Germline sample

Amount to Collect:
Tumor sample
EDTA whole blood: 5 mL
Bone Marrow aspirate: 3 mL

Germline sample
Cultured fibroblasts: Confluent T25 flasks x2
Buccal swab: Collect 4-6 cytobrush/cotton swabs on each side of the mouth, place swabs in transport tubes, 2 swabs per tube.

Sample Type:
Tumor sample EDTA whole blood or Bone marrow aspirate

Germline sample Buccal swab or Cultured fibroblasts

Note: Buccal swabs are required for all new patients.(CCGL - 415-502-3252)

Preferred Volume:
Tumor sample
EDTA whole blood: 5 mL
Bone Marrow aspirate: 3 mL

Germline sample
Cultured fibroblasts: Confluent T25 flasks x2
Buccal swab: Collect 4-6 cytobrush/cotton swabs on each side of the mouth, place swabs in transport tubes, 2 swabs per tube.

Minimum Volume:
Tumor sample
EDTA whole blood: 2 mL
Bone Marrow aspirate: 1 mL

Germline sample
Cultured fibroblasts: Confluent T25 flasks x2
Buccal swab: Collect 2-4 cytobrush/cotton swabs on each side of the mouth, place swabs in transport tubes, 2 swabs per tube.

Specimen Preparation:
DO NOT FREEZE blood or bone marrow samples. Ship samples to CCGL at Mt Zion as soon as possible.

Overnight refrigeration prior to transport is acceptable.

Reference Interval:
Negative: No clinically significant variants detected.

Interpretive Data:
The test was validated by the UCSF Clinical Cancer Genomics Laboratory (CCGL) to confirm performance characteristics, in compliance with current guidelines for clinical implementation.

Synonyms:

- JMML Panel
- CBL exons 8/9
- KRAS exons 2/3
- NRAS exons 2/3
- PTPN11 exons 3/4/13

Reported:
14 days

Reflex Testing:
An interpretation of this test by a laboratory physician will be automatically performed and billed for separately.

Additional Information:
Requisition Form

The test was validated by the UCSF Clinical Cancer Genomics Laboratory (CCGL) to confirm performance characteristics, in compliance with current guidelines for clinical implementation.

CPT Codes:
81450

LDT or Modified FDA:
Yes

Supplemental Test Request Form Required:
Yes

Kappa & Lambda Free Light Chains, Urine

FRULC

ORDERING

Ordering Recommendations:
Order SERUM instead of URINE to screen for monoclonal gammopathies.

Available Stat:
No

Performing Lab:
Quest

Methodology:
Nephelometry

Reported:
Set up 5 days per week. Turn around 2-4 days

Additional Information:
Polyclonal Immunoglobulin light chains (kappa and Lambda) normally occur in a ratio of 2:1, whereas monoclonal immunoglobulin light chains exhibit only one light chain type, either kappa or lambda. A kappa:lambda ratio outside 2:1 is an indication of a monoclonal gammopathy.

Synonyms:

- K/L ratio
- Free light chains

COLLECTION

Sample Type:
24 hour or random urine

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container

Amount to Collect:
Complete 24 hour urine output or 10 mL random urine

Preferred Volume:
2 mL urine

Minimum Volume:
1 mL urine

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 3 weeks, frozen at -20C 3 months

PROCESSING

Test Code:
FRULC

Test Group:
light chains

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate sample. Order Quest test # 11233X.

Preferred Volume:
2 mL urine

Minimum Volume:
1 mL urine

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 3 weeks, frozen at -20C 3 months

RESULT INTERPRETATION

Additional Information:
Polyclonal Immunoglobulin light chains (kappa and Lambda) normally occur in a ratio of 2:1, whereas monoclonal immunoglobulin light chains exhibit only one light chain type, either kappa or lambda. A kappa:lambda ratio outside 2:1 is an indication of a monoclonal gammopathy.

ADMINISTRATIVE

CPT Codes:
83521-90 x 2

LOINC Codes:
41759-2

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Order SERUM instead of URINE to screen for monoclonal gammopathies.

Test Code:
FRULC

Test Group:
light chains

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Nephelometry

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container

Amount to Collect:
Complete 24 hour urine output or 10 mL random urine

Sample Type:
24 hour or random urine

Preferred Volume:
2 mL urine

Minimum Volume:
1 mL urine

Specimen Preparation:
Refrigerate sample. Order Quest test # 11233X.

Synonyms:

- K/L ratio
- Free light chains

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 3 weeks, frozen at -20C 3 months

Reported:
Set up 5 days per week. Turn around 2-4 days

Additional Information:
Polyclonal Immunoglobulin light chains (kappa and Lambda) normally occur in a ratio of 2:1, whereas monoclonal immunoglobulin light chains exhibit only one light chain type, either kappa or lambda. A kappa:lambda ratio outside 2:1 is an indication of a monoclonal gammopathy.

CPT Codes:
83521-90 x 2

LOINC Codes:
41759-2

Kappa and Lambda Free light Chains, serum

FKL

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Tuesday, Wednesday, Friday (day shift)

Methodology:
Turbidimetry

Reported:
1-5 days

Additional Information:
In serum, the kappa/lambda ratio of whole immunoglobulin molecules is 2:1, whereas the kappa/lambda ratio of free light chains is 1:1.5. The latter is attributed to the occurrence of lambda light chains as dimers whose serum half-life is approximately 3 times longer than that of monomeric kappa light chains. Excess production of kappa or lambda light chains alters the kappa/lambda ratio. Alterations that fall outside the normal range may be attributable to the presence of monoclonal light chains. Serum or urine protein electrophoresis along with immunofixation electrophoresis should be performed to confirm the presence of a monoclonal paraprotein.

Measurement of free light chain concentration in serum can be useful for diagnosis, prognosis, monitoring disease activity and following response to therapy of many disorders, including plasma cell myeloma, macroglobulinemia, Mu heavy chain disease, primary amyloidosis, light chain deposition disease, monoclonal gammopathies, and some cases of lymphoproliferative disorders with paraprotein production such as chronic lymphocytic leukemia.

Chronic infections, chronic inflammatory diseases, and renal insufficiency may be accompanied by a diffuse increase in both kappa and lambda free light chains. Additionally, the serum concentration of free light chains increases with age (particularly over age 60). In each of these cases the kappa/lambda ratio still remains within normal limits.

This test is performed on The Binding Site reagent on the Optilite instrument. Results from this assay are not comparable to results obtained from other assays.

Synonyms:

- K/L
- kappa/lambda

COLLECTION

Sample Type:
Serum

Collect:
Gold top (Red top acceptable)

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Remarks:
Avoid hemolysis

Unacceptable Conditions:
Hemolysis, lipemia

PROCESSING

Test Code:
FKL

Test Group:
light chains

Performing Lab:
Immunology

Specimen Preparation:
Refrigerate sample

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Hemolysis, lipemia

RESULT INTERPRETATION

Units:
mg/L

Reference Interval:
Kappa light chains: 3.3-19.4 mg/L
Lambda light chains: 5.7-26.3 mg/L
Kappa/Lambda ratio: 0.26-1.65

Additional Information:
In serum, the kappa/lambda ratio of whole immunoglobulin molecules is 2:1, whereas the kappa/lambda ratio of free light chains is 1:1.5. The latter is attributed to the occurrence of lambda light chains as dimers whose serum half-life is approximately 3 times longer than that of monomeric kappa light chains. Excess production of kappa or lambda light chains alters the kappa/lambda ratio. Alterations that fall outside the normal range may be attributable to the presence of monoclonal light chains. Serum or urine protein electrophoresis along with immunofixation electrophoresis should be performed to confirm the presence of a monoclonal paraprotein.

Measurement of free light chain concentration in serum can be useful for diagnosis, prognosis, monitoring disease activity and following response to therapy of many disorders, including plasma cell myeloma, macroglobulinemia, Mu heavy chain disease, primary amyloidosis, light chain deposition disease, monoclonal gammopathies, and some cases of lymphoproliferative disorders with paraprotein production such as chronic lymphocytic leukemia.

Chronic infections, chronic inflammatory diseases, and renal insufficiency may be accompanied by a diffuse increase in both kappa and lambda free light chains. Additionally, the serum concentration of free light chains increases with age (particularly over age 60). In each of these cases the kappa/lambda ratio still remains within normal limits.

This test is performed on The Binding Site reagent on the Optilite instrument. Results from this assay are not comparable to results obtained from other assays.

ADMINISTRATIVE

CPT Codes:
83521 x2

LOINC Codes:
40844-3

COMPLETE VIEW

Available Stat:
No

Test Code:
FKL

Test Group:
light chains

Performing Lab:
Immunology

Performed:
Tuesday, Wednesday, Friday (day shift)

Methodology:
Turbidimetry

Remarks:
Avoid hemolysis

Collect:
Gold top (Red top acceptable)

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Hemolysis, lipemia

Specimen Preparation:
Refrigerate sample

Units:
mg/L

Reference Interval:
Kappa light chains: 3.3-19.4 mg/L
Lambda light chains: 5.7-26.3 mg/L
Kappa/Lambda ratio: 0.26-1.65

Synonyms:

- K/L
- kappa/lambda

Reported:
1-5 days

Additional Information:
In serum, the kappa/lambda ratio of whole immunoglobulin molecules is 2:1, whereas the kappa/lambda ratio of free light chains is 1:1.5. The latter is attributed to the occurrence of lambda light chains as dimers whose serum half-life is approximately 3 times longer than that of monomeric kappa light chains. Excess production of kappa or lambda light chains alters the kappa/lambda ratio. Alterations that fall outside the normal range may be attributable to the presence of monoclonal light chains. Serum or urine protein electrophoresis along with immunofixation electrophoresis should be performed to confirm the presence of a monoclonal paraprotein.

Measurement of free light chain concentration in serum can be useful for diagnosis, prognosis, monitoring disease activity and following response to therapy of many disorders, including plasma cell myeloma, macroglobulinemia, Mu heavy chain disease, primary amyloidosis, light chain deposition disease, monoclonal gammopathies, and some cases of lymphoproliferative disorders with paraprotein production such as chronic lymphocytic leukemia.

Chronic infections, chronic inflammatory diseases, and renal insufficiency may be accompanied by a diffuse increase in both kappa and lambda free light chains. Additionally, the serum concentration of free light chains increases with age (particularly over age 60). In each of these cases the kappa/lambda ratio still remains within normal limits.

This test is performed on The Binding Site reagent on the Optilite instrument. Results from this assay are not comparable to results obtained from other assays.

CPT Codes:
83521 x2

LOINC Codes:
40844-3

Ketones, Qualitative, urine

UA, UAWM

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Dipstick

Reported:
STAT 1 hour, Routine same or next day.

Additional Information:
Ketone bodies include acetoacetate, acetone and beta-hydroxybutyrate; however, this reacts only with acetoacetic acid and does not react with beta-hydroxybutyric acid

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
See preferred volume

Preferred Volume:
10 mL urine

PROCESSING

Test Code:
UA or UAWM

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology

Preferred Volume:
10 mL urine

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
Ketone bodies include acetoacetate, acetone and beta-hydroxybutyrate; however, this reacts only with acetoacetic acid and does not react with beta-hydroxybutyric acid

ADMINISTRATIVE

CPT Codes:
81003

COMPLETE VIEW

Available Stat:
Yes

Test Code:
UA or UAWM

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Dipstick

Collect:
Urine cup

Amount to Collect:
See preferred volume

Sample Type:
Random urine

Preferred Volume:
10 mL urine

Reference Interval:
Negative

Reported:
STAT 1 hour, Routine same or next day.

Additional Information:
Ketone bodies include acetoacetate, acetone and beta-hydroxybutyrate; however, this reacts only with acetoacetic acid and does not react with beta-hydroxybutyric acid

CPT Codes:
81003

KIR Genotype - Low Resolution

HTKIR (Sunquest: ILKIR)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Molecular - SSP

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Synonyms:

- KIR Typing, KIR Genotyping

COLLECTION

Sample Type:
ACD anticoagulated whole blood.

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Preferred Volume:
8.5 mL blood

Minimum Volume:
1 mL blood

Remarks:
Fill ACD tube completely. Obtain ACD tube from Specimen Receiving. If being collected with other HLA intermediate resolution typing such as HLA-B, HLA-C, HLA-DR, HLA-DQ, etc., 1 tube is sufficient for all tests. Collect additional samples if white blood cell (WBC) count is low (<1,000).

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours.

Unacceptable Conditions:
WBC count too low (<1,000).

PROCESSING

Test Code:
HTKIR (Sunquest: ILKIR)

Test Group:
KIR Genotyping

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Preferred Volume:
8.5 mL blood

Minimum Volume:
1 mL blood

Unacceptable Conditions:
WBC count too low (<1,000).

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours.

ADMINISTRATIVE

CPT Codes:
81373

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTKIR (Sunquest: ILKIR)

Test Group:
KIR Genotyping

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Molecular - SSP

Remarks:
Fill ACD tube completely. Obtain ACD tube from Specimen Receiving. If being collected with other HLA intermediate resolution typing such as HLA-B, HLA-C, HLA-DR, HLA-DQ, etc., 1 tube is sufficient for all tests. Collect additional samples if white blood cell (WBC) count is low (<1,000).

Collect:
Yellow top (ACD)

Amount to Collect:
8.5 mL blood

Sample Type:
ACD anticoagulated whole blood.

Preferred Volume:
8.5 mL blood

Minimum Volume:
1 mL blood

Unacceptable Conditions:
WBC count too low (<1,000).

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Synonyms:

- KIR Typing, KIR Genotyping

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours.

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

CPT Codes:
81373

Lactate Dehydrogenase, Body Fluid

LDB

ORDERING

Available Stat:
No

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
IFCC recommended forward reaction - Lactate to Pyruvate

Reported:
4 hours

Additional Information:
Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context.

Interpretive information on this testing can be found at https://aruplab.com/bodyfluids

Synonyms:

- LD
- LDH

COLLECTION

Sample Type:
Body fluid

Collect:
Clean, empty container OR red top (no additives)
Note: Do NOT collect in red top with clot activator (silicone coated).

Amount to Collect:
5 mL fluid

Preferred Volume:
0.5 mL fluid

Minimum Volume:
0.2 mL fluid

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Stability (from collection to initiation):
Room Temperature: 7 days
Refrigerated (2-8 C): 4 days
Frozen (-20 C): 6 weeks

PROCESSING

Test Code:
LDB

Test Group:
LD

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
0.5 mL fluid

Minimum Volume:
0.2 mL fluid

Stability (from collection to initiation):
Room Temperature: 7 days
Refrigerated (2-8 C): 4 days
Frozen (-20 C): 6 weeks

RESULT INTERPRETATION

Units:
U/L

Additional Information:
Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context.

Interpretive information on this testing can be found at https://aruplab.com/bodyfluids

ADMINISTRATIVE

CPT Codes:
83615

LOINC Codes:
2529-6

COMPLETE VIEW

Available Stat:
No

Test Code:
LDB

Test Group:
LD

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
IFCC recommended forward reaction - Lactate to Pyruvate

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Collect:
Clean, empty container OR red top (no additives)
Note: Do NOT collect in red top with clot activator (silicone coated).

Amount to Collect:
5 mL fluid

Sample Type:
Body fluid

Preferred Volume:
0.5 mL fluid

Minimum Volume:
0.2 mL fluid

Units:
U/L

Synonyms:

- LD
- LDH

Stability (from collection to initiation):
Room Temperature: 7 days
Refrigerated (2-8 C): 4 days
Frozen (-20 C): 6 weeks

Reported:
4 hours

Additional Information:
Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context.

Interpretive information on this testing can be found at https://aruplab.com/bodyfluids

CPT Codes:
83615

LOINC Codes:
2529-6

Lactate Dehydrogenase, CSF

LDCF

ORDERING

Available Stat:
No

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
IFCC recommended forward reaction - Lactate to Pyruvate

Reported:
4 hours

Additional Information:
Interpretation requires knowledge of blood level.

Synonyms:

- LD
- LDH

COLLECTION

Sample Type:
CSF

Collect:
CSF tube or sterile collection tube

Amount to Collect:
3 mL CSF

Preferred Volume:
0.5 mL CSF

Minimum Volume:
0.2 mL CSF

Remarks:
Collect serum/plasma in addition if recent blood level is not available for comparison with CSF result. Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Stability (from collection to initiation):
Room temperature 2 hours. Do not refrigerate or freeze.

PROCESSING

Test Code:
LDCF

Test Group:
LD

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
0.5 mL CSF

Minimum Volume:
0.2 mL CSF

Stability (from collection to initiation):
Room temperature 2 hours. Do not refrigerate or freeze.

RESULT INTERPRETATION

Units:
U/L

Reference Interval:
The LDH level in CSF is normally about 10% of the serum LDH level

Karcher DS, McPherson RA. Chapter 29: Cerebrospinal, synovial, serous body fluids, and alternative specimens. In Henry's Clinical Diagnosis and Management by Laboratory Methods. 22 Ed. McPherson RA, Pincus MR. Eds. Elsevier Saunders: Philadelphia, PA, 2011.

Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context.

Additional Information:
Interpretation requires knowledge of blood level.

ADMINISTRATIVE

CPT Codes:
83615

COMPLETE VIEW

Available Stat:
No

Test Code:
LDCF

Test Group:
LD

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
IFCC recommended forward reaction - Lactate to Pyruvate

Remarks:
Collect serum/plasma in addition if recent blood level is not available for comparison with CSF result. Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Collect:
CSF tube or sterile collection tube

Amount to Collect:
3 mL CSF

Sample Type:
CSF

Preferred Volume:
0.5 mL CSF

Minimum Volume:
0.2 mL CSF

Units:
U/L

Reference Interval:
The LDH level in CSF is normally about 10% of the serum LDH level

Karcher DS, McPherson RA. Chapter 29: Cerebrospinal, synovial, serous body fluids, and alternative specimens. In Henry's Clinical Diagnosis and Management by Laboratory Methods. 22 Ed. McPherson RA, Pincus MR. Eds. Elsevier Saunders: Philadelphia, PA, 2011.

Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context.

Synonyms:

- LD
- LDH

Stability (from collection to initiation):
Room temperature 2 hours. Do not refrigerate or freeze.

Reported:
4 hours

Additional Information:
Interpretation requires knowledge of blood level.

CPT Codes:
83615

Lactate Dehydrogenase, Plasma / Serum

LD

ORDERING

Available Stat:
No

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
IFCC recommended forward reaction - Lactate to Pyruvate

Reported:
4 hours

Additional Information:
Hemolysis will increase results because erythrocytes contain approximately 150 times more LD activity.

Certain LDH isoenzymes (LDH-4 and LDH-5) are sensitive to cold exposure and cooling the sample may result in variable decreases in the LDH activity depending on the isoenzyme composition of the sample.

Synonyms:

- LD
- LDH

COLLECTION

Sample Type:
Plasma or serum

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Remarks:
Samples should be submitted to the laboratory for processing within 2 hours of collection

Stability (from collection to initiation):
Room temperature 7 days, refrigerated 4 days, frozen at -20C 6 weeks

PROCESSING

Test Code:
LD

Test Group:
LD

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Specimen Preparation:
Centrifuge and separate serum/plasma from cells. Do not freeze.

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Room temperature 7 days, refrigerated 4 days, frozen at -20C 6 weeks

RESULT INTERPRETATION

Units:
U/L

Reference Interval:

Age	Male (U/L)	Female (U/L)
0 to 14 days	309-1222	309-1222
15 days to <1 year	163-452	163-452
1 to 9 years	192-321	192-321
10 to 14 years	170-283	157-272
15 to 17 years	130-250	130-250
>=18 years	125-243	125-243

Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, https://caliper.research.sickkids.ca/#/search

The adult reference ranges were adopted from Lee et al, 2017, Generating method-specific reference ranges - a harmonious outcome? Pract Lab Med 9: 1-11. The adult reference ranges were verified by running 40 normal volunteers from UCSF Clinical Laboratories.

Additional Information:

Hemolysis will increase results because erythrocytes contain approximately 150 times more LD activity.

Certain LDH isoenzymes (LDH-4 and LDH-5) are sensitive to cold exposure and cooling the sample may result in variable decreases in the LDH activity depending on the isoenzyme composition of the sample.

ADMINISTRATIVE

CPT Codes:
83615

LOINC Codes:
2532-0

COMPLETE VIEW

Available Stat:
No

Test Code:
LD

Test Group:
LD

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
IFCC recommended forward reaction - Lactate to Pyruvate

Remarks:
Samples should be submitted to the laboratory for processing within 2 hours of collection

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
1 mL blood

Sample Type:
Plasma or serum

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Specimen Preparation:
Centrifuge and separate serum/plasma from cells. Do not freeze.

Units:
U/L

Reference Interval:

Age	Male (U/L)	Female (U/L)
0 to 14 days	309-1222	309-1222
15 days to <1 year	163-452	163-452
1 to 9 years	192-321	192-321
10 to 14 years	170-283	157-272
15 to 17 years	130-250	130-250
>=18 years	125-243	125-243

Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, https://caliper.research.sickkids.ca/#/search

The adult reference ranges were adopted from Lee et al, 2017, Generating method-specific reference ranges - a harmonious outcome? Pract Lab Med 9: 1-11. The adult reference ranges were verified by running 40 normal volunteers from UCSF Clinical Laboratories.

Synonyms:

- LD
- LDH

Stability (from collection to initiation):

Room temperature 7 days, refrigerated 4 days, frozen at -20C 6 weeks

Reported:

4 hours

Additional Information:

Hemolysis will increase results because erythrocytes contain approximately 150 times more LD activity.

Certain LDH isoenzymes (LDH-4 and LDH-5) are sensitive to cold exposure and cooling the sample may result in variable decreases in the LDH activity depending on the isoenzyme composition of the sample.

CPT Codes:

83615

LOINC Codes:

2532-0

Lactate, CSF

LACS

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Enzymatic - Lactic Acid to Pyruvate

Reported:
1 hour

Synonyms:

- Lactic acid

COLLECTION

Sample Type:
CSF

Collect:
CSF tube or sterile collection tube on ice

Amount to Collect:
1 mL CSF

Preferred Volume:
1 mL CSF

Minimum Volume:
0.6 mL CSF

Remarks:
Chill tube before collection. Deliver sample on ice IMMEDIATELY to laboratory (should be received within 30 min of collection).

Specimen label should contain the date the sample was collected and the legible name of the person who collected the sample.

Stability (from collection to initiation):
On ice 2 hours.

PROCESSING

Test Code:
LACS

Test Group:
lactate

Performing Lab:
Parnassus & Mission Bay Chemistry

Specimen Preparation:
If specimen not received on ice, attach comment "Specimen not received on ice, may cause falsely elevated lactate in some cases"

If specimen received > 60 minutes after collection, attach comment “stability period exceeded, results questionable."

All specimens must be assumed to contain cells and processed immediately.

Provide immediately to Chemistry who will centrifuge and assay sample.

If specimen is collected at Mt. Zion, centrifuge immediately. Aliquot and freeze the sample (-20C) immediately and send to Parnassus on next scheduled delivery run.

Preferred Volume:
1 mL CSF

Minimum Volume:
0.6 mL CSF

Stability (from collection to initiation):
On ice 2 hours.

RESULT INTERPRETATION

Units:
mmol/L

Reference Interval:
1.1-2.8 mmol/L

Reference range adapted from manufacturer's reference range and the reference of Herold DA, Savory J, Bruns DE. Determination of lactate acid concentration in spinal fluid: results on patient samples using automated enzymatic assay. Clin Chem 1980;26:968.

ADMINISTRATIVE

CPT Codes:
83605

LOINC Codes:
2520-5

COMPLETE VIEW

Available Stat:
Yes

Test Code:
LACS

Test Group:
lactate

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Enzymatic - Lactic Acid to Pyruvate

Remarks:
Chill tube before collection. Deliver sample on ice IMMEDIATELY to laboratory (should be received within 30 min of collection).

Specimen label should contain the date the sample was collected and the legible name of the person who collected the sample.

Collect:
CSF tube or sterile collection tube on ice

Amount to Collect:
1 mL CSF

Sample Type:
CSF

Preferred Volume:
1 mL CSF

Minimum Volume:
0.6 mL CSF

Specimen Preparation:
If specimen not received on ice, attach comment "Specimen not received on ice, may cause falsely elevated lactate in some cases"

If specimen received > 60 minutes after collection, attach comment “stability period exceeded, results questionable."

All specimens must be assumed to contain cells and processed immediately.

Provide immediately to Chemistry who will centrifuge and assay sample.

If specimen is collected at Mt. Zion, centrifuge immediately. Aliquot and freeze the sample (-20C) immediately and send to Parnassus on next scheduled delivery run.

Units:
mmol/L

Reference Interval:

1.1-2.8 mmol/L

Reference range adapted from manufacturer's reference range and the reference of Herold DA, Savory J, Bruns DE. Determination of lactate acid concentration in spinal fluid: results on patient samples using automated enzymatic assay. Clin Chem 1980;26:968.

Synonyms:

- Lactic acid

Stability (from collection to initiation):

On ice 2 hours.

Reported:

1 hour

CPT Codes:

83605

LOINC Codes:

2520-5

Lactate, plasma

LACT

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Enzymatic - Lactic Acid to Pyruvate

Reported:
1 hour

Additional Information:
Glycolic acid, the ethylene glycol metabolite, causes a significant interference in this assay.
High concentrations of N-acetyl-L-cysteine cause a significant interference in this assay.

Synonyms:

- Lactic acid

COLLECTION

Sample Type:
Fluoride / oxalate whole blood

Collect:
Gray top

Amount to Collect:
1 mL blood

Preferred Volume:
1 mL blood

Minimum Volume:
0.3 mL blood

Remarks:
Deliver sample immediately to laboratory for processing.

Stability (from collection to initiation):
Refrigerated 3 days, frozen at -20C 3 days

Unacceptable Conditions:
Note that samples received in gray top tubes more than 60 minutes after collection or samples received in non-gray top tubes will be tested but will have a comment attached to the result noting that results could be falsely elevated.

PROCESSING

Test Code:
LACT

Test Group:
lactate

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Specimen Preparation:
Provide immediately to Chemistry section who will centrifuge and assay sample.

If specimen cannot be run at either site centrifuge immediately. Aliquot and freeze the plasma (-20C) immediately and send immediately to other site for testing

Preferred Volume:
1 mL blood

Minimum Volume:
0.3 mL blood

Unacceptable Conditions:
Note that samples received in gray top tubes more than 60 minutes after collection or samples received in non-gray top tubes will be tested but will have a comment attached to the result noting that results could be falsely elevated.

Stability (from collection to initiation):
Refrigerated 3 days, frozen at -20C 3 days

RESULT INTERPRETATION

Units:
mmol/L

Reference Interval:

Age	Normal Range
0 - 2 months	1.0-3.5 mmol/L
3 months - 1 year	1.0-3.3 mmol/L
2 - 18 years	1.0-2.4 mmol/L
> 18 years	0.5-2.2 mmol/L

Pediatric reference ranges adopted from Soldin, Steven J. Pediatric Reference Intervals (method 3), 7th edition, 2011.

Critical Values:
> 3.9 mmol/L

Additional Information:
Glycolic acid, the ethylene glycol metabolite, causes a significant interference in this assay.
High concentrations of N-acetyl-L-cysteine cause a significant interference in this assay.

ADMINISTRATIVE

CPT Codes:
83605

LOINC Codes:
2524-7

COMPLETE VIEW

Available Stat:
Yes

Test Code:
LACT

Test Group:
lactate

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Enzymatic - Lactic Acid to Pyruvate

Remarks:
Deliver sample immediately to laboratory for processing.

Collect:
Gray top

Amount to Collect:
1 mL blood

Sample Type:
Fluoride / oxalate whole blood

Preferred Volume:
1 mL blood

Minimum Volume:
0.3 mL blood

Unacceptable Conditions:
Note that samples received in gray top tubes more than 60 minutes after collection or samples received in non-gray top tubes will be tested but will have a comment attached to the result noting that results could be falsely elevated.

Specimen Preparation:
Provide immediately to Chemistry section who will centrifuge and assay sample.

If specimen cannot be run at either site centrifuge immediately. Aliquot and freeze the plasma (-20C) immediately and send immediately to other site for testing

Units:
mmol/L

Reference Interval:

Age	Normal Range
0 - 2 months	1.0-3.5 mmol/L
3 months - 1 year	1.0-3.3 mmol/L
2 - 18 years	1.0-2.4 mmol/L
> 18 years	0.5-2.2 mmol/L

Pediatric reference ranges adopted from Soldin, Steven J. Pediatric Reference Intervals (method 3), 7th edition, 2011.

Critical Values:

> 3.9 mmol/L

Synonyms:

- Lactic acid

Stability (from collection to initiation):

Refrigerated 3 days, frozen at -20C 3 days

Reported:

1 hour

Additional Information:

Glycolic acid, the ethylene glycol metabolite, causes a significant interference in this assay.
High concentrations of N-acetyl-L-cysteine cause a significant interference in this assay.

CPT Codes:

83605

LOINC Codes:

2524-7

Lactate, Whole Blood

NLACT, LACTWB

ORDERING

Ordering Recommendations:
Follow the link for information about Blood Gas Panels that contain this test.

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay and Mt Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Radiometer ABL 90 FLEX Plus

Reported:
STAT: 10 min

Additional Information:
Glycolic acid, the ethylene glycol metabolite, causes erroneously high results in this assay.

Synonyms:

- Lactic acid
- ARTBGL
- VENBGL
- CVBGL
- MVBGL
- Blood gas
- ABG

COLLECTION

Sample Type:
Heparinized whole blood (Blood gas syringe only)

Collect:
Plastic blood gas syringe containing 100U of dry heparin

Amount to Collect:
3 mL blood

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood

Remarks:

Arterial puncture:

Due to the risk of arterial damage and subsequent distal ischemia, prior to puncturing an artery the RN assesses the collateral circulation. If the radial artery is to be punctured, then the pulse of the ulnar artery is assessed. If the dorsalis pedis artery is to be accessed then the posterial tibial pulse is assessed and likewise if the posterial tibial approach is used the dorsalis pedis pulse is assessed. The modified Allens's test may be used to assess collateral circulation of the ulnar artery before a radial artery puncture, but it does not always ensure adequate flow. A Doppler ultrasound flow indicator may be used to verify collateral circulation. If the collateral circulation is poor and the RN cannot palpate a pulse then the physician should be notified before proceeding. If for any reason the circulation is compromised to the extremity being assessed for arterial puncture then the physician should be notified prior to proceeding.

1. Palpate the radial artery and identify the site where the pulse is the strongest. Avoid areas with overlying veins to prevent venous admixture.
2. Prepare the patient's skin with an alcohol or 2% chlorhexidine wipe/swab.
3. Place two or three fingers along the course of the artery both to locate its position and direction, and to stabilize it.
4. Penetrate the skin smoothly holding the needle at 30-60 degree angle with the needle bevel up and pointed proximally. The angle of the butterfly" IV catheter should not exceed 45° for pediatric patients.
5. Re-establish the position and direction of the artery by palpation.
6. Gently and slowly advance the needle or butterfly", aiming directly for the area of maximum pulsation.
7. When the arterial lumen has been entered, less resistance is felt and blood appears in the syringe above the needle hub.
8. Obtain required amount of arterial blood for test(s).
9. If blood is not obtained on first attempt, withdraw the needle to just below the skin surface and advance needle at same angle but at 1 mm to either side of previous attempt.
10. Place the 2x2 gauze over the site of the puncture then withdraw the needle from the artery. Press firmly at the site for at least five minutes, or until the bleeding stops. Apply bandage or pressure dressing.
11. Expel any air bubble in the syringe with air filter cap placed on specimen syringe.
12. Label sample with patient's name, ID number and DOB.

Venous samples:

1. Avoid excessive venous stasis from prolonged tourniquet application or clenching of the fist prior to sample collection.
2. For central line draws make sure to waste a full red top tube then draw via the blood gas syringe as noted above.
3. Fill syringe completely, remove needle (in peripheral draws), cap sample, expel all bubbles (while holding syringe upright) until blood hits the top of cap.
4. Label sample with patient's name, ID number and DOB.

Deliver samples immediately to lab for testing. Samples delivered to the lab >30 minutes after collection may yield erroneous results.

Unacceptable Conditions:

Samples submitted > 30 min after collection, samples with needle attached, containing large bubbles, unlabeled, clotted or of insufficient volume.

PROCESSING

Test Code:

NLACT (battery code)
LACTWB (test code)

Test Group:

Lactate

Performing Lab:

Parnassus, Mission Bay and Mt Zion Chemistry

Preferred Volume:

3 mL blood

Minimum Volume:

1 mL blood

Unacceptable Conditions:

Samples submitted > 30 min after collection, samples with needle attached, containing large bubbles, unlabeled, clotted or of insufficient volume.

RESULT INTERPRETATION

Units:

mmol/L

Reference Interval:

0.5-2.0 mmol/L

Critical Values:

> 3.9 mmol/L

Additional Information:

Glycolic acid, the ethylene glycol metabolite, causes erroneously high results in this assay.

COMPLETE VIEW

Available Stat:
Yes

Ordering Recommendations:
Follow the link for information about Blood Gas Panels that contain this test.

Test Code:
NLACT (battery code)
LACTWB (test code)

Test Group:
Lactate

Performing Lab:
Parnassus, Mission Bay and Mt Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Radiometer ABL 90 FLEX Plus

Remarks:

Arterial puncture:
Due to the risk of arterial damage and subsequent distal ischemia, prior to puncturing an artery the RN assesses the collateral circulation. If the radial artery is to be punctured, then the pulse of the ulnar artery is assessed. If the dorsalis pedis artery is to be accessed then the posterial tibial pulse is assessed and likewise if the posterial tibial approach is used the dorsalis pedis pulse is assessed. The modified Allens's test may be used to assess collateral circulation of the ulnar artery before a radial artery puncture, but it does not always ensure adequate flow. A Doppler ultrasound flow indicator may be used to verify collateral circulation. If the collateral circulation is poor and the RN cannot palpate a pulse then the physician should be notified before proceeding. If for any reason the circulation is compromised to the extremity being assessed for arterial puncture then the physician should be notified prior to proceeding.

1. Palpate the radial artery and identify the site where the pulse is the strongest. Avoid areas with overlying veins to prevent venous admixture.
2. Prepare the patient's skin with an alcohol or 2% chlorhexidine wipe/swab.
3. Place two or three fingers along the course of the artery both to locate its position and direction, and to stabilize it.
4. Penetrate the skin smoothly holding the needle at 30-60 degree angle with the needle bevel up and pointed proximally. The angle of the butterfly" IV catheter should not exceed 45° for pediatric patients.
5. Re-establish the position and direction of the artery by palpation.
6. Gently and slowly advance the needle or butterfly", aiming directly for the area of maximum pulsation.
7. When the arterial lumen has been entered, less resistance is felt and blood appears in the syringe above the needle hub.
8. Obtain required amount of arterial blood for test(s).
9. If blood is not obtained on first attempt, withdraw the needle to just below the skin surface and advance needle at same angle but at 1 mm to either side of previous attempt.
10. Place the 2x2 gauze over the site of the puncture then withdraw the needle from the artery. Press firmly at the site for at least five minutes, or until the bleeding stops. Apply bandage or pressure dressing.
11. Expel any air bubble in the syringe with air filter cap placed on specimen syringe.
12. Label sample with patient's name, ID number and DOB.

Venous samples:
1. Avoid excessive venous stasis from prolonged tourniquet application or clenching of the fist prior to sample collection.
2. For central line draws make sure to waste a full red top tube then draw via the blood gas syringe as noted above.
3. Fill syringe completely, remove needle (in peripheral draws), cap sample, expel all bubbles (while holding syringe upright) until blood hits the top of cap.
4. Label sample with patient's name, ID number and DOB.

Deliver samples immediately to lab for testing. Samples delivered to the lab >30 minutes after collection may yield erroneous results.

Collect:
Plastic blood gas syringe containing 100U of dry heparin

Amount to Collect:
3 mL blood

Sample Type:
Heparinized whole blood (Blood gas syringe only)

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood

Unacceptable Conditions:
Samples submitted > 30 min after collection, samples with needle attached, containing large bubbles, unlabeled, clotted or of insufficient volume.

Units:
mmol/L

Reference Interval:
0.5-2.0 mmol/L

Critical Values:
> 3.9 mmol/L

Synonyms:

- Lactic acid
- ARTBGL
- VENBGL
- CVBGL
- MVBGL
- Blood gas
- ABG

Reported:
STAT: 10 min

Additional Information:
Glycolic acid, the ethylene glycol metabolite, causes erroneously high results in this assay.

Lactoferrin, stool

LACTOF

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
ELISA

Reported:
Test set up 2x per week. Turnaround time 4-7 days.

COLLECTION

Sample Type:
Stool

Collect:
Urine cup

Amount to Collect:
1 gram stool
10 grams for B&T patients

Preferred Volume:
1 gram stool
10 grams for B&T patients

Minimum Volume:
0.3 gram stool

Remarks:
Collect stool in clean dry container. Do not use or add preservatives. Keep sample at room temperature and deliver to laboratory within 48 hours after collection.

Stability (from collection to initiation):
Room temperature 48 hours, refrigerated 48 hours, frozen 3 weeks.

Unacceptable Conditions:
Samples received > 48 hours after collection. Samples submitted in preservative.

Rejection Criteria:
Sample thawed when received. Samples collected in preservative.

PROCESSING

Test Code:
LACTOF

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze stool sample. Send to China Basin. Order Quest test # 10156.

For B&T patients order LabCorp test # 823513

Preferred Volume:
1 gram stool
10 grams for B&T patients

Minimum Volume:
0.3 gram stool

Unacceptable Conditions:
Samples received > 48 hours after collection. Samples submitted in preservative.

Rejection Criteria:
Sample thawed when received. Samples collected in preservative.

Stability (from collection to initiation):
Room temperature 48 hours, refrigerated 48 hours, frozen 3 weeks.

RESULT INTERPRETATION

Reference Interval:
Negative

ADMINISTRATIVE

CPT Codes:
83630-90

COMPLETE VIEW

Available Stat:
No

Test Code:
LACTOF

Performing Lab:
Quest

Sendout:
Yes

Methodology:
ELISA

Remarks:
Collect stool in clean dry container. Do not use or add preservatives. Keep sample at room temperature and deliver to laboratory within 48 hours after collection.

Collect:
Urine cup

Amount to Collect:
1 gram stool
10 grams for B&T patients

Sample Type:
Stool

Preferred Volume:
1 gram stool
10 grams for B&T patients

Minimum Volume:
0.3 gram stool

Rejection Criteria:
Sample thawed when received. Samples collected in preservative.

Unacceptable Conditions:
Samples received > 48 hours after collection. Samples submitted in preservative.

Specimen Preparation:
Freeze stool sample. Send to China Basin. Order Quest test # 10156.

For B&T patients order LabCorp test # 823513

Reference Interval:
Negative

Stability (from collection to initiation):
Room temperature 48 hours, refrigerated 48 hours, frozen 3 weeks.

Reported:
Test set up 2x per week. Turnaround time 4-7 days.

CPT Codes:
83630-90

Lamotrigine

LAMI

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
LC-MS-MS

Reported:
Test run 5 days per week. Turnaround 3-5 days

Synonyms:

- Lamictal

COLLECTION

Sample Type:
Serum

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Remarks:
Draw 1/2 to 1 hour before next dose at steady state. Do not use gel barrier tube.

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 5 days, frozen at -20C 2 weeks.

Unacceptable Conditions:
Collected in Gold top. Gross hemolyzed or lipemic samples

Rejection Criteria:
Gross hemolyzed or lipemic samples

PROCESSING

Test Code:
LAMI

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze sample. Order Quest # 22060

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Collected in Gold top. Gross hemolyzed or lipemic samples

Rejection Criteria:
Gross hemolyzed or lipemic samples

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 5 days, frozen at -20C 2 weeks.

RESULT INTERPRETATION

Reference Interval:
4.0-18.0 µg/mL

ADMINISTRATIVE

CPT Codes:
80175-90

LOINC Codes:
6948-4

COMPLETE VIEW

Available Stat:
No

Test Code:
LAMI

Performing Lab:
Quest

Sendout:
Yes

Methodology:
LC-MS-MS

Remarks:
Draw 1/2 to 1 hour before next dose at steady state. Do not use gel barrier tube.

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Rejection Criteria:
Gross hemolyzed or lipemic samples

Unacceptable Conditions:
Collected in Gold top. Gross hemolyzed or lipemic samples

Specimen Preparation:
Freeze sample. Order Quest # 22060

Reference Interval:
4.0-18.0 µg/mL

Synonyms:

- Lamictal

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 5 days, frozen at -20C 2 weeks.

Reported:
Test run 5 days per week. Turnaround 3-5 days

CPT Codes:
80175-90

LOINC Codes:
6948-4

L-asparaginase

MOLT

ORDERING

Available Stat:
No

Performing Lab:
NEXT Molecular Analytics via ARUP

Methodology:

Enzyme Linked Immunosorbent Assay (ELISA)

Reported:
1-4 days

Additional Information:
An asparaginase assay sample submission form must be completed and submitted with the sample. The form is available here.

Additional information about this testing can be found on the vendors website here.

COLLECTION

Sample Type:
Plasma or serum

Collect:
Lavender, red or gold top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.3 mL plasma or serum

Remarks:
An asparaginase assay sample submission form must be completed and submitted with the sample. The form is available here.

Additional information about this testing can be found on the vendors website here.

Stability (from collection to initiation):
5 days refrigerated; indefinite frozen

Storage/Transport Temperature:
Refrigerated

PROCESSING

Test Code:
MOLT

Sendout:
Yes

Performing Lab:
NEXT Molecular Analytics via ARUP

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.3 mL plasma or serum

Stability (from collection to initiation):
5 days refrigerated; indefinite frozen

Storage/Transport Temperature:
Refrigerated

RESULT INTERPRETATION

Additional Information:

An asparaginase assay sample submission form must be completed and submitted with the sample. The form is available here.

Additional information about this testing can be found on the vendors website here.

ADMINISTRATIVE

CPT Codes:

82657

COMPLETE VIEW

Available Stat:

No

Test Code:

MOLT

Performing Lab:

NEXT Molecular Analytics via ARUP

Sendout:

Yes

Methodology:

Enzyme Linked Immunosorbent Assay (ELISA)

Remarks:

An asparaginase assay sample submission form must be completed and submitted with the sample. The form is available here.

Additional information about this testing can be found on the vendors website here.

Collect:

Lavender, red or gold top

Amount to Collect:

1 mL blood

Sample Type:

Plasma or serum

Preferred Volume:

0.5 mL plasma or serum

Minimum Volume:

0.3 mL plasma or serum

Storage/Transport Temperature:

Refrigerated

Stability (from collection to initiation):

5 days refrigerated; indefinite frozen

Reported:

1-4 days

Additional Information:

An asparaginase assay sample submission form must be completed and submitted with the sample. The form is available here.

Additional information about this testing can be found on the vendors website here.

CPT Codes:

82657

LCM Virus Antibody

LCM

ORDERING

Available Stat:
No

Performing Lab:
San Francisco Public Health Laboratory

Methodology:
IFA

Reported:
Test run Wednesday. Turnaround time: 1-2 weeks

Additional Information:
Available from the State Viral and Rickettsial Diseases Lab via the local health department. See also entry for Viral Serology, and consult Microbiology regarding culture.

Supplemental Test Request Form Required:
Yes

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Remarks:
Submit paired sera, one collected within 1 wk of onset of illness and another 2-3 weeks later. Tests are NOT performed until convalescent serum is received. The physician must complete a form for Special Serology, Click here for form

Stability (from collection to initiation):
Refrigerated 2 weeks, frozen 1 month

Rejection Criteria:
Sample received at room temperature

PROCESSING

Test Code:
LCM

Sendout:
Yes

Performing Lab:
San Francisco Public Health Laboratory

Specimen Preparation:
Refrigerate sample

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Rejection Criteria:
Sample received at room temperature

Stability (from collection to initiation):
Refrigerated 2 weeks, frozen 1 month

RESULT INTERPRETATION

Units:
Titer

Reference Interval:
Negative titer < 8

Additional Information:
Available from the State Viral and Rickettsial Diseases Lab via the local health department. See also entry for Viral Serology, and consult Microbiology regarding culture.

COMPLETE VIEW

Available Stat:
No

Test Code:
LCM

Performing Lab:
San Francisco Public Health Laboratory

Sendout:
Yes

Methodology:
IFA

Remarks:
Submit paired sera, one collected within 1 wk of onset of illness and another 2-3 weeks later. Tests are NOT performed until convalescent serum is received. The physician must complete a form for Special Serology, Click here for form

Collect:
Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Rejection Criteria:
Sample received at room temperature

Specimen Preparation:
Refrigerate sample

Units:
Titer

Reference Interval:
Negative titer < 8

Stability (from collection to initiation):
Refrigerated 2 weeks, frozen 1 month

Reported:
Test run Wednesday. Turnaround time: 1-2 weeks

Additional Information:
Available from the State Viral and Rickettsial Diseases Lab via the local health department. See also entry for Viral Serology, and consult Microbiology regarding culture.

Supplemental Test Request Form Required:
Yes

Lead, 24 hour urine

PBUR

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Inductively-Coupled Plasma/Mass Spectrometry

Reported:
Test run Tuesday-Saturday. Turnaround: 2-5 days.

Additional Information:
The results are reported as the lead concentration (ug/L) and in the amount of lead in the total volume (ug/TV). To convert µg/L to µmol/L (SI units), multiply by 0.00483.

Synonyms:

- Pb
- heavy metal toxicity
- heavy metal poisoning
- heavy metals

COLLECTION

Sample Type:
24 hour urine collection

Collect:
Acid Wash Container Required

Amount to Collect:
Entire 24 hour urine output

Preferred Volume:
7 mL urine

Minimum Volume:
3 mL urine

Remarks:
Refrigerate container during collection.

Unacceptable Conditions:
Container not refrigerated during collection.

PROCESSING

Test Code:
PBUR

Test Group:
Lead

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Record total volume of urine collected on requisition. Follow detailed processing instructions for trace metal analysisMix urine received and aliquot 7 mL. Refrigerate. Order Quest #36440

Preferred Volume:
7 mL urine

Minimum Volume:
3 mL urine

Unacceptable Conditions:
Container not refrigerated during collection.

RESULT INTERPRETATION

Units:
µg/L (mcg/L)

Reference Interval:
< 80 µg/L

Additional Information:
The results are reported as the lead concentration (ug/L) and in the amount of lead in the total volume (ug/TV). To convert µg/L to µmol/L (SI units), multiply by 0.00483.

ADMINISTRATIVE

CPT Codes:
83655-90

LOINC Codes:
20625-0

COMPLETE VIEW

Available Stat:
No

Test Code:
PBUR

Test Group:
Lead

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Inductively-Coupled Plasma/Mass Spectrometry

Remarks:
Refrigerate container during collection.

Collect:
Acid Wash Container Required

Amount to Collect:
Entire 24 hour urine output

Sample Type:
24 hour urine collection

Preferred Volume:
7 mL urine

Minimum Volume:
3 mL urine

Unacceptable Conditions:
Container not refrigerated during collection.

Specimen Preparation:
Record total volume of urine collected on requisition. Follow detailed processing instructions for trace metal analysisMix urine received and aliquot 7 mL. Refrigerate. Order Quest #36440

Units:
µg/L (mcg/L)

Reference Interval:
< 80 µg/L

Synonyms:

- Pb
- heavy metal toxicity
- heavy metal poisoning
- heavy metals

Reported:
Test run Tuesday-Saturday. Turnaround: 2-5 days.

Additional Information:
The results are reported as the lead concentration (ug/L) and in the amount of lead in the total volume (ug/TV). To convert µg/L to µmol/L (SI units), multiply by 0.00483.

CPT Codes:
83655-90

LOINC Codes:
20625-0

Lead, Blood (Capillary)

PBMC1

ORDERING

Ordering Recommendations:
Recommended routine screening for lead exposure in pediatric populations. Confirm elevated results with Lead, Blood (Venous) (0020098).

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)

Reported:
1-3 days

Synonyms:

- BLL
- Capillary blood level
- Lead (Pediatric)
- Pb
- Pb, Blood
- Pb, Pediatric
- Pb, Whole Blood

Supplemental Test Request Form Required:
Yes

COLLECTION

Patient Preparation:
Clean puncture site well with soap and water before collection procedure begins.

Sample Type:
Whole blood (micro-lavendar top)

Collect:
Lavender microtainer (K_2EDTA)

Amount to Collect:
0.5 mL

Preferred Volume:
0.5 mL

Minimum Volume:
0.3 mL

Remarks:
Trace Elements requisition form may be required (ARUP form #32990).

Stability (from collection to initiation):
Ambient: Indefinitely; Refrigerated: Indefinitely; Frozen: Unacceptable

Storage/Transport Temperature:
Room temperature. Also acceptable: Refrigerated.

Unacceptable Conditions:
Specimens collected in tubes other than lavender microtainer (K_2EDTA). Specimens transported in tubes other than trace element-free transport tubes or lavender microtainer (K_2EDTA) tubes. Heparin anticoagulant. Clotted specimens. Venous whole blood, refer to Lead, Blood (Venous) (ARUP test code 0020098).

PROCESSING

Test Code:
PBMC1

ARUP Test Code:
0020745

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Invert specimen 10 times to prevent clot formation. Transport 0.5 mL whole blood in the original collection tube. (Min: 0.3 mL)

Preferred Volume:
0.5 mL

Minimum Volume:
0.3 mL

Unacceptable Conditions:
Specimens collected in tubes other than lavender microtainer (K_2EDTA). Specimens transported in tubes other than trace element-free transport tubes or lavender microtainer (K_2EDTA) tubes. Heparin anticoagulant. Clotted specimens.
Venous whole blood, refer to Lead, Blood (Venous) (ARUP test code 0020098).

Stability (from collection to initiation):
Ambient: Indefinitely; Refrigerated: Indefinitely; Frozen: Unacceptable

Storage/Transport Temperature:
Room temperature. Also acceptable: Refrigerated.

RESULT INTERPRETATION

Reference Interval:
Effective December 6, 2021

0-5 years	Less than or equal to 3.4 µg/dL
6 years or above	Less than or equal to 4.9 µg/dL

Interpretive Data:
Analysis performed by inductively coupled plasma-mass spectrometry (ICP-MS).

Elevated results may be due to skin or collection-related contamination, including the use of a noncertified lead-free collection/transport tube. If contamination concerns exist due to elevated levels of blood lead, confirmation with a venous specimen collected in a certified lead-free tube is recommended.

Repeat testing is recommended prior to initiating chelation therapy or conducting environmental investigations of potential lead sources. Repeat testing collections should be performed using a venous specimen collected in a certified lead-free collection tube.

Information sources for blood lead reference intervals and interpretive comments include the CDC's "Childhood Lead Poisoning Prevention: Recommended Actions Based on Blood Lead Level" and the "Adult Blood Lead Epidemiology and Surveillance: Reference Blood Lead Levels (BLLs) for Adults in the U.S." Thresholds and time intervals for retesting, medical evaluation, and response vary by state and regulatory body. Contact your State Department of Health and/or applicable regulatory agency for specific guidance on medical management recommendations.

Children	
Concentration	**Comment**
3.5-19.9 µg/dL	Children under the age of 6 years are the most vulnerable to the harmful effects of lead exposure. Environmental investigation and exposure history to identify potential sources of lead. Biological and nutritional monitoring are recommended. Follow-up blood lead monitoring is recommended.
20-44.9 µg/dL	Lead hazard reduction and prompt medical evaluation are recommended. Contact a Pediatric Environmental Health Specialty Unit or poison control center for guidance.
Greater than 44.9 µg/dL	Critical. Immediate medical evaluation, including detailed neurological exam is recommended. Consider chelation therapy when symptoms of lead toxicity are present. Contact a Pediatric Environmental Health Specialty Unit or poison control center for assistance.

Adults	
Concentration	**Comment**
5-19.9 µg/dL	Medical removal is recommended for pregnant women or those who are trying or may become pregnant. Adverse health effects are possible. Reduced lead exposure and increased blood lead monitoring are recommended.
20-69.9 µg/dL	Adverse health effects are indicated. Medical removal from lead exposure is required by OSHA if blood lead level exceeds 50 µg/dL. Prompt medical evaluation is recommended.
Greater than 69.9 µg/dL	Critical. Immediate medical evaluation is recommended. Consider chelation therapy when symptoms of lead toxicity are present.

ADMINISTRATIVE

CPT Codes:
83655

LOINC:

- 10368-9

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Recommended routine screening for lead exposure in pediatric populations. Confirm elevated results with Lead, Blood (Venous) (0020098).

Test Code:
PBMC1

ARUP Test Code:
0020745

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)

Patient Preparation:
Clean puncture site well with soap and water before collection procedure begins.

Remarks:
Trace Elements requisition form may be required (ARUP form #32990).

Collect:
Lavender microtainer (K_2EDTA)

Amount to Collect:
0.5 mL

Sample Type:
Whole blood (micro-lavendar top)

Preferred Volume:
0.5 mL

Minimum Volume:
0.3 mL

Unacceptable Conditions:
Specimens collected in tubes other than lavender microtainer (K_2EDTA). Specimens transported in tubes other than trace element-free transport tubes or lavender microtainer (K_2EDTA) tubes. Heparin anticoagulant. Clotted specimens. Venous whole blood, refer to Lead, Blood (Venous) (ARUP test code 0020098).

Specimen Preparation:
Invert specimen 10 times to prevent clot formation. Transport 0.5 mL whole blood in the original collection tube. (Min: 0.3 mL)

Reference Interval:
Effective December 6, 2021

0-5 years	Less than or equal to 3.4 µg/dL
6 years or above	Less than or equal to 4.9 µg/dL

Interpretive Data:

Analysis performed by inductively coupled plasma-mass spectrometry (ICP-MS).

Elevated results may be due to skin or collection-related contamination, including the use of a noncertified lead-free collection/transport tube. If contamination concerns exist due to elevated levels of blood lead, confirmation with a venous specimen collected in a certified lead-free tube is recommended.

Repeat testing is recommended prior to initiating chelation therapy or conducting environmental investigations of potential lead sources. Repeat testing collections should be performed using a venous specimen collected in a certified lead-free collection tube.

Information sources for blood lead reference intervals and interpretive comments include the CDC's "Childhood Lead Poisoning Prevention: Recommended Actions Based on Blood Lead Level" and the "Adult Blood Lead Epidemiology and Surveillance: Reference Blood Lead Levels (BLLs) for Adults in the U.S." Thresholds and time intervals for retesting, medical evaluation, and response vary by state and regulatory body. Contact your State Department of Health and/or applicable regulatory agency for specific guidance on medical management recommendations.

Children	
Concentration	**Comment**
3.5-19.9 µg/dL	Children under the age of 6 years are the most vulnerable to the harmful effects of lead exposure. Environmental investigation and exposure history to identify potential sources of lead. Biological and nutritional monitoring are recommended. Follow-up blood lead monitoring is recommended.
20-44.9 µg/dL	Lead hazard reduction and prompt medical evaluation are recommended. Contact a Pediatric Environmental Health Specialty Unit or poison control center for guidance.
Greater than 44.9 µg/dL	Critical. Immediate medical evaluation, including detailed neurological exam is recommended. Consider chelation therapy when symptoms of lead toxicity are present. Contact a Pediatric Environmental Health Specialty Unit or poison control center for assistance.

Adults	
Concentration	**Comment**
5-19.9 µg/dL	Medical removal is recommended for pregnant women or those who are trying or may become pregnant. Adverse health effects are possible. Reduced lead exposure and increased blood lead monitoring are recommended.
20-69.9 µg/dL	Adverse health effects are indicated. Medical removal from lead exposure is required by OSHA if blood lead level exceeds 50 µg/dL. Prompt medical evaluation is recommended.
Greater than 69.9 µg/dL	Critical. Immediate medical evaluation is recommended. Consider chelation therapy when symptoms of lead toxicity are present.

Synonyms:

- BLL
- Capillary blood level
- Lead (Pediatric)
- Pb
- Pb, Blood
- Pb, Pediatric
- Pb, Whole Blood

Storage/Transport Temperature:

Room temperature. Also acceptable: Refrigerated.

Stability (from collection to initiation):

Ambient: Indefinitely; Refrigerated: Indefinitely; Frozen: Unacceptable

Reported:

1-3 days

CPT Codes:

83655

LOINC:

- 10368-9

Supplemental Test Request Form Required:

Yes

Lead, Blood (Venous)

PBM

ORDERING

Ordering Recommendations:
Recommended for routine testing for lead exposure. For occupational exposure, consider Lead, Industrial Exposure Panel, Adults (0025016).

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)

Reported:
1-2 days

Synonyms:

- BLL
- Lead (Adult)
- Pb
- Pb, Blood
- Pb, Whole Blood
- Venous blood level

COLLECTION

Sample Type:
Whole blood

Collect:
Royal blue (K2EDTA), Royal blue (NaHep), or tan (K2EDTA).

Amount to Collect:
Royal blue: 7 mL blood
Tan: 3 mL blood

Preferred Volume:
Royal blue: 7 mL blood
Tan: 3 mL blood

Minimum Volume:
Royal blue: 0.5 mL blood
Tan: 0.5 mL blood

Remarks:
Trace Elements requisition form may be required (ARUP form #32990).

Stability (from collection to initiation):
Ambient: Indefinitely; Refrigerated: Indefinitely; Frozen: Unacceptable

Storage/Transport Temperature:
Room temperature. Also acceptable: Refrigerated.

Unacceptable Conditions:
Serum. Specimens collected in tubes other than Royal blue(K2EDTA), Royal blue (NaHep), or tan (K2EDTA). Clotted specimens. Capillary pediatric EDTA collection tubes, refer to Lead, Blood (Capillary) 0020745.

PROCESSING

Test Code:
PBM

ARUP Test Code:
0020098

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transport 3 or 6 mL whole blood in the original collection tube (royal blue). (Min: 0.5 mL) OR Transport 3 mL whole blood in the original collection tube (tan). (Min: 0.5 mL)

Additional Processing Instructions:
NOTE: Pediatric venous specimens are an acceptable sample for this test.

Preferred Volume:
Royal blue: 7 mL blood
Tan: 3 mL blood

Minimum Volume:
Royal blue: 0.5 mL blood
Tan: 0.5 mL blood

Unacceptable Conditions:
Serum. Specimens collected in tubes other than Royal blue(K2EDTA), Royal blue (NaHep), or tan (K2EDTA). Clotted specimens. Capillary pediatric EDTA collection tubes, refer to Lead, Blood (Capillary) 0020745.

Stability (from collection to initiation):
Ambient: Indefinitely; Refrigerated: Indefinitely; Frozen: Unacceptable

Storage/Transport Temperature:
Room temperature. Also acceptable: Refrigerated.

RESULT INTERPRETATION

Reference Interval:
Effective December 6, 2021

Age	Reference Internal
0-5 years	Less than or equal to 3.4 µg/dL
6 year or above	Less than or equal to 4.9 µg/dL

Interpretive Data:
Analysis performed by Inductively Coupled Plasma-Mass Spectrometry (ICP-MS).

Elevated results may be due to skin or collection-related contamination, including the use of a noncertified lead-free tube. If contamination concerns exist due to elevated levels of blood lead, confirmation with a second specimen collected in a certified lead-free tube is recommended.

Information sources for blood lead reference intervals and interpretive comments include the CDC's "Childhood Lead Poisoning Prevention: Recommended Actions Based on Blood Lead Level" and the "Adult Blood Lead Epidemiology and Surveillance: Reference Blood Lead Levels (BLLs) for Adults in the U.S." Thresholds and time intervals for retesting, medical evaluation, and response vary by state and regulatory body. Contact your State Department of Health and/or applicable regulatory agency for specific guidance on medical management recommendations.

Children	
Concentration	**Comment**
3.5-19.9 µg/dL	Children under the age of 6 years are the most vulnerable to the harmful effects of lead exposure. Environmental investigation and exposure history to identify potential sources of lead. Biological and nutritional monitoring are recommended. Follow-up blood lead monitoring is recommended.
20-44.9 µg/dL	Lead hazard reduction and prompt medical evaluation are recommended. Contact a Pediatric Environmental Health Specialty Unit or poison control center for guidance.
Greater than 44.9 µg/dL	Critical. Immediate medical evaluation, including detailed neurological exam is recommended. Consider chelation therapy when symptoms of lead toxicity are present. Contact a Pediatric Environmental Health Specialty Unit or poison control center for assistance.

Adults	
Concentration	**Comment**
5-19.9 µg/dL	Medical removal is recommended for pregnant women or those who are trying or may become pregnant. Adverse health effects are possible. Reduced lead exposure and increased blood lead monitoring are recommended.
20-69.9 µg/dL	Adverse health effects are indicated. Medical removal from lead exposure is required by OSHA if blood lead level exceeds 50 µg/dL. Prompt medical evaluation is recommended.
Greater than 69.9 µg/dL	Critical. Immediate medical evaluation is recommended. Consider chelation therapy when symptoms of lead toxicity are present.

ADMINISTRATIVE

CPT Codes:
83655

LOINC:

- 77307-7

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Recommended for routine testing for lead exposure. For occupational exposure, consider Lead, Industrial Exposure Panel, Adults (0025016).

Test Code:
PBM

ARUP Test Code:
0020098

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)

Remarks:
Trace Elements requisition form may be required (ARUP form #32990).

Collect:
Royal blue (K2EDTA), Royal blue (NaHep), or tan (K2EDTA).

Amount to Collect:
Royal blue: 7 mL blood
Tan: 3 mL blood

Sample Type:
Whole blood

Preferred Volume:
Royal blue: 7 mL blood
Tan: 3 mL blood

Minimum Volume:
Royal blue: 0.5 mL blood
Tan: 0.5 mL blood

Unacceptable Conditions:
Serum. Specimens collected in tubes other than Royal blue(K2EDTA), Royal blue (NaHep), or tan (K2EDTA). Clotted specimens. Capillary pediatric EDTA collection tubes, refer to Lead, Blood (Capillary) 0020745.

Specimen Preparation:
Transport 3 or 6 mL whole blood in the original collection tube (royal blue). (Min: 0.5 mL) OR Transport 3 mL whole blood in the original collection tube (tan). (Min: 0.5 mL)

Additional Processing Instructions:
NOTE: Pediatric venous specimens are an acceptable sample for this test.

Reference Interval:
Effective December 6, 2021

Age	Reference Internal
0-5 years	Less than or equal to 3.4 µg/dL
6 year or above	Less than or equal to 4.9 µg/dL

Interpretive Data:

Analysis performed by Inductively Coupled Plasma-Mass Spectrometry (ICP-MS).

Elevated results may be due to skin or collection-related contamination, including the use of a noncertified lead-free tube. If contamination concerns exist due to elevated levels of blood lead, confirmation with a second specimen collected in a certified lead-free tube is recommended.

Information sources for blood lead reference intervals and interpretive comments include the CDC's "Childhood Lead Poisoning Prevention: Recommended Actions Based on Blood Lead Level" and the "Adult Blood Lead Epidemiology and Surveillance: Reference Blood Lead Levels (BLLs) for Adults in the U.S." Thresholds and time intervals for retesting, medical evaluation, and response vary by state and regulatory body. Contact your State Department of Health and/or applicable regulatory agency for specific guidance on medical management recommendations.

Children	
Concentration	**Comment**
3.5-19.9 µg/dL	Children under the age of 6 years are the most vulnerable to the harmful effects of lead exposure. Environmental investigation and exposure history to identify potential sources of lead. Biological and nutritional monitoring are recommended. Follow-up blood lead monitoring is recommended.
20-44.9 µg/dL	Lead hazard reduction and prompt medical evaluation are recommended. Contact a Pediatric Environmental Health Specialty Unit or poison control center for guidance.
Greater than 44.9 µg/dL	Critical. Immediate medical evaluation, including detailed neurological exam is recommended. Consider chelation therapy when symptoms of lead toxicity are present. Contact a Pediatric Environmental Health Specialty Unit or poison control center for assistance.

Adults	
Concentration	**Comment**
5-19.9 µg/dL	Medical removal is recommended for pregnant women or those who are trying or may become pregnant. Adverse health effects are possible. Reduced lead exposure and increased blood lead monitoring are recommended.
20-69.9 µg/dL	Adverse health effects are indicated. Medical removal from lead exposure is required by OSHA if blood lead level exceeds 50 µg/dL. Prompt medical evaluation is recommended.
Greater than 69.9 µg/dL	Critical. Immediate medical evaluation is recommended. Consider chelation therapy when symptoms of lead toxicity are present.

Synonyms:

- BLL
- Lead (Adult)
- Pb
- Pb, Blood
- Pb, Whole Blood
- Venous blood level

Storage/Transport Temperature:

Room temperature. Also acceptable: Refrigerated.

Stability (from collection to initiation):

Ambient: Indefinitely; Refrigerated: Indefinitely; Frozen: Unacceptable

Reported:

1-2 days

CPT Codes:

83655

LOINC:

- 77307-7

Lead, random urine

PBURR

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Inductively-Coupled Plasma/Mass Spectrometry

Reported:
Performed 5 days per week. Turn around 6-8 days.

Synonyms:

- Pb
- heavy metal toxicity
- heavy metal poisoning
- heavy metals

COLLECTION

Sample Type:
Random urine (2nd void)

Collect:
Urine cup

Amount to Collect:
See preferred volume

Preferred Volume:
7 mL urine

Minimum Volume:
3 mL urine

Remarks:
Collect second morning void urine.

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 5 days, frozen at -20C 2 weeks.

PROCESSING

Test Code:
PBURR

Test Group:
Lead

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate aliquot. Order Quest test # 56762P

Preferred Volume:
7 mL urine

Minimum Volume:
3 mL urine

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 5 days, frozen at -20C 2 weeks.

RESULT INTERPRETATION

Units:
µg/g Creatinine (mcg/g Creatinine)

Reference Interval:
Nonexposed: < 10 µg/g creatinine

ADMINISTRATIVE

CPT Codes:
82570-90, 83655-90

LOINC Codes:
13466-8

COMPLETE VIEW

Available Stat:
No

Test Code:
PBURR

Test Group:
Lead

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Inductively-Coupled Plasma/Mass Spectrometry

Remarks:
Collect second morning void urine.

Collect:
Urine cup

Amount to Collect:
See preferred volume

Sample Type:
Random urine (2nd void)

Preferred Volume:
7 mL urine

Minimum Volume:
3 mL urine

Specimen Preparation:
Refrigerate aliquot. Order Quest test # 56762P

Units:
µg/g Creatinine (mcg/g Creatinine)

Reference Interval:
Nonexposed: < 10 µg/g creatinine

Synonyms:

- Pb
- heavy metal toxicity
- heavy metal poisoning
- heavy metals

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 5 days, frozen at -20C 2 weeks.

Reported:
Performed 5 days per week. Turn around 6-8 days.

CPT Codes:
82570-90, 83655-90

LOINC Codes:
13466-8

Leflunomide

LEFL

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
LC/MS

Reported:
7 days

Additional Information:
This test reports the active metabolite of Teriflunomide. Women who are being treated with Leflunomide and desire to become pregnant it is recommended that the plasma Teriflunomide levels be less than 20 ng/mL by two separate tests taken at least 14 days apart. Mean steady state trough plasma concentrations of Teriflunomide from patients on daily regimen of 5,10 or 25 mg of Leflunomide were 8,800 , 18,000 and 63,000 ng/mL respectively. The minimum effective concentration is reported to be 13,000 ng/mL.

This test was developed, validated and performed by National Medical Services Inc. 3701 Welsh Road, Willow Grove, PA. 19090 via Quest Nichols Diagnostics.

Synonyms:

- Teriflunomide

COLLECTION

Sample Type:
Serum

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Unacceptable Conditions:
Collected in Gold top

PROCESSING

Test Code:
LEFL

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate sample. Order Quest test #18865

Preferred Volume:
1 mL serum

Unacceptable Conditions:
Collected in Gold top

RESULT INTERPRETATION

Units:
ng/mL

Reference Interval:
See Additional Information

Additional Information:

This test reports the active metabolite of Teriflunomide. Women who are being treated with Leflunomide and desire to become pregnant it is recommended that the plasma Teriflunomide levels be less than 20 ng/mL by two separate tests taken at least 14 days apart. Mean steady state trough plasma concentrations of Teriflunomide from patients on daily regimen of 5,10 or 25 mg of Leflunomide were 8,800 , 18,000 and 63,000 ng/mL respectively. The minimum effective concentration is reported to be 13,000 ng/mL.

This test was developed, validated and performed by National Medical Services Inc. 3701 Welsh Road, Willow Grove, PA. 19090 via Quest Nichols Diagnostics.

ADMINISTRATIVE

CPT Codes:
80299

LOINC Codes:
38901-5

COMPLETE VIEW

Available Stat:
No

Test Code:
LEFL

Performing Lab:
Quest

Sendout:
Yes

Methodology:
LC/MS

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Unacceptable Conditions:
Collected in Gold top

Specimen Preparation:
Refrigerate sample. Order Quest test #18865

Units:
ng/mL

Reference Interval:
See Additional Information

Synonyms:

- Teriflunomide

Reported:
7 days

Additional Information:

This test reports the active metabolite of Teriflunomide. Women who are being treated with Leflunomide and desire to become pregnant it is recommended that the plasma Teriflunomide levels be less than 20 ng/mL by two separate tests taken at least 14 days apart. Mean steady state trough plasma concentrations of Teriflunomide from patients on daily regimen of 5,10 or 25 mg of Leflunomide were 8,800 , 18,000 and 63,000 ng/mL respectively. The minimum effective concentration is reported to be 13,000 ng/mL.

This test was developed, validated and performed by National Medical Services Inc. 3701 Welsh Road, Willow Grove, PA. 19090 via Quest Nichols Diagnostics.

CPT Codes:
80299

LOINC Codes:
38901-5

Legionella Culture

P125

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Daily, day and evening shifts

Methodology:
Culture

Reported:
Up to 14 days

Additional Information:
Culture is the gold standard and 100% specific, but sensitivity is less than 75%. Inadequate specimens, poor growth characteristics and prior antibiotic use will decrease culture yield.

The sensitivity of PCR tests are estimated to be 80 to 100% for lower respiratory tract specimens and the specificity is >90%.

Order Legionella Culture in conjunction with Legionella PCR test for optimal laboratory diagnosis of Legionella infections.

Legionella Urinary Antigen detects only serotype 1, which accounts for less than half of infections seen at UCSF.

Synonyms:

- Bacterial culture
- Legionnaires disease

COLLECTION

Sample Type:
Bronchial wash/lavage, endotrachael aspirate, sputum, unfixed tissue, nasopharyngeal swab

Collect:
Nasopharyngeal swab: Flocked swab in Universal Transport Medium(UTM), E-swab (liquid Amies elution medium) or Amies transport medium with charcoal, Other samples: Sterile, leak-proof container. Amies Gel and Amies/Stuart Liquid Swab Transport Systems have also been validated for culture.

Remarks:
Nasopharyngeal swab: Use flocked swab/Universal Transport Medium for collection. Insert swab into the nostril, gently rotating the swab inward until resistance is met at the level of the turbinates. Rotate the swab a few times against the nasopharyngeal wall (approximately 10 sec) and then withdraw swab. Insert swab into container with Universal Transport Medium. Break end of swab so top of vial can be screwed on securely. Appropriately label specimen and send to the laboratory.

Stability (from collection to initiation):
Refrigerated 24 hours

PROCESSING

Test Code:
P125

Test Group:
Legionella

Performing Lab:
Microbiology

Stability (from collection to initiation):
Refrigerated 24 hours

RESULT INTERPRETATION

Reference Interval:
Negative

Critical Values:
Positive culture

Additional Information:

Culture is the gold standard and 100% specific, but sensitivity is less than 75%. Inadequate specimens, poor growth characteristics and prior antibiotic use will decrease culture yield.

The sensitivity of PCR tests are estimated to be 80 to 100% for lower respiratory tract specimens and the specificity is >90%.

Order Legionella Culture in conjunction with Legionella PCR test for optimal laboratory diagnosis of Legionella infections.

Legionella Urinary Antigen detects only serotype 1, which accounts for less than half of infections seen at UCSF.

ADMINISTRATIVE

CPT Codes:
87081

LOINC Codes:
593-4

COMPLETE VIEW

Available Stat:
No

Test Code:
P125

Test Group:
Legionella

Performing Lab:
Microbiology

Performed:
Daily, day and evening shifts

Methodology:
Culture

Remarks:
Nasopharyngeal swab: Use flocked swab/Universal Transport Medium for collection. Insert swab into the nostril, gently rotating the swab inward until resistance is met at the level of the turbinates. Rotate the swab a few times against the nasopharyngeal wall (approximately 10 sec) and then withdraw swab. Insert swab into container with Universal Transport Medium. Break end of swab so top of vial can be screwed on securely. Appropriately label specimen and send to the laboratory.

Collect:
Nasopharyngeal swab: Flocked swab in Universal Transport Medium(UTM), E-swab (liquid Amies elution medium) or Amies transport medium with charcoal, Other samples: Sterile, leak-proof container. Amies Gel and Amies/Stuart Liquid Swab Transport Systems have also been validated for culture.

Sample Type:
Bronchial wash/lavage, endotrachael aspirate, sputum, unfixed tissue, nasopharyngeal swab

Reference Interval:
Negative

Critical Values:
Positive culture

Synonyms:

- Bacterial culture
- Legionnaires disease

Stability (from collection to initiation):
Refrigerated 24 hours

Reported:
Up to 14 days

Additional Information:

Culture is the gold standard and 100% specific, but sensitivity is less than 75%. Inadequate specimens, poor growth characteristics and prior antibiotic use will decrease culture yield.

The sensitivity of PCR tests are estimated to be 80 to 100% for lower respiratory tract specimens and the specificity is >90%.

Order Legionella Culture in conjunction with Legionella PCR test for optimal laboratory diagnosis of Legionella infections.

Legionella Urinary Antigen detects only serotype 1, which accounts for less than half of infections seen at UCSF.

CPT Codes:
87081

LOINC Codes:
593-4

Legionella DNA

P356

ORDERING

Available Stat:
No

Performing Lab:
Focus via Quest

Methodology:
Real time PCR

Reported:
3-5 days

Additional Information:
This test detects and differentiates between Legionella pneumophila and non-pneumophila Legionella spp. DNA in clinical specimens.

Synonyms:

- Legionnaires disease

COLLECTION

Sample Type:
Bronchial wash/lavage, endotrachael aspirate, sputum, nasopharyngeal swab

Collect:
Nasopharyngeal swab: Flocked swab in Universal Transport Medium (UTM)
Other samples: Sterile leak-proof container

Amount to Collect:
Nasopharyngeal swab: 1 flocked swab
Other samples: 1 mL

Preferred Volume:
Nasopharyngeal swab: 1 flocked swab
?Other samples: 1 mL

Minimum Volume:
Nasopharyngeal swab: 1 flocked swab
?Other samples: 0.5 mL

Remarks:
Nasopharyngeal swab: Use flocked swab/Universal Transport Medium for collection. Insert swab into the nostril, gently rotating the swab inward until resistance is met at the level of the turbinates. Rotate the swab a few times against the nasopharyngeal wall (approximately 10 sec) and then withdraw swab. Insert swab into container with Universal Transport Medium. Break end of swab so top of vial can be screwed on securely. Appropriately label specimen and send to the laboratory.

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 2 weeks, frozen 1 month

PROCESSING

Test Code:
P356

Test Group:
Legionella

Sendout:
Yes

Performing Lab:
Focus via Quest

Specimen Preparation:
Refrigerate sample and ship to CB refrigerated. Freeze specimen at -70C upon receipt at China Basin and ship frozen to reference lab.

Preferred Volume:
Nasopharyngeal swab: 1 flocked swab
?Other samples: 1 mL

Minimum Volume:
Nasopharyngeal swab: 1 flocked swab
?Other samples: 0.5 mL

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 2 weeks, frozen 1 month

RESULT INTERPRETATION

Reference Interval:
Not detected

Critical Values:
Detected

Additional Information:
This test detects and differentiates between Legionella pneumophila and non-pneumophila Legionella spp. DNA in clinical specimens.

ADMINISTRATIVE

CPT Codes:
87541-90, 87798-90

LOINC Codes:
21363-7, 31208-2, 49616-6

COMPLETE VIEW

Available Stat:
No

Test Code:
P356

Test Group:
Legionella

Performing Lab:
Focus via Quest

Sendout:
Yes

Methodology:
Real time PCR

Remarks:
Nasopharyngeal swab: Use flocked swab/Universal Transport Medium for collection. Insert swab into the nostril, gently rotating the swab inward until resistance is met at the level of the turbinates. Rotate the swab a few times against the nasopharyngeal wall (approximately 10 sec) and then withdraw swab. Insert swab into container with Universal Transport Medium. Break end of swab so top of vial can be screwed on securely. Appropriately label specimen and send to the laboratory.

Collect:
Nasopharyngeal swab: Flocked swab in Universal Transport Medium (UTM)
Other samples: Sterile leak-proof container

Amount to Collect:
Nasopharyngeal swab: 1 flocked swab
Other samples: 1 mL

Sample Type:
Bronchial wash/lavage, endotrachael aspirate, sputum, nasopharyngeal swab

Preferred Volume:
Nasopharyngeal swab: 1 flocked swab
?Other samples: 1 mL

Minimum Volume:
Nasopharyngeal swab: 1 flocked swab
?Other samples: 0.5 mL

Specimen Preparation:
Refrigerate sample and ship to CB refrigerated. Freeze specimen at -70C upon receipt at China Basin and ship frozen to reference lab.

Reference Interval:
Not detected

Critical Values:
Detected

Synonyms:

- Legionnaires disease

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 2 weeks, frozen 1 month

Reported:
3-5 days

Additional Information:
This test detects and differentiates between Legionella pneumophila and non-pneumophila Legionella spp. DNA in clinical specimens.

CPT Codes:
87541-90, 87798-90

LOINC Codes:
21363-7, 31208-2, 49616-6

Legionella pneumophila urinary antigen

LEGAU

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
EIA

Reported:
Set up 5 days per week. Turnaround time 4-6 days.

Additional Information:
Legionella pneumophila serogroup 1 antigen can be detected in urine within 2-3 days of infection and may persist even after treatment.

Only a small portion of Legionella infections are due to serogroup 1. **This assay does not detect other Legionella species or serogroups.** Therefore a negative test cannot be used to exclude infection.

Regardless of whether a urine antigen test is used, culture of respiratory specimen should always be performed because culture diagnosis continues to be the most sensitive and specific means to diagnose Legionnaire's Disease

Synonyms:

- Legionnaires disease

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
10 mL

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 2 weeks, frozen at -20C 1 month.

PROCESSING

Test Code:
LEGAU

Test Group:
Legionella

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Order Quest test # 8856

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 2 weeks, frozen at -20C 1 month.

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:

Legionella pneumophila serogroup 1 antigen can be detected in urine within 2-3 days of infection and may persist even after treatment.

Only a small portion of Legionella infections are due to serogroup 1. **This assay does not detect other Legionella species or serogroups.** Therefore a negative test cannot be used to exclude infection.

Regardless of whether a urine antigen test is used, culture of respiratory specimen should always be performed because culture diagnosis continues to be the most sensitive and specific means to diagnose Legionnaire's Disease

ADMINISTRATIVE

CPT Codes:
87449-90

COMPLETE VIEW

Available Stat:
No

Test Code:
LEGAU

Test Group:
Legionella

Performing Lab:
Quest

Sendout:
Yes

Methodology:
EIA

Collect:
Urine cup

Amount to Collect:
10 mL

Sample Type:
Random urine

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Specimen Preparation:
Order Quest test # 8856

Reference Interval:
Negative

Synonyms:

- Legionnaires disease

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 2 weeks, frozen at -20C 1 month.

Reported:
Set up 5 days per week. Turnaround time 4-6 days.

Additional Information:

Legionella pneumophila serogroup 1 antigen can be detected in urine within 2-3 days of infection and may persist even after treatment.

Only a small portion of Legionella infections are due to serogroup 1. **This assay does not detect other Legionella species or serogroups.** Therefore a negative test cannot be used to exclude infection.

Regardless of whether a urine antigen test is used, culture of respiratory specimen should always be performed because culture diagnosis continues to be the most sensitive and specific means to diagnose Legionnaire's Disease

CPT Codes:
87449-90

Leishmania Exam

P403L

ORDERING

Approval Required:
No, but contact parasitologist in Microbiology (x31268) prior to collecting samples

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Monday-Thursday before 12:30 pm

Methodology:
Microscopy (Giema stain of smears)

Reported:
Giemsa smears 1-3 days PCR/Sequencing 6 weeks

Additional Information:
Lesion biopsies and aspirates can be examined by stain and/or culture in patients with cutaneous or mucocutaneous leishmaniasis. Biopsy of liver, spleen, or lymph node, or bone marrow can be examined by stain and/or culture in visceral leishmaniasis (Kala azar). A portion of any tissue sample should also be submitted to Pathology.

Physician may also request Microbiology to send sample to CDC for PCR and DNA sequencing, and culture

Synonyms:

- Kala azar
- Cutaneous leishmaniasis
- Uta
- Visceral leishmaniasis

COLLECTION

Sample Type:
Cutaneous/mucocutanous leishmaniasis: Tissue/biopsy, lesion aspirate
Visceral leishmaniasis: bone marrow

Collect:
Biopsy/tissue: Sterile container
Lesion aspirate: Sterile container or syringe capped with Luer plug
Bone marrow: Lavender top (EDTA)

Amount to Collect:
Tissue/biopsy: 4 mm punch biopsies x 1-2
Lesion aspirate or bone marrow: 0.5 mL

Preferred Volume:
Tissue/biopsy: 4 mm punch biopsies x 1-2
Lesion aspirate or bone marrow: 0.5 mL

Minimum Volume:
Tissue/biopsy: 4 mm punch biopsies x 1-2
Lesion aspirate or bone marrow: 0.5 mL

Remarks:
Contact parasitologist in Microbiology Lab x31268 prior to obtaining specimens, and to discuss appropriate types of samples and collection instructions.

Deliver the specimen to the laboratory within 30 minutes of collection.

Include travel/residence history on requisition.

Stability (from collection to initiation):
Room temperature 24 hours

Unacceptable Conditions:
Fixed specimens

PROCESSING

Test Code:
P403L

Test Group:
Leishmania

Sendout:
Appropriate samples cab be sent to CDC for PCR and culture after consultation with Microbiology.

Performing Lab:
Microbiology

Preferred Volume:
Tissue/biopsy: 4 mm punch biopsies x 1-2
Lesion aspirate or bone marrow: 0.5 mL

Minimum Volume:
Tissue/biopsy: 4 mm punch biopsies x 1-2
Lesion aspirate or bone marrow: 0.5 mL

Unacceptable Conditions:
Fixed specimens

Stability (from collection to initiation):
Room temperature 24 hours

RESULT INTERPRETATION

Reference Interval:
No Leishmania seen or detected

Additional Information:
Lesion biopsies and aspirates can be examined by stain and/or culture in patients with cutaneous or mucocutaneous leishmaniasis. Biopsy of liver, spleen, or lymph node, or bone marrow can be examined by stain and/or culture in visceral leishmaniasis (Kala azar). A portion of any tissue sample should also be submitted to Pathology.

Physician may also request Microbiology to send sample to CDC for PCR and DNA sequencing, and culture

ADMINISTRATIVE

CPT Codes:
87207

COMPLETE VIEW

Approval Required:
No, but contact parasitologist in Microbiology (x31268) prior to collecting samples

Available Stat:
No

Test Code:
P403L

Test Group:
Leishmania

Performing Lab:
Microbiology

Sendout:
Appropriate samples cab be sent to CDC for PCR and culture after consultation with Microbiology.

Performed:
Monday-Thursday before 12:30 pm

Methodology:
Microscopy (Giema stain of smears)

Remarks:
Contact parasitologist in Microbiology Lab x31268 prior to obtaining specimens, and to discuss appropriate types of samples and collection instructions.

Deliver the specimen to the laboratory within 30 minutes of collection.

Include travel/residence history on requisition.

Collect:
Biopsy/tissue: Sterile container
Lesion aspirate: Sterile container or syringe capped with Luer plug
Bone marrow: Lavender top (EDTA)

Amount to Collect:
Tissue/biopsy: 4 mm punch biopsies x 1-2
Lesion aspirate or bone marrow: 0.5 mL

Sample Type:
Cutaneous/mucocutanous leishmaniasis: Tissue/biopsy, lesion aspirate
Visceral leishmaniasis: bone marrow

Preferred Volume:
Tissue/biopsy: 4 mm punch biopsies x 1-2
Lesion aspirate or bone marrow: 0.5 mL

Minimum Volume:
Tissue/biopsy: 4 mm punch biopsies x 1-2
Lesion aspirate or bone marrow: 0.5 mL

Unacceptable Conditions:
Fixed specimens

Reference Interval:
No Leishmania seen or detected

Synonyms:

- Kala azar
- Cutaneous leishmaniasis
- Uta
- Visceral leishmaniasis

Stability (from collection to initiation):
Room temperature 24 hours

Reported:
Giemsa smears 1-3 days PCR/Sequencing 6 weeks

Additional Information:
Lesion biopsies and aspirates can be examined by stain and/or culture in patients with cutaneous or mucocutaneous leishmaniasis. Biopsy of liver, spleen, or lymph node, or bone marrow can be examined by stain and/or culture in visceral leishmaniasis (Kala azar). A portion of any tissue sample should also be submitted to Pathology.

Physician may also request Microbiology to send sample to CDC for PCR and DNA sequencing, and culture

CPT Codes:
87207

Leishmania species Antibodies

LEISB

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Immunoassay

Reported:
Set up 5x per week. Turnaround 3-7 days

Additional Information:
There is significant cross reactivity between the various Leishmania species with this assay. It is not specific for any single species.

See also Parasites-Culture and-Skin.

Synonyms:

- Kala azar
- Cutaneous leishmaniasis
- Uta
- Visceral leishmaniasis
- Leishmania mexicana
- Leishmania donovani
- Leishmania tropica
- Leishmania braziliensis

COLLECTION

Sample Type:
Serum

Collect:
Red top (Gold top acceptable)

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.1 mL serum

Stability (from collection to initiation):
Room temperature 5 days, refrigerated 2 weeks, frozen at -20C 1 month.

PROCESSING

Test Code:
LEISB

Test Group:
Leishmania

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate sample at 4C. Order Quest # 42200N

For B&T patients order BTMOLT.

Preferred Volume:
1 mL serum

Minimum Volume:
0.1 mL serum

Stability (from collection to initiation):
Room temperature 5 days, refrigerated 2 weeks, frozen at -20C 1 month.

RESULT INTERPRETATION

Units:
Titer

Reference Interval:
Negative

Additional Information:
There is significant cross reactivity between the various Leishmania species with this assay. It is not specific for any single species.

See also Parasites-Culture and-Skin.

ADMINISTRATIVE

CPT Codes:
86717

LOINC Codes:
23156-3

COMPLETE VIEW

Available Stat:
No

Test Code:
LEISB

Test Group:
Leishmania

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Immunoassay

Collect:
Red top (Gold top acceptable)

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.1 mL serum

Specimen Preparation:
Refrigerate sample at 4C. Order Quest # 42200N

For B&T patients order BTMOLT.

Units:
Titer

Reference Interval:
Negative

Synonyms:

- Kala azar
- Cutaneous leishmaniasis
- Uta
- Visceral leishmaniasis
- Leishmania mexicana
- Leishmania donovani
- Leishmania tropica
- Leishmania braziliensis

Stability (from collection to initiation):
Room temperature 5 days, refrigerated 2 weeks, frozen at -20C 1 month.

Reported:

Set up 5x per week. Turnaround 3-7 days

Additional Information:

There is significant cross reactivity between the various Leishmania species with this assay. It is not specific for any single species.

See also Parasites-Culture and-Skin.

CPT Codes:

86717

LOINC Codes:

23156-3

Leptin

LEPN

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Electrochemiluminescence (ECL)

Reported:
Set up 2x per week. Turnaround 3-10 days

COLLECTION

Sample Type:
Serum

Collect:
Red top, Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 2 weeks, frozen at -20C 5 weeks.

Unacceptable Conditions:
Markedly icteric or hemolyzed samples

Rejection Criteria:
Markedly icteric or hemolyzed samples

PROCESSING

Test Code:
LEPN

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate sample. Order Quest # 90367

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Unacceptable Conditions:
Markedly icteric or hemolyzed samples

Rejection Criteria:
Markedly icteric or hemolyzed samples

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 2 weeks, frozen at -20C 5 weeks.

RESULT INTERPRETATION

Reference Interval:

Adult Lean Subjects (18-61years) with BMI range of 18-25:

Males	1.2 - 9.5 ng/mL
Females	4.1 - 25.0 ng/mL

Adult Subjects (19-60 years) with BMI range 25-30:

Males	1.6 - 20.9 ng/mL
Females	13.1 - 40.8 ng/mL

Pediatric:	Male	Female
Prepubertal	1.6-10.8 ng/mL	1.7-10.6 ng/mL
Tanner Stages II-III	2.1-11.6 ng/mL	2.6-11.5 ng/mL
Tanner Stages IV-V	3.4-10.2 ng/mL	3.4-13.0 ng/mL

ADMINISTRATIVE

CPT Codes:
82397-90

LOINC Codes:
21365-2

COMPLETE VIEW

Available Stat:
No

Test Code:
LEPN

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Electrochemiluminescence (ECL)

Collect:
Red top, Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Rejection Criteria:
Markedly icteric or hemolyzed samples

Unacceptable Conditions:
Markedly icteric or hemolyzed samples

Specimen Preparation:
Refrigerate sample. Order Quest # 90367

Reference Interval:

Adult Lean Subjects (18-61years) with BMI range of 18-25:

Males	1.2 - 9.5 ng/mL
Females	4.1 - 25.0 ng/mL

Adult Subjects (19-60 years) with BMI range 25-30:

Males	1.6 - 20.9 ng/mL
Females	13.1 - 40.8 ng/mL

Pediatric:	Male	Female
Prepubertal	1.6-10.8 ng/mL	1.7-10.6 ng/mL
Tanner Stages II-III	2.1-11.6 ng/mL	2.6-11.5 ng/mL
Tanner Stages IV-V	3.4-10.2 ng/mL	3.4-13.0 ng/mL

Stability (from collection to initiation):

Room temperature 8 hours, refrigerated 2 weeks, frozen at -20C 5 weeks.

Reported:

Set up 2x per week. Turnaround 3-10 days

CPT Codes:

82397-90

LOINC Codes:

21365-2

Leukemia Cytogenetics

BCYTLL, CYTLL

ORDERING

Approval Required:
Yes, contact Cytogenetics at x3-4813 if requested on blood samples.

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Giemsa banding and brightfield microscopy

Reported:
7-21 days

Synonyms:

- Cytogenetic analysis
- chromosomal analysis
- karyotype
- karyotyping

COLLECTION

Sample Type:
Heparinized bone marrow, whole blood or marrow core

Collect:
Blood & bone marrow aspirate: 15 mL centrifuge tube with transport media (RPMI, FBS, L-Glutamine, Sodium Heparin and PenStrep). Available from Cytogenetics, 415-353-4844. Dark Green top also acceptable

Bone marrow core: 15 mL centrifuge tube with transport media (RPMI, FBS, L-Glutamine, Sodium Heparin and PenStrep). Available from Cytogenetics.

Amount to Collect:
Bone marrow: 3 mL
Blood: 3 mL
Bone core: 2 cm

Preferred Volume:
Bone marrow: 3 mL
Blood: 3 mL
?Bone core: 2 cm

Minimum Volume:
Bone marrow: 2 mL
Blood: 2 mL
?Bone core: 1 cm

Remarks:
Bone marrow is the preferred specimen, but heparinized peripheral blood may be submitted if a large number of malignant cells are present.

Collect bone marrow in a syringe, transfer to Dark Green top vacutainer and gently invert the tube several times for good mixing.

If a dry tap is obtained, consult the Laboratory Medicine resident in Hematology regarding the possible submission of a green top tube of peripheral blood. Contact Hematology if the specimen is more than 24 hours old.

Keep sample at room temperature.

Stability (from collection to initiation):
48 hours

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

PROCESSING

Test Code:
BCYTLL: Blood
CYTLL: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Specimen Preparation:
Keep sample at room temperature. Do not centrifuge.

Preferred Volume:
Bone marrow: 3 mL
Blood: 3 mL
?Bone core: 2 cm

Minimum Volume:
Bone marrow: 2 mL
Blood: 2 mL
?Bone core: 1 cm

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

Stability (from collection to initiation):
48 hours

ADMINISTRATIVE

CPT Codes:
88237x1, 88264x1, 88280x1

LDT or Modified FDA:
Yes

LOINC Codes:
33893-9

COMPLETE VIEW

Approval Required:
Yes, contact Cytogenetics at x3-4813 if requested on blood samples.

Available Stat:
No

Test Code:
BCYTLL: Blood
CYTLL: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Giemsa banding and brightfield microscopy

Remarks:
Bone marrow is the preferred specimen, but heparinized peripheral blood may be submitted if a large number of malignant cells are present.

Collect bone marrow in a syringe, transfer to Dark Green top vacutainer and gently invert the tube several times for good mixing.

If a dry tap is obtained, consult the Laboratory Medicine resident in Hematology regarding the possible submission of a green top tube of peripheral blood. Contact Hematology if the specimen is more than 24 hours old.

Keep sample at room temperature.

Collect:
Blood & bone marrow aspirate: 15 mL centrifuge tube with transport media (RPMI, FBS, L-Glutamine, Sodium Heparin and PenStrep). Available from Cytogenetics, 415-353-4844. Dark Green top also acceptable

Bone marrow core: 15 mL centrifuge tube with transport media (RPMI, FBS, L-Glutamine, Sodium Heparin and PenStrep). Available from Cytogenetics.

Amount to Collect:
Bone marrow: 3 mL
Blood: 3 mL
Bone core: 2 cm

Sample Type:
Heparinized bone marrow, whole blood or marrow core

Preferred Volume:
Bone marrow: 3 mL
Blood: 3 mL
?Bone core: 2 cm

Minimum Volume:
Bone marrow: 2 mL
Blood: 2 mL
?Bone core: 1 cm

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

Specimen Preparation:
Keep sample at room temperature. Do not centrifuge.

Synonyms:

- Cytogenetic analysis
- chromosomal analysis
- karyotype
- karyotyping

Stability (from collection to initiation):
48 hours

Reported:
7-21 days

CPT Codes:
88237x1, 88264x1, 88280x1

LDT or Modified FDA:
Yes

LOINC Codes:
33893-9

Leukemia Minimal Residual Disease Testing (Flow cytometry)

MRDFC

ORDERING

Available Stat:
No

Performing Lab:
Univ. of Washington

Methodology:
Flow cytometry

Reported:
2-3 days

Additional Information:
Samples must be accompanied by a completed Univ. of Washington Hematopathology lab requisition.

Synonyms:

- MRD
- flow cytometry

Supplemental Test Request Form Required:
Yes

COLLECTION

Sample Type:
Bone marrow aspirate, peripheral blood

Collect:
Dark Green top, EDTA (purple top) is acceptable but less desirable

Amount to Collect:
2 mL

Preferred Volume:
2 mL

Minimum Volume:
1 mL

Remarks:
Samples are processed and shipped Monday through Friday only. To ensure that samples make the Friday shipment, they must be received in lab by 12 noon.

Samples must be accompanied by a completed Univ. of Washington Hematopathology lab requisition.

Stability (from collection to initiation):
< 3 days

PROCESSING

Test Code:
MRDFC

Sendout:
Yes

Performing Lab:
Univ. of Washington

Specimen Preparation:
Maintain sample at room temperature. Ship via FedEx Monday - Saturday to: Hematopathology Laboratory, SCCA Room G7800, 825 Eastlake Ave. E., Seattle, WA 98109, Ph: (206)288-7060, Fax: (206)288-7127

Preferred Volume:
2 mL

Minimum Volume:
1 mL

Stability (from collection to initiation):
< 3 days

RESULT INTERPRETATION

Additional Information:
Samples must be accompanied by a completed Univ. of Washington Hematopathology lab requisition.

COMPLETE VIEW

Available Stat:
No

Test Code:
MRDFC

Performing Lab:
Univ. of Washington

Sendout:
Yes

Methodology:
Flow cytometry

Remarks:
Samples are processed and shipped Monday through Friday only. To ensure that samples make the Friday shipment, they must be received in lab by 12 noon.

Samples must be accompanied by a completed Univ. of Washington Hematopathology lab requisition.

Collect:
Dark Green top, EDTA (purple top) is acceptable but less desirable

Amount to Collect:
2 mL

Sample Type:
Bone marrow aspirate, peripheral blood

Preferred Volume:
2 mL

Minimum Volume:
1 mL

Specimen Preparation:
Maintain sample at room temperature. Ship via FedEx Monday - Saturday to: Hematopathology Laboratory, SCCA Room G7800, 825 Eastlake Ave. E., Seattle, WA 98109, Ph: (206)288-7060, Fax: (206)288-7127

Synonyms:

- MRD
- flow cytometry

Stability (from collection to initiation):
< 3 days

Reported:
2-3 days

Additional Information:
Samples must be accompanied by a completed Univ. of Washington Hematopathology lab requisition.

Supplemental Test Request Form Required:
Yes

Leukemia/Lymphoma Markers by Flow Cytometry

LEUM, LEUMBF

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday-Saturday (day shift)

Methodology:
Flow cytometry

Reported:
Preliminary result available from laboratory in 1-2 days. Written interpretive report sent within 7 days.

Additional Information:
This testing is appropriate for the evaluation of suspected hematologic malignancies, including Sezary's syndrome. Groups of monoclonal antibodies selected as appropriate for the diagnoses under consideration, are employed to detect one or more of the following phenotypic subsets:

Antigen	Cells Detected/Comments
CD2	T cells (E rosette sheep RBC receptor)
CD3	T cells
CD4	helper and inducer T cells and monocytes
CD5	T cells, NK cells and B cell subsets, most CLL
CD7	T cells, lost on most sezary cells
CD8	suppressor and cytotoxic T cells and NK cells
CD10	immature lymphoid and germinal center cells, many pre-B ALL
CD11c	monocytes, NK cells and B cell subsets
CD13	myeloid lineage cells
CD14	monocytes
CD15	myeloid and Reed-Sternberg cells and rare T cells
CD16	NK cells and T cell subsets
CD19	mature B and pre-B cells
CD20	mature B cells, some T cells
CD22	mature B cells
CD23	B cells, most CLL
CD25	activated T and B cells
CD33	myeloid lineage cells
CD34	hematopoietic progenitor (stem) cells
CD38	pre-B, pre-T, activated T and plasma cells
CD45	all leukocytes
CD52	CAMPATH-1, lymphoid malignancies
CD56	NK cells and T cell subsets
CD61	megakaryocytes and platelets
CD117	c-kit, myeloid lineage
Kappa	kappa light chain-positive B cells
Lambda	lambda light chain-positive B cells

This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. Only some of the reagents used have been cleared or approved by the U.S. Food and Drug Administration.

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Synonyms:

- AML
- acute myeloid leukemia
- ALL
- Acute lymphocytic leukemia
- Acute lymphoblastic leukemia
- T-ALL
- B-ALL
- CLL
- Chronic lymphocytic leukemia
- Mantel cell lymphoma
- Immunoblastic lymphoma
- small cell lymphoma
- follicular lymphoma
- large cell lymphoma
- Burkitt's lymphoma
- diffuse lymphoma, small cleaved cell lymphoma
- lymphoblastic lymphoma
- flow cytometry
- Sezary Cells
- Sezary Syndrome
- Mycosis fungoides

COLLECTION

Sample Type:
EDTA whole blood, Bone marrow, Unfixed tissue, Tissue aspirates, CSF, Body fluids (with approval)

Collect:
Blood or marrow: Lavender top
CSF: CSF tube or sterile collection tube
Body Fluid: 50 mL conical bottom plastic tube with blue screw cap preferred

Amount to Collect:
3 mL blood

Preferred Volume:
Amount of specimen needed varies call Immunology, x3-1712, for consultation

For body fluids 80-100 mL is generally sufficient but this is dependent on the cell count.

Remarks:
Bone marrow aspirates should be held at room temperature. Fine needle aspirates should be refrigerated until they can be assayed (this medium is available in refrigerator at Specimen Receiving in the main laboratory).

Test performed Monday-Friday at 1200, results available at 1700 hours the following day. Saturday at 1200, results available at 1700 hours on Monday.

If results are required for immediate patient treatment, for which the above schedule will not suffice, contact the Laboratory Medicine resident.

Unacceptable Conditions:
Reject samples that have been frozen, stored in fixative, transported or stored at improper temperatures.

PROCESSING

Test Code:
LEUM: Blood
LEUMBF: Bone marrow and other body fluids

Test Group:
CD

Performing Lab:
Immunology

Specimen Preparation:
Hold bone marrow specimens at room temperature, but refrigerate fine needle aspirates in special holding medium. Do NOT centrifuge. Each specimen should be assigned its own accession number.

If specimens are delivered after 1200 hours on Saturday, anytime Sunday or on a holiday contact the resident on call.

Preferred Volume:
Amount of specimen needed varies call Immunology, x3-1712, for consultation

For body fluids 80-100 mL is generally sufficient but this is dependent on the cell count.

Unacceptable Conditions:
Reject samples that have been frozen, stored in fixative, transported or stored at improper temperatures.

RESULT INTERPRETATION

Reference Interval:
See Additional Information

Additional Information:
This testing is appropriate for the evaluation of suspected hematologic malignancies, including Sezary's syndrome. Groups of monoclonal antibodies selected as appropriate for the diagnoses under consideration, are employed to detect one or more of the following phenotypic subsets:

Antigen	Cells Detected/Comments
CD2	T cells (E rosette sheep RBC receptor)
CD3	T cells
CD4	helper and inducer T cells and monocytes
CD5	T cells, NK cells and B cell subsets, most CLL
CD7	T cells, lost on most sezary cells
CD8	suppressor and cytotoxic T cells and NK cells
CD10	immature lymphoid and germinal center cells, many pre-B ALL
CD11c	monocytes, NK cells and B cell subsets
CD13	myeloid lineage cells
CD14	monocytes
CD15	myeloid and Reed-Sternberg cells and rare T cells
CD16	NK cells and T cell subsets
CD19	mature B and pre-B cells
CD20	mature B cells, some T cells
CD22	mature B cells
CD23	B cells, most CLL
CD25	activated T and B cells
CD33	myeloid lineage cells
CD34	hematopoietic progenitor (stem) cells
CD38	pre-B, pre-T, activated T and plasma cells
CD45	all leukocytes
CD52	CAMPATH-1, lymphoid malignancies
CD56	NK cells and T cell subsets
CD61	megakaryocytes and platelets
CD117	c-kit, myeloid lineage
Kappa	kappa light chain-positive B cells
Lambda	lambda light chain-positive B cells

This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. Only some of the reagents used have been cleared or approved by the U.S. Food and Drug Administration.

ADMINISTRATIVE

CPT Codes:
88184; 88185 x 21

LDT or Modified FDA:
Yes

LOINC Codes:
54226-6

COMPLETE VIEW

Available Stat:
No

Test Code:
LEUM: Blood
LEUMBF: Bone marrow and other body fluids

Test Group:
CD

Performing Lab:
Immunology

Performed:
Monday-Saturday (day shift)

Methodology:
Flow cytometry

Remarks:
Bone marrow aspirates should be held at room temperature. Fine needle aspirates should be refrigerated until they can be assayed (this medium is available in refrigerator at Specimen Receiving in the main laboratory).

Test performed Monday-Friday at 1200, results available at 1700 hours the following day. Saturday at 1200, results available at 1700 hours on Monday.

If results are required for immediate patient treatment, for which the above schedule will not suffice, contact the Laboratory Medicine resident.

Collect:
Blood or marrow: Lavender top
CSF: CSF tube or sterile collection tube
Body Fluid: 50 mL conical bottom plastic tube with blue screw cap preferred

Amount to Collect:
3 mL blood

Sample Type:
EDTA whole blood, Bone marrow, Unfixed tissue, Tissue aspirates, CSF, Body fluids (with approval)

Preferred Volume:
Amount of specimen needed varies call Immunology, x3-1712, for consultation

For body fluids 80-100 mL is generally sufficient but this is dependent on the cell count.

Unacceptable Conditions:
Reject samples that have been frozen, stored in fixative, transported or stored at improper temperatures.

Specimen Preparation:
Hold bone marrow specimens at room temperature, but refrigerate fine needle aspirates in special holding medium. Do NOT centrifuge. Each specimen should be assigned its own accession number.

If specimens are delivered after 1200 hours on Saturday, anytime Sunday or on a holiday contact the resident on call.

Reference Interval:
See Additional Information

Synonyms:

- AML
- acute myeloid leukemia
- ALL
- Acute lymphocytic leukemia
- Acute lymphoblastic leukemia
- T-ALL
- B-ALL
- CLL
- Chronic lymphocytic leukemia
- Mantel cell lymphoma
- Immunoblastic lymphoma
- small cell lymphoma
- follicular lymphoma
- large cell lymphoma
- Burkitt's lymphoma
- diffuse lymphoma, small cleaved cell lymphoma
- lymphoblastic lymphoma
- flow cytometry
- Sezary Cells
- Sezary Syndrome
- Mycosis fungoides

Reported:
Preliminary result available from laboratory in 1-2 days. Written interpretive report sent within 7 days.

Reflex Testing:

An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Additional Information:

This testing is appropriate for the evaluation of suspected hematologic malignancies, including Sezary's syndrome. Groups of monoclonal antibodies selected as appropriate for the diagnoses under consideration, are employed to detect one or more of the following phenotypic subsets:

Antigen	Cells Detected/Comments
CD2	T cells (E rosette sheep RBC receptor)
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CD5	T cells, NK cells and B cell subsets, most CLL
CD7	T cells, lost on most sezary cells
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CD10	immature lymphoid and germinal center cells, many pre-B ALL
CD11c	monocytes, NK cells and B cell subsets
CD13	myeloid lineage cells
CD14	monocytes
CD15	myeloid and Reed-Sternberg cells and rare T cells
CD16	NK cells and T cell subsets
CD19	mature B and pre-B cells
CD20	mature B cells, some T cells
CD22	mature B cells
CD23	B cells, most CLL
CD25	activated T and B cells
CD33	myeloid lineage cells
CD34	hematopoietic progenitor (stem) cells
CD38	pre-B, pre-T, activated T and plasma cells
CD45	all leukocytes
CD52	CAMPATH-1, lymphoid malignancies
CD56	NK cells and T cell subsets
CD61	megakaryocytes and platelets
CD117	c-kit, myeloid lineage
Kappa	kappa light chain-positive B cells
Lambda	lambda light chain-positive B cells

This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. Only some of the reagents used have been cleared or approved by the U.S. Food and Drug Administration.

CPT Codes:

88184; 88185 x 21

LDT or Modified FDA:

Yes

LOINC Codes:

54226-6

Levetiracetam

LEV

ORDERING

Available Stat:
No

Performing Lab:
NMS via Quest Diagnostics

Performed:
Varies

Methodology:
High Performance Liquid Chromatography/Tandem Mass Spectrometry

Reported:
5 days

Synonyms:

- Keppra

COLLECTION

Sample Type:
Serum

Collect:
Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Stability (from collection to initiation):
Ambient/Refrigerated: 30 days
Frozen: 10 months

Storage/Transport Temperature:
Frozen

PROCESSING

Test Code:
LEV

Sendout:
Yes

Performing Lab:
NMS via Quest Diagnostics

Specimen Preparation:
Aliquot of freeze. Send to China Basin frozen. Order Quest test code 37670.

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Stability (from collection to initiation):
Ambient/Refrigerated: 30 days
Frozen: 10 months

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Units:
µg/mL (mcg/mL)

Reference Interval:
Steady-state trough plasma concentrations following doses of 500 to 3000 mg/day: 1.1 to 33 mcg/mL.

Critical Values:
Quest Priority-2: peak > 70 µg/mL or trough > 37 µg/mL

Interpretive Data:
This test is not chiral specific. Levetiracetam cannot be distinguished from its inactive isomer etiracetam.

ADMINISTRATIVE

CPT Codes:
80177

LOINC Codes:
30471-7

COMPLETE VIEW

Available Stat:
No

Test Code:
LEV

Performing Lab:
NMS via Quest Diagnostics

Sendout:
Yes

Performed:
Varies

Methodology:
High Performance Liquid Chromatography/Tandem Mass Spectrometry

Collect:
Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Specimen Preparation:
Aliquot of freeze. Send to China Basin frozen. Order Quest test code 37670.

Units:
µg/mL (mcg/mL)

Reference Interval:
Steady-state trough plasma concentrations following doses of 500 to 3000 mg/day: 1.1 to 33 mcg/mL.

Critical Values:
Quest Priority-2: peak > 70 µg/mL or trough > 37 µg/mL

Interpretive Data:
This test is not chiral specific. Levetiracetam cannot be distinguished from its inactive isomer etiracetam.

Synonyms:

- Keppra

Storage/Transport Temperature:
Frozen

Stability (from collection to initiation):
Ambient/Refrigerated: 30 days
Frozen: 10 months

Reported:
5 days

CPT Codes:
80177

LOINC Codes:
30471-7

Lidocaine

LIDOC

ORDERING

Available Stat:
Yes

Performing Lab:
Mission Bay Chemistry

Performed:
24 hours per day 7 days per week

Methodology:
Siemens EMIT homogeneous particle enhanced photometric enzyme immunoassay performed on Abbott Architect c8000

Reported:
Mission Bay: STAT: 1 hour Routine: 4 hours
Parnassus and Mount Zion: Within 24 hours

Synonyms:

- Xylocaine
- Lignocaine
- Anesthetic

COLLECTION

Sample Type:
Blood

Collect:
Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Stability (from collection to initiation):
Room temperature: 5 days
Refrigerated: 1 week
Frozen at -20C: 1 month

Storage/Transport Temperature:
Refrigerated

Unacceptable Conditions:
Collected in Gold Top

PROCESSING

Test Code:
LIDOC

Performing Lab:
Mission Bay Chemistry

Specimen Preparation:
Process immediately and forward specimen to Mission Bay Chemistry. Store refrigerated if necessary.

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Unacceptable Conditions:
Collected in Gold Top

Stability (from collection to initiation):
Room temperature: 5 days
Refrigerated: 1 week
Frozen at -20C: 1 month

Storage/Transport Temperature:
Refrigerated

RESULT INTERPRETATION

Units:
mg/L

Reference Interval:
Therapeutic: 1.5 - 5.0 mg/L

Critical Values:
> 6.0 mg/L

ADMINISTRATIVE

CPT Codes:
80176

LOINC Codes:
3714-3

COMPLETE VIEW

Available Stat:
Yes

Test Code:
LIDOC

Performing Lab:
Mission Bay Chemistry

Performed:
24 hours per day 7 days per week

Methodology:
Siemens EMIT homogeneous particle enhanced photometric enzyme immunoassay performed on Abbott Architect c8000

Collect:
Red top

Amount to Collect:
2 mL blood

Sample Type:
Blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Unacceptable Conditions:
Collected in Gold Top

Specimen Preparation:
Process immediately and forward specimen to Mission Bay Chemistry. Store refrigerated if necessary.

Units:
mg/L

Reference Interval:
Therapeutic: 1.5 - 5.0 mg/L

Critical Values:
> 6.0 mg/L

Synonyms:

- Xylocaine
- Lignocaine
- Anesthetic

Storage/Transport Temperature:
Refrigerated

Stability (from collection to initiation):
Room temperature: 5 days
Refrigerated: 1 week
Frozen at -20C: 1 month

Reported:
Mission Bay: STAT: 1 hour Routine: 4 hours
Parnassus and Mount Zion: Within 24 hours

CPT Codes:
80176

LOINC Codes:
3714-3

Lipase, Plasma / Serum

LIPA

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Spectrophotometric (see Additional Information)

Reported:
4 hours

Additional Information:
Lipase can at times be elevated in pancreatitis when amylase is normal, but may also be falsely elevated in a variety of non-pancreatic disorders (e.g., GI disease, renal insufficiency).

The enzymatic color rate assay uses a clear substrate solution of 1,2 diglyceride, which is a 'natural' substrate. This assay includes colipase and deoxycholate cofactors to improve specificity for lipase of pancreatic origin.

At high therapeutic concentrations, N-acetylcysteine may falsely decrease lipase concentrations by ~50% in this assay.

COLLECTION

Sample Type:
Plasma or serum

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Room temperature 7 days, refrigerated 7 days, frozen at -20C 1 year

PROCESSING

Test Code:
LIPA

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Room temperature 7 days, refrigerated 7 days, frozen at -20C 1 year

RESULT INTERPRETATION

Units:
U/L

Reference Interval:
0 to 18 years: 4-39 U/L
>18 years: 8-78 U/L Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, http://caliper.research.sickkids.ca/#/search

Additional Information:

Lipase can at times be elevated in pancreatitis when amylase is normal, but may also be falsely elevated in a variety of non-pancreatic disorders (e.g., GI disease, renal insufficiency).

The enzymatic color rate assay uses a clear substrate solution of 1,2 diglyceride, which is a 'natural' substrate. This assay includes colipase and deoxycholate cofactors to improve specificity for lipase of pancreatic origin.

At high therapeutic concentrations, N-acetylcysteine may falsely decrease lipase concentrations by ~50% in this assay.

ADMINISTRATIVE

CPT Codes:
83690

LOINC Codes:
3040-3

COMPLETE VIEW

Available Stat:
Yes

Test Code:
LIPA

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Spectrophotometric (see Additional Information)

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
1 mL blood

Sample Type:
Plasma or serum

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Units:
U/L

Reference Interval:
0 to 18 years: 4-39 U/L
>18 years: 8-78 U/L Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, http://caliper.research.sickkids.ca/#/search

Stability (from collection to initiation):
Room temperature 7 days, refrigerated 7 days, frozen at -20C 1 year

Reported:
4 hours

Additional Information:

Lipase can at times be elevated in pancreatitis when amylase is normal, but may also be falsely elevated in a variety of non-pancreatic disorders (e.g., GI disease, renal insufficiency).

The enzymatic color rate assay uses a clear substrate solution of 1,2 diglyceride, which is a 'natural' substrate. This assay includes colipase and deoxycholate cofactors to improve specificity for lipase of pancreatic origin.

At high therapeutic concentrations, N-acetylcysteine may falsely decrease lipase concentrations by ~50% in this assay.

CPT Codes:
83690

LOINC Codes:
3040-3

Lipid Panel (incl. LDL, HDL, total chol, and trig)

LDL

ORDERING

Available Stat:
No

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Calculated (Friedewald formula)

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by 0.0259.

LDL cholesterol is calculated from the formula: Total cholesterol-(HDL cholest. + Triglycerides/5). THIS ESTIMATE IS NOT RELIABLE IF TRIGLYCERIDES EXCEED 400 mg/dL, at which level the calculation of LDL cholesterol is suppressed and an explanatory comment is appended. To obtain a more reliable estimate of LDL cholesterol in this situation, request sendout testing for direct LDL assay.

The strict requirement of a fasting sample for lipid analysis is no longer considered necessary by many authorities. Changes in CV risk management guidelines, and the results of studies comparing fasting to non-fasting lipid levels, indicate that fasting samples need not be routinely required.

Synonyms:

- low density lipoprotein
- LDL cholesterol
- Coronary risk panel
- lipid panel

COLLECTION

Sample Type:
Serum or plasma

Collect:
Gold top or Light Green top

Amount to Collect:
3 mL blood

Preferred Volume:
1.5 mL serum or plasma

Minimum Volume:
1 mL serum or plasma

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 2 days, frozen at -20C 1 week

PROCESSING

Test Code:
LDL

Test Group:
Cholesterol

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Preferred Volume:
1.5 mL serum or plasma

Minimum Volume:
1 mL serum or plasma

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 2 days, frozen at -20C 1 week

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:

TOTAL CHOLESTEROL:

Adults (>=20 years old):

Desirable	< 200 mg/dL
Borderline	200-239 mg/dL
High	> 239 mg/dL

Children and Adolescents (< 20 years old):

Acceptable	< 170 mg/dL
Borderline	170-199 mg/dL
High	> 199 mg/dL

HDL CHOLESTEROL:

Adults (>=20 years old):

Acceptable	> 39 mg/dL
Higher risk	< 40 mg/dL
Lower risk	> 59 mg/dL

Children and Adolescents (< 20 years old):

Acceptable	> 45 mg/dL
Higher risk	< 40 mg/dL
Lower risk	40-45 mg/dL

LDL CHOLESTEROL:

Adults (>=20 years old):

Optimal	< 100 mg/dL
Near or above optimal	100-129 mg/dL
Borderline high-risk	130-159 mg/dL
High-risk	160-189 mg/dL
Very high-risk	> 189 mg/dL

Children and Adolescents (< 20 years old):

Acceptable	< 110 mg/dL
Borderline high	110-129 mg/dL
High	> 129 mg/dL

TOTAL CHOLESTEROL:HDL CHOLESTEROL RATIO:

Female, higher risk	>= 5.6
Male, higher risk	>= 6.0

NON-HDL CHOLESTEROL:

Adults (>=20 years old):

Optimal	< 130 mg/dL
Near or above optimal	< 160 mg/dL
Borderline high-risk	160-189 mg/dL
High-risk	> 189 mg/dL
Very high-risk	> 219 mg/dL

Children and Adolescents (< 20 years old):

Acceptable	< 120 mg/dL
Borderline high	120 - 144 mg/dL
Borderline high-risk	> 144 mg/dL

TRIGLYCERIDES:

Adults (>=20 years old):

Desirable (if fasting sample)	< 150 mg/dL
Desirable (if not fasting sample)	< 200 mg/dL

If non-fasting sample is 200 mg/dL or more, testing on fasting sample is recommended

Children and Adolescents (< 20 years old):

0 to 9 years	Acceptable	<75 mg/dL
	Borderline high	75-99 mg/dL
	High	>99 mg/dL
10 to < 20 years	Acceptable	<90 mg/dL
	Borderline high	90-129 mg/dL
	High	>129 mg/dL

Risk classifications based on combination of NCEP-ATPIII guidelines and American College of Cardiology/American Heart Association Guidelines, 2013

Risk classifications for pediatrics based on The NHLBI Expert Panel on Integrated Guidelines for Cardiovascular Health and Risk Reduction in Children and Adolescents: Pediatrics 2011; 128: S213.

Additional Information:

To convert mg/dL to mmol/L (SI units) multiply by 0.0259.

LDL cholesterol is calculated from the formula: Total cholesterol-(HDL cholest. + Triglycerides/5). THIS ESTIMATE IS NOT RELIABLE IF TRIGLYCERIDES EXCEED 400 mg/dL, at which level the calculation of LDL cholesterol is suppressed and an explanatory comment is appended. To obtain a more reliable estimate of LDL cholesterol in this situation, request sendout testing for direct LDL assay.

The strict requirement of a fasting sample for lipid analysis is no longer considered necessary by many authorities. Changes in CV risk management guidelines, and the results of studies comparing fasting to non-fasting lipid levels, indicate that fasting samples need not be routinely required.

ADMINISTRATIVE

CPT Codes:
80061

LOINC Codes:
13457-7

COMPLETE VIEW

Available Stat:
No

Test Code:
LDL

Test Group:
Cholesterol

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Calculated (Friedewald formula)

Collect:
Gold top or Light Green top

Amount to Collect:
3 mL blood

Sample Type:
Serum or plasma

Preferred Volume:
1.5 mL serum or plasma

Minimum Volume:
1 mL serum or plasma

Units:
mg/dL

Reference Interval:

TOTAL CHOLESTEROL:

Adults (>=20 years old):

Desirable	< 200 mg/dL
Borderline	200-239 mg/dL
High	> 239 mg/dL

Children and Adolescents (< 20 years old):

Acceptable	< 170 mg/dL
Borderline	170-199 mg/dL
High	> 199 mg/dL

HDL CHOLESTEROL:

Adults (>=20 years old):

Acceptable	> 39 mg/dL
Higher risk	< 40 mg/dL
Lower risk	> 59 mg/dL

Children and Adolescents (< 20 years old):

Acceptable	> 45 mg/dL
Higher risk	< 40 mg/dL
Lower risk	40-45 mg/dL

LDL CHOLESTEROL:

Adults (>=20 years old):

Optimal	< 100 mg/dL
Near or above optimal	100-129 mg/dL
Borderline high-risk	130-159 mg/dL
High-risk	160-189 mg/dL
Very high-risk	> 189 mg/dL

Children and Adolescents (< 20 years old):

Acceptable	< 110 mg/dL
Borderline high	110-129 mg/dL
High	> 129 mg/dL

TOTAL CHOLESTEROL:HDL CHOLESTEROL RATIO:

Female, higher risk	>= 5.6
Male, higher risk	>= 6.0

NON-HDL CHOLESTEROL:

Adults (>=20 years old):

Optimal	< 130 mg/dL
Near or above optimal	< 160 mg/dL
Borderline high-risk	160-189 mg/dL
High-risk	> 189 mg/dL
Very high-risk	> 219 mg/dL

Children and Adolescents (< 20 years old):

Acceptable	< 120 mg/dL
Borderline high	120 - 144 mg/dL
Borderline high-risk	> 144 mg/dL

TRIGLYCERIDES:

Adults (>=20 years old):

Desirable (if fasting sample)	< 150 mg/dL
Desirable (if not fasting sample)	< 200 mg/dL

If non-fasting sample is 200 mg/dL or more, testing on fasting sample is recommended

Children and Adolescents (< 20 years old):

0 to 9 years	Acceptable	<75 mg/dL
	Borderline high	75-99 mg/dL
	High	>99 mg/dL
10 to < 20 years	Acceptable	<90 mg/dL
	Borderline high	90-129 mg/dL
	High	>129 mg/dL

Risk classifications based on combination of NCEP-ATPIII guidelines and American College of Cardiology/American Heart Association Guidelines, 2013

Risk classifications for pediatrics based on The NHLBI Expert Panel on Integrated Guidelines for Cardiovascular Health and Risk Reduction in Children and Adolescents: Pediatrics 2011; 128: S213.

Synonyms:

- low density lipoprotein
- LDL cholesterol
- Coronary risk panel
- lipid panel

Stability (from collection to initiation):

Room temperature 8 hours, refrigerated 2 days, frozen at -20C 1 week

Additional Information:

To convert mg/dL to mmol/L (SI units) multiply by 0.0259.

LDL cholesterol is calculated from the formula: Total cholesterol-(HDL cholest. + Triglycerides/5). THIS ESTIMATE IS NOT RELIABLE IF TRIGLYCERIDES EXCEED 400 mg/dL, at which level the calculation of LDL cholesterol is suppressed and an explanatory comment is appended. To obtain a more reliable estimate of LDL cholesterol in this situation, request sendout testing for direct LDL assay.

The strict requirement of a fasting sample for lipid analysis is no longer considered necessary by many authorities. Changes in CV risk management guidelines, and the results of studies comparing fasting to non-fasting lipid levels, indicate that fasting samples need not be routinely required.

CPT Codes:

80061

LOINC Codes:

13457-7

Lipoprotein (a)

LPA

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday, Wednesday, Friday (day shift)

Methodology:
Nephelometry particle-enhanced

Reported:
2-5 days

Additional Information:
Lipoprotein(a) is a modified form of LDL in which a large glycoprotein, apo(a) is covalently bound to apo(B) by a disulfide bridge. Studies that evaluated Lp(a) as a predictor of cardiovascular events have had conflicting results.

Some studies suggested that Lp(a) was an independent risk factor for CHD, while others showed no significant association. There may be a role for elevated Lp(a) levels in predicting CHD events in subjects with concomitant hypercholesterolemia. While a cutoff of 75 nmol/L is frequently used as indication of elevated Lp(a) there appears to be racial differences in the reference range for Lp(a) when studying different racial groups without evidence of coronary heart disease. Additionally the size of the Lp(a) particle can affect the quantitation of this molecule making inter-method comparisons difficult. If fasting is not observed for 12 hours, elevated levels of Lp(a) will be detected.

References

1. Marcovina SM, et al. 1996. Differences in Lp[a] concentrations and apo[a] polymorphs between black and white Americans. J. Lipid Res. 37: 2569-2585.
2. Iso H, et al. 1996. Lipoprotein (a) and its correlates in Japanese and U.S. population samples. Ann. Epidemiol. 6: 324-330.
3. Nazir DJ and McQueen MJ. 1997. Monthly intra-individual variation in lipoprotein(a) in 22 normal subjects over 12 months. Clin Biochem. 30: 163-170.

Synonyms:

- Lp(a)

COLLECTION

Patient Preparation:
An 8 hour fast before specimen collection is preferred.

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Room temperature 6 hours, refrigerated 2 weeks, frozen at -20C 3 months.

Unacceptable Conditions:
Lipemic samples

PROCESSING

Test Code:
LPA

Performing Lab:
Immunology

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Lipemic samples

Stability (from collection to initiation):
Room temperature 6 hours, refrigerated 2 weeks, frozen at -20C 3 months.

RESULT INTERPRETATION

Units:
nmol/L

Reference Interval:
< 75 nmol/L

Additional Information:
Lipoprotein(a) is a modified form of LDL in which a large glycoprotein, apo(a) is covalently bound to apo(B) by a disulfide bridge. Studies that evaluated Lp(a) as a predictor of cardiovascular events have had conflicting results.

Some studies suggested that Lp(a) was an independent risk factor for CHD, while others showed no significant association. There may be a role for elevated Lp(a) levels in predicting CHD events in subjects with concomitant hypercholesterolemia. While a cutoff of 75 nmol/L is frequently used as indication of elevated Lp(a) there appears to be racial differences in the reference range for Lp(a) when studying different racial groups without evidence of coronary heart disease. Additionally the size of the Lp(a) particle can affect the quantitation of this molecule making inter-method comparisons difficult. If fasting is not observed for 12 hours, elevated levels of Lp(a) will be detected.

References

1. Marcovina SM, et al. 1996. Differences in Lp[a] concentrations and apo[a] polymorphs between black and white Americans. J. Lipid Res. 37: 2569-2585.
2. Iso H, et al. 1996. Lipoprotein (a) and its correlates in Japanese and U.S. population samples. Ann. Epidemiol. 6: 324-330.
3. Nazir DJ and McQueen MJ. 1997. Monthly intra-individual variation in lipoprotein(a) in 22 normal subjects over 12 months. Clin Biochem. 30: 163-170.

ADMINISTRATIVE

CPT Codes:
83695

LOINC Codes:
49748-7

COMPLETE VIEW

Available Stat:
No

Test Code:
LPA

Performing Lab:
Immunology

Performed:
Monday, Wednesday, Friday (day shift)

Methodology:
Nephelometry particle-enhanced

Patient Preparation:
An 8 hour fast before specimen collection is preferred.

Collect:
Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Lipemic samples

Units:
nmol/L

Reference Interval:
< 75 nmol/L

Synonyms:

- Lp(a)

Stability (from collection to initiation):
Room temperature 6 hours, refrigerated 2 weeks, frozen at -20C 3 months.

Reported:
2-5 days

Additional Information:
Lipoprotein(a) is a modified form of LDL in which a large glycoprotein, apo(a) is covalently bound to apo(B) by a disulfide bridge. Studies that evaluated Lp(a) as a predictor of cardiovascular events have had conflicting results.

Some studies suggested that Lp(a) was an independent risk factor for CHD, while others showed no significant association. There may be a role for elevated Lp(a) levels in predicting CHD events in subjects with concomitant hypercholesterolemia. While a cutoff of 75 nmol/L is frequently used as indication of elevated Lp(a) there appears to be racial differences in the reference range for Lp(a) when studying different racial groups without evidence of coronary heart disease. Additionally the size of the Lp(a) particle can affect the quantitation of this molecule making inter-method comparisons difficult. If fasting is not observed for 12 hours, elevated levels of Lp(a) will be detected.

References

1. Marcovina SM, et al. 1996. Differences in Lp[a] concentrations and apo[a] polymorphs between black and white Americans. J. Lipid Res. 37: 2569-2585.
2. Iso H, et al. 1996. Lipoprotein (a) and its correlates in Japanese and U.S. population samples. Ann. Epidemiol. 6: 324-330.
3. Nazir DJ and McQueen MJ. 1997. Monthly intra-individual variation in lipoprotein(a) in 22 normal subjects over 12 months. Clin Biochem. 30: 163-170.

CPT Codes:
83695

LOINC Codes:
49748-7

Lipoprotein Fractionation, Ion Mobility

LFIM

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Ion Mobility

Reported:
2-3 days

Additional Information:
This test includes the following results:

LDL Particle Number; LDL Small; LDL Medium; HDL Large; LDL Pattern; LDL Peak Size

There is a correlation between increased risk of premature heart disease with decreasing size of LDL particles. Ion mobility offers the only direct measurement of lipoprotein particle size and concentration for each lipoprotein from HDL3 to large VLDL.

COLLECTION

Patient Preparation:
Fasting preferred. Non-fasting acceptable.

Sample Type:
Serum

Collect:
Gold or red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.25 mL serum

Stability (from collection to initiation):
Room temperature: 24 hours
Refrigerated: 7 days
Frozen: 30 days

Storage/Transport Temperature:
Frozen

PROCESSING

Test Code:
LFIM

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot and freeze. Send to China Basin Frozen. Order Quest test code 91604.

Preferred Volume:
1 mL serum

Minimum Volume:
0.25 mL serum

Stability (from collection to initiation):
Room temperature: 24 hours
Refrigerated: 7 days
Frozen: 30 days

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Additional Information:

This test includes the following results:

LDL Particle Number; LDL Small; LDL Medium; HDL Large; LDL Pattern; LDL Peak Size

There is a correlation between increased risk of premature heart disease with decreasing size of LDL particles. Ion mobility offers the only direct measurement of lipoprotein particle size and concentration for each lipoprotein from HDL3 to large VLDL.

ADMINISTRATIVE

CPT Codes:

83704

COMPLETE VIEW

Available Stat:

No

Test Code:

LFIM

Performing Lab:

Quest

Sendout:

Yes

Methodology:

Ion Mobility

Patient Preparation:

Fasting preferred. Non-fasting acceptable.

Collect:

Gold or red top

Amount to Collect:

2 mL blood

Sample Type:

Serum

Preferred Volume:

1 mL serum

Minimum Volume:

0.25 mL serum

Specimen Preparation:

Aliquot and freeze. Send to China Basin Frozen. Order Quest test code 91604.

Storage/Transport Temperature:

Frozen

Stability (from collection to initiation):

Room temperature: 24 hours
Refrigerated: 7 days
Frozen: 30 days

Reported:

2-3 days

Additional Information:

This test includes the following results:

LDL Particle Number; LDL Small; LDL Medium; HDL Large; LDL Pattern; LDL Peak Size

There is a correlation between increased risk of premature heart disease with decreasing size of LDL particles. Ion mobility offers the only direct measurement of lipoprotein particle size and concentration for each lipoprotein from HDL3 to large VLDL.

CPT Codes:

83704

Lipoprotein Metabolism Profile

LMPP

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Performed:
No

Methodology:
Ultracentrifugation/Electrophoresis/Automated Enzymatic/Colorimetric Analysis

Reported:
4 - 7 days

Additional Information:
Lipoprotein metabolism profile analysis adds practical information about the etiology of cholesterol and/or triglyceride elevation. In some patients, increased serum lipids reflects elevated levels of intermediate-density lipoprotein (IDL), very-low-density lipoprotein (VLDL), lipoprotein a (Lp[a]), or even the abnormal lipoprotein complex-LpX. These elevations can be indicative of a genetic deficiency in lipid metabolism or transport, nephrotic syndrome, endocrine dysfunction or even cholestasis. Identification of the lipoprotein associated with lipid elevation is achieved using the gold-standard methods, which include ultracentrifugation, selective precipitation, electrophoresis, and direct measurement of cholesterol and triglycerides in isolated lipoprotein fractions. Proper characterization of a patient's dyslipidemic phenotype aids clinical decisions and guides appropriate therapy.

Classifying the hyperlipoproteinemias into phenotypes places disorders that affect plasma lipid and lipoprotein concentrations into convenient groups for evaluation and treatment. A clear distinction must be made between primary (inherited) and secondary (liver disease, alcoholism, metabolic diseases) causes of dyslipoproteinemia. Lipoprotein profiling will identify the presence of Lp(a) and LpX and distinguish between the following dyslipidemias:

Exogenous hyperlipemia (Type I)

Familial Hypercholesterolemia (Type IIa)

Familial Combined Hyperlipidemia (Type IIb)

Familial dysbetalipoproteinemia (Type III)

Endogenous hyperlipemia (Type IV)

Mixed hyperlipemia (Type V)

Synonyms:

- lipid panel
- Apo B
- Apolipoprotein B
- Lp(a)
- LpX
- Lipoprotein (a)
- Lipoprotein X

COLLECTION

Patient Preparation:
1. Fasting-overnight (12-14 hours)
2. Patient must not consume any alcohol for 24 hours before the specimen is drawn.

Sample Type:
Serum

Collect:
Red-top or gold-top

Amount to Collect:
10 mL blood

Preferred Volume:
5 mL serum

Minimum Volume:
2 mL serum

Stability (from collection to initiation):
Refrigerated: 7 days
Frozen: 60 days

Rejection Criteria:
Gross Hemolysis/Icterus

PROCESSING

Test Code:
LMPP

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Aliquot and refrigerate. Send to CB refrigerated. Order Mayo test code LMPP.

Preferred Volume:
5 mL serum

Minimum Volume:
2 mL serum

Rejection Criteria:
Gross Hemolysis/Icterus

Stability (from collection to initiation):
Refrigerated: 7 days
Frozen: 60 days

RESULT INTERPRETATION

Additional Information:
Lipoprotein metabolism profile analysis adds practical information about the etiology of cholesterol and/or triglyceride elevation. In some patients, increased serum lipids reflects elevated levels of intermediate-density lipoprotein (IDL), very-low-density lipoprotein (VLDL), lipoprotein a (Lp[a]), or even the abnormal lipoprotein complex-LpX. These elevations can be indicative of a genetic deficiency in lipid metabolism or transport, nephrotic syndrome, endocrine dysfunction or even cholestasis. Identification of the lipoprotein associated with lipid elevation is achieved using the gold-standard methods, which include ultracentrifugation, selective precipitation, electrophoresis, and direct measurement of cholesterol and triglycerides in isolated lipoprotein fractions. Proper characterization of a patient's dyslipidemic phenotype aids clinical decisions and guides appropriate therapy.

Classifying the hyperlipoproteinemias into phenotypes places disorders that affect plasma lipid and lipoprotein concentrations into convenient groups for evaluation and treatment. A clear distinction must be made between primary (inherited) and secondary (liver disease, alcoholism, metabolic diseases) causes of dyslipoproteinemia. Lipoprotein profiling will identify the presence of Lp(a) and LpX and distinguish between the following dyslipidemias:

Exogenous hyperlipemia (Type I)

Familial Hypercholesterolemia (Type IIa)

Familial Combined Hyperlipidemia (Type IIb)

Familial dysbetalipoproteinemia (Type III)

Endogenous hyperlipemia (Type IV)

Mixed hyperlipemia (Type V)

ADMINISTRATIVE

CPT Codes:
82465-90, 84478-90, 82172-90, 83718-90, 83700-90

LOINC Codes:

Result ID	Test Result Name	Result LOINC Value
TCS	Cholesterol, Total, CDC, S	2093-3
HDLS	HDL Cholesterol, CDC, S	2085-9
TRIGC	Triglycerides, CDC, S	2571-8
APLBS	Apolipoprotein B, S	1884-6
2839	LDL Cholesterol	2089-1
2840	LDL Triglycerides	3046-0
2844	VLDL cholesterol	2091-7
2847	VLDL triglycerides	3047-8
2842	Beta VLDL Cholesterol	2091-7
2843	Beta VLDL triglycerides	3045-2
2855	Chylomicron cholesterol	34467-1
2856	Chylomicron triglycerides	35363-1
2849	Lp(a) Cholesterol	10835-7
23924	LpX	42178-4
23937	Interpretation	59462-2

COMPLETE VIEW

Available Stat:
No

Test Code:
LMPP

Performing Lab:
Mayo

Sendout:
Yes

Performed:
No

Methodology:
Ultracentrifugation/Electrophoresis/Automated Enzymatic/Colorimetric Analysis

Patient Preparation:
1. Fasting-overnight (12-14 hours)
2. Patient must not consume any alcohol for 24 hours before the specimen is drawn.

Collect:
Red-top or gold-top

Amount to Collect:
10 mL blood

Sample Type:
Serum

Preferred Volume:
5 mL serum

Minimum Volume:
2 mL serum

Rejection Criteria:
Gross Hemolysis/Icterus

Specimen Preparation:
Aliquot and refrigerate. Send to CB refrigerated. Order Mayo test code LMPP.

Synonyms:

- lipid panel
- Apo B
- Apolipoprotein B
- Lp(a)
- LpX
- Lipoprotein (a)
- Lipoprotein X

Stability (from collection to initiation):

Refrigerated: 7 days
Frozen: 60 days

Reported:

4 - 7 days

Additional Information:

Lipoprotein metabolism profile analysis adds practical information about the etiology of cholesterol and/or triglyceride elevation. In some patients, increased serum lipids reflects elevated levels of intermediate-density lipoprotein (IDL), very-low-density lipoprotein (VLDL), lipoprotein a (Lp[a]), or even the abnormal lipoprotein complex-LpX. These elevations can be indicative of a genetic deficiency in lipid metabolism or transport, nephrotic syndrome, endocrine dysfunction or even cholestasis. Identification of the lipoprotein associated with lipid elevation is achieved using the gold-standard methods, which include ultracentrifugation, selective precipitation, electrophoresis, and direct measurement of cholesterol and triglycerides in isolated lipoprotein fractions. Proper characterization of a patient's dyslipidemic phenotype aids clinical decisions and guides appropriate therapy.

Classifying the hyperlipoproteinemias into phenotypes places disorders that affect plasma lipid and lipoprotein concentrations into convenient groups for evaluation and treatment. A clear distinction must be made between primary (inherited) and secondary (liver disease, alcoholism, metabolic diseases) causes of dyslipoproteinemia. Lipoprotein profiling will identify the presence of Lp(a) and LpX and distinguish between the following dyslipidemias:

Exogenous hyperlipemia (Type I)

Familial Hypercholesterolemia (Type IIa)

Familial Combined Hyperlipidemia (Type IIb)

Familial dysbetalipoproteinemia (Type III)

Endogenous hyperlipemia (Type IV)

Mixed hyperlipemia (Type V)

CPT Codes:

82465-90, 84478-90, 82172-90, 83718-90, 83700-90

LOINC Codes:

Result ID	Test Result Name	Result LOINC Value
TCS	Cholesterol, Total, CDC, S	2093-3
HDLS	HDL Cholesterol, CDC, S	2085-9
TRIGC	Triglycerides, CDC, S	2571-8
APLBS	Apolipoprotein B, S	1884-6
2839	LDL Cholesterol	2089-1
2840	LDL Triglycerides	3046-0
2844	VLDL cholesterol	2091-7
2847	VLDL triglycerides	3047-8
2842	Beta VLDL Cholesterol	2091-7
2843	Beta VLDL triglycerides	3045-2
2855	Chylomicron cholesterol	34467-1
2856	Chylomicron triglycerides	35363-1
2849	Lp(a) Cholesterol	10835-7
23924	LpX	42178-4
23937	Interpretation	59462-2

Lithium

LI

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Stat: Test available 24 hours per day 7 days per week.

Routine: day shift only, seven days per week

Methodology:
ISE

Reported:
STAT 1 hour, Routine same or next day

Additional Information:
See the lab manual's "A Guide on Drug Level Monitoring" (in the Chemistry Guide) for additional information.

COLLECTION

Sample Type:
Serum

Collect:
Preferred: Gold top
Acceptable: Red top or dark green top

LIGHT GREEN TOP IS NOT ACCEPTABLE.

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Remarks:
Time to steady state: 5 days

Collect 30 minutes before next dose or at least 8-12 hours post dose.

Indicate time of draw on requisition.

PROCESSING

Test Code:
LI

Performing Lab:
Parnassus & Mission Bay Chemistry

Specimen Preparation:
Refrigerated 14 days, frozen at -20 C 2 months

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

RESULT INTERPRETATION

Units:
mmol/L

Reference Interval:
Therapeutic: 0.5-1.5 mmol/L

Critical Values:
> 2.0 mmol/L

Additional Information:
See the lab manual's "A Guide on Drug Level Monitoring" (in the Chemistry Guide) for additional information.

ADMINISTRATIVE

CPT Codes:
80178

LOINC Codes:
14334-7

COMPLETE VIEW

Available Stat:
Yes

Test Code:
LI

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Stat: Test available 24 hours per day 7 days per week.

Routine: day shift only, seven days per week

Methodology:
ISE

Remarks:
Time to steady state: 5 days

Collect 30 minutes before next dose or at least 8-12 hours post dose.

Indicate time of draw on requisition.

Collect:
Preferred: Gold top
Acceptable: Red top or dark green top

LIGHT GREEN TOP IS NOT ACCEPTABLE.

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Specimen Preparation:
Refrigerated 14 days, frozen at -20 C 2 months

Units:
mmol/L

Reference Interval:
Therapeutic: 0.5-1.5 mmol/L

Critical Values:
> 2.0 mmol/L

Reported:
STAT 1 hour, Routine same or next day

Additional Information:
See the lab manual's "A Guide on Drug Level Monitoring" (in the Chemistry Guide) for additional information.

CPT Codes:
80178

LOINC Codes:
14334-7

Liver Function Panel

LFP

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Test available 24 hours per day, 7 days per week

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
This panel includes Bilirubin, Total, Alkaline Phosphatase, ALT (alanine transaminase) and AST (aspartate transaminase).

Individual tests may be ordered separately.

Synonyms:

- LFT
- Liver function tests

COLLECTION

Sample Type:
Plasma or serum

Collect:
Light Green top preferred, Gold top acceptable

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL

Minimum Volume:
0.3 mL

PROCESSING

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Preferred Volume:
0.5 mL

Minimum Volume:
0.3 mL

RESULT INTERPRETATION

Units:
See individual test entries

Reference Interval:
See individual test entries

Additional Information:
This panel includes Bilirubin, Total, Alkaline Phosphatase, ALT (alanine transaminase) and AST (aspartate transaminase).

Individual tests may be ordered separately.

ADMINISTRATIVE

CPT Codes:
82247
84075
84460
84450

LOINC Codes:
34543-9
6768-6
1742-6
1920-8

COMPLETE VIEW

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Test available 24 hours per day, 7 days per week

Collect:
Light Green top preferred, Gold top acceptable

Amount to Collect:
1 mL blood

Sample Type:
Plasma or serum

Preferred Volume:
0.5 mL

Minimum Volume:
0.3 mL

Units:
See individual test entries

Reference Interval:
See individual test entries

Synonyms:

- LFT
- Liver function tests

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
This panel includes Bilirubin, Total, Alkaline Phosphatase, ALT (alanine transaminase) and AST (aspartate transaminase).

Individual tests may be ordered separately.

CPT Codes:
82247
84075
84460
84450

LOINC Codes:
34543-9
6768-6
1742-6
1920-8

Liver Kidney Microsome Antibody

LKMAB

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Tuesday (day shift)

Methodology:
Enzyme-Linked Immunosorbent Assay (ELISA)

Reported:
2-8 days

Additional Information:
Presence of LKM-1 antibodies can be used in conjunction with clinical findings and other laboratory tests to aid in the diagnosis of autoimmune liver diseases such as autoimmune hepatitis (AIH-2).

Synonyms:

- LKM-1 Antibody
- Autoimmune hepatitis
- AIH-2

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
2-8C serum up to 2 days; -20C or colder if longer than 2 days

Storage/Transport Temperature:
-20C

Unacceptable Conditions:
Microbial contamination, heat-treated, or specimens containing visible particulate should not be used. Grossly hemolysed, icteric or lipemic serum should be avoided.

PROCESSING

Test Code:
LKMAB

Performing Lab:
Immunology

Specimen Preparation:
Freeze sample at -20C

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Microbial contamination, heat-treated, or specimens containing visible particulate should not be used. Grossly hemolysed, icteric or lipemic serum should be avoided.

Stability (from collection to initiation):
2-8C serum up to 2 days; -20C or colder if longer than 2 days

Storage/Transport Temperature:
-20C

RESULT INTERPRETATION

Units:
Units

Reference Interval:
< 20.1
Units

Additional Information:
Presence of LKM-1 antibodies can be used in conjunction with clinical findings and other laboratory tests to aid in the diagnosis of autoimmune liver diseases such as autoimmune hepatitis (AIH-2).

ADMINISTRATIVE

CPT Codes:
86376

LDT or Modified FDA:
47318-1

COMPLETE VIEW

Available Stat:
No

Test Code:
LKMAB

Performing Lab:
Immunology

Performed:
Tuesday (day shift)

Methodology:
Enzyme-Linked Immunosorbent Assay (ELISA)

Collect:
Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Microbial contamination, heat-treated, or specimens containing visible particulate should not be used. Grossly hemolysed, icteric or lipemic serum should be avoided.

Specimen Preparation:
Freeze sample at -20C

Units:
Units

Reference Interval:
< 20.1
Units

Synonyms:

- LKM-1 Antibody
- Autoimmune hepatitis
- AIH-2

Storage/Transport Temperature:
-20C

Stability (from collection to initiation):
2-8C serum up to 2 days; -20C or colder if longer than 2 days

Reported:
2-8 days

Additional Information:

Presence of LKM-1 antibodies can be used in conjunction with clinical findings and other laboratory tests to aid in the diagnosis of autoimmune liver diseases such as autoimmune hepatitis (AIH-2).

CPT Codes:

86376

LDT or Modified FDA:

47318-1

Lp-PLA2 Activity

LPP2A

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
LC/MS/MS

Reported:
3-8 days

Additional Information:
The Lp-PLA2 Activity assay may be useful for individuals at intermediate or high risk for developing coronary heart disease.

Additional Information: Lp-PLA2 Activity levels should be interpreted in conjunction with clinical findings and other diagnostic tests. This test does not replace blood cholesterol tests or other traditional risk factors identified for coronary heart disease or ischemic stroke.

Synonyms:

- Lipoprotein associated phospholipase A2

COLLECTION

Sample Type:
Serum

Collect:
Gold-top or Red-top tube

Amount to Collect:
2 mL whole blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Remarks:
1. Collect and label sample according to standard protocols.
2. Gently invert tube 5 times immediately after draw. Do not shake.
3. Allow blood to clot 30 minutes.
4. Centrifuge at 1300 rcf for 10 minutes

Stability (from collection to initiation):
Room temperature: 7 days
Refrigerated: 21 days
Frozen: 21 days

PROCESSING

Test Code:
LPP2A

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot and freeze sample. Transport to CB frozen. Order Quest test code 94117

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature: 7 days
Refrigerated: 21 days
Frozen: 21 days

RESULT INTERPRETATION

Units:
nmol/min/mL

Reference Interval:
<75

Additional Information:
The Lp-PLA2 Activity assay may be useful for individuals at intermediate or high risk for developing coronary heart disease.

Additional Information: Lp-PLA2 Activity levels should be interpreted in conjunction with clinical findings and other diagnostic tests. This test does not replace blood cholesterol tests or other traditional risk factors identified for coronary heart disease or ischemic stroke.

ADMINISTRATIVE

CPT Codes:
83698-90

COMPLETE VIEW

Available Stat:
No

Test Code:
LPP2A

Performing Lab:
Quest

Sendout:
Yes

Methodology:
LC/MS/MS

Remarks:
1. Collect and label sample according to standard protocols.
2. Gently invert tube 5 times immediately after draw. Do not shake.
3. Allow blood to clot 30 minutes.
4. Centrifuge at 1300 rcf for 10 minutes

Collect:
Gold-top or Red-top tube

Amount to Collect:
2 mL whole blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Specimen Preparation:
Aliquot and freeze sample. Transport to CB frozen. Order Quest test code 94117

Units:
nmol/min/mL

Reference Interval:
<75

Synonyms:

- Lipoprotein associated phospholipase A2

Stability (from collection to initiation):
Room temperature: 7 days
Refrigerated: 21 days
Frozen: 21 days

Reported:
3-8 days

Additional Information:

The Lp-PLA2 Activity assay may be useful for individuals at intermediate or high risk for developing coronary heart disease.

Additional Information: Lp-PLA2 Activity levels should be interpreted in conjunction with clinical findings and other diagnostic tests. This test does not replace blood cholesterol tests or other traditional risk factors identified for coronary heart disease or ischemic stroke.

CPT Codes:

83698-90

LRF Test

ORDERING

Available Stat:
No

Synonyms:

- LH
- FSH

COLLECTION

Remarks:
After collecting blood for baseline (0 time) FSH and LH levels, Luteinizing Releasing Factor is administered intravenously and additional samples are collected at intervals (e.g., 10, 20, 30, 60 and 90 min post-infusion) to determine the maximal (peak) value. For additional information regarding collection of samples and test performance see under LH and FSH.

COMPLETE VIEW

Available Stat:
No

Remarks:
After collecting blood for baseline (0 time) FSH and LH levels, Luteinizing Releasing Factor is administered intravenously and additional samples are collected at intervals (e.g., 10, 20, 30, 60 and 90 min post-infusion) to determine the maximal (peak) value. For additional information regarding collection of samples and test performance see under LH and FSH.

Synonyms:

- LH
- FSH

Lupus Anticoagulant by HEXA

HEXA

ORDERING

Ordering Recommendations:
Should be ordered concurrently with RVVT.

Available Stat:
No

Performing Lab:
Parnassus Hematology

Performed:
Tuesday, day shift

Methodology:
Hexagonal Phospholipid Neutralization Test

Additional Information:
Summary of Interpretive Information for test results:

A negative test result in this assay does not exclude the possibility of a lupus anticoagulant. Current guidelines suggest testing for lupus anticoagulant with two clot based tests (J Thromb Haemost 2009; 7: 1737-40): in addition to this lupus anticoagulant by HEXA, the RVVT-based assay is recommended for detecting lupus anticoagulants. Lupus anticoagulant testing should be considered positive if one of the two tests gives a positive result.

Testing for lupus anticoagulant in the presence of anticoagulant therapy (including warfarin, direct thrombin inhibitors & direct factor 10a inhibitors, and supratherapeutic heparin) is not recommended due to possible interference with test results. The presence of factor deficiencies or a factor specific inhibitor may also interfere with this assay. Clinical correlation is advised.

Test results must be interpreted in their clinical context if a diagnosis of antiphospholipid syndrome is being considered. J Thromb Haemost 2006; 4: 295-306 provides consensus guidelines for diagnosis of antiphospholipid syndrome.

For detection of lupus anticoagulants, which by definition prolong a clotting time, are inhibitors, and are phospholipid dependent. Persistent presence (> 3 months) of antiphospholipid antibodies has been associated with recurrent thrombosis syndromes. A review of testing performed on UCSF patients indicates that, of all patients diagnosed with Lupus Anticoagulants, approximately 50% are detected in both Hexagonal Phospholipid Neutralization and Russell's Viper Venom tests, 25% in only the Hexagonal Phospholipid Neutralization Test, and 25% in only the Russell's Viper Venom Test.

Thrombin inhibitors (e.g. hirudin, argatroban, etc.) present in the sample to be tested may interfere in the test and lead to falsely positive results

Rivaroxaban, apixaban, and similar agents can cause false positive results in assays used to identify LA. Evaluation for a lupus anticoagulant, therefore, cannot be accurately performed in the presence of rivaroxaban.

To monitor unfractionated heparin therapy in the presence of a lupus anticoagulant, Heparin Levels may be needed.

If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

Reflex Testing:
When lupus anticoagulant testing is requested, it is appropriate to perform BOTH the RVVT and Lupus Anticoagulant by HEXA tests. For this reason, both will be performed whenever either is ordered. In the uncommon circumstance that a provider wishes to perform only one of these tests, the hematology laboratory should be contacted at 353-1747 to request that only the single test be performed.

Synonyms:

- LA
- antiphospholipid AB
- Anti-cardiolipin
- HEXA
- RVVT
- Russel's viper venom
- Hexagonal phospholipid neutralization

COLLECTION

Sample Type:
Citrated plasma

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Preferred Volume:
1 mL plasma

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap. Bring specimen immediately to lab after collection.

For patients with Hct's >= 55% please contact Hematology (x3-1747) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

NOTE: Thrombin inhibitors (e.g. hirudin, argatroban) present in the sample to be tested may interfere in the test and lead to falsely positive results, for patients receiving such therapy please contact the Hematology lab (x3-1747) **BEFORE** collecting samples for testing.

Unacceptable Conditions:
Hemolysis, sample collected in glass tube. Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

PROCESSING

Test Code:
HEXA

Test Group:
Anti-phospholipid

Performing Lab:
Parnassus Hematology

Specimen Preparation:
Platelet poor plasma required and must be frozen within 4 hours of collection.**Note:** If Lupius Anticoagulant ordered without further specification order both HEXA and RVVTM

Preferred Volume:
1 mL plasma

Unacceptable Conditions:
Hemolysis, sample collected in glass tube. Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:

Summary of Interpretive Information for test results:

A negative test result in this assay does not exclude the possibility of a lupus anticoagulant. Current guidelines suggest testing for lupus anticoagulant with two clot based tests (J Thromb Haemost 2009; 7: 1737-40): in addition to this lupus anticoagulant by HEXA, the RVVT-based assay is recommended for detecting lupus anticoagulants. Lupus anticoagulant testing should be considered positive if one of the two tests gives a positive result.

Testing for lupus anticoagulant in the presence of anticoagulant therapy (including warfarin, direct thrombin inhibitors & direct factor 10a inhibitors, and supratherapeutic heparin) is not recommended due to possible interference with test results. The presence of factor deficiencies or a factor specific inhibitor may also interfere with this assay. Clinical correlation is advised.

Test results must be interpreted in their clinical context if a diagnosis of antiphospholipid syndrome is being considered. J Thromb Haemost 2006; 4: 295-306 provides consensus guidelines for diagnosis of antiphospholipid syndrome.

For detection of lupus anticoagulants, which by definition prolong a clotting time, are inhibitors, and are phospholipid dependent. Persistent presence (> 3 months) of antiphospholipid antibodies has been associated with recurrent thrombosis syndromes. A review of testing performed on UCSF patients indicates that, of all patients diagnosed with Lupus Anticoagulants, approximately 50% are detected in both Hexagonal Phospholipid Neutralization and Russell's Viper Venom tests, 25% in only the Hexagonal Phospholipid Neutralization Test, and 25% in only the Russell's Viper Venom Test.

Thrombin inhibitors (e.g. hirudin, argatroban, etc.) present in the sample to be tested may interfere in the test and lead to falsely positive results

Rivaroxaban, apixaban, and similar agents can cause false positive results in assays used to identify LA. Evaluation for a lupus anticoagulant, therefore, cannot be accurately performed in the presence of rivaroxaban.

To monitor unfractionated heparin therapy in the presence of a lupus anticoagulant, Heparin Levels may be needed.

If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

ADMINISTRATIVE

CPT Codes:
85597

LOINC Codes:
33930-9

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Should be ordered concurrently with RVVT.

Test Code:
HEXA

Test Group:
Anti-phospholipid

Performing Lab:
Parnassus Hematology

Performed:
Tuesday, day shift

Methodology:
Hexagonal Phospholipid Neutralization Test

Remarks:

1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap. Bring specimen immediately to lab after collection.

For patients with Hct's >= 55% please contact Hematology (x3-1747) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

NOTE: Thrombin inhibitors (e.g. hirudin, argatroban) present in the sample to be tested may interfere in the test and lead to falsely positive results, for patients receiving such therapy please contact the Hematology lab (x3-1747) **BEFORE** collecting samples for testing.

Collect:

Blue top filled to full extent of vacuum

Amount to Collect:

2.7 mL blood

Sample Type:

Citrated plasma

Preferred Volume:

1 mL plasma

Unacceptable Conditions:

Hemolysis, sample collected in glass tube. Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Specimen Preparation:

Platelet poor plasma required and must be frozen within 4 hours of collection.**Note:** If Lupius Anticoagulant ordered without further specification order both HEXA and RVVTM

Reference Interval:

Negative

Synonyms:

- LA
- antiphospholipid AB
- Anti-cardiolipin
- HEXA
- RVVT
- Russel's viper venom
- Hexagonal phospholipid neutralization

Reflex Testing:

When lupus anticoagulant testing is requested, it is appropriate to perform BOTH the RVVT and Lupus Anticoagulant by HEXA tests. For this reason, both will be performed whenever either is ordered. In the uncommon circumstance that a provider wishes to perform only one of these tests, the hematology laboratory should be contacted at 353-1747 to request that only the single test be performed.

Additional Information:

Summary of Interpretive Information for test results:

A negative test result in this assay does not exclude the possibility of a lupus anticoagulant. Current guidelines suggest testing for lupus anticoagulant with two clot based tests (J Thromb Haemost 2009; 7: 1737-40): in addition to this lupus anticoagulant by HEXA, the RVVT-based assay is recommended for detecting lupus anticoagulants. Lupus anticoagulant testing should be considered positive if one of the two tests gives a positive result.

Testing for lupus anticoagulant in the presence of anticoagulant therapy (including warfarin, direct thrombin inhibitors & direct factor 10a inhibitors, and supratherapeutic heparin) is not recommended due to possible interference with test results. The presence of factor deficiencies or a factor specific inhibitor may also interfere with this assay. Clinical correlation is advised.

Test results must be interpreted in their clinical context if a diagnosis of antiphospholipid syndrome is being considered. J Thromb Haemost 2006; 4: 295-306 provides consensus guidelines for diagnosis of antiphospholipid syndrome.

For detection of lupus anticoagulants, which by definition prolong a clotting time, are inhibitors, and are phospholipid dependent. Persistent presence (> 3 months) of antiphospholipid antibodies has been associated with recurrent thrombosis syndromes. A review of testing performed on UCSF patients indicates that, of all patients diagnosed with Lupus Anticoagulants, approximately 50% are detected in both Hexagonal Phospholipid Neutralization and Russell's Viper Venom tests, 25% in only the Hexagonal Phospholipid Neutralization Test, and 25% in only the Russell's Viper Venom Test.

Thrombin inhibitors (e.g. hirudin, argatroban, etc.) present in the sample to be tested may interfere in the test and lead to falsely positive results

Rivaroxaban, apixaban, and similar agents can cause false positive results in assays used to identify LA. Evaluation for a lupus anticoagulant, therefore, cannot be accurately performed in the presence of rivaroxaban.

To monitor unfractionated heparin therapy in the presence of a lupus anticoagulant, Heparin Levels may be needed.

If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

CPT Codes:

85597

LOINC Codes:

33930-9

Lupus Anticoagulant Information

LUPUS

ORDERING

Available Stat:

No

Additional Information:

If "Lupus Anticoagulant" is ordered without further specification, a RVVTM and HEXA will be done.

The Russell's Viper Venom Test and the Hexagonal Phospholipid Neutralization test are 2 tests available to diagnose lupus anticoagulants, which by definition prolong a clotting time, are inhibitors, and are phospholipid dependent.

Lupus anticoagulants along with anti-cardiolipin antibodies and anti-beta-2-glycoprotein antibodies are the three major categories of anti-phospholipid antibodies. If a patient is being evaluated for anti-phospholipid antibody syndrome, the hematology laboratory service at Moffitt-Long recommends that the Anti-phospholipid Antibody Panel (APLA) be performed (as clinically indicated). This panel includes Russell Viper Venom Test (RVVTM), Hexagonal Phospholipid Neutralization Test (HEXA), and Anti-cardiolipin Antibody Tests (ACLG and ACLM), and Anti-beta-2-glycoprotein Antibody Tests (B2GPG and B2GPM).

To monitor unfractionated heparin therapy in the presence of a lupus anticoagulant, Heparin Levels may be needed.

Synonyms:

- LA
- antiphospholipid AB
- Anti-cardiolipin, HEXA
- RVVT
- Russell's viper venom
- Hexagonal phospholipids neutralization

PROCESSING

Test Code:

LUPUS

Test Group:

Anti-phospolipid

Specimen Preparation:

If "Lupus Anticoagulant" is ordered without further specification, order test package LUPUS which contains RVVTM & HEXA.

RESULT INTERPRETATION

Additional Information:

If "Lupus Anticoagulant" is ordered without further specification, a RVVTM and HEXA will be done.

The Russell's Viper Venom Test and the Hexagonal Phospholipid Neutralization test are 2 tests available to diagnose lupus anticoagulants, which by definition prolong a clotting time, are inhibitors, and are phospholipid dependent.

Lupus anticoagulants along with anti-cardiolipin antibodies and anti-beta-2-glycoprotein antibodies are the three major categories of anti-phospholipid antibodies. If a patient is being evaluated for anti-phospholipid antibody syndrome, the hematology laboratory service at Moffitt-Long recommends that the Anti-phospholipid Antibody Panel (APLA) be performed (as clinically indicated). This panel includes Russell Viper Venom Test (RVVTM), Hexagonal Phospholipid Neutralization Test (HEXA), and Anti-cardiolipin Antibody Tests (ACLG and ACLM), and Anti-beta-2-glycoprotein Antibody Tests (B2GPG and B2GPM).

To monitor unfractionated heparin therapy in the presence of a lupus anticoagulant, Heparin Levels may be needed.

ADMINISTRATIVE

CPT Codes:

85597, 85613

COMPLETE VIEW

Available Stat:

No

Test Code:

LUPUS

Test Group:
Anti-phospolipid

Specimen Preparation:
If "Lupus Anticoagulant" is ordered without further specification, order test package LUPUS which contains RVVTM & HEXA.

Synonyms:

- LA
- antiphospholipid AB
- Anti-cardiolipin, HEXA
- RVVT
- Russell's viper venom
- Hexagonal phospholipids neutralization

Additional Information:
If "Lupus Anticoagulant" is ordered without further specification, a RVVTM and HEXA will be done.

The Russell's Viper Venom Test and the Hexagonal Phospholipid Neutralization test are 2 tests available to diagnose lupus anticoagulants, which by definition prolong a clotting time, are inhibitors, and are phospholipid dependent.

Lupus anticoagulants along with anti-cardiolipin antibodies and anti-beta-2-glycoprotein antibodies are the three major categories of anti-phospholipid antibodies. If a patient is being evaluated for anti-phospholipid antibody syndrome, the hematology laboratory service at Moffitt-Long recommends that the Anti-phospholipid Antibody Panel (APLA) be performed (as clinically indicated). This panel includes Russell Viper Venom Test (RVVTM), Hexagonal Phospholipid Neutralization Test (HEXA), and Anti-cardiolipin Antibody Tests (ACLG and ACLM), and Anti-beta-2-glycoprotein Antibody Tests (B2GPG and B2GPM).

To monitor unfractionated heparin therapy in the presence of a lupus anticoagulant, Heparin Levels may be needed.

CPT Codes:
85597, 85613

Luteinizing Hormone

LH

ORDERING

Ordering Recommendations:
This assay is suitable for use in adult and pediatric patients to assess general endocrine function.

Available Stat:
No

Performing Lab:
China Basin Chemistry

Performed:
Thursday, Sunday (day shift)

Methodology:
Chemiluminescent Microparticle Immunoassay (Abbott Architect i2000)

Reported:
1-5 days

Additional Information:
Method changed from Siemens Centaur XP platform to Abbott Architect i2000 platform on 11/27/17. The Abbott Architect method reads approximately 19% lower than the Centaur method. Please note that the reference ranges have changed.

The Abbott assay standardization is traceable to the World Health Organization (WHO) LH 2nd International Standard, (80/552).

Synonyms:

- LH
- gonadotropin tests
- Leuteinizing hormone

COLLECTION

Sample Type:
Serum

Collect:
Gold or Red top

Amount to Collect:
1 mL blood

Preferred Volume:
0.3 mL serum

Minimum Volume:
0.15 mL serum

Stability (from collection to initiation):
Refrigerated (2-8°C): 7 days
Frozen (-10°C or colder): 12 months

If testing will be delayed more than 24 hours, remove serum from clot, red blood cells, or serum separator gel.

Avoid multiple freeze-thaw cycles.

PROCESSING

Test Code:
LH

Test Group:
LH

Performing Lab:
China Basin Chemistry

Specimen Preparation:
Aliquot and freeze serum at -20C.

Preferred Volume:
0.3 mL serum

Minimum Volume:
0.15 mL serum

Stability (from collection to initiation):

Refrigerated (2-8°C): 7 days
Frozen (-10°C or colder): 12 months

If testing will be delayed more than 24 hours, remove serum from clot, red blood cells, or serum separator gel.

Avoid multiple freeze-thaw cycles.

RESULT INTERPRETATION

Units:

IU/L

Reference Interval:

Pediatric (< 18 years old):

Age	IU/L (Male and Female
< 12 months	0.02 - 7.0
12 months - 8 years	0.02 - 0.3

Age	Male (IU/L)	Female (IU/L)
Early puberty	0.2 - 5.0	0.02 - 12.0
Late puberty	0.4 - 7.0	0.4 - 11.7

Tanner Stage	Age (years)	Male range (IU/L)
1	< 9.8	0.02 - 0.3
2	9.8 - 14.5	0.2 - 4.9
3	10.7 - 15.4	0.2 - 5.0
4-5	11.8 - 17.3	0.4 - 7.0

Tanner Stage	Age (years)	Female range (IU/L)
1	< 9.2	0.02 - 0.18
2	9.2 - 13.7	0.02 - 4.7
3	10.0 - 14.4	0.1 - 12.0
4-5	10.7 - 18.6	0.4 - 11.7

Pediatric references intervals adopted from Esoterix Laboratory Services and verified by running 31 female and 16 male pediatric samples on both the Esoterix assay and the in-house Abbott Architect LH assay.

Adult males (>= 18 years): 0.6 - 12.1 IU/L

Adult females (>= 18 years):

Follicular Phase	1.8 - 11.8 IU/L
Mid-cycle Peak	7.6 - 89.1 IU/L
Luteal Phase	0.6 - 14.0 IU/L
Post-menopausal	5.2 - 62.0 IU/L

Reference intervals adopted from Abbott (vendor) based on in-house verification study of 23 male (>18 years old) normal volunteers in the UCSF Laboratory and 20 split female sample comparisons with ARUP.

Additional Information:

Method changed from Siemens Centaur XP platform to Abbott Architect i2000 platform on 11/27/17. The Abbott Architect method reads approximately 19% lower than the Centaur method. Please note that the reference ranges have changed.

The Abbott assay standardization is traceable to the World Health Organization (WHO) LH 2nd International Standard, (80/552).

ADMINISTRATIVE

CPT Codes:

83002

LOINC Codes:

10501-5

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
This assay is suitable for use in adult and pediatric patients to assess general endocrine function.

Test Code:
LH

Test Group:
LH

Performing Lab:
China Basin Chemistry

Performed:
Thursday, Sunday (day shift)

Methodology:
Chemiluminescent Microparticle Immunoassay (Abbott Architect i2000)

Collect:
Gold or Red top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.3 mL serum

Minimum Volume:
0.15 mL serum

Specimen Preparation:
Aliquot and freeze serum at -20C.

Units:
IU/L

Reference Interval:

Pediatric (< 18 years old):

Age	IU/L (Male and Female
< 12 months	0.02 - 7.0
12 months - 8 years	0.02 - 0.3

Age	Male (IU/L)	Female (IU/L)
Early puberty	0.2 - 5.0	0.02 - 12.0
Late puberty	0.4 - 7.0	0.4 - 11.7

Tanner Stage	Age (years)	Male range (IU/L)
1	< 9.8	0.02 - 0.3
2	9.8 - 14.5	0.2 - 4.9
3	10.7 - 15.4	0.2 - 5.0
4-5	11.8 - 17.3	0.4 - 7.0

Tanner Stage	Age (years)	Female range (IU/L)
1	< 9.2	0.02 - 0.18
2	9.2 - 13.7	0.02 - 4.7
3	10.0 - 14.4	0.1 - 12.0
4-5	10.7 - 18.6	0.4 - 11.7

Pediatric references intervals adopted from Esoterix Laboratory Services and verified by running 31 female and 16 male pediatric samples on both the Esoterix assay and the in-house Abbott Architect LH assay.

Adult males (>= 18 years): 0.6 - 12.1 IU/L

Adult females (>= 18 years):

Follicular Phase	1.8 - 11.8 IU/L
Mid-cycle Peak	7.6 - 89.1 IU/L
Luteal Phase	0.6 - 14.0 IU/L
Post-menopausal	5.2 - 62.0 IU/L

Reference intervals adopted from Abbott (vendor) based on in-house verification study of 23 male (>18 years old) normal volunteers in the UCSF Laboratory and 20 split female sample comparisons with ARUP.

Synonyms:

- LH
- gonadotropin tests
- Leuteinizing hormone

Stability (from collection to initiation):

Refrigerated (2-8°C): 7 days
Frozen (-10°C or colder): 12 months

If testing will be delayed more than 24 hours, remove serum from clot, red blood cells, or serum separator gel.

Avoid multiple freeze-thaw cycles.

Reported:

1-5 days

Additional Information:

Method changed from Siemens Centaur XP platform to Abbott Architect i2000 platform on 11/27/17. The Abbott Architect method reads approximately 19% lower than the Centaur method. Please note that the reference ranges have changed.

The Abbott assay standardization is traceable to the World Health Organization (WHO) LH 2nd International Standard, (80/552).

CPT Codes:

83002

LOINC Codes:

10501-5

Lyme Disease Ab Confirmation (WB)

LYMEWB

ORDERING

Ordering Recommendations:
This test is for confirmation of positive antibody tests (LYMET). It should not be used as the first line diagnostic.

Available Stat:
No

Performing Lab:
Quest

Methodology:
Western blot

Reported:
Test run Monday-Friday. Turnaround time: 2-4 days.

Additional Information:
Western blot testing is automatically performed on samples that are positive on EIA for confirmation.

IgG Western Blot strips which have 5 (or more) of the 10 significant bands are considered positive for specific antibody to B. burgdorferi. IgM Western blot strips which have 2 (or more) of the 3 significant bands are considered positive for specific antibody to B. burgdorferi. The bands will be reported under a "See Separate Report". Caution must be used in supporting a diagnosis of B. burgdorferi infection when sera are Western blot IgM positive and Western blot IgG negative after the initial 4 week period from onset. Because the likelihood of a false-positive test result is high for these individuals, a positive IgM test alone is not recommended for use in determining active disease in persons with illness of longer than one month duration.

Synonyms:

- Relapsing fever
- Borreliosis
- Borrelia burgdorferi Ab
- Borrelia burgdorferi antibody

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

PROCESSING

Test Code:
LYMEWB

Test Group:
Borrelia burgdorferi

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate sample.

LYMEWB should only be ordered by Immunology staff as a reflex test for patients with a positive LYMET result.

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
Western blot testing is automatically performed on samples that are positive on EIA for confirmation.

IgG Western Blot strips which have 5 (or more) of the 10 significant bands are considered positive for specific antibody to B. burgdorferi. IgM Western blot strips which have 2 (or more) of the 3 significant bands are considered positive for specific antibody to B. burgdorferi. The bands will be reported under a "See Separate Report". Caution must be used in supporting a diagnosis of B. burgdorferi infection when sera are Western blot IgM positive and Western blot IgG negative after the initial 4 week period from onset. Because the likelihood of a false-positive test result is high for these individuals, a positive IgM test alone is not recommended for use in determining active disease in persons with illness of longer than one month duration.

ADMINISTRATIVE

CPT Codes:
86617-90 x 2

LOINC Codes:
9587-7

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
This test is for confirmation of positive antibody tests (LYMET). It should not be used as the first line diagnostic.

Test Code:
LYMEWB

Test Group:
Borrelia burgdorferi

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Western blot

Collect:
Gold top

Amount to Collect:
4 mL blood

Sample Type:
Serum

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Specimen Preparation:
Refrigerate sample.

LYMEWB should only be ordered by Immunology staff as a reflex test for patients with a positive LYMET result.

Reference Interval:
Negative

Synonyms:

- Relapsing fever
- Borreliosis
- Borrelia burgdorferi Ab
- Borrelia burgdorferi antibody

Reported:
Test run Monday-Friday. Turnaround time: 2-4 days.

Additional Information:

Western blot testing is automatically performed on samples that are positive on EIA for confirmation.

IgG Western Blot strips which have 5 (or more) of the 10 significant bands are considered positive for specific antibody to B. burgdorferi. IgM Western blot strips which have 2 (or more) of the 3 significant bands are considered positive for specific antibody to B. burgdorferi. The bands will be reported under a "See Separate Report". Caution must be used in supporting a diagnosis of B. burgdorferi infection when sera are Western blot IgM positive and Western blot IgG negative after the initial 4 week period from onset. Because the likelihood of a false-positive test result is high for these individuals, a positive IgM test alone is not recommended for use in determining active disease in persons with illness of longer than one month duration.

CPT Codes:

86617-90 x 2

LOINC Codes:

9587-7

Lyme Disease Antibody Total

LYMET

ORDERING

Ordering Recommendations:

Laboratory diagnosis of suspected Lyme disease is best performed through serology testing. PCR very rarely detects organisms, even in clinical Lyme disease, and is typically not indicated. Positive bloodstream antibodies do not necessarily indicate active Lyme disease, but do indicate previous exposure. Positive antibody testing is automatically confirmed with Western Blot.

Most patients with CNS Lyme disease have high levels of bloodstream antibodies; therefore testing of CSF for Lyme antibodies is typically only indicated for patients with positive serology. PCR for Lyme organisms in CSF has very low sensitivity for CNS disease.

Available Stat:

No

Performing Lab:

Immunology

Performed:

Monday-Friday (day shift)

Methodology:

Chemiluminescent immunoassay

Reported:

1-4 days.

Additional Information:

A negative result on this test should be followed up in two to four weeks if lyme disease is still suspected. A negative result does not rule out infection with Borrelia Burgdorferi.

Due to recommendations by the FDA, all positive or equivocal Borrelia Burgdorferi antibody EIA (screening) tests will be followed by the relevant western blot.

The screening test for B. Burgdorferi has a low negative predictive value result when used to detect early infection and a low positive predictive value when exposure history, symptoms, and clinical findings are not consistent with lyme disease.

Positive or equivocal results should not be interpreted as true positives until a second-step testing of the specimen is done using method that is more specific for antibodies to B. Burgdoreri (e.g. western blot). The patient will be billed an additional charge if the Lyme Disease by Western Blot is performed.

Reflex Testing:

Western Blot confirmation is automatically performed on all EIA positive tests.

Synonyms:

- Borreliosis
- Borrelia burgdorferi Ab
- Borrelia burgdorferi Antibody

COLLECTION

Sample Type:

Serum

Collect:

Gold top

Amount to Collect:

3 mL blood

Preferred Volume:

1.5 mL serum

Minimum Volume:

0.5 mL serum

PROCESSING

Test Code:

LYMET

Test Group:

Borrelia burgdorferi

Performing Lab:

Immunology

Specimen Preparation:
Freeze serum at -20C

Preferred Volume:
1.5 mL serum

Minimum Volume:
0.5 mL serum

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
A negative result on this test should be followed up in two to four weeks if lyme disease is still suspected. A negative result does not rule out infection with Borrelia Burgdorferi.

Due to recommendations by the FDA, all positive or equivocal Borrelia Burgdorferi antibody EIA (screening) tests will be followed by the relevant western blot.

The screening test for B. Burgdorferi has a low negative predictive value result when used to detect early infection and a low positive predictive value when exposure history, symptoms, and clinical findings are not consistent with lyme disease.

Positive or equivocal results should not be interpreted as true positives until a second-step testing of the specimen is done using method that is more specific for antibodies to B. Burgdoreri (e.g. western blot). The patient will be billed an additional charge if the Lyme Disease by Western Blot is performed.

ADMINISTRATIVE

CPT Codes:
86618

LOINC Codes:
22131-7

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Laboratory diagnosis of suspected Lyme disease is best performed through serology testing. PCR very rarely detects organisms, even in clinical Lyme disease, and is typically not indicated. Positive bloodstream antibodies do not necessarily indicate active Lyme disease, but do indicate previous exposure. Positive antibody testing is automatically confirmed with Western Blot.

Most patients with CNS Lyme disease have high levels of bloodstream antibodies; therefore testing of CSF for Lyme antibodies is typically only indicated for patients with positive serology. PCR for Lyme organisms in CSF has very low sensitivity for CNS disease.

Test Code:
LYMET

Test Group:
Borrelia burgdorferi

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift)

Methodology:
Chemiluminescent immunoassay

Collect:
Gold top

Amount to Collect:
3 mL blood

Sample Type:
Serum

Preferred Volume:
1.5 mL serum

Minimum Volume:
0.5 mL serum

Specimen Preparation:
Freeze serum at -20C

Reference Interval:
Negative

Synonyms:

- Borreliosis
- Borrelia burgdorferi Ab
- Borrelia burgdorferi Antibody

Reported:
1-4 days.

Reflex Testing:
Western Blot confirmation is automatically performed on all EIA positive tests.

Additional Information:
A negative result on this test should be followed up in two to four weeks if lyme disease is still suspected. A negative result does not rule out infection with Borrelia Burgdorferi.

Due to recommendations by the FDA, all positive or equivocal Borrelia Burgdorferi antibody EIA (screening) tests will be followed by the relevant western blot.

The screening test for B. Burgdorferi has a low negative predictive value result when used to detect early infection and a low positive predictive value when exposure history, symptoms, and clinical findings are not consistent with lyme disease.

Positive or equivocal results should not be interpreted as true positives until a second-step testing of the specimen is done using method that is more specific for antibodies to B. Burgdoreri (e.g. western blot). The patient will be billed an additional charge if the Lyme Disease by Western Blot is performed.

CPT Codes:
86618

LOINC Codes:
22131-7

Lyme Disease Antibody, CSF

LYMC

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Immunoblot

Reported:
5-7 days

Additional Information:
No interpretive criteria for Borrelia burgdorferi Western blot have been established for CSF or other fluids. The presence of B. burgdorferi reactive antibodies in fluids may represent either compartmental antibody production or transudation of plasma antibody. The Western blot test will confirm the presence of B. burgdorferi specific antibodies detected by serologic screening methods (ELISA, IFA).

Synonyms:

- Borreliosis
- Borrelia burgdorferi Ab
- Borrelia burgdorferi Antibody

COLLECTION

Sample Type:
CSF

Collect:
CSF tube or sterile collection tube

Amount to Collect:
2 mL CSF

Preferred Volume:
2 mL CSF

Minimum Volume:
0.5 mL CSF

Stability (from collection to initiation):
Refrigerated 1 week, frozen 1 month

PROCESSING

Test Code:
LYMC

Test Group:
Borrelia burgdorferi

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze sample and ship to CB frozen.

Preferred Volume:
2 mL CSF

Minimum Volume:
0.5 mL CSF

Stability (from collection to initiation):
Refrigerated 1 week, frozen 1 month

RESULT INTERPRETATION

Reference Interval:
No bands detected

Additional Information:
No interpretive criteria for Borrelia burgdorferi Western blot have been established for CSF or other fluids. The presence of B. burgdorferi reactive antibodies in fluids may represent either compartmental antibody production or transudation of plasma antibody. The Western blot test will confirm the presence of B. burgdorferi specific antibodies detected by serologic screening methods (ELISA, IFA).

ADMINISTRATIVE

CPT Codes:
86617-90 x2

COMPLETE VIEW

Available Stat:
No

Test Code:
LYMC

Test Group:
Borrelia burgdorferi

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Immunoblot

Collect:
CSF tube or sterile collection tube

Amount to Collect:
2 mL CSF

Sample Type:
CSF

Preferred Volume:
2 mL CSF

Minimum Volume:
0.5 mL CSF

Specimen Preparation:
Freeze sample and ship to CB frozen.

Reference Interval:
No bands detected

Synonyms:

- Borreliosis
- Borrelia burgdorferi Ab
- Borrelia burgdorferi Antibody

Stability (from collection to initiation):
Refrigerated 1 week, frozen 1 month

Reported:
5-7 days

Additional Information:
No interpretive criteria for Borrelia burgdorferi Western blot have been established for CSF or other fluids. The presence of B. burgdorferi reactive antibodies in fluids may represent either compartmental antibody production or transudation of plasma antibody. The Western blot test will confirm the presence of B. burgdorferi specific antibodies detected by serologic screening methods (ELISA, IFA).

CPT Codes:
86617-90 x2

Lymphocyte Antigen Stimulation

LPAG

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
Flow cytometry

Reported:
10-12 days.

Additional Information:
Abnormal test results to antigen stimulation are indicative of impaired T-cell function, if T-cell counts are normal or only modestly decreased. If there is profound T-cell lymphopenia, it must be kept in mind that there could be a "dilution" effect with underrepresentation of T cells within the peripheral blood mononuclear cells (PBMC) population that could result in lower T-cell proliferative responses. However, this is not a significant concern in the flow cytometry assay, since acquisition of additional cellular events during analysis can compensate for artificial reduction in proliferation due to lower T-cell counts. In the case of antigen-specific T-cell responses to tetanus toxoid (TT), there can be absent responses due to natural waning of cellular immunity, if the interval between vaccinations has exceeded the recommended period, especially in adults. In such circumstances, it would be appropriate to measure TT-specific T-cell responses 4 to 6 weeks after a booster vaccination.

There is no absolute correlation between T-cell proliferation in vitro and a clinically significant immunodeficiency, whether primary or secondary, since T-cell proliferation in response to activation is necessary, but not sufficient, for an effective immune response. Therefore, the proliferative response to antigens can be regarded as a more sensitive, but less specific, test for the diagnosis of infection susceptibility.

It should also be kept in mind that there is no single laboratory test that can identify or define impaired cellular immunity, with the exception of an opportunistic infection.

Controls in this laboratory and most clinical laboratories are healthy adults. Since this test is used for screening and evaluating cellular immune dysfunction in infants and children, it is reasonable to question the comparability of proliferative responses between healthy infants, children, and adults. It is reasonable to expect robust T-cell-specific responses to TT in children without cellular immune compromise, as a result of repeated childhood vaccinations. The response to Candida albicans can be more variable depending on the extent of exposure and age of exposure. A comment will be provided in the report documenting the comparison of pediatric results with an adult reference range and correlation with clinical context for appropriate interpretation.

It should be noted that without obtaining formal pediatric reference values, it remains a possibility that the response in infants and children can be underestimated. However, the practical challenges of generating a pediatric range for this assay necessitate comparison of pediatric data with adult reference values or controls.

Synonyms:

- Lymphocyte stimulation
- lymphocyte antigen proliferation
- lymphocyte proliferation, SCIDS
- Severe combined immunodeficiency syndrome
- C. albicans
- Candida albicans
- tetanus toxoid

COLLECTION

Sample Type:
Heparinized whole blood

Collect:
Dark Green top

Preferred Volume:

Blood Volume Recommendations Based on Absolute Lymphocyte Count (ALC):

Antigen only:

ALC x 10(9)/L	Blood volume for minimum Candida albicans (CA) and tetanus toxoid (TT) Only	Blood volume for full assay
<0.5	>18.5 mL	>40 mL
0.5-1.0	18.5 mL	40 mL
1.1-1.5	8.5 mL	20 mL
1.6-2.0	6.0 mL	12 mL
2.1-3.0	4.5 mL	10 mL
3.1-4.0	3.0 mL	6 mL
4.1-5.0	2.5 mL	5 mL
>5.0	2.0 mL	4 mL

Minimum Volume:

>= 18 year olds: 6 mL blood
Children: 3 mL blood

Remarks:

Collect blood Monday through Thursday only.

Specimen must be received for sendout at China Basin by 3:30 pm on day of collection.

Specimens must arrive at Mayo laboratories within 24 hours of collection, therefore samples must be drawn and delivered to UCSF laboratory by 12:00 noon to meet processing deadline.

For Brown & Toland patients Authorization from B&T is **required before** samples are collected.

Unacceptable Conditions:

Samples collected outside of stated time frames

PROCESSING

Test Code:

LPAG

Sendout:

Yes

Performing Lab:

Mayo

Specimen Preparation:

Specimen must be maintained at room temperature. Do not refrigerate or freeze.

Specimen must be received for sendout at China Basin by 3:30 pm on day of collection.

Please notify China Basin Sendout to expedite processing of whole blood specimens (Dark Green tubes) at 3-1349 or 3-4840 upon receipt.

Preferred Volume:

Blood Volume Recommendations Based on Absolute Lymphocyte Count (ALC):

Antigen only:

ALC x 10(9)/L	Blood volume for minimum Candida albicans (CA) and tetanus toxoid (TT) Only	Blood volume for full assay
<0.5	>18.5 mL	>40 mL
0.5-1.0	18.5 mL	40 mL
1.1-1.5	8.5 mL	20 mL
1.6-2.0	6.0 mL	12 mL
2.1-3.0	4.5 mL	10 mL
3.1-4.0	3.0 mL	6 mL
4.1-5.0	2.5 mL	5 mL
>5.0	2.0 mL	4 mL

Minimum Volume:

>= 18 year olds: 6 mL blood
Children: 3 mL blood

Unacceptable Conditions:
Samples collected outside of stated time frames

RESULT INTERPRETATION

Reference Interval:

Viability of lymphocytes at day 0	>= 75.0%
Maximum proliferation of Candida albicans as % CD45	>= 5.7%
Maximum proliferation of Candida albicans as % CD3	>= 3.0%
Maximum proliferation of tetanus toxoid as % CD45	>= 5.2%
Maximum proliferation of tetanus toxoid as % CD3	>= 3.3%

Additional Information:
Abnormal test results to antigen stimulation are indicative of impaired T-cell function, if T-cell counts are normal or only modestly decreased. If there is profound T-cell lymphopenia, it must be kept in mind that there could be a "dilution" effect with underrepresentation of T cells within the peripheral blood mononuclear cells (PBMC) population that could result in lower T-cell proliferative responses. However, this is not a significant concern in the flow cytometry assay, since acquisition of additional cellular events during analysis can compensate for artificial reduction in proliferation due to lower T-cell counts. In the case of antigen-specific T-cell responses to tetanus toxoid (TT), there can be absent responses due to natural waning of cellular immunity, if the interval between vaccinations has exceeded the recommended period, especially in adults. In such circumstances, it would be appropriate to measure TT-specific T-cell responses 4 to 6 weeks after a booster vaccination.

There is no absolute correlation between T-cell proliferation in vitro and a clinically significant immunodeficiency, whether primary or secondary, since T-cell proliferation in response to activation is necessary, but not sufficient, for an effective immune response. Therefore, the proliferative response to antigens can be regarded as a more sensitive, but less specific, test for the diagnosis of infection susceptibility.

It should also be kept in mind that there is no single laboratory test that can identify or define impaired cellular immunity, with the exception of an opportunistic infection.

Controls in this laboratory and most clinical laboratories are healthy adults. Since this test is used for screening and evaluating cellular immune dysfunction in infants and children, it is reasonable to question the comparability of proliferative responses between healthy infants, children, and adults. It is reasonable to expect robust T-cell-specific responses to TT in children without cellular immune compromise, as a result of repeated childhood vaccinations. The response to Candida albicans can be more variable depending on the extent of exposure and age of exposure. A comment will be provided in the report documenting the comparison of pediatric results with an adult reference range and correlation with clinical context for appropriate interpretation.

It should be noted that without obtaining formal pediatric reference values, it remains a possibility that the response in infants and children can be underestimated. However, the practical challenges of generating a pediatric range for this assay necessitate comparison of pediatric data with adult reference values or controls.

ADMINISTRATIVE

CPT Codes:
86353-90

COMPLETE VIEW

Available Stat:
No

Test Code:
LPAG

Performing Lab:
Mayo

Sendout:
Yes

Methodology:
Flow cytometry

Remarks:

Collect blood Monday through Thursday only.

Specimen must be received for sendout at China Basin by 3:30 pm on day of collection.

Specimens must arrive at Mayo laboratories within 24 hours of collection, therefore samples must be drawn and delivered to UCSF laboratory by 12:00 noon to meet processing deadline.

For Brown & Toland patients Authorization from B&T is **required before** samples are collected.

Collect:

Dark Green top

Sample Type:

Heparinized whole blood

Preferred Volume:

Blood Volume Recommendations Based on Absolute Lymphocyte Count (ALC):

Antigen only:

ALC x 10(9)/L	Blood volume for minimum Candida albicans (CA) and tetanus toxoid (TT) Only	Blood volume for full assay
<0.5	>18.5 mL	>40 mL
0.5-1.0	18.5 mL	40 mL
1.1-1.5	8.5 mL	20 mL
1.6-2.0	6.0 mL	12 mL
2.1-3.0	4.5 mL	10 mL
3.1-4.0	3.0 mL	6 mL
4.1-5.0	2.5 mL	5 mL
>5.0	2.0 mL	4 mL

Minimum Volume:

>= 18 year olds: 6 mL blood
Children: 3 mL blood

Unacceptable Conditions:

Samples collected outside of stated time frames

Specimen Preparation:

Specimen must be maintained at room temperature. Do not refrigerate or freeze.

Specimen must be received for sendout at China Basin by 3:30 pm on day of collection.

Please notify China Basin Sendout to expedite processing of whole blood specimens (Dark Green tubes) at 3-1349 or 3-4840 upon receipt.

Reference Interval:

Viability of lymphocytes at day 0	>= 75.0%
Maximum proliferation of Candida albicans as % CD45	>= 5.7%
Maximum proliferation of Candida albicans as % CD3	>= 3.0%
Maximum proliferation of tetanus toxoid as % CD45	>= 5.2%
Maximum proliferation of tetanus toxoid as % CD3	>= 3.3%

Synonyms:

- Lymphocyte stimulation
- lymphocyte antigen proliferation
- lymphocyte proliferation, SCIDS
- Severe combined immunodeficiency syndrome
- C. albicans
- Candida albicans
- tetanus toxoid

Reported:

10-12 days.

Additional Information:

Abnormal test results to antigen stimulation are indicative of impaired T-cell function, if T-cell counts are normal or only modestly decreased. If there is profound T-cell lymphopenia, it must be kept in mind that there could be a "dilution" effect with underrepresentation of T cells within the peripheral blood mononuclear cells (PBMC) population that could result in lower T-cell proliferative responses. However, this is not a significant concern in the flow cytometry assay, since acquisition of additional cellular events during analysis can compensate for artificial reduction in proliferation due to lower T-cell counts. In the case of antigen-specific T-cell responses to tetanus toxoid (TT), there can be absent responses due to natural waning of cellular immunity, if the interval between vaccinations has exceeded the recommended period, especially in adults. In such circumstances, it would be appropriate to measure TT-specific T-cell responses 4 to 6 weeks after a booster vaccination.

There is no absolute correlation between T-cell proliferation in vitro and a clinically significant immunodeficiency, whether primary or secondary, since T-cell proliferation in response to activation is necessary, but not sufficient, for an effective immune response. Therefore, the proliferative response to antigens can be regarded as a more sensitive, but less specific, test for the diagnosis of infection susceptibility.

It should also be kept in mind that there is no single laboratory test that can identify or define impaired cellular immunity, with the exception of an opportunistic infection.

Controls in this laboratory and most clinical laboratories are healthy adults. Since this test is used for screening and evaluating cellular immune dysfunction in infants and children, it is reasonable to question the comparability of proliferative responses between healthy infants, children, and adults. It is reasonable to expect robust T-cell-specific responses to TT in children without cellular immune compromise, as a result of repeated childhood vaccinations. The response to Candida albicans can be more variable depending on the extent of exposure and age of exposure. A comment will be provided in the report documenting the comparison of pediatric results with an adult reference range and correlation with clinical context for appropriate interpretation.

It should be noted that without obtaining formal pediatric reference values, it remains a possibility that the response in infants and children can be underestimated. However, the practical challenges of generating a pediatric range for this assay necessitate comparison of pediatric data with adult reference values or controls.

CPT Codes:

86353-90

Lymphocyte Mitogen Stimulation
LPMG

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
Flow cytometry

Reported:
10-12 days.

Additional Information:
Abnormal test results to mitogen stimulation are indicative of impaired T-cell function if T-cell counts are normal or only modestly decreased. If there is profound T-cell lymphopenia, it must be kept in mind that there could be a "dilution" effect with under-representation of T cells within the peripheral blood mononuclear cells (PBMCs) population that could result in lower T-cell proliferative responses. However, this is not a significant concern in the flow cytometry assay, since acquisition of additional cellular events during analysis can compensate for artificial reduction in proliferation due to lower T-cell counts.

There is no absolute correlation between T-cell proliferation in vitro and a clinically significant immunodeficiency, whether primary or secondary, since T-cell proliferation in response to activation is necessary, but not sufficient, for an effective immune response. Therefore, the proliferative response to mitogens can be regarded as a more specific but less sensitive test for the diagnosis of infection susceptibility.

It should also be kept in mind that there is no single laboratory test that can identify or define impaired cellular immunity, with the exception of an opportunistic infection.

Controls in this laboratory and most clinical laboratories are healthy adults. Since this test is used for screening and evaluating cellular immune dysfunction in infants and children, it is reasonable to question the comparability of proliferative responses between healthy infants, children, and adults. One study has reported that the highest mitogen responses are seen in newborn infants with subsequent decline to 6 months of age, and a continuing decline through adolescence to half the neonatal response.(6) In our evaluation of 43 pediatric specimens (of all ages) with adult normal controls, only 21% and 14% were below the tenth percentile of the adult reference range for pokeweed (PWM) and phytohemagglutinin (PHA), respectively. A comment will be provided in the report documenting the comparison of pediatric results with an adult reference range and correlation with clinical context for appropriate interpretation.

It should be noted that without obtaining formal pediatric reference values it remains a possibility that the response in infants and children can be underestimated. However, the practical challenges of generating a pediatric range for this assay necessitate comparison of pediatric data with adult reference values or controls.

Lymphocyte proliferation responses to mitogens and antigens are significantly affected by time elapsed since blood collection. Results have been shown to be variable for specimens assessed >24 and <48 hours postblood collection, therefore, lymphocyte proliferation results must be interpreted with due caution and results should be correlated with clinical context.

Synonyms:

- Lymphocyte proliferation
- pokeweed mitogen
- PWM
- phytohemagglutinin
- PHA
- Lymphocyte stimulation
- lymphocyte proliferation
- SCIDS
- Severe combined immunodeficiency syndrome

COLLECTION

Sample Type:
Heparinized whole blood

Collect:
Dark Green top

Preferred Volume:

Blood Volume Recommendations Based on Absolute Lymphocytes Count (ALC):

Mitogen only:

ALC x 10(9)/L	Blood volume for minimum phytohemagglutinin (PHA) only	Blood volume for PHA and pokeweed mitogen (PWM)	Blood volume for full assay
<0.5	>6.5 mL	>8.5 mL	>22 mL
0.5-1.0	6.5 mL	8.5 mL	22 mL
1.1-1.5	3.0 mL	5.0 mL	10 mL
1.6-2.0	2.0 mL	2.5 mL	7 mL
2.1-3.0	1.5 mL	2.0 mL	6 mL
3.1-4.0	1.0 mL	1.5 mL	4 mL
4.1-5.0	0.8 mL	1.0 mL	3 mL
>5.0	0.5 mL	0.8 mL	2 mL

Minimum Volume:

>= 18 year olds: 6 mL blood
Children: 3 mL blood

Remarks:

Collect blood Monday through Thursday only.

Specimen must be received for sendout at China Basin by 3:30 pm on day of collection.

Specimens must arrive at Mayo laboratories within 24 hours of collection, therefore samples must be drawn and delivered to UCSF laboratory by 12:00 noon to meet processing deadline.

For Brown & Toland patients Authorization from B&T is **required before** samples are collected.

Unacceptable Conditions:

Samples collected outside of stated time frames

PROCESSING

Test Code:

LPMG

Sendout:

Yes

Performing Lab:

Mayo

Specimen Preparation:

Specimen must be maintained at room temperature. Do not refrigerate or freeze.

Specimen must be received for sendout at China Basin by 3:30 pm on day of collection.

Please notify China Basin Sendout to expedite processing of whole blood specimens (Dark Green tubes) at 3-1349 or 3-4840 upon receipt.

Preferred Volume:

Blood Volume Recommendations Based on Absolute Lymphocytes Count (ALC):

Mitogen only:

ALC x 10(9)/L	Blood volume for minimum phytohemagglutinin (PHA) only	Blood volume for PHA and pokeweed mitogen (PWM)	Blood volume for full assay
<0.5	>6.5 mL	>8.5 mL	>22 mL
0.5-1.0	6.5 mL	8.5 mL	22 mL
1.1-1.5	3.0 mL	5.0 mL	10 mL
1.6-2.0	2.0 mL	2.5 mL	7 mL
2.1-3.0	1.5 mL	2.0 mL	6 mL
3.1-4.0	1.0 mL	1.5 mL	4 mL
4.1-5.0	0.8 mL	1.0 mL	3 mL
>5.0	0.5 mL	0.8 mL	2 mL

Minimum Volume:

>= 18 year olds: 6 mL blood
Children: 3 mL blood

Unacceptable Conditions:
Samples collected outside of stated time frames

RESULT INTERPRETATION

Reference Interval:

Viability of lymphocytes at day 0	>= 75.0%
Maximum proliferation of phytohemagglutinin as % CD45	>= 49.9%
Maximum proliferation of phytohemagglutinin as % CD3	>= 58.5%
Maximum proliferation of pokeweed mitogen as % CD45	>= 4.5%
Maximum proliferation of pokeweed mitogen as % CD3	>= 3.5%
Maximum proliferation of pokeweed mitogen as % CD19	>= 3.9%

Additional Information:

Abnormal test results to mitogen stimulation are indicative of impaired T-cell function if T-cell counts are normal or only modestly decreased. If there is profound T-cell lymphopenia, it must be kept in mind that there could be a "dilution" effect with under-representation of T cells within the peripheral blood mononuclear cells (PBMCs) population that could result in lower T-cell proliferative responses. However, this is not a significant concern in the flow cytometry assay, since acquisition of additional cellular events during analysis can compensate for artificial reduction in proliferation due to lower T-cell counts.

There is no absolute correlation between T-cell proliferation in vitro and a clinically significant immunodeficiency, whether primary or secondary, since T-cell proliferation in response to activation is necessary, but not sufficient, for an effective immune response. Therefore, the proliferative response to mitogens can be regarded as a more specific but less sensitive test for the diagnosis of infection susceptibility.

It should also be kept in mind that there is no single laboratory test that can identify or define impaired cellular immunity, with the exception of an opportunistic infection.

Controls in this laboratory and most clinical laboratories are healthy adults. Since this test is used for screening and evaluating cellular immune dysfunction in infants and children, it is reasonable to question the comparability of proliferative responses between healthy infants, children, and adults. One study has reported that the highest mitogen responses are seen in newborn infants with subsequent decline to 6 months of age, and a continuing decline through adolescence to half the neonatal response.(6) In our evaluation of 43 pediatric specimens (of all ages) with adult normal controls, only 21% and 14% were below the tenth percentile of the adult reference range for pokeweed (PWM) and phytohemagglutinin (PHA), respectively. A comment will be provided in the report documenting the comparison of pediatric results with an adult reference range and correlation with clinical context for appropriate interpretation.

It should be noted that without obtaining formal pediatric reference values it remains a possibility that the response in infants and children can be underestimated. However, the practical challenges of generating a pediatric range for this assay necessitate comparison of pediatric data with adult reference values or controls.

Lymphocyte proliferation responses to mitogens and antigens are significantly affected by time elapsed since blood collection. Results have been shown to be variable for specimens assessed >24 and <48 hours postblood collection, therefore, lymphocyte proliferation results must be interpreted with due caution and results should be correlated with clinical context.

ADMINISTRATIVE

CPT Codes:
86353-90

COMPLETE VIEW

Available Stat:
No

Test Code:
LPMG

Performing Lab:
Mayo

Sendout:
Yes

Methodology:
Flow cytometry

Remarks:

Collect blood Monday through Thursday only.

Specimen must be received for sendout at China Basin by 3:30 pm on day of collection.

Specimens must arrive at Mayo laboratories within 24 hours of collection, therefore samples must be drawn and delivered to UCSF laboratory by 12:00 noon to meet processing deadline.

For Brown & Toland patients Authorization from B&T is **required before** samples are collected.

Collect:

Dark Green top

Sample Type:

Heparinized whole blood

Preferred Volume:

Blood Volume Recommendations Based on Absolute Lymphocytes Count (ALC):

Mitogen only:

ALC x 10(9)/L	Blood volume for minimum phytohemagglutinin (PHA) only	Blood volume for PHA and pokeweed mitogen (PWM)	Blood volume for full assay
<0.5	>6.5 mL	>8.5 mL	>22 mL
0.5-1.0	6.5 mL	8.5 mL	22 mL
1.1-1.5	3.0 mL	5.0 mL	10 mL
1.6-2.0	2.0 mL	2.5 mL	7 mL
2.1-3.0	1.5 mL	2.0 mL	6 mL
3.1-4.0	1.0 mL	1.5 mL	4 mL
4.1-5.0	0.8 mL	1.0 mL	3 mL
>5.0	0.5 mL	0.8 mL	2 mL

Minimum Volume:

>= 18 year olds: 6 mL blood
Children: 3 mL blood

Unacceptable Conditions:

Samples collected outside of stated time frames

Specimen Preparation:

Specimen must be maintained at room temperature. Do not refrigerate or freeze.

Specimen must be received for sendout at China Basin by 3:30 pm on day of collection.

Please notify China Basin Sendout to expedite processing of whole blood specimens (Dark Green tubes) at 3-1349 or 3-4840 upon receipt.

Reference Interval:

Viability of lymphocytes at day 0	>= 75.0%
Maximum proliferation of phytohemagglutinin as % CD45	>= 49.9%
Maximum proliferation of phytohemagglutinin as % CD3	>= 58.5%
Maximum proliferation of pokeweed mitogen as % CD45	>= 4.5%
Maximum proliferation of pokeweed mitogen as % CD3	>= 3.5%
Maximum proliferation of pokeweed mitogen as % CD19	>= 3.9%

Synonyms:

- Lymphocyte proliferation
- pokeweed mitogen
- PWM
- phytohemagglutinin
- PHA
- Lymphocyte stimulation
- lymphocyte proliferation
- SCIDS
- Severe combined immunodeficiency syndrome

Reported:

10-12 days.

Additional Information:

Abnormal test results to mitogen stimulation are indicative of impaired T-cell function if T-cell counts are normal or only modestly decreased. If there is profound T-cell lymphopenia, it must be kept in mind that there could be a "dilution" effect with under-representation of T cells within the peripheral blood mononuclear cells (PBMCs) population that could result in lower T-cell proliferative responses. However, this is not a significant concern in the flow cytometry assay, since acquisition of additional cellular events during analysis can compensate for artificial reduction in proliferation due to lower T-cell counts.

There is no absolute correlation between T-cell proliferation in vitro and a clinically significant immunodeficiency, whether primary or secondary, since T-cell proliferation in response to activation is necessary, but not sufficient, for an effective immune response. Therefore, the proliferative response to mitogens can be regarded as a more specific but less sensitive test for the diagnosis of infection susceptibility.

It should also be kept in mind that there is no single laboratory test that can identify or define impaired cellular immunity, with the exception of an opportunistic infection.

Controls in this laboratory and most clinical laboratories are healthy adults. Since this test is used for screening and evaluating cellular immune dysfunction in infants and children, it is reasonable to question the comparability of proliferative responses between healthy infants, children, and adults. One study has reported that the highest mitogen responses are seen in newborn infants with subsequent decline to 6 months of age, and a continuing decline through adolescence to half the neonatal response.(6) In our evaluation of 43 pediatric specimens (of all ages) with adult normal controls, only 21% and 14% were below the tenth percentile of the adult reference range for pokeweed (PWM) and phytohemagglutinin (PHA), respectively. A comment will be provided in the report documenting the comparison of pediatric results with an adult reference range and correlation with clinical context for appropriate interpretation.

It should be noted that without obtaining formal pediatric reference values it remains a possibility that the response in infants and children can be underestimated. However, the practical challenges of generating a pediatric range for this assay necessitate comparison of pediatric data with adult reference values or controls.

Lymphocyte proliferation responses to mitogens and antigens are significantly affected by time elapsed since blood collection. Results have been shown to be variable for specimens assessed >24 and <48 hours postblood collection, therefore, lymphocyte proliferation results must be interpreted with due caution and results should be correlated with clinical context.

CPT Codes:

86353-90

Lymphocyte Subsets for Lavage Only by Flow Cytometry

TBHSBF

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift)

Methodology:
Flow Cytometry

Reported:
2-3 days

Synonyms:

- CD3
- CD4
- CD19
- CD56
- T cells
- B cells
- NK cells
- CD4/CD8 ratio
- H/S ratio
- helper/suppressor ratio
- cytotoxic T cells
- suppressor T cells
- T cell markers
- B cell markers
- T and B cells
- T4/T8 ratio
- flow cytometry
- Lavage
- BAL

COLLECTION

Sample Type:
BAL - Bronchoalveolar Lavage

Collect:
PF - FLUID

Preferred Volume:
10 mL lavage

Minimum Volume:
5 mL lavage (cell count affects the success of the test. Please provide 10 mL sample whenever possible)

Remarks:
Unacceptable conditions - Refrigerated sample received. Sample > 48 hours old when received.

Stability (from collection to initiation):
48 hr.

Storage/Transport Temperature:
Room Temperature

Unacceptable Conditions:
Refrigerated sample. Sample > 48 hours old.

PROCESSING

Test Code:
TBHSBF

Test Group:
CD

Performing Lab:
Immunology

Specimen Preparation:
Store at room temperature and transport to China Basin. DO NOT refrigerate.

Preferred Volume:
10 mL lavage

Minimum Volume:
5 mL lavage (cell count affects the success of the test. Please provide 10 mL sample whenever possible)

Unacceptable Conditions:
Refrigerated sample. Sample > 48 hours old.

Stability (from collection to initiation):
48 hr.

Storage/Transport Temperature:
Room Temperature

RESULT INTERPRETATION

Units:
%

ADMINISTRATIVE

CPT Codes:
86360, 86359, 86357, 86355, 85025

LOINC Codes:
97594-6, 97595-3, 97596-1, 97599-5

COMPLETE VIEW

Available Stat:
No

Test Code:
TBHSBF

Test Group:
CD

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift)

Methodology:
Flow Cytometry

Remarks:
Unacceptable conditions - Refrigerated sample received. Sample > 48 hours old when received.

Collect:
PF - FLUID

Sample Type:
BAL - Bronchoalveolar Lavage

Preferred Volume:
10 mL lavage

Minimum Volume:
5 mL lavage (cell count affects the success of the test. Please provide 10 mL sample whenever possible)

Unacceptable Conditions:
Refrigerated sample. Sample > 48 hours old.

Specimen Preparation:
Store at room temperature and transport to China Basin. DO NOT refrigerate.

Units:
%

Synonyms:

- CD3
- CD4
- CD19
- CD56
- T cells
- B cells
- NK cells
- CD4/CD8 ratio
- H/S ratio
- helper/suppressor ratio
- cytotoxic T cells
- suppressor T cells
- T cell markers
- B cell markers
- T and B cells
- T4/T8 ratio
- flow cytometry
- Lavage
- BAL

Storage/Transport Temperature:
Room Temperature

Stability (from collection to initiation):
48 hr.

Reported:
2-3 days

CPT Codes:
86360, 86359, 86357, 86355, 85025

LOINC Codes:
97594-6, 97595-3, 97596-1, 97599-5

Lymphocyte subsets, T/B/NK-cell quantitation for Peripheral Blood

TBNK

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday - Saturday (day shift)

Methodology:
Flow Cytometry

Reported:
2-3 days

Additional Information:
Absolute counts are enumerated from an internal bead standard. CBC data is not required. CD4 results are automatically forwarded to California public health per regulations. However, this does not absolve the ordering provider from any additional reporting if such is required.

Synonyms:

- CD3
- CD4
- CD8
- CD19
- CD16+56
- T cells
- B cells
- NK cells
- CD4/CD8 ratio
- H/S ratio
- helper/suppressor ratio
- cytotoxic T cells
- suppressor T cells
- absolute T cell count
- T cell markers
- T subsets
- B cell markers
- T&B cells
- T & B cells
- T and B cells
- T4/T8 ratio
- flow cytometry
- TBNK

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top

Amount to Collect:
3 mL blood

Preferred Volume:
3 mL blood

Storage/Transport Temperature:
Room Temperature

Unacceptable Conditions:
Refrigerated sample received. Sample > 48 hours old when received. Reject hemolyzed samples.

PROCESSING

Test Code:
TBNK

Test Group:
CD

Performing Lab:
Immunology

Specimen Preparation:
DO NOT refrigerate, store at room temperature and ship to China Basin.

Preferred Volume:
3 mL blood

Unacceptable Conditions:
Refrigerated sample received. Sample > 48 hours old when received. Reject hemolyzed samples.

Storage/Transport Temperature:
Room Temperature

RESULT INTERPRETATION

Units:
% and x10^6 cells/L

Reference Interval:

Subset	Percentage	Absolute
CD3 (T) Cells	57-83%	827-2547 x106 cells/L
CD4 (helper-inducer) T Cells	32-63%	488-1711 x106 cells/L
CD8 (cytotoxic-suppressor) T Cells	9-39%	154-1097 x106 cells/L
CD19 (B) Cells	5-23%	60-551 x106 cells/L
CD16+CD56+ Natural Killer (NK) cells	5-30%	102-617 x106 cells/L

CD4 / CD8 (Helper/Supressor) ratio: 0.7-3.9

Note: Reference values are for >= 18 year olds. For pediatric ranges please see:

Kotylo, PA, et al. 1993. Reference ranges for Lymphocyte Subsets in Pediatric Patients. Am. J. Clin. Pathol 100:111-115

Lin, S-C., et al. 1998. Age-Related Changes in Blood Lymphocytes of Chinese Children. Ped. Allergy Immunol. 9:215-220

Melaranci, C., et al. 1992. T. Cell Subpopulations in Pediatric Healthy Children: age-normal values. J. Clin. Lab. Immunol. 30:143-149

Tosato, F., et al. 2015. Lymphocytes Subset Reference Values in Childhood. Cytometry Part A. 87A:81-85.

Additional Information:
Absolute counts are enumerated from an internal bead standard. CBC data is not required. CD4 results are automatically forwarded to California public health per regulations. However, this does not absolve the ordering provider from any additional reporting if such is required.

ADMINISTRATIVE

LOINC Codes:
80721-4

COMPLETE VIEW

Available Stat:
No

Test Code:
TBNK

Test Group:
CD

Performing Lab:
Immunology

Performed:
Monday - Saturday (day shift)

Methodology:
Flow Cytometry

Collect:
Lavender top

Amount to Collect:
3 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
3 mL blood

Unacceptable Conditions:
Refrigerated sample received. Sample > 48 hours old when received. Reject hemolyzed samples.

Specimen Preparation:
DO NOT refrigerate, store at room temperature and ship to China Basin.

Units:
% and x10^6 cells/L

Reference Interval:

Subset	Percentage	Absolute
CD3 (T) Cells	57-83%	827-2547 x106 cells/L
CD4 (helper-inducer) T Cells	32-63%	488-1711 x106 cells/L
CD8 (cytotoxic-suppressor) T Cells	9-39%	154-1097 x106 cells/L
CD19 (B) Cells	5-23%	60-551 x106 cells/L
CD16+CD56+ Natural Killer (NK) cells	5-30%	102-617 x106 cells/L

CD4 / CD8 (Helper/Supressor) ratio: 0.7-3.9

Note: Reference values are for >= 18 year olds. For pediatric ranges please see:

Kotylo, PA, et al. 1993. Reference ranges for Lymphocyte Subsets in Pediatric Patients. Am. J. Clin. Pathol 100:111-115

Lin, S-C., et al. 1998. Age-Related Changes in Blood Lymphocytes of Chinese Children. Ped. Allergy Immunol. 9:215-220

Melaranci, C., et al. 1992. T. Cell Subpopulations in Pediatric Healthy Children: age-normal values. J. Clin. Lab. Immunol. 30:143-149

Tosato, F., et al. 2015. Lymphocytes Subset Reference Values in Childhood. Cytometry Part A. 87A:81-85.

Synonyms:

- CD3
- CD4
- CD8
- CD19
- CD16+56
- T cells
- B cells
- NK cells
- CD4/CD8 ratio
- H/S ratio
- helper/suppressor ratio
- cytotoxic T cells
- suppressor T cells
- absolute T cell count
- T cell markers
- T subsets
- B cell markers
- T&B cells
- T & B cells
- T and B cells
- T4/T8 ratio
- flow cytometry
- TBNK

Storage/Transport Temperature:
Room Temperature

Reported:
2-3 days

Additional Information:
Absolute counts are enumerated from an internal bead standard. CBC data is not required. CD4 results are automatically forwarded to California public health per regulations. However, this does not absolve the ordering provider from any additional reporting if such is required.

LOINC Codes:
80721-4

Lymphocyte T-cell subsets, Naive and Memory

RARO

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift). Samples must arrive in hospital lab by 11am to get onto latest 11:45am courier.

Methodology:
Flow cytometry

Reported:
2-3 days

Additional Information:
T-cell subsets (CD3/CD4/CD8 Test code:THS) or Lymphocyte subsets (T/B/NK-cell Test code: TBNK) MUST be ordered together with this test in order to calculate absolute cell counts.

Reflex Testing:
If none is ordered on the same sample, lab will automatically order Lymphocyte subsets (T/B/NK-cell which will be charged separately.

Synonyms:

- CD45RO
- CD45RA
- CD45RA/RO
- CD45RA/CD45RO
- flow cytometry

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top

Amount to Collect:
3 ml blood

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood

Remarks:
Collect only Monday - Friday. Do not draw samples for this test on weekends and UCSF observed holidays. Samples drawn on Friday and the day before holidays must be received in the hospital lab by 11am (to get onto latest 11:45am courier) or they cannot be processed.

Stability (from collection to initiation):
Room temperature 48 hrs

Unacceptable Conditions:
Refrigerated sample. Sample > 48 hours old.

PROCESSING

Test Code:
RARO

Test Group:
CD

Performing Lab:
Immunology

Specimen Preparation:
DO NOT refrigerate, store at room temperature and ship to China Basin.

Order TBNK on a sample collected within 24 hours of RARO sample, if not already ordered on the same sample.

Samples received on weekends and UCSF holidays will not be processed or saved. Samples received on Fridays or on the day before holiday must be received in hospital lab by 11am (to get onto latest 11:45am courier) or it cannot be processed or saved.

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood

Unacceptable Conditions:
Refrigerated sample. Sample > 48 hours old.

Stability (from collection to initiation):
Room temperature 48 hrs

RESULT INTERPRETATION

Units:
% and $x10^6$cells/L

Reference Interval:
>= 18 year olds:

Subset	Percentage	Absolute
CD4+ CD45 RA+	3-59% of CD4 T cells of CD4 T-cells	48-632 $x10^6$cells/L
CD4+ CD45 RO+	31-76% of CD4 T cells	220-833 $x10^6$cells/L
CD8+ CD45 RA+	15-75% of CD8 T cells	27-457 $x10^6$cells/L
CD8+ CD45 RO+	11-65% of CD8 T cells	48-400 $x10^6$cells/L

For pediatric ranges please see following ranges established by Mayo Clinic - Department of Laboratory Medicine and Pathology; Rochester, MN 55905 (Laboratory Test Abstract Form - F 006284)

Pediatric:

CD4+ CD45 RA+	21-75% of CD4 T cells	138-893 $x10^6$cells/L
CD4+ CD45 RO+	11-44% of CD4 T cells	56-411 $x10^6$cells/L
CD8+ CD45 RA+	23-88% of CD8 T cells	83-653 $x10^6$cells/L
CD8+ CD45 RO+	2-26% of CD8 T cells	10-142 $x10^6$cells/L

Additional Information:
T-cell subsets (CD3/CD4/CD8 Test code:THS) or Lymphocyte subsets (T/B/NK-cell Test code: TBNK) MUST be ordered together with this test in order to calculate absolute cell counts.

ADMINISTRATIVE

CPT Codes:
88184; 88185 x 5

LDT or Modified FDA:
Yes

LOINC Codes:
20631-8

COMPLETE VIEW

Available Stat:
No

Test Code:
RARO

Test Group:
CD

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift). Samples must arrive in hospital lab by 11am to get onto latest 11:45am courier.

Methodology:
Flow cytometry

Remarks:
Collect only Monday - Friday. Do not draw samples for this test on weekends and UCSF observed holidays. Samples drawn on Friday and the day before holidays must be received in the hospital lab by 11am (to get onto latest 11:45am courier) or they cannot be processed.

Collect:
Lavender top

Amount to Collect:
3 ml blood

Sample Type:
EDTA whole blood

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood

Unacceptable Conditions:
Refrigerated sample. Sample > 48 hours old.

Specimen Preparation:
DO NOT refrigerate, store at room temperature and ship to China Basin.

Order TBNK on a sample collected within 24 hours of RARO sample, if not already ordered on the same sample.

Samples received on weekends and UCSF holidays will not be processed or saved. Samples received on Fridays or on the day before holiday must be received in hospital lab by 11am (to get onto latest 11:45am courier) or it cannot be processed or saved.

Units:
% and x10^6cells/L

Reference Interval:
>= 18 year olds:

Subset	Percentage	Absolute
CD4+ CD45 RA+	3-59% of CD4 T cells of CD4 T-cells	48-632 x10^6cells/L
CD4+ CD45 RO+	31-76% of CD4 T cells	220-833 x10^6cells/L
CD8+ CD45 RA+	15-75% of CD8 T cells	27-457 x10^6cells/L
CD8+ CD45 RO+	11-65% of CD8 T cells	48-400 x10^6cells/L

For pediatric ranges please see following ranges established by Mayo Clinic - Department of Laboratory Medicine and Pathology; Rochester, MN 55905 (Laboratory Test Abstract Form - F 006284)

Pediatric:

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CD4+ CD45 RO+	11-44% of CD4 T cells	56-411 x10^6cells/L
CD8+ CD45 RA+	23-88% of CD8 T cells	83-653 x10^6cells/L
CD8+ CD45 RO+	2-26% of CD8 T cells	10-142 x10^6cells/L

Synonyms:

- CD45RO
- CD45RA
- CD45RA/RO
- CD45RA/CD45RO
- flow cytometry

Stability (from collection to initiation):
Room temperature 48 hrs

Reported:
2-3 days

Reflex Testing:
If none is ordered on the same sample, lab will automatically order Lymphocyte subsets (T/B/NK-cell which will be charged separately.

Additional Information:

T-cell subsets (CD3/CD4/CD8 Test code:THS) or Lymphocyte subsets (T/B/NK-cell Test code: TBNK) MUST be ordered together with this test in order to calculate absolute cell counts.

CPT Codes:

88184; 88185 x 5

LDT or Modified FDA:

Yes

LOINC Codes:

20631-8

Lymphocytic Choriomeningitis (LCM) Virus Antibodies, IgG & IgM

LCMVS

ORDERING

Ordering Recommendations:
Aid in the diagnosis of lymphocytic choriomeningitis (LCM) viral infection.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Tue, Fri

Methodology:
Semi-Quantitative Indirect Fluorescent Antibody

Reported:
1-5 days

Synonyms:

- LCM Antibodies, Serum

COLLECTION

Collect:
Serum separator tube.

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Contaminated, hemolyzed, or severely lipemic specimens.

PROCESSING

Test Code:
LCMVS

ARUP Test Code:
2001635

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate serum from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min 0.2 mL) Parallel testing is preferred and convalescent specimens must be received within 30 days from receipt of the acute specimens. Mark specimens plainly as "acute" or "convalescent."

Unacceptable Conditions:
Contaminated, hemolyzed, or severely lipemic specimens.

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:

Components	Reference Interval
LCM Virus Ab, IgG	Less than 1:10
LCM Virus Ab, IgM	Less than 1:10

Interpretive Data:

The best evidence for current infection is a significant change on two appropriately timed specimens, where both tests are done in the same laboratory at the same time.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Component	Interpretation
Lymphocytic Choriomeningitis (LCM) Virus Antibody, IgG	< 1:10 Negative - No significant level of LCM virus IgG antibody detected. >= 1:10 Positive - Presence of IgG antibody to LCM virus detected, suggestive of current or past infection.
Lymphocytic Choriomeningitis (LCM) Virus Antibody, IgM	< 1:10 Negative - No significant level of LCM virus IgM antibody detected. >= 1:10 Positive - Presence of IgM antibody to LCM virus detected, suggestive of current or past infection.

ADMINISTRATIVE

CPT Codes:

86727 x2

LOINC:

- 9765-9
- 9767-5

COMPLETE VIEW

Available Stat:

No

Ordering Recommendations:

Aid in the diagnosis of lymphocytic choriomeningitis (LCM) viral infection.

Test Code:

LCMVS

ARUP Test Code:

2001635

Performing Lab:

ARUP

Sendout:

Yes

Performed:

Tue, Fri

Methodology:

Semi-Quantitative Indirect Fluorescent Antibody

Collect:

Serum separator tube.

Unacceptable Conditions:

Contaminated, hemolyzed, or severely lipemic specimens.

Specimen Preparation:

Separate serum from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min 0.2 mL) Parallel testing is preferred and convalescent specimens must be received within 30 days from receipt of the acute specimens. Mark specimens plainly as "acute" or "convalescent."

Reference Interval:

Components	Reference Interval
LCM Virus Ab, IgG	Less than 1:10
LCM Virus Ab, IgM	Less than 1:10

Interpretive Data:

The best evidence for current infection is a significant change on two appropriately timed specimens, where both tests are done in the same laboratory at the same time.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Component	Interpretation
Lymphocytic Choriomeningitis (LCM) Virus Antibody, IgG	< 1:10 Negative - No significant level of LCM virus IgG antibody detected. >= 1:10 Positive - Presence of IgG antibody to LCM virus detected, suggestive of current or past infection.
Lymphocytic Choriomeningitis (LCM) Virus Antibody, IgM	< 1:10 Negative - No significant level of LCM virus IgM antibody detected. >= 1:10 Positive - Presence of IgM antibody to LCM virus detected, suggestive of current or past infection.

Synonyms:

- LCM Antibodies, Serum

Storage/Transport Temperature:

Refrigerated.

Stability (from collection to initiation):

After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

Reported:

1-5 days

CPT Codes:

86727 x2

LOINC:

- 9765-9
- 9767-5

Lymphocytic Choriomeningitis (LCM) Virus Antibodies, IgG & IgM, CSF

LCMVC

ORDERING

Ordering Recommendations:
Aid in the diagnosis of lymphocytic choriomeningitis (LCM) viral infection in CNS.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Tue, Fri

Methodology:
Semi-Quantitative Indirect Fluorescent Antibody

Reported:
1-5 days

Synonyms:

- LCM Antibodies, CSF

COLLECTION

Collect:
CSF.

Stability (from collection to initiation):
Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Contaminated, hemolyzed, or heat-inactivated specimens.

PROCESSING

Test Code:
LCMVC

ARUP Test Code:
2001628

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transfer 1 mL CSF to an ARUP Standard Transport Tube. (Min 0.2 mL)

Unacceptable Conditions:
Contaminated, hemolyzed, or heat-inactivated specimens.

Stability (from collection to initiation):
Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:

Components	Reference Interval
LCM Virus Ab, IgG, CSF	Less than 1:1
LCM Virus Ab, IgM, CSF	Less than 1:1

Interpretive Data:

The best evidence for current infection is a significant change on two appropriately timed specimens, where both tests are done in the same laboratory at the same time.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Component	Interpretation
Lymphocytic Choriomeningitis (LCM) Virus Antibody, IgG, CSF	< 1:1 Negative - No significant level of LCM virus IgG antibody detected. >=1:1 Positive - Presence of IgG antibody to LCM virus detected, suggestive of current or past infection.
Lymphocytic Choriomeningitis (LCM) Virus Antibody, IgM, CSF	< 1:1 Negative - No significant level of LCM virus IgM antibody detected. >=1:1 Positive - Presence of IgM antibody to LCM virus detected, suggestive of current or past infection.

ADMINISTRATIVE

CPT Codes:

86727 x2

LOINC:

- 9768-3
- 9766-7

COMPLETE VIEW

Available Stat:

No

Ordering Recommendations:

Aid in the diagnosis of lymphocytic choriomeningitis (LCM) viral infection in CNS.

Test Code:

LCMVC

ARUP Test Code:

2001628

Performing Lab:

ARUP

Sendout:

Yes

Performed:

Tue, Fri

Methodology:

Semi-Quantitative Indirect Fluorescent Antibody

Collect:

CSF.

Unacceptable Conditions:

Contaminated, hemolyzed, or heat-inactivated specimens.

Specimen Preparation:

Transfer 1 mL CSF to an ARUP Standard Transport Tube. (Min 0.2 mL)

Reference Interval:

Components	Reference Interval
LCM Virus Ab, IgG, CSF	Less than 1:1
LCM Virus Ab, IgM, CSF	Less than 1:1

Interpretive Data:

The best evidence for current infection is a significant change on two appropriately timed specimens, where both tests are done in the same laboratory at the same time.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Component	Interpretation
Lymphocytic Choriomeningitis (LCM) Virus Antibody, IgG, CSF	< 1:1 Negative - No significant level of LCM virus IgG antibody detected. >=1:1 Positive - Presence of IgG antibody to LCM virus detected, suggestive of current or past infection.
Lymphocytic Choriomeningitis (LCM) Virus Antibody, IgM, CSF	< 1:1 Negative - No significant level of LCM virus IgM antibody detected. >=1:1 Positive - Presence of IgM antibody to LCM virus detected, suggestive of current or past infection.

Synonyms:

- LCM Antibodies, CSF

Storage/Transport Temperature:

Refrigerated.

Stability (from collection to initiation):

Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

Reported:

1-5 days

CPT Codes:

86727 x2

LOINC:

- 9768-3
- 9766-7

Lymphogranuloma venereum Antibody Panel

LGV

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Micro-indirect fluorescence

Reported:
5-7 days

Additional Information:
Lymphogranuloma venereum (LGV) is a clinical syndrome caused by infection with serovars L1, L2, or L3 of C. trachomatis. Due to the highly crossreactive nature of the C. trachomatis (L2) antigen used in this panel, antibodies induced by infection with C. trachomatis (D-K) or other chlamydial species often show strong L2 reactivity. Thus, detection of L2-reactive antibodies does not necessarily indicate infection with LGV serovars of C. trachomatis. Results for the whole Chlamydia antibody panel should be considered in conjunction with clinical findings to establish the diagnosis.

Includes:
C. pneumoniae IgA, C. psittaci IgA, C. trachomatis (L2) IgA, C. trachomatis (D-K) IgA, C. pneumoniae IgG,C. trachomatis (L2) IgG, C. psittaci IgG, C. trachomatis (D-K) IgG, C. trachomatis (D-K) IgM, C. pneumoniae IgM, C. psittaci IgM, C. trachomatis (L2) IgM

Synonyms:

- LGV

COLLECTION

Sample Type:
Serum

Collect:
Red top or Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen 1 month

PROCESSING

Test Code:
LGV

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Spin and freeze aliquot at -20C. Ship to CB.

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen 1 month

RESULT INTERPRETATION

Units:
Titer

Reference Interval:
IgG: <1:64
IgA: <1:16
IgM: <1:10

Additional Information:
Lymphogranuloma venereum (LGV) is a clinical syndrome caused by infection with serovars L1, L2, or L3 of C. trachomatis. Due to the highly crossreactive nature of the C. trachomatis (L2) antigen used in this panel, antibodies induced by infection with C. trachomatis (D-K) or other chlamydial species often show strong L2 reactivity. Thus, detection of L2-reactive antibodies does not necessarily indicate infection with LGV serovars of C. trachomatis. Results for the whole Chlamydia antibody panel should be considered in conjunction with clinical findings to establish the diagnosis.

Includes:
C. pneumoniae IgA, C. psittaci IgA, C. trachomatis (L2) IgA, C. trachomatis (D-K) IgA, C. pneumoniae IgG,C. trachomatis (L2) IgG, C. psittaci IgG, C. trachomatis (D-K) IgG, C. trachomatis (D-K) IgM, C. pneumoniae IgM, C. psittaci IgM, C. trachomatis (L2) IgM

ADMINISTRATIVE

CPT Codes:
86632-90 x4, 86631-90 x8

COMPLETE VIEW

Available Stat:
No

Test Code:
LGV

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Micro-indirect fluorescence

Collect:
Red top or Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Specimen Preparation:
Spin and freeze aliquot at -20C. Ship to CB.

Units:
Titer

Reference Interval:
IgG: <1:64
IgA: <1:16
IgM: <1:10

Synonyms:

- LGV

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen 1 month

Reported:
5-7 days

Additional Information:

Lymphogranuloma venereum (LGV) is a clinical syndrome caused by infection with serovars L1, L2, or L3 of C. trachomatis. Due to the highly crossreactive nature of the C. trachomatis (L2) antigen used in this panel, antibodies induced by infection with C. trachomatis (D-K) or other chlamydial species often show strong L2 reactivity. Thus, detection of L2-reactive antibodies does not necessarily indicate infection with LGV serovars of C. trachomatis. Results for the whole Chlamydia antibody panel should be considered in conjunction with clinical findings to establish the diagnosis.

Includes:
C. pneumoniae IgA, C. psittaci IgA, C. trachomatis (L2) IgA, C. trachomatis (D-K) IgA, C. pneumoniae IgG,C. trachomatis (L2) IgG, C. psittaci IgG, C. trachomatis (D-K) IgG, C. trachomatis (D-K) IgM, C. pneumoniae IgM, C. psittaci IgM, C. trachomatis (L2) IgM

CPT Codes:

86632-90 x4, 86631-90 x8

Lysosomal Acid Lipase Activity, Dried Blood Spot

LALA

ORDERING

Available Stat:
No

Performing Lab:
ARUP

Performed:
Tue

Methodology:
Quantitative Fluorometry

Reported:
3-10 days

Synonyms:

- CESD
- Cholesterol Ester Storage Disease
- LAL deficiency
- LIPA deficiency
- Lysosomal acid lipase deficiency
- Wolman Disease

COLLECTION

Collect:
Dried Blood Spot (DBS): Whatman 903 Protein Saver Card (filter paper).
Whole blood: Yellow (ACD solution A). Also Acceptable: Lavender (K2EDTA), lavender (K3EDTA) or green (sodium heparin).

Remarks:
Additional information is required: Clinical indication for testing.

Stability (from collection to initiation):
DBS: Ambient: 1 week; Refrigerated: 1 week; Frozen: 1 month
Whole Blood: Ambient: 3 days; Refrigerated: 3days; Frozen: Unacceptable

Storage/Transport Temperature:
DBS: Room temperature. Also acceptable: Refrigerated.
Whole Blood: Refrigerated. Also acceptable: Room temperature.

Unacceptable Conditions:
DBS: Samples transported before blood is dried. Blood not soaked through to the back of the filter paper card. Heavily saturated, clotted, or double-spotted samples. Samples with evidence of milking or squeezing the puncture site or of contamination by alcohol or other liquids.

PROCESSING

Test Code:
LALA

ARUP Test Code:
2012266

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
DBS: Whole blood collected on filter paper by direct puncture and dried.
Whole blood collected by venipuncture in yellow (ACD solution A) or lavender (K2EDTA), lavender (K3EDTA) or green (sodium heparin) and then spotted on filter paper and dried.
Allow blood to completely air dry before transporting for a minimum of 4 hours to overnight. Two circles of whole blood. (Min: 1 circle)
Whole Blood: Transport 1 mL whole blood. (Min: 0.5 mL)

Unacceptable Conditions:
DBS: Samples transported before blood is dried. Blood not soaked through to the back of the filter paper card. Heavily saturated, clotted, or double-spotted samples. Samples with evidence of milking or squeezing the puncture site or of contamination by alcohol or other liquids.

Stability (from collection to initiation):
DBS: Ambient: 1 week; Refrigerated: 1 week; Frozen: 1 month
Whole Blood: Ambient: 3 days; Refrigerated: 3days; Frozen: Unacceptable

Storage/Transport Temperature:
DBS: Room temperature. Also acceptable: Refrigerated.
Whole Blood: Refrigerated. Also acceptable: Room temperature.

RESULT INTERPRETATION

Reference Interval:
0.50 - 2.30 nmol hydrolyzed/hr/DBS punch

Interpretive Data:
Refer to report.

ADMINISTRATIVE

CPT Codes:
82657

LOINC:

- 48767-8
- 73958-1

COMPLETE VIEW

Available Stat:
No

Test Code:
LALA

ARUP Test Code:
2012266

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Tue

Methodology:
Quantitative Fluorometry

Remarks:
Additional information is required: Clinical indication for testing.

Collect:
Dried Blood Spot (DBS): Whatman 903 Protein Saver Card (filter paper).
Whole blood: Yellow (ACD solution A). Also Acceptable: Lavender (K2EDTA), lavender (K3EDTA) or green (sodium heparin).

Unacceptable Conditions:
DBS: Samples transported before blood is dried. Blood not soaked through to the back of the filter paper card. Heavily saturated, clotted, or double-spotted samples. Samples with evidence of milking or squeezing the puncture site or of contamination by alcohol or other liquids.

Specimen Preparation:
DBS: Whole blood collected on filter paper by direct puncture and dried.
Whole blood collected by venipuncture in yellow (ACD solution A) or lavender (K2EDTA), lavender (K3EDTA) or green (sodium heparin) and then spotted on filter paper and dried.
Allow blood to completely air dry before transporting for a minimum of 4 hours to overnight. Two circles of whole blood. (Min: 1 circle)
Whole Blood: Transport 1 mL whole blood. (Min: 0.5 mL)

Reference Interval:
0.50 - 2.30 nmol hydrolyzed/hr/DBS punch

Interpretive Data:
Refer to report.

Synonyms:

- CESD
- Cholesterol Ester Storage Disease
- LAL deficiency
- LIPA deficiency
- Lysosomal acid lipase deficiency
- Wolman Disease

Storage/Transport Temperature:
DBS: Room temperature. Also acceptable: Refrigerated.
Whole Blood: Refrigerated. Also acceptable: Room temperature.

Stability (from collection to initiation):
DBS: Ambient: 1 week; Refrigerated: 1 week; Frozen: 1 month
Whole Blood: Ambient: 3 days; Refrigerated: 3days; Frozen: Unacceptable

Reported:
3-10 days

CPT Codes:
82657

LOINC:

- 48767-8
- 73958-1

Lysosomal Disease Screen

LYDX

ORDERING

Available Stat:
No

Performing Lab:
Jefferson Medical College

Reported:
Test performed Thursday. Turnaround time: 10 days.

Additional Information:
A detailed clinical history must accompany the test request or be sent by fax: (215)955-7560. Click here to obtain the history form.

In addition to this diagnostic screen, carrier identification and prenatal testing for many disorders is also available.

Reflex Testing:
Additional assays for confirmatory testing may be run and charged separately.

Synonyms:

- Alpha-iduronidase
- Multiple sulfatase deficiency
- Sulfatase deficiency,multiple
- Mucolipidosis Screen

Supplemental Test Request Form Required:
Yes

COLLECTION

Sample Type:
Heparinized whole blood

Collect:
Dark Green top

Amount to Collect:
10 mL blood

Preferred Volume:
10 mL blood

Minimum Volume:
3 mL blood

Remarks:
Keep sample at room temperature.

A detailed clinical history must accompany the test request or be sent by fax: (215)955-7560. Click here to obtain the history form.

Sample must arrive at Jefferson Medical College within 24 hours of collection, therefore collect Monday-Thursday noon only.

Unacceptable Conditions:
Samples collected outside of stated time frames

PROCESSING

Test Code:
LYDX

Sendout:
Yes

Performing Lab:
Jefferson Medical College

Specimen Preparation:
Keep at room temperature-do NOT centrifuge or refrigerate.

Ship with clinical history by Federal Express, Monday-Thursday only, to: Dr. David A. Wenger, Jefferson Medical College, Jefferson Alumni Hall, Rm. 346, 1020 Locust St., Philadelphia, PA 19107 ph: (215) 955-4923, fax (215) 955-9554, e-mail: david.wenger@mail.tju.edu

Preferred Volume:
10 mL blood

Minimum Volume:
3 mL blood

Unacceptable Conditions:
Samples collected outside of stated time frames

RESULT INTERPRETATION

Additional Information:
A detailed clinical history must accompany the test request or be sent by fax: (215)955-7560. Click here to obtain the history form.

In addition to this diagnostic screen, carrier identification and prenatal testing for many disorders is also available.

ADMINISTRATIVE

CPT Codes:
82657-90

LOINC Codes:
48311-5

COMPLETE VIEW

Available Stat:
No

Test Code:
LYDX

Performing Lab:
Jefferson Medical College

Sendout:
Yes

Remarks:
Keep sample at room temperature.

A detailed clinical history must accompany the test request or be sent by fax: (215)955-7560. Click here to obtain the history form.

Sample must arrive at Jefferson Medical College within 24 hours of collection, therefore collect Monday-Thursday noon only.

Collect:
Dark Green top

Amount to Collect:
10 mL blood

Sample Type:
Heparinized whole blood

Preferred Volume:
10 mL blood

Minimum Volume:
3 mL blood

Unacceptable Conditions:
Samples collected outside of stated time frames

Specimen Preparation:
Keep at room temperature-do NOT centrifuge or refrigerate.

Ship with clinical history by Federal Express, Monday-Thursday only, to: Dr. David A. Wenger, Jefferson Medical College, Jefferson Alumni Hall, Rm. 346, 1020 Locust St., Philadelphia, PA 19107 ph: (215) 955-4923, fax (215) 955-9554, e-mail: david.wenger@mail.tju.edu

Synonyms:

- Alpha-iduronidase
- Multiple sulfatase deficiency
- Sulfatase deficiency,multiple
- Mucolipidosis Screen

Reported:
Test performed Thursday. Turnaround time: 10 days.

Reflex Testing:
Additional assays for confirmatory testing may be run and charged separately.

Additional Information:
A detailed clinical history must accompany the test request or be sent by fax: (215)955-7560. Click here to obtain the history form.

In addition to this diagnostic screen, carrier identification and prenatal testing for many disorders is also available.

CPT Codes:
82657-90

LOINC Codes:
48311-5

Supplemental Test Request Form Required:
Yes

Lysozyme, serum

LYSO

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Turbidimetric

Reported:
Test performed Monday-Wednesday-Friday. Turnaround time: 2-3 days.

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature 1 day, refrigerated 15 days, frozen at -20C 18 days.

PROCESSING

Test Code:
LYSO

Test Group:
Lysozyme

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze at -20C. Order Quest # 25890P.

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature 1 day, refrigerated 15 days, frozen at -20C 18 days.

RESULT INTERPRETATION

Units:
µg/mL (mcg/mL)

Reference Interval:
5.0 - 11.0 µg/mL

ADMINISTRATIVE

CPT Codes:
85549-90

LOINC Codes:
2589-0

COMPLETE VIEW

Available Stat:
No

Test Code:
LYSO

Test Group:
Lysozyme

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Turbidimetric

Collect:
Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Specimen Preparation:
Freeze at -20C. Order Quest # 25890P.

Units:
µg/mL (mcg/mL)

Reference Interval:
5.0 - 11.0 µg/mL

Stability (from collection to initiation):
Room temperature 1 day, refrigerated 15 days, frozen at -20C 18 days.

Reported:
Test performed Monday-Wednesday-Friday. Turnaround time: 2-3 days.

CPT Codes:
85549-90

LOINC Codes:
2589-0

Lysozyme, urine

MOLT

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Immunodiffusion

Reported:
Test performed Monday-Wednesday-Friday. Turnaround time: 2-5 days.

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
See preferred volume

Preferred Volume:
1 mL urine

Minimum Volume:
0.2 mL urine

PROCESSING

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Test Group:
Lysozyme

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze at -20C. Order Quest # 109710P

Preferred Volume:
1 mL urine

Minimum Volume:
0.2 mL urine

RESULT INTERPRETATION

Units:
mg/L

Reference Interval:
< 4.0 mg/L

ADMINISTRATIVE

CPT Codes:
85549-90

COMPLETE VIEW

Available Stat:
No

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Test Group:
Lysozyme

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Immunodiffusion

Collect:
Urine cup

Amount to Collect:
See preferred volume

Sample Type:
Random urine

Preferred Volume:
1 mL urine

Minimum Volume:
0.2 mL urine

Specimen Preparation:
Freeze at -20C. Order Quest # 109710P

Units:
mg/L

Reference Interval:
< 4.0 mg/L

Reported:
Test performed Monday-Wednesday-Friday. Turnaround time: 2-5 days.

CPT Codes:
85549-90

Macroprolactin

MACPRO

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Immunoassay & PEG precipitation

Reported:
7-10 days

Additional Information:
For some patients the level of Prolactin measured by immunoassay may be inaccurate with respect to the level of monomeric, biologically active Prolactin. The Macroprolactin by PEG Precipitation test can help to identify if a patient sample has elevated Prolactin due to mostly inactive protein-bound Prolactin (Macroprolactin).

Synonyms:

- prolactin monomeric
- monomeric prolactin

COLLECTION

Patient Preparation:
Fasting recommended but not required

Sample Type:
Serum

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.4 mL serum

Stability (from collection to initiation):
Room temperature or refrigerated 1 week, frozen 6 months

Unacceptable Conditions:
Plasma samples, hemolyzed samples

Rejection Criteria:
Plasma samples, hemolyzed samples

PROCESSING

Test Code:
MACPRO

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot and freeze serum. Transport to CB frozen. Order Quest code 16122

Preferred Volume:
1 mL serum

Minimum Volume:
0.4 mL serum

Unacceptable Conditions:
Plasma samples, hemolyzed samples

Rejection Criteria:
Plasma samples, hemolyzed samples

Stability (from collection to initiation):
Room temperature or refrigerated 1 week, frozen 6 months

RESULT INTERPRETATION

Units:
ng/mL

Additional Information:
For some patients the level of Prolactin measured by immunoassay may be inaccurate with respect to the level of monomeric, biologically active Prolactin. The Macroprolactin by PEG Precipitation test can help to identify if a patient sample has elevated Prolactin due to mostly inactive protein-bound Prolactin (Macroprolactin).

ADMINISTRATIVE

CPT Codes:
84146-90 x2

COMPLETE VIEW

Available Stat:
No

Test Code:
MACPRO

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Immunoassay & PEG precipitation

Patient Preparation:
Fasting recommended but not required

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.4 mL serum

Rejection Criteria:
Plasma samples, hemolyzed samples

Unacceptable Conditions:
Plasma samples, hemolyzed samples

Specimen Preparation:
Aliquot and freeze serum. Transport to CB frozen. Order Quest code 16122

Units:
ng/mL

Synonyms:

- prolactin monomeric
- monomeric prolactin

Stability (from collection to initiation):
Room temperature or refrigerated 1 week, frozen 6 months

Reported:
7-10 days

Additional Information:
For some patients the level of Prolactin measured by immunoassay may be inaccurate with respect to the level of monomeric, biologically active Prolactin. The Macroprolactin by PEG Precipitation test can help to identify if a patient sample has elevated Prolactin due to mostly inactive protein-bound Prolactin (Macroprolactin).

CPT Codes:
84146-90 x2

Magnesium, 24 hour urine

MGU

ORDERING

Available Stat:
No

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 7 days per week from 8:00 AM to midnight only.

Methodology:
Enzymatic using isocitrate dehydrogenase

Reported:
Test run 2x daily. Results available at 1400 & 2000

Additional Information:
Output varies with the diet.

To convert mg/d to mmol/d (SI units) or to mmol/L multiply by x 0.411.

Synonyms:

- Mg

COLLECTION

Sample Type:
24 hour urine collection

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container, 30mL 6N HCL, 10g Boric Acid

Amount to Collect:
Entire 24 hour urine output.

Preferred Volume:
2 mL urine

Minimum Volume:
1 mL urine

Remarks:
Keep container refrigerated during collection. Indicate hours of collection on requisition.

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 3 days, frozen at -20C 1 year
Acidify to pH < 2 prior to storage

PROCESSING

Test Code:
MGU

Test Group:
Magnesium

Performing Lab:
Parnassus & Mission Bay Chemistry

Specimen Preparation:
Sample can be collected in a preservative free container. Following collection in a preservative free container, mix well, measure 24-hour urine volume, aliquot 2 mL and add 1 drop of 6N HCl to acidify.

Preferred Volume:
2 mL urine

Minimum Volume:
1 mL urine

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 3 days, frozen at -20C 1 year
Acidify to pH < 2 prior to storage

RESULT INTERPRETATION

Units:
mg/D

Reference Interval:
73-122 mg/D

See Additional information.

Additional Information:
Output varies with the diet.

To convert mg/d to mmol/d (SI units) or to mmol/L multiply by x 0.411.

ADMINISTRATIVE

CPT Codes:
83735

COMPLETE VIEW

Available Stat:
No

Test Code:
MGU

Test Group:
Magnesium

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 7 days per week from 8:00 AM to midnight only.

Methodology:
Enzymatic using isocitrate dehydrogenase

Remarks:
Keep container refrigerated during collection. Indicate hours of collection on requisition.

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container, 30mL 6N HCL, 10g Boric Acid

Amount to Collect:
Entire 24 hour urine output.

Sample Type:
24 hour urine collection

Preferred Volume:
2 mL urine

Minimum Volume:
1 mL urine

Specimen Preparation:
Sample can be collected in a preservative free container. Following collection in a preservative free container, mix well, measure 24-hour urine volume, aliquot 2 mL and add 1 drop of 6N HCl to acidify.

Units:
mg/D

Reference Interval:
73-122 mg/D

See Additional information.

Synonyms:

- Mg

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 3 days, frozen at -20C 1 year
Acidify to pH < 2 prior to storage

Reported:
Test run 2x daily. Results available at 1400 & 2000

Additional Information:

Output varies with the diet.

To convert mg/d to mmol/d (SI units) or to mmol/L multiply by x 0.411.

CPT Codes:

83735

Magnesium, Plasma / Serum

MG

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Chemistry: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center (Mon-Fri 0800-1630)

Methodology:
Parnassus, Mission Bay & Mt. Zion Chemistry:
Enzymatic using isocitrate dehydrogenase on Abbott Architect
Berkeley Outpatient Center:
Xylidyl blue spectrophotometric method on Roche cobas c311

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by x 0.411.

Severe hemolysis may artifactually increase the result.

Synonyms:

- Mg

COLLECTION

Sample Type:
Plasma or serum

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Parnassus, Mission Bay, Mt. Zion, and Berkeley Outpatient Center
Room temperature 7 days, refrigerated 7 days, frozen at -20C 1 year

PROCESSING

Test Code:
MG

Test Group:
Magnesium

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Parnassus, Mission Bay, Mt. Zion, and Berkeley Outpatient Center
Room temperature 7 days, refrigerated 7 days, frozen at -20C 1 year

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:
Parnassus, Mission Bay & Mt. Zion Chemistry
Age : (Pediatrics) mg/dL
Newborn 2 to <5 days 1.5 - 2.2
5 days to <6 years 1.7 - 2.3
6 years to <12 years 1.7 - 2.1
12 years to 18 years 1.7 - 2.2

Pediatric reference ranges provided by manufacturer of the assay (Abbott) and obtained from Wu AHB. Tietz Clinical Guide to Laboratory Tests, 4th ed. Philadelphia, PA: WB Saunders; 2006: 706-708.

Adult:
>18 years 1.6 - 2.6

Berkeley Outpatient Center

Age	mg/dL
>= 19 years	1.6-2.6

UCSF Clinical Labs at Berkeley Outpatient Center verified the adult reference range (>= 19 years) stated in the Roche MG2 package insert by running 20 male and 20 female lab volunteers.

Critical Values:
<1.0 mg/dL or >4.5 mg/dL

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by x 0.411.

Severe hemolysis may artifactually increase the result.

ADMINISTRATIVE

CPT Codes:
83735

LOINC Codes:
19123-9

COMPLETE VIEW

Available Stat:
Yes

Test Code:
MG

Test Group:
Magnesium

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Chemistry: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center (Mon-Fri 0800-1630)

Methodology:
Parnassus, Mission Bay & Mt. Zion Chemistry:
Enzymatic using isocitrate dehydrogenase on Abbott Architect
Berkeley Outpatient Center:
Xylidyl blue spectrophotometric method on Roche cobas c311

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
1 mL blood

Sample Type:
Plasma or serum

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Units:
mg/dL

Reference Interval:
Parnassus, Mission Bay & Mt. Zion Chemistry
Age : (Pediatrics) mg/dL
Newborn 2 to <5 days 1.5 - 2.2
5 days to <6 years 1.7 - 2.3
6 years to <12 years 1.7 - 2.1
12 years to 18 years 1.7 - 2.2

Pediatric reference ranges provided by manufacturer of the assay (Abbott) and obtained from Wu AHB. Tietz Clinical Guide to Laboratory Tests, 4th ed. Philadelphia, PA: WB Saunders; 2006: 706-708.

Adult:
>18 years 1.6 - 2.6

Berkeley Outpatient Center

Age	mg/dL
>= 19 years	1.6-2.6

UCSF Clinical Labs at Berkeley Outpatient Center verified the adult reference range (>= 19 years) stated in the Roche MG2 package insert by running 20 male and 20 female lab volunteers.

Critical Values:
<1.0 mg/dL or >4.5 mg/dL

Synonyms:

- Mg

Stability (from collection to initiation):
Parnassus, Mission Bay, Mt. Zion, and Berkeley Outpatient Center
Room temperature 7 days, refrigerated 7 days, frozen at -20C 1 year

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by x 0.411.

Severe hemolysis may artifactually increase the result.

CPT Codes:
83735

LOINC Codes:
19123-9

Magnesium, random urine

MGUR

ORDERING

Available Stat:
No

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Enzymatic using isocitrate dehydrogenase

Reported:
Routine 4 hours

Additional Information:
Output varies with the diet.

To convert mg/dL to mmol/L, multiply by 0.411

Synonyms:

- Mg

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
10 mL urine

Preferred Volume:
2 mL urine

Minimum Volume:
1 mL urine

Remarks:
Refrigerate sample after collection if transport to laboratory is delayed

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 3 days, frozen at -20C 1 year

PROCESSING

Test Code:
MGUR

Test Group:
Magnesium

Performing Lab:
Parnassus & Mission Bay Chemistry

Specimen Preparation:
Urine specimens should be mixed well and acidified by adding 1 drop of 6N HCl to a 2 mL aliquot of urine to prevent precipitation of magnesium complexes.

If aliquot is < 2 mL, add 1 drop of 3N HCl.

Preferred Volume:
2 mL urine

Minimum Volume:
1 mL urine

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 3 days, frozen at -20C 1 year

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:
See additional information

Additional Information:
Output varies with the diet.

To convert mg/dL to mmol/L, multiply by 0.411

ADMINISTRATIVE

CPT Codes:
83735

LOINC Codes:
19124-7

COMPLETE VIEW

Available Stat:
No

Test Code:
MGUR

Test Group:
Magnesium

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Enzymatic using isocitrate dehydrogenase

Remarks:
Refrigerate sample after collection if transport to laboratory is delayed

Collect:
Urine cup

Amount to Collect:
10 mL urine

Sample Type:
Random urine

Preferred Volume:
2 mL urine

Minimum Volume:
1 mL urine

Specimen Preparation:
Urine specimens should be mixed well and acidified by adding 1 drop of 6N HCl to a 2 mL aliquot of urine to prevent precipitation of magnesium complexes.

If aliquot is < 2 mL, add 1 drop of 3N HCl.

Units:
mg/dL

Reference Interval:
See additional information

Synonyms:

- Mg

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 3 days, frozen at -20C 1 year

Reported:
Routine 4 hours

Additional Information:
Output varies with the diet.

To convert mg/dL to mmol/L, multiply by 0.411

CPT Codes:
83735

LOINC Codes:
19124-7

Malaria Smear

P403M

ORDERING

Available Stat:
Yes, thin smear only

Performing Lab:
Microbiology, Parnassus & Mission Bay Hematology

Performed:
Stat: Daily, all shifts
Routine: Daily until 9:00 PM

Methodology:
Thick and thin Giemsa- or Wright's stained smears

Reported:
A preliminary report, based on the reading of one thin smear, is available within 2 hours for stats and 4-12 hours for routine samples. Thick smears are read Monday-Friday 0800-1500 hours only. Final report is sent after thick smears are read.

Additional Information:
Will detect Babesia species. Other blood parasites may also be detected.

Delay in preparation of blood smears can decrease the sensitivity of the test.

Stats are read and a preliminary result is reported by Hematology. Stat examination of thick smears is NOT available.

For possible Babesiosis, see also entry under Babesia microti Antibodies.

Synonyms:

- babesia
- plasmodium sp
- P. vivax
- P. falciparum
- P. malariae
- P. ovale

COLLECTION

Sample Type:
EDTA whole blood (Heparinized acceptable)

Collect:
Lavender top (Dark green top acceptable)

Amount to Collect:
3 mL blood

Remarks:
Deliver to lab within 1 hour of collection. If possible, samples from Moffitt-Long inpatients and ED should be walked directly to the STAT window in Clinical Lab Specimen Processing (5th floor Moffitt) by an attendant.

Order stat only if results required for immediate care decisions (e.g. patient extremely ill, potentially requiring admission or suspected of having cerebral malaria).

Note exact time of blood draw on sample and provide history of travel, residence, prophylaxis and/or therapy received before the specimen was obtained. Indicate if other parasites (e.g. Babesia) are suspected.

The optimal time to collect a specimen is midway between chills (before a fever spike is anticipated). If the first specimen is negative for malarial parasites, submit specimens q12-24h for 72 hours.

PROCESSING

Test Code:
P403M

Test Group:
malaria

Performing Lab:
Microbiology, Parnassus & Mission Bay Hematology

Specimen Preparation:

Microbiology (0700-2330) or Hematology (2330-0700) lab staff will make 4 thin and 4 thick smears to send to China Basin. Smears should be made within 1 hour of specimen collection. Enter code COMPRO in SREQ if >1 hour. Thin smears should be fixed with methanol (write "fixed" on slide). Do not fix thick smears. If test is ordered STAT, 2 additional thin smears should be made and delivered to Hematology to stain and read.

If thick smears are not dry when courier arrives, send thin smears to China Basin with note "Thick smears to follow."

Mt. Zion specimens should be sent to China Basin as soon as possible. Microbiology staff at China Basin will make smears.

Specimens should be refrigerated upon receipt at China Basin, once smears have been made.

RESULT INTERPRETATION

Reference Interval:

Negative

Critical Values:

Positive smear

Additional Information:

Will detect Babesia species. Other blood parasites may also be detected.

Delay in preparation of blood smears can decrease the sensitivity of the test.

Stats are read and a preliminary result is reported by Hematology. Stat examination of thick smears is NOT available.

For possible Babesiosis, see also entry under Babesia microti Antibodies.

ADMINISTRATIVE

CPT Codes:

87207

LOINC Codes:

32700-7

COMPLETE VIEW

Available Stat:

Yes, thin smear only

Test Code:

P403M

Test Group:

malaria

Performing Lab:

Microbiology, Parnassus & Mission Bay Hematology

Performed:

Stat: Daily, all shifts
Routine: Daily until 9:00 PM

Methodology:

Thick and thin Giemsa- or Wright's stained smears

Remarks:

Deliver to lab within 1 hour of collection. If possible, samples from Moffitt-Long inpatients and ED should be walked directly to the STAT window in Clinical Lab Specimen Processing (5th floor Moffitt) by an attendant.

Order stat only if results required for immediate care decisions (e.g. patient extremely ill, potentially requiring admission or suspected of having cerebral malaria).

Note exact time of blood draw on sample and provide history of travel, residence, prophylaxis and/or therapy received before the specimen was obtained. Indicate if other parasites (e.g. Babesia) are suspected.

The optimal time to collect a specimen is midway between chills (before a fever spike is anticipated). If the first specimen is negative for malarial parasites, submit specimens q12-24h for 72 hours.

Collect:

Lavender top (Dark green top acceptable)

Amount to Collect:

3 mL blood

Sample Type:
EDTA whole blood (Heparinized acceptable)

Specimen Preparation:
Microbiology (0700-2330) or Hematology (2330-0700) lab staff will make 4 thin and 4 thick smears to send to China Basin. Smears should be made within 1 hour of specimen collection. Enter code COMPRO in SREQ if >1 hour. Thin smears should be fixed with methanol (write "fixed" on slide). Do not fix thick smears. If test is ordered STAT, 2 additional thin smears should be made and delivered to Hematology to stain and read.

If thick smears are not dry when courier arrives, send thin smears to China Basin with note "Thick smears to follow."

Mt. Zion specimens should be sent to China Basin as soon as possible. Microbiology staff at China Basin will make smears.

Specimens should be refrigerated upon receipt at China Basin, once smears have been made.

Reference Interval:
Negative

Critical Values:
Positive smear

Synonyms:

- babesia
- plasmodium sp
- P. vivax
- P. falciparum
- P. malariae
- P. ovale

Reported:
A preliminary report, based on the reading of one thin smear, is available within 2 hours for stats and 4-12 hours for routine samples. Thick smears are read Monday-Friday 0800-1500 hours only. Final report is sent after thick smears are read.

Additional Information:
Will detect Babesia species. Other blood parasites may also be detected.

Delay in preparation of blood smears can decrease the sensitivity of the test.

Stats are read and a preliminary result is reported by Hematology. Stat examination of thick smears is NOT available.

For possible Babesiosis, see also entry under Babesia microti Antibodies.

CPT Codes:
87207

LOINC Codes:
32700-7

MALT1 18q21 FISH

BMALT1, MALT1

ORDERING

Available Stat:
No

Performing Lab:
Molecular Genetics - Cytogenetics

Performed:
Monday - Friday 0900-1700

Methodology:
FISH

Reported:
1-2 weeks

Synonyms:

- 18q21break apart FISH, MALT1 FISH

COLLECTION

Sample Type:
Heparinized whole blood or bone marrow, Bone marrow core biopsy

Collect:
Dark green top

Amount to Collect:
Blood: 2 mL
Bone marrow: 2 mL
Bone marrow biopsy: 2 cm

Preferred Volume:
Blood: 2 mL
Bone marrow: 2 mL
?Bone marrow biopsy: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow: 1 mL
?Bone marrow biopsy: 1 cm

Remarks:
Mix sample well with anticoagulant. keep at room temperature

Stability (from collection to initiation):
Room temperature 2 days

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

PROCESSING

Test Code:
BMALT1: Blood
MALT1: Bone marrow

Performing Lab:
Molecular Genetics - Cytogenetics

Specimen Preparation:
Do not centrifuge, refrigerate or freeze samples.

Transport to China Basin Cytogenetics asap.

Preferred Volume:
Blood: 2 mL
Bone marrow: 2 mL
?Bone marrow biopsy: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow: 1 mL
?Bone marrow biopsy: 1 cm

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

Stability (from collection to initiation):
Room temperature 2 days

ADMINISTRATIVE

CPT Codes:
88271 x2, 88275

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BMALT1: Blood
MALT1: Bone marrow

Performing Lab:
Molecular Genetics - Cytogenetics

Performed:
Monday - Friday 0900-1700

Methodology:
FISH

Remarks:
Mix sample well with anticoagulant. keep at room temperature

Collect:
Dark green top

Amount to Collect:
Blood: 2 mL
Bone marrow: 2 mL
Bone marrow biopsy: 2 cm

Sample Type:
Heparinized whole blood or bone marrow, Bone marrow core biopsy

Preferred Volume:
Blood: 2 mL
Bone marrow: 2 mL
?Bone marrow biopsy: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow: 1 mL
?Bone marrow biopsy: 1 cm

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

Specimen Preparation:
Do not centrifuge, refrigerate or freeze samples.

Transport to China Basin Cytogenetics asap.

Synonyms:

- 18q21break apart FISH, MALT1 FISH

Stability (from collection to initiation):
Room temperature 2 days

Reported:
1-2 weeks

CPT Codes:
88271 x2, 88275

LDT or Modified FDA:
Yes

Manganese, blood

MN

ORDERING

Ordering Recommendations:
Manganese performed on whole blood is the preferred method to monitor for toxicity.

Available Stat:
No

Performing Lab:
Quest

Performed:
Test performed Monday-Friday.

Methodology:
ICP/MS

Reported:
2-5 days.

Additional Information:
Manganese is an essential trace metal. Over 95% of manganese in blood is protein bound and therefore whole blood levels are higher than those derived from serum.

Toxicity that can result from excessive exposure can cause serious organ damage. Symptoms include Parkinsonian-like tremor and gait disturbances. manganese is excreted in bile therefore patients with hepatic dysfunction/cholestasis and receiving manganese in TPN may be at increased risk for toxicity.

To convert µg/L to nmol/L (SI units) multiply by 18.2.

COLLECTION

Patient Preparation:
Patient should refrain from taking manganese supplements at least 3 days before collection of sample.

Sample Type:
EDTA whole blood

Collect:
Navy blue top (EDTA) tube

Amount to Collect:
2 mL blood

Preferred Volume:
2 mL blood

Minimum Volume:
1 mL blood

Remarks:
To avoid contamination, use powderless gloves during phlebotomy.

Transport specimen at on ice.

Mix well, inverting gently 5x.

PROCESSING

Test Code:
MN

Test Group:
Manganese

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Follow the detailed processing instructions for Trace Metal Analysis. Refrigerate. Do NOT centrifuge. Do NOT transfer to another container. Order Quest # 4406

Preferred Volume:
2 mL blood

Minimum Volume:
1 mL blood

RESULT INTERPRETATION

Units:
µg/L (mcg/L)

Reference Interval:
7-19 µg/L

Additional Information:
Manganese is an essential trace metal. Over 95% of manganese in blood is protein bound and therefore whole blood levels are higher than those derived from serum.

Toxicity that can result from excessive exposure can cause serious organ damage. Symptoms include Parkinsonian-like tremor and gait disturbances. manganese is excreted in bile therefore patients with hepatic dysfunction/cholestasis and receiving manganese in TPN may be at increased risk for toxicity.

To convert µg/L to nmol/L (SI units) multiply by 18.2.

ADMINISTRATIVE

CPT Codes:
83785-90

LOINC Codes:
5681-2

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Manganese performed on whole blood is the preferred method to monitor for toxicity.

Test Code:
MN

Test Group:
Manganese

Performing Lab:
Quest

Sendout:
Yes

Performed:
Test performed Monday-Friday.

Methodology:
ICP/MS

Patient Preparation:
Patient should refrain from taking manganese supplements at least 3 days before collection of sample.

Remarks:
To avoid contamination, use powderless gloves during phlebotomy.

Transport specimen at on ice.

Mix well, inverting gently 5x.

Collect:
Navy blue top (EDTA) tube

Amount to Collect:
2 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
2 mL blood

Minimum Volume:
1 mL blood

Specimen Preparation:
Follow the detailed processing instructions for Trace Metal Analysis. Refrigerate. Do NOT centrifuge. Do NOT transfer to another container. Order Quest # 4406

Units:
µg/L (mcg/L)

Reference Interval:
7-19 µg/L

Reported:
2-5 days.

Additional Information:
Manganese is an essential trace metal. Over 95% of manganese in blood is protein bound and therefore whole blood levels are higher than those derived from serum.

Toxicity that can result from excessive exposure can cause serious organ damage. Symptoms include Parkinsonian-like tremor and gait disturbances. manganese is excreted in bile therefore patients with hepatic dysfunction/cholestasis and receiving manganese in TPN may be at increased risk for toxicity.

To convert µg/L to nmol/L (SI units) multiply by 18.2.

CPT Codes:
83785-90

LOINC Codes:
5681-2

Manganese, urine

MOLT

ORDERING

Ordering Recommendations:
Urine levels do not correlate well with toxic symptoms. Whole blood levels are the preferred test for assessing for manganese toxicity.

Available Stat:
No

Performing Lab:
Quest

Methodology:
ICP/MS

Reported:
Test performed Tuesday, Thursday, Saturday. Turnaround time: 2-5 days.

Additional Information:
To convert µg/L to nmol/L (SI units) multiply by 18.2

COLLECTION

Sample Type:
24 hour urine collection or random urine

Collect:
Acid Wash Container Required

Amount to Collect:
Entire 24 hour urine output or random urine (See preferred volume)

Preferred Volume:
10 mL urine

Minimum Volume:
5 mL urine

PROCESSING

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Test Group:
Manganese

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Follow the detailed processing instructions for Trace Metal Analysis. Refrigerate. For 24 hour urine order Quest # 42044N. For random urine order Quest # 84863N

Preferred Volume:
10 mL urine

Minimum Volume:
5 mL urine

RESULT INTERPRETATION

Units:
µg/L (mcg/L)

Reference Interval:
Male: 0.5-3.0 µg/L
Female: 0.5-1.8 µg/L

Additional Information:
To convert µg/L to nmol/L (SI units) multiply by 18.2

ADMINISTRATIVE

CPT Codes:
83785-90

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Urine levels do not correlate well with toxic symptoms. Whole blood levels are the preferred test for assessing for manganese toxicity.

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Test Group:
Manganese

Performing Lab:
Quest

Sendout:
Yes

Methodology:
ICP/MS

Collect:
Acid Wash Container Required

Amount to Collect:
Entire 24 hour urine output or random urine (See preferred volume)

Sample Type:
24 hour urine collection or random urine

Preferred Volume:
10 mL urine

Minimum Volume:
5 mL urine

Specimen Preparation:
Follow the detailed processing instructions for Trace Metal Analysis. Refrigerate. For 24 hour urine order Quest # 42044N. For random urine order Quest # 84863N

Units:
µg/L (mcg/L)

Reference Interval:
Male: 0.5-3.0 µg/L
Female: 0.5-1.8 µg/L

Reported:
Test performed Tuesday, Thursday, Saturday. Turnaround time: 2-5 days.

Additional Information:
To convert µg/L to nmol/L (SI units) multiply by 18.2

CPT Codes:
83785-90

Mannose Binding Lectin

MBL

ORDERING

Ordering Recommendations:
Initial screening for suspected deficiency in the lectin complement pathway.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Tue

Methodology:
Quantitative Enzyme-Linked Immunosorbent Assay (ELISA)

Reported:
1-8 days

Synonyms:

- Mannan Binding Lectin
- Mannose-Binding Lectin, S
- Lectin Pathway Functional Assay
- Mannose-Binding Lectin, S MBL

COLLECTION

Sample Type:
Serum

Collect:
Serum separator tube or plain red.

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 7 days; Frozen: 30 days (avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
Frozen. Also acceptable: Refrigerated if maintained at temperature for less than 7 days.

Unacceptable Conditions:
Nonserum, contaminated, or heat-inactivated specimens.

PROCESSING

Test Code:
MBL

ARUP Test Code:
0051692

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate serum from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP standard transport tube. (Min 0.2 mL)

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Unacceptable Conditions:
Nonserum, contaminated, or heat-inactivated specimens.

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 7 days; Frozen: 30 days (avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
Frozen. Also acceptable: Refrigerated if maintained at temperature for less than 7 days.

RESULT INTERPRETATION

Reference Interval:
Greater than or equal to 76 ng/mL

Interpretive Data:
Mannose-binding protein is a component of the innate or natural immune system which binds to mannose residues on a variety of different microorganisms. When bound, this lectin will trigger the complement pathway resulting in opsonization. Mannose-binding protein is also an acute phase reactant produced by the liver. Patients who have abnormal levels of mannose-binding protein may have recurrent significant infections in the absence of abnormalities in the four major arms of the immune system. Abnormal mannose-binding protein concentrations have been found in patients with infectious disorders such as tuberculosis and hepatitis B and in autoimmune disorders, including recurrent spontaneous abortion and systemic lupus erythematosis.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration. This test was performed in a CLIA-certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:
83520

LOINC:

- 30152-3

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Initial screening for suspected deficiency in the lectin complement pathway.

Test Code:
MBL

ARUP Test Code:
0051692

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Tue

Methodology:
Quantitative Enzyme-Linked Immunosorbent Assay (ELISA)

Collect:
Serum separator tube or plain red.

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Unacceptable Conditions:
Nonserum, contaminated, or heat-inactivated specimens.

Specimen Preparation:
Separate serum from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP standard transport tube. (Min 0.2 mL)

Reference Interval:

Greater than or equal to 76 ng/mL

Interpretive Data:

Mannose-binding protein is a component of the innate or natural immune system which binds to mannose residues on a variety of different microorganisms. When bound, this lectin will trigger the complement pathway resulting in opsonization. Mannose-binding protein is also an acute phase reactant produced by the liver. Patients who have abnormal levels of mannose-binding protein may have recurrent significant infections in the absence of abnormalities in the four major arms of the immune system. Abnormal mannose-binding protein concentrations have been found in patients with infectious disorders such as tuberculosis and hepatitis B and in autoimmune disorders, including recurrent spontaneous abortion and systemic lupus erythematosis.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration. This test was performed in a CLIA-certified laboratory and is intended for clinical purposes.

Synonyms:

- Mannan Binding Lectin
- Mannose-Binding Lectin, S
- Lectin Pathway Functional Assay
- Mannose-Binding Lectin, S MBL

Storage/Transport Temperature:

Frozen. Also acceptable: Refrigerated if maintained at temperature for less than 7 days.

Stability (from collection to initiation):

After separation from cells: Ambient: 48 hours; Refrigerated: 7 days; Frozen: 30 days (avoid repeated freeze/thaw cycles)

Reported:

1-8 days

CPT Codes:

83520

LOINC:

- 30152-3

MaTa Antibody

MATAB

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Western blot

Reported:
10-12 days

Synonyms:

- Ma Ab
- Ma antibody
- Ta Ab
- Ta antibody
- Ma2 Antibody

COLLECTION

Sample Type:
Serum or CSF

Collect:
Red top, Gold top, CSF tube or sterile collection tube

Amount to Collect:
Blood: 4 mL
CSF: 2mL

Preferred Volume:
Serum or CSF: 2 mL

Minimum Volume:
Serum or CSF: 1 mL

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 2 weeks, frozen indefinite

PROCESSING

Test Code:
MATAB

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot and freeze sample. Ship to CB frozen.

Preferred Volume:
Serum or CSF: 2 mL

Minimum Volume:
Serum or CSF: 1 mL

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 2 weeks, frozen indefinite

RESULT INTERPRETATION

Reference Interval:
Negative

ADMINISTRATIVE

CPT Codes:
84182-90

COMPLETE VIEW

Available Stat:
No

Test Code:
MATAB

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Western blot

Collect:
Red top, Gold top, CSF tube or sterile collection tube

Amount to Collect:
Blood: 4 mL
CSF: 2mL

Sample Type:
Serum or CSF

Preferred Volume:
Serum or CSF: 2 mL

Minimum Volume:
Serum or CSF: 1 mL

Specimen Preparation:
Aliquot and freeze sample. Ship to CB frozen.

Reference Interval:
Negative

Synonyms:

- Ma Ab
- Ma antibody
- Ta Ab
- Ta antibody
- Ma2 Antibody

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 2 weeks, frozen indefinite

Reported:
10-12 days

CPT Codes:
84182-90

Maternal Cell Contamination

MCC

ORDERING

Ordering Recommendations:
Test can be ordered in APeX

Available Stat:
No

Performing Lab:
Genomic Services - Molecular Diagnostics Lab

Performed:
Run 1x per week or as needed, day shift only

Methodology:
PCR and capillary electrophoresis

Reported:
10-14 days

Additional Information:
Contamination of prenatal amniotic fluid or chorionic villi samples with maternal cells or tissue may lead to misinterpretation of prenatal diagnostic tests, particularly in determination of true fetal heterozygosity. Maternal contamination of prenatal samples is assessed by genotyping maternal and fetal DNA at 15 different autosomal short-tandem repeats loci with heterozygosity rates ranging from 70-93%. This assay can detect maternal DNA contamination at approximately 10% of fetal DNA.

This test was developed, and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. FDA.

COLLECTION

Sample Type:
EDTA whole blood from mother of fetus. Should only be ordered in conjunction with prenatal genetic testing on either amniotic fluid or chorionic villi.

Collect:
Lavender top (EDTA)

Amount to Collect:
3 mL blood

Preferred Volume:
3 mL blood

Minimum Volume:
1.5 mL blood

Remarks:
Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Unacceptable Conditions:
Heparinized whole blood received.

PROCESSING

Test Code:
MCC

Performing Lab:
Genomic Services - Molecular Diagnostics Lab

Specimen Preparation:
Do not centrifuge the specimen. Store at room temperature. Refrigerated samples are acceptable

Preferred Volume:
3 mL blood

Minimum Volume:
1.5 mL blood

Unacceptable Conditions:
Heparinized whole blood received.

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:

Contamination of prenatal amniotic fluid or chorionic villi samples with maternal cells or tissue may lead to misinterpretation of prenatal diagnostic tests, particularly in determination of true fetal heterozygosity. Maternal contamination of prenatal samples is assessed by genotyping maternal and fetal DNA at 15 different autosomal short-tandem repeats loci with heterozygosity rates ranging from 70-93%. This assay can detect maternal DNA contamination at approximately 10% of fetal DNA.

This test was developed, and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. FDA.

ADMINISTRATIVE

CPT Codes:
81265

LDT or Modified FDA:
Yes

LOINC Codes:
35457-1

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Test can be ordered in APeX

Test Code:
MCC

Performing Lab:
Genomic Services - Molecular Diagnostics Lab

Performed:
Run 1x per week or as needed, day shift only

Methodology:
PCR and capillary electrophoresis

Remarks:
Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Collect:
Lavender top (EDTA)

Amount to Collect:
3 mL blood

Sample Type:
EDTA whole blood from mother of fetus. Should only be ordered in conjunction with prenatal genetic testing on either amniotic fluid or chorionic villi.

Preferred Volume:
3 mL blood

Minimum Volume:
1.5 mL blood

Unacceptable Conditions:
Heparinized whole blood received.

Specimen Preparation:
Do not centrifuge the specimen. Store at room temperature. Refrigerated samples are acceptable

Reference Interval:
Negative

Reported:
10-14 days

Additional Information:

Contamination of prenatal amniotic fluid or chorionic villi samples with maternal cells or tissue may lead to misinterpretation of prenatal diagnostic tests, particularly in determination of true fetal heterozygosity. Maternal contamination of prenatal samples is assessed by genotyping maternal and fetal DNA at 15 different autosomal short-tandem repeats loci with heterozygosity rates ranging from 70-93%. This assay can detect maternal DNA contamination at approximately 10% of fetal DNA.

This test was developed, and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. FDA.

CPT Codes:
81265

LDT or Modified FDA:
Yes

LOINC Codes:
35457-1

Measles (Rubeola) Antibody, IgM

MEAM

ORDERING

Ordering Recommendations:
Aid in the diagnosis of acute measles infection. Consider ordering Measles (Rubeola) Antibodies, IgG and IgM (0050375).

Available Stat:
No

Performing Lab:
ARUP

Performed:
Mon-Fri

Methodology:
Semi-Quantitative Enzyme-Linked Immunosorbent Assay

Reported:
1-5 days

Synonyms:

- measles IgM
- MMR
- Rubeola
- Rubeola IgM

COLLECTION

Sample Type:
Serum; Gold or red top

Collect:
Serum separator tube.

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.1 mL serum

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Bacterially contaminated, heat-inactivated, hemolyzed, icteric, lipemic, or turbid specimens.

PROCESSING

Test Code:
MEAM

ARUP Test Code:
0099597

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate serum from cells ASAP or within 2 hours of collection. Transfer 0.5 mL serum to an ARUP Standard Transport Tube. (Min: 0.1 mL) Parallel testing is preferred and convalescent specimens must be received within 30 days from receipt of the acute specimens. Mark specimens plainly as "acute" or "convalescent."

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.1 mL serum

Unacceptable Conditions:
Bacterially contaminated, heat-inactivated, hemolyzed, icteric, lipemic, or turbid specimens.

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:
0.79 AU or less: Negative - No significant level of IgM antibodies to measles (rubeola) virus detected.
0.80-1.20 AU: Equivocal - Repeat testing in 10-14 days may be helpful.
1.21 AU or greater: Positive - IgM antibodies to measles (rubeola) virus detected. Suggestive of current or recent infection or immunization. However, low levels of IgM antibodies may occasionally persist for more than 12 months post-infection or immunization.

ADMINISTRATIVE

CPT Codes:
86765

LOINC:

- 25421-9

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Aid in the diagnosis of acute measles infection. Consider ordering Measles (Rubeola) Antibodies, IgG and IgM (0050375).

Test Code:
MEAM

ARUP Test Code:
0099597

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Mon-Fri

Methodology:
Semi-Quantitative Enzyme-Linked Immunosorbent Assay

Collect:
Serum separator tube.

Amount to Collect:
1 mL blood

Sample Type:
Serum; Gold or red top

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.1 mL serum

Unacceptable Conditions:
Bacterially contaminated, heat-inactivated, hemolyzed, icteric, lipemic, or turbid specimens.

Specimen Preparation:
Separate serum from cells ASAP or within 2 hours of collection. Transfer 0.5 mL serum to an ARUP Standard Transport Tube. (Min: 0.1 mL) Parallel testing is preferred and convalescent specimens must be received within 30 days from receipt of the acute specimens. Mark specimens plainly as "acute" or "convalescent."

Reference Interval:
0.79 AU or less: Negative - No significant level of IgM antibodies to measles (rubeola) virus detected.
0.80-1.20 AU: Equivocal - Repeat testing in 10-14 days may be helpful.
1.21 AU or greater: Positive - IgM antibodies to measles (rubeola) virus detected. Suggestive of current or recent infection or immunization. However, low levels of IgM antibodies may occasionally persist for more than 12 months post-infection or immunization.

Synonyms:

- measles IgM
- MMR
- Rubeola
- Rubeola IgM

Storage/Transport Temperature:
Refrigerated.

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

Reported:
1-5 days

CPT Codes:
86765

LOINC:

- 25421-9

Measles (Rubeola) Antibody, IgM, CSF

MSCM

ORDERING

Ordering Recommendations:
Aid in the diagnosis of measles encephalitis. False-positive results will occur due to low incidence of measles in the U.S.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Mon-Fri

Methodology:
Semi-Quantitative Enzyme-Linked Immunosorbent Assay

Reported:
1-5 days

Synonyms:

- English Measles
- measles IgM CSF
- MMR
- Rubeola IgM CSF

COLLECTION

Sample Type:
CSF in steril container

Collect:
CSF.

Amount to Collect:
0.5 mL

Preferred Volume:
0.5 mL

Minimum Volume:
0.2 mL

Stability (from collection to initiation):
Ambient: 8 hours; Refrigerated: 2 weeks; Frozen: 1 year
New York State Clients: Ambient: 1 week; Refrigerated: 2 weeks; Frozen: 1 month

Storage/Transport Temperature:
Refrigerated. Also acceptable: Frozen.
New York State Clients: Refrigerated

Unacceptable Conditions:
Bacterially contaminated, heat-inactivated, hemolyzed, or xanthochromic specimens.

PROCESSING

Test Code:
MSCM

ARUP Test Code:
0054441

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transfer 0.5 mL CSF to an ARUP Standard Transport Tube. (Min: 0.2 mL)
New York State Clients: 1 mL (Min: 0.075 mL)

Preferred Volume:
0.5 mL

Minimum Volume:
0.2 mL

Unacceptable Conditions:
Bacterially contaminated, heat-inactivated, hemolyzed, or xanthochromic specimens.

Stability (from collection to initiation):
Ambient: 8 hours; Refrigerated: 2 weeks; Frozen: 1 year
New York State Clients: Ambient: 1 week; Refrigerated: 2 weeks; Frozen: 1 month

Storage/Transport Temperature:
Refrigerated. Also acceptable: Frozen.
New York State Clients: Refrigerated

RESULT INTERPRETATION

Reference Interval:

0.79 AU or less	Negative - No significant level of IgM antibodies to measles (rubeola) virus detected.
0.80-1.20 AU	Equivocal - Repeat testing in 10-14 days may be helpful.
1.21 AU or greater	Positive - IgM antibodies to measles (rubeola) virus detected. Suggestive of current or recent infection or immunization. However, low levels of IgM antibodies may occasionally persist for more than 12 months post-infection or immunization.

Interpretive Data:
The detection of antibodies to rubeola in CSF may indicate central nervous system infection. However, consideration must be given to possible contamination by blood or transfer of serum antibodies across the blood-brain barrier.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:
86765

LOINC:

- 13283-7

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Aid in the diagnosis of measles encephalitis. False-positive results will occur due to low incidence of measles in the U.S.

Test Code:
MSCM

ARUP Test Code:
0054441

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Mon-Fri

Methodology:
Semi-Quantitative Enzyme-Linked Immunosorbent Assay

Collect:
CSF.

Amount to Collect:
0.5 mL

Sample Type:
CSF in steril container

Preferred Volume:
0.5 mL

Minimum Volume:
0.2 mL

Unacceptable Conditions:
Bacterially contaminated, heat-inactivated, hemolyzed, or xanthochromic specimens.

Specimen Preparation:
Transfer 0.5 mL CSF to an ARUP Standard Transport Tube. (Min: 0.2 mL)
New York State Clients: 1 mL (Min: 0.075 mL)

Reference Interval:

0.79 AU or less	Negative - No significant level of IgM antibodies to measles (rubeola) virus detected.
0.80-1.20 AU	Equivocal - Repeat testing in 10-14 days may be helpful.
1.21 AU or greater	Positive - IgM antibodies to measles (rubeola) virus detected. Suggestive of current or recent infection or immunization. However, low levels of IgM antibodies may occasionally persist for more than 12 months post-infection or immunization.

Interpretive Data:
The detection of antibodies to rubeola in CSF may indicate central nervous system infection. However, consideration must be given to possible contamination by blood or transfer of serum antibodies across the blood-brain barrier.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Synonyms:

- English Measles
- measles IgM CSF
- MMR
- Rubeola IgM CSF

Storage/Transport Temperature:
Refrigerated. Also acceptable: Frozen.
New York State Clients: Refrigerated

Stability (from collection to initiation):
Ambient: 8 hours; Refrigerated: 2 weeks; Frozen: 1 year
New York State Clients: Ambient: 1 week; Refrigerated: 2 weeks; Frozen: 1 month

Reported:
1-5 days

CPT Codes:
86765

LOINC:

- 13283-7

Measles Antibody, CSF, IgG

MOLT

ORDERING

Available Stat:
No

Performing Lab:
Focus

Methodology:
IFA

Reported:
Test run Sunday-Thursday. Turnaround time: 2-5 days

Synonyms:

- sspe
- subacute sclerosing panencephalitis
- rubeola

COLLECTION

Sample Type:
CSF

Collect:
CSF tube or sterile collection tube

Amount to Collect:
See preferred volume

Preferred Volume:
1 mL CSF

Minimum Volume:
0.25 mL CSF

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

PROCESSING

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Test Group:
Measles

Sendout:
Yes

Performing Lab:
Focus

Specimen Preparation:
Refrigerate. Order MRL #60690

Preferred Volume:
1 mL CSF

Minimum Volume:
0.25 mL CSF

RESULT INTERPRETATION

Reference Interval:
Neagtive: IgG < 1:64

COMPLETE VIEW

Available Stat:
No

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Test Group:
Measles

Performing Lab:
Focus

Sendout:
Yes

Methodology:
IFA

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Collect:
CSF tube or sterile collection tube

Amount to Collect:
See preferred volume

Sample Type:
CSF

Preferred Volume:
1 mL CSF

Minimum Volume:
0.25 mL CSF

Specimen Preparation:
Refrigerate. Order MRL #60690

Reference Interval:
Neagtive: IgG < 1:64

Synonyms:

- sspe
- subacute sclerosing panencephalitis
- rubeola

Reported:
Test run Sunday-Thursday. Turnaround time: 2-5 days

Measles Antibody, IgG, serum

MEAI

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday - Friday (day shift)

Methodology:
Chemiluminescent Immunoassay

Reported:
1-4 days

Additional Information:
Sera are screened for IgG antibody. Samples are not retained for comparative testing with a later sample.

Results are reported as 'Positive', 'Negative', or Equivocal'. Equivocal results may represent low-titer antibody; testing may be repeated, if clinically indicated.

For diagnosis of acute primary infection, culture is a more rapid and generally more suitable technique, particularly where immune competence is in question.

Synonyms:

- sspe
- subacute sclerosing panencephalitis
- rubeola

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Unacceptable Conditions:
Grossly hemolyzed, lipemic or icteric samples

PROCESSING

Test Code:
MEAI

Test Group:
Measles

Performing Lab:
Immunology

Specimen Preparation:
Freeze sample at -20C

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Unacceptable Conditions:
Grossly hemolyzed, lipemic or icteric samples

RESULT INTERPRETATION

Units:
AU/mL

Reference Interval:
Negative / Not Immune: < 13.5
Equivocal: 13.5 - 16.4
Positive / Immune: >= 16.5

Additional Information:
Sera are screened for IgG antibody. Samples are not retained for comparative testing with a later sample.

Results are reported as 'Positive', 'Negative', or Equivocal'. Equivocal results may represent low-titer antibody; testing may be repeated, if clinically indicated.

For diagnosis of acute primary infection, culture is a more rapid and generally more suitable technique, particularly where immune competence is in question.

ADMINISTRATIVE

CPT Codes:
86765

LOINC Codes:
35275-7

COMPLETE VIEW

Available Stat:
No

Test Code:
MEAI

Test Group:
Measles

Performing Lab:
Immunology

Performed:
Monday - Friday (day shift)

Methodology:
Chemiluminescent Immunoassay

Collect:
Gold top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Unacceptable Conditions:
Grossly hemolyzed, lipemic or icteric samples

Specimen Preparation:
Freeze sample at -20C

Units:
AU/mL

Reference Interval:
Negative / Not Immune: < 13.5
Equivocal: 13.5 - 16.4
Positive / Immune: >= 16.5

Synonyms:

- sspe
- subacute sclerosing panencephalitis
- rubeola

Reported:
1-4 days

Additional Information:

Sera are screened for IgG antibody. Samples are not retained for comparative testing with a later sample.

Results are reported as 'Positive', 'Negative', or Equivocal'. Equivocal results may represent low-titer antibody; testing may be repeated, if clinically indicated.

For diagnosis of acute primary infection, culture is a more rapid and generally more suitable technique, particularly where immune competence is in question.

CPT Codes:

86765

LOINC Codes:

35275-7

Measles virus RNA

P319

ORDERING

Ordering Recommendations:

CDPH Testing Guidance Document
SFDPH Lab Manual

Approval Required:

Patient's physician must discuss the case and receive approval for submission of specimens from the SF Department of Public Health Communicable Disease Control Unit (415) 554-2830.

Available Stat:

No

Performing Lab:

San Francisco Public Health Laboratory

Methodology:

PCR, serology, molecular genotyping

Reported:

PCR 1 weekCulture 3 weeks

Additional Information:

The PCR results should always be interpreted in conjunction with serologic testing for IgM and IgG and thorough assessment of the relevant clinical and epidemiological risk factors.

Synonyms:

- Rubeola

COLLECTION

Sample Type:

Throat/Nasal/NP Swab in Universal Transport Medium
Urine

Collect:

Throat or NP swab in Universal Transport Medium (preferred)
Urine (preferred)

Nasal swab could also be collected in Universal Transport Medium though is not a preferred collection site.

Amount to Collect:

Urine 50 mL

Preferred Volume:

Urine 50 mL

Minimum Volume:

Urine 10 mL

Remarks:

Urine AND NP OR throat swab for PCR are preferred. Collect nasopharyngeal swab for PCR within 9 days after rash onset. Collect urine for PCR within 10 days after rash onset. Measles can frequently be detected in the urine later in the infection (up to 10 days - sometimes longer) when it can no longer be detected in respiratory samples.

Throat Swab: vigorously swab tonsillar areas with sterile Dacron or flocked swab. Swabs must be synthetic with aluminum or plastic shaft. Place swab in Universal Transport Medium.

Nasopharyngeal swab: firmly rub posterior nasopharynx with sterile Dacron swab or flocked swab. Swabs must be synthetic with aluminum or plastic shaft. Place swab into Universal Transport Medium.

Urine: Collect 10-50 ml urine in a sterile container. Collect from first part of urine stream; first morning void is ideal.

Stability (from collection to initiation):

Refrigerated 2 days.

Unacceptable Conditions:

Swabs not collected using synthetic flocked or Dacron swab with aluminum or plastic shaft
Swabs not submitted in Universal Transport Medium

PROCESSING

Test Code:

P319

Test Group:
Measles

Sendout:
Yes

Performing Lab:
San Francisco Public Health Laboratory

Specimen Preparation:
Specimen is sent out to SFDPH by Microbiology.

Order P319 and freetext at T319 prompt: Measles virus PCR

If blood is sent with the specimen, separate serum by centrifugation. Refrigerate specimens and give form and copy of requisition to supervisor. If unable to send out within 48 hours, freeze specimens at -70°C. Before freezing urine, centrifuge urine at 3000 rpm at 500-600 g for 10 min at 4°C. Discard supernatant and re-suspend pellet in 2-3 ml Universal Transport Medium. Pool sediment when urine is centrifuged in more than one tube. Supervisor is to complete SFDPH Lab request form.

Send specimens with dry ice if frozen at -70 C and SFDPH Lab form.

Preferred Volume:
Urine 50 mL

Minimum Volume:
Urine 10 mL

Unacceptable Conditions:
Swabs not collected using synthetic flocked or Dacron swab with aluminum or plastic shaft
Swabs not submitted in Universal Transport Medium

Stability (from collection to initiation):
Refrigerated 2 days.

RESULT INTERPRETATION

Reference Interval:
No virus detected

Additional Information:
The PCR results should always be interpreted in conjunction with serologic testing for IgM and IgG and thorough assessment of the relevant clinical and epidemiological risk factors.

COMPLETE VIEW

Approval Required:
Patient's physician must discuss the case and receive approval for submission of specimens from the SF Department of Public Health Communicable Disease Control Unit (415) 554-2830.

Available Stat:
No

Ordering Recommendations:
CDPH Testing Guidance Document
SFDPH Lab Manual

Test Code:
P319

Test Group:
Measles

Performing Lab:
San Francisco Public Health Laboratory

Sendout:
Yes

Methodology:
PCR, serology, molecular genotyping

Remarks:

Urine AND NP OR throat swab for PCR are preferred. Collect nasopharyngeal swab for PCR within 9 days after rash onset. Collect urine for PCR within 10 days after rash onset. Measles can frequently be detected in the urine later in the infection (up to 10 days - sometimes longer) when it can no longer be detected in respiratory samples.

Throat Swab: vigorously swab tonsillar areas with sterile Dacron or flocked swab. Swabs must be synthetic with aluminum or plastic shaft. Place swab in Universal Transport Medium.

Nasopharyngeal swab: firmly rub posterior nasopharynx with sterile Dacron swab or flocked swab. Swabs must be synthetic with aluminum or plastic shaft. Place swab into Universal Transport Medium.

Urine: Collect 10-50 ml urine in a sterile container. Collect from first part of urine stream; first morning void is ideal.

Collect:

Throat or NP swab in Universal Transport Medium (preferred)
Urine (preferred)

Nasal swab could also be collected in Universal Transport Medium though is not a preferred collection site.

Amount to Collect:

Urine 50 mL

Sample Type:

Throat/Nasal/NP Swab in Universal Transport Medium
Urine

Preferred Volume:

Urine 50 mL

Minimum Volume:

Urine 10 mL

Unacceptable Conditions:

Swabs not collected using synthetic flocked or Dacron swab with aluminum or plastic shaft
Swabs not submitted in Universal Transport Medium

Specimen Preparation:

Specimen is sent out to SFDPH by Microbiology.

Order P319 and freetext at T319 prompt: Measles virus PCR

If blood is sent with the specimen, separate serum by centrifugation. Refrigerate specimens and give form and copy of requisition to supervisor. If unable to send out within 48 hours, freeze specimens at -70°C. Before freezing urine, centrifuge urine at 3000 rpm at 500-600 g for 10 min at 4°C. Discard supernatant and re-suspend pellet in 2-3 ml Universal Transport Medium. Pool sediment when urine is centrifuged in more than one tube. Supervisor is to complete SFDPH Lab request form.

Send specimens with dry ice if frozen at -70 C and SFDPH Lab form.

Reference Interval:

No virus detected

Synonyms:

- Rubeola

Stability (from collection to initiation):

Refrigerated 2 days.

Reported:

PCR 1 weekCulture 3 weeks

Additional Information:

The PCR results should always be interpreted in conjunction with serologic testing for IgM and IgG and thorough assessment of the relevant clinical and epidemiological risk factors.

MECOM Break-apart Rearrangement FISH

MECOM, BMECOM

ORDERING

Available Stat:
No

Performing Lab:
Cytogenetics

Performed:
Monday - Friday, 9AM to 5PM

Methodology:
FISH

Reported:
7-14 days

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Synonyms:

- MECOM
- BMECOM
- 3q26 BA FISH

COLLECTION

Sample Type:
Bone marrow aspirate, Bone marrow core, Blood

Collect:
Bone marrow: Dark Green Top Sodium Heparin tube
Bone Core : Sterile container with medium
Blood: Dark Green Top Sodium Heparin tube

Preferred Volume:
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm
Blood: 2 mL

Minimum Volume:
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm
Blood: 1 mL

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Room temperature

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen

PROCESSING

Performing Lab:
Cytogenetics

Preferred Volume:
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm
Blood: 2 mL

Minimum Volume:
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm
Blood: 1 mL

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Room temperature

ADMINISTRATIVE

CPT Codes:
88271x2, 88275x1

COMPLETE VIEW

Available Stat:
No

Performing Lab:
Cytogenetics

Performed:
Monday - Friday, 9AM to 5PM

Methodology:
FISH

Collect:
Bone marrow: Dark Green Top Sodium Heparin tube
Bone Core : Sterile container with medium
Blood: Dark Green Top Sodium Heparin tube

Sample Type:
Bone marrow aspirate, Bone marrow core, Blood

Preferred Volume:
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm
Blood: 2 mL

Minimum Volume:
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm
Blood: 1 mL

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen

Synonyms:

- MECOM
- BMECOM
- 3q26 BA FISH

Storage/Transport Temperature:
Room temperature

Stability (from collection to initiation):
2 days

Reported:
7-14 days

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

CPT Codes:
88271x2, 88275x1

Mercury, 24 hour urine

HGU

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Inductively-Coupled Plasma/Mass Spectrometry

Reported:
Test run Tuesday-Saturday. Turnaround: 2-5 days.

Additional Information:
To convert µg/L to µmol/L (SI units) multiply by 0.00499. Urine is the specimen of choice for exposure to inorganic mercury.

Synonyms:

- Hg
- heavy metal toxicity
- heavy metal poisoning
- heavy metals

COLLECTION

Patient Preparation:
The patient should not eat predatory fish such as tuna, swordfish and shark for at least 3 days prior to sample collection.

Sample Type:
24 hour urine collection

Collect:
Acid Wash Container Required

Amount to Collect:
Entire 24 hour urine output

Preferred Volume:
10 mL urine

Minimum Volume:
5 mL urine

PROCESSING

Test Code:
HGU

Test Group:
Mercury

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Follow the detailed processing instructions for Trace Metal Analysis. Refrigerate. Order Quest #36441

Preferred Volume:
10 mL urine

Minimum Volume:
5 mL urine

RESULT INTERPRETATION

Units:
µg/L (mcg/L)

Reference Interval:
Normal >= 20 µg/L (Varies w/diet)Toxic >= 150 µg/L

Critical Values:
Quest Priority-1: >= 150 µg/L

Additional Information:
To convert µg/L to µmol/L (SI units) multiply by 0.00499. Urine is the specimen of choice for exposure to inorganic mercury.

ADMINISTRATIVE

CPT Codes:
83825-90

LOINC Codes:
21383-5

COMPLETE VIEW

Available Stat:
No

Test Code:
HGU

Test Group:
Mercury

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Inductively-Coupled Plasma/Mass Spectrometry

Patient Preparation:
The patient should not eat predatory fish such as tuna, swordfish and shark for at least 3 days prior to sample collection.

Collect:
Acid Wash Container Required

Amount to Collect:
Entire 24 hour urine output

Sample Type:
24 hour urine collection

Preferred Volume:
10 mL urine

Minimum Volume:
5 mL urine

Specimen Preparation:
Follow the detailed processing instructions for Trace Metal Analysis. Refrigerate. Order Quest #36441

Units:
µg/L (mcg/L)

Reference Interval:
Normal >= 20 µg/L (Varies w/diet)Toxic >= 150 µg/L

Critical Values:
Quest Priority-1: >= 150 µg/L

Synonyms:

- Hg
- heavy metal toxicity
- heavy metal poisoning
- heavy metals

Reported:
Test run Tuesday-Saturday. Turnaround: 2-5 days.

Additional Information:
To convert µg/L to µmol/L (SI units) multiply by 0.00499. Urine is the specimen of choice for exposure to inorganic mercury.

CPT Codes:
83825-90

LOINC Codes:
21383-5

Mercury, blood

HG

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
CVAA-FI

Reported:
Test run Wednesday & Friday. Turnaround: 2-5 days.

Additional Information:
To convert µg/L to µmol/L (SI units) multiply by 4.99. Blood is the preferred sample for poisoning w/ methyl mercury and other organic mercurials (e.g., thiomerosal).

Synonyms:

- Hg
- heavy metal toxicity
- heavy metal poisoning
- heavy metals

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Navy blue top (EDTA) tube

Amount to Collect:
5 mL blood

Preferred Volume:
5 mL blood

Minimum Volume:
2 mL blood

Remarks:
Mix well, inverting gently 5x.

PROCESSING

Test Code:
HG

Test Group:
Mercury

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Follow the detailed processing instructions for Trace Metal Analysis. Do NOT centrifuge or transfer to another container. Refrigerate. Order Quest # 56853N.

Preferred Volume:
5 mL blood

Minimum Volume:
2 mL blood

RESULT INTERPRETATION

Units:
µg/L (mcg/L)

Reference Interval:
<= 10 µg/L

Additional Information:
To convert µg/L to µmol/L (SI units) multiply by 4.99. Blood is the preferred sample for poisoning w/ methyl mercury and other organic mercurials (e.g., thiomerosal).

ADMINISTRATIVE

CPT Codes:
83825-90

LOINC Codes:
5685-3

COMPLETE VIEW

Available Stat:
No

Test Code:
HG

Test Group:
Mercury

Performing Lab:
Quest

Sendout:
Yes

Methodology:
CVAA-FI

Remarks:
Mix well, inverting gently 5x.

Collect:
Navy blue top (EDTA) tube

Amount to Collect:
5 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
5 mL blood

Minimum Volume:
2 mL blood

Specimen Preparation:
Follow the detailed processing instructions for Trace Metal Analysis. Do NOT centrifuge or transfer to another container. Refrigerate. Order Quest # 56853N.

Units:
µg/L (mcg/L)

Reference Interval:
<= 10 µg/L

Synonyms:

- Hg
- heavy metal toxicity
- heavy metal poisoning
- heavy metals

Reported:
Test run Wednesday & Friday. Turnaround: 2-5 days.

Additional Information:
To convert µg/L to µmol/L (SI units) multiply by 4.99. Blood is the preferred sample for poisoning w/ methyl mercury and other organic mercurials (e.g., thiomerosal).

CPT Codes:
83825-90

LOINC Codes:
5685-3

Mercury, random urine

HGUR

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Inductively-Coupled Plasma/Mass Spectrometry

Reported:
Performed 5 days per week. Turn around 3-5 days.

Synonyms:

- Hg
- heavy metal toxicity
- heavy metal poisoning
- heavy metals

COLLECTION

Patient Preparation:
Patient should refrain from eating predatory fish such as swordfish, tuna and shark at least three days prior to specimen collection.

Sample Type:
Random urine (2nd void)

Collect:
Urine cup

Amount to Collect:
See preferred volume

Preferred Volume:
14 mL urine

Minimum Volume:
5 mL urine

Remarks:
Wash hands before sample collection. Wipe hand dry with lint free paper towel. Do not use recycled paper. Collect aliquot of the second morning urine. For industrial monitoring, collect urine preshift.

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 5 days, frozen at -20C 2 weeks

PROCESSING

Test Code:
HGUR

Test Group:
Mercury

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Use powderless gloves to pour sample into acid-washed shipping container, if needed, Cap securely, freeze at -20C and ship frozen to China Basin. Order Quest # 637

Preferred Volume:
14 mL urine

Minimum Volume:
5 mL urine

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 5 days, frozen at -20C 2 weeks

RESULT INTERPRETATION

Units:
µg/g Creatinine (mcg/g Creatinine)

Reference Interval:
Nonexposed >= 18 year olds <= 4 µg/g creatinine Biologic exposure Index (preshift) <= 35 µg/g creatinine

Critical Values:
Quest Priority-1: >= 150 µg/g creatinine

ADMINISTRATIVE

CPT Codes:
82570-90, 83825-90

LOINC Codes:
13465-0

COMPLETE VIEW

Available Stat:
No

Test Code:
HGUR

Test Group:
Mercury

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Inductively-Coupled Plasma/Mass Spectrometry

Patient Preparation:
Patient should refrain from eating predatory fish such as swordfish, tuna and shark at least three days prior to specimen collection.

Remarks:
Wash hands before sample collection. Wipe hand dry with lint free paper towel. Do not use recycled paper. Collect aliquot of the second morning urine. For industrial monitoring, collect urine preshift.

Collect:
Urine cup

Amount to Collect:
See preferred volume

Sample Type:
Random urine (2nd void)

Preferred Volume:
14 mL urine

Minimum Volume:
5 mL urine

Specimen Preparation:
Use powderless gloves to pour sample into acid-washed shipping container, if needed, Cap securely, freeze at -20C and ship frozen to China Basin. Order Quest # 637

Units:
µg/g Creatinine (mcg/g Creatinine)

Reference Interval:
Nonexposed >= 18 year olds <= 4 µg/g creatinine Biologic exposure Index (preshift) <= 35 µg/g creatinine

Critical Values:
Quest Priority-1: >= 150 µg/g creatinine

Synonyms:

- Hg
- heavy metal toxicity
- heavy metal poisoning
- heavy metals

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 5 days, frozen at -20C 2 weeks

Reported:
Performed 5 days per week. Turn around 3-5 days.

CPT Codes:
82570-90, 83825-90

LOINC Codes:
13465-0

Metanephrines, 24 hour urine

METN

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
LC/MS/MS

Reported:
Test performed Monday-Friday. Turnaround time: 3-6 days.

Additional Information:
To convert µg/d to nmol/d (SI units) multiply by 5.07 (using MW 197.2).Creatinine is assayed as a measure of completeness of urine collection. If total creatinine excretion is not within normal limits for the patient's age and sex (see entry for Creatinine) and the patient has normal renal function, the urine collection is probably incomplete and the result is invalid.

COLLECTION

Patient Preparation:
Patient should avoid tobacco, tea, coffee, for 3 days prior to specimen collection.It is preferable for the patient to be off medications for 3 days prior to collection.Common antihypertensives (diuretics, ACE inhibitors, calcium channel blockers, alpha and beta blockers) cause minimal or no interference. Medications which are alpha agonists (Aldomet), alpha blockers (Dibenzyline) should be avoided 18-24 hrs prior to specimen collection.

Sample Type:
24 hour urine collection

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container, 30mL 6N HCL

Amount to Collect:
Entire 24 hour urine output

Preferred Volume:
10 mL urine

Minimum Volume:
3 mL urine

Remarks:
Obtain container from Specimen Receiving.Refrigerate container during collection

Stability (from collection to initiation):
Room temperature 1 week (acidified), refrigerated 8 days, frozen at -20C 1 month

PROCESSING

Test Code:
METN

Test Group:
Metanephrines

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Mix well before aliquoting. Adjust aliquot pH to 2-5 with 6N HCL and ship sample frozen. Record the patient's age and the total urine volume on the test request form and the transport vial. Order Quest#14962X for Metanephrines, 24 hour, urine.

Preferred Volume:
10 mL urine

Minimum Volume:
3 mL urine

Stability (from collection to initiation):
Room temperature 1 week (acidified), refrigerated 8 days, frozen at -20C 1 month

RESULT INTERPRETATION

Units:
µg/24 hours (mcg/24 hours)

Reference Interval:

Age	Metanephrine (µg/d)	Normetanephrine (µg/d)	Metanephrine, Total (µg/d)
3 months-4 years	25-117	54-249	79-345
5-9 years	11-139	31-398	49-408
10-13 years	51-275	67-503	110-714
14-17 years	40-189	69-531	107-741
18-29 years	25-222	40-412	94-604
30-39 years	36-190	35-482	115-695
40-49 years	58-203	88-649	182-739
>= 50 years	90-315	122-676	224-832

Additional Information:
To convert µg/d to nmol/d (SI units) multiply by 5.07 (using MW 197.2).Creatinine is assayed as a measure of completeness of urine collection. If total creatinine excretion is not within normal limits for the patient's age and sex (see entry for Creatinine) and the patient has normal renal function, the urine collection is probably incomplete and the result is invalid.

ADMINISTRATIVE

CPT Codes:
83835-90

COMPLETE VIEW

Available Stat:
No

Test Code:
METN

Test Group:
Metanephrines

Performing Lab:
Quest

Sendout:
Yes

Methodology:
LC/MS/MS

Patient Preparation:
Patient should avoid tobacco, tea, coffee, for 3 days prior to specimen collection.It is preferable for the patient to be off medications for 3 days prior to collection.Common antihypertensives (diuretics, ACE inhibitors, calcium channel blockers, alpha and beta blockers) cause minimal or no interference. Medications which are alpha agonists (Aldomet), alpha blockers (Dibenzyline) should be avoided 18-24 hrs prior to specimen collection.

Remarks:
Obtain container from Specimen Receiving.Refrigerate container during collection

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container, 30mL 6N HCL

Amount to Collect:
Entire 24 hour urine output

Sample Type:
24 hour urine collection

Preferred Volume:
10 mL urine

Minimum Volume:
3 mL urine

Specimen Preparation:
Mix well before aliquoting. Adjust aliquot pH to 2-5 with 6N HCL and ship sample frozen. Record the patient's age and the total urine volume on the test request form and the transport vial. Order Quest#14962X for Metanephrines, 24 hour, urine.

Units:
µg/24 hours (mcg/24 hours)

Reference Interval:

Age	Metanephrine (µg/d)	Normetanephrine (µg/d)	Metanephrine, Total (µg/d)
3 months-4 years	25-117	54-249	79-345
5-9 years	11-139	31-398	49-408
10-13 years	51-275	67-503	110-714
14-17 years	40-189	69-531	107-741
18-29 years	25-222	40-412	94-604
30-39 years	36-190	35-482	115-695
40-49 years	58-203	88-649	182-739
>= 50 years	90-315	122-676	224-832

Stability (from collection to initiation):

Room temperature 1 week (acidified), refrigerated 8 days, frozen at -20C 1 month

Reported:

Test performed Monday-Friday. Turnaround time: 3-6 days.

Additional Information:

To convert µg/d to nmol/d (SI units) multiply by 5.07 (using MW 197.2).Creatinine is assayed as a measure of completeness of urine collection. If total creatinine excretion is not within normal limits for the patient's age and sex (see entry for Creatinine) and the patient has normal renal function, the urine collection is probably incomplete and the result is invalid.

CPT Codes:

83835-90

Metanephrines, Free, fractionated, plasma

METNF

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
LC/MS/MS

Additional Information:
Normetanephrine (NM) and metanephrine (MN) are the extra-neuronal catechol-o-methyltransferase (COMT) metabolites of the catecholamines norepinephrine and epinephrine, respectively. Measurement of plasma metanephrines is more sensitive (but may be less specific) than measurement of catecholamines for the detection of pheochromocytoma. Proper interpretation of results requires awareness of recent medication/drug history(e.f., antihypertensive agents, alcohol, cocaine) and other pre-analytical factors (e.f., stree, severe congestive heart failure, myocardial infarction) that influence release of catecholamines and metanephrines.

Synonyms:

- Metanephrines, plasma
- plasma metanephrines

COLLECTION

Patient Preparation:
Patient should be relaxed in either a supine or upright position before blood is drawn. Patients should avoid alcohol, coffee, tea, tobacco and strenuous exercise prior to collection. Overnight fasting is preferred.

Sample Type:
Plasma

Collect:
Lavender top 6 mL (on ice)

Amount to Collect:
6 mL blood

Preferred Volume:
2.5 mL plasma

Minimum Volume:
1.5 mL plasma

Remarks:
Draw specimen in a pre-chilled EDTA Lavender top (6 mL) and send to Lab on ICE.

Stability (from collection to initiation):
Room temperature 4 hours, refrigerated 2 weeks, frozen at -20C 2 weeks.

PROCESSING

Test Code:
METNF

Test Group:
Metanephrines

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Maintain on ice until centrifuged. Separate the plasma within 2 hours of venipuncture. Freeze plasma immediately. Store frozen at -20C. Ship on dry ice to China Basin. Order Quest test # 19548.

Preferred Volume:
2.5 mL plasma

Minimum Volume:
1.5 mL plasma

Stability (from collection to initiation):
Room temperature 4 hours, refrigerated 2 weeks, frozen at -20C 2 weeks.

RESULT INTERPRETATION

Units:
pg/mL

Reference Interval:
Metanephrine: <= 57 pg/mL
Normetanephrine: <= 148 pg/mL
Total: <= 205 pg/mL

Additional Information:
Normetanephrine (NM) and metanephrine (MN) are the extra-neuronal catechol-o-methyltransferase (COMT) metabolites of the catecholamines norepinephrine and epinephrine, respectively. Measurement of plasma metanephrines is more sensitive (but may be less specific) than measurement of catecholamines for the detection of pheochromocytoma. Proper interpretation of results requires awareness of recent medication/drug history(e.f., antihypertensive agents, alcohol, cocaine) and other pre-analytical factors (e.f., stree, severe congestive heart failure, myocardial infarction) that influence release of catecholamines and metanephrines.

ADMINISTRATIVE

CPT Codes:
83835-90

COMPLETE VIEW

Available Stat:
No

Test Code:
METNF

Test Group:
Metanephrines

Performing Lab:
Quest

Sendout:
Yes

Methodology:
LC/MS/MS

Patient Preparation:
Patient should be relaxed in either a supine or upright position before blood is drawn. Patients should avoid alcohol, coffee, tea, tobacco and strenuous exercise prior to collection. Overnight fasting is preferred.

Remarks:
Draw specimen in a pre-chilled EDTA Lavender top (6 mL) and send to Lab on ICE.

Collect:
Lavender top 6 mL (on ice)

Amount to Collect:
6 mL blood

Sample Type:
Plasma

Preferred Volume:
2.5 mL plasma

Minimum Volume:
1.5 mL plasma

Specimen Preparation:
Maintain on ice until centrifuged. Separate the plasma within 2 hours of venipuncture. Freeze plasma immediately. Store frozen at -20C. Ship on dry ice to China Basin. Order Quest test # 19548.

Units:
pg/mL

Reference Interval:
Metanephrine: <= 57 pg/mL
Normetanephrine: <= 148 pg/mL
Total: <= 205 pg/mL

Synonyms:

- Metanephrines, plasma
- plasma metanephrines

Stability (from collection to initiation):
Room temperature 4 hours, refrigerated 2 weeks, frozen at -20C 2 weeks.

Additional Information:

Normetanephrine (NM) and metanephrine (MN) are the extra-neuronal catechol-o-methyltransferase (COMT) metabolites of the catecholamines norepinephrine and epinephrine, respectively. Measurement of plasma metanephrines is more sensitive (but may be less specific) than measurement of catecholamines for the detection of pheochromocytoma. Proper interpretation of results requires awareness of recent medication/drug history(e.f., antihypertensive agents, alcohol, cocaine) and other pre-analytical factors (e.f., stree, severe congestive heart failure, myocardial infarction) that influence release of catecholamines and metanephrines.

CPT Codes:

83835-90

Metanephrines, random urine

METNR

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
LC/MS/MS

COLLECTION

Patient Preparation:
Patient should avoid tobacco, tea, coffee, for 3 days prior to specimen collection.

It is preferable for the patient to be off medications for 3 days prior to collection.

Common antihypertensives (diuretics, ACE inhibitors, calcium channel blockers, alpha and beta blockers) cause minimal or no interference. Medications which are alpha agonists (Aldomet), alpha blockers (Dibenzyline) should be avoided 18-24 hrs prior to specimen collection.

Sample Type:
Random urine

Collect:
Uirne cup

Amount to Collect:
5 mL urine

Preferred Volume:
5 mL urine

Minimum Volume:
1.5 mL urine

Stability (from collection to initiation):
Acidified urine: Room temperature 1 week, refrigerated 8 days, frozen at -20C 1 month

PROCESSING

Test Code:
METNR

Test Group:
Metanephrines

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Acidify urine to pH < 3.0 with 6N HCl. Freeze acidified urine at -20C Order Quest test #14961X

Preferred Volume:
5 mL urine

Minimum Volume:
1.5 mL urine

Stability (from collection to initiation):
Acidified urine: Room temperature 1 week, refrigerated 8 days, frozen at -20C 1 month

RESULT INTERPRETATION

Units:
µg/g creatinine

Reference Interval:

Metanephrine:

3 mo-4 years	Not established
5-9 years	106-257 µg/g creatinine
10-13 years	34-357 µg/g creatinine
14-17 years	24-302 µg/g creatinine
18-29 years	39-146 µg/g creatinine
30-39 years	32-134 µg/g creatinine
40-49 years	33-192 µg/g creatinine
>=50 years	21-153 µg/g creatinine

Normetanephrine:

3 months-4 years	Not Established
5-9 years	149-781 µg/g creatinine
10-13 years	38-523 µg/g creatinine
14-17 years	14-302 µg/g creatinine
18-29 years	91-365 µg/g creatinine
30-39 years	67-390 µg/g creatinine
40-49 years	85-514 µg/g creatinine
>=50 years	108-524 µg/g creatinine

Total metanephrines:

3 months-4 years Not Established

5-9 years	255-1167 µg/g creatinine
10-13 years	86-845 µg/g creatinine
14-17 years	39-578 µg/g creatinine
18-29 years	156-442 µg/g creatinine
30-39 years	94-445 µg/g creatinine
40-49 years	155-608 µg/g creatinine
>=50 years	149-603 µg/g creatinine

ADMINISTRATIVE

CPT Codes:
82570-90, 83835-90

LOINC Codes:
13771-1

COMPLETE VIEW

Available Stat:
No

Test Code:
METNR

Test Group:
Metanephrines

Performing Lab:
Quest

Sendout:
Yes

Methodology:
LC/MS/MS

Patient Preparation:

Patient should avoid tobacco, tea, coffee, for 3 days prior to specimen collection.

It is preferable for the patient to be off medications for 3 days prior to collection.

Common antihypertensives (diuretics, ACE inhibitors, calcium channel blockers, alpha and beta blockers) cause minimal or no interference. Medications which are alpha agonists (Aldomet), alpha blockers (Dibenzyline) should be avoided 18-24 hrs prior to specimen collection.

Collect:

Uirne cup

Amount to Collect:

5 mL urine

Sample Type:

Random urine

Preferred Volume:

5 mL urine

Minimum Volume:

1.5 mL urine

Specimen Preparation:

Acidify urine to pH < 3.0 with 6N HCl. Freeze acidified urine at -20C Order Quest test #14961X

Units:

µg/g creatinine

Reference Interval:

Metanephrine:

3 mo-4 years	Not established
5-9 years	106-257 µg/g creatinine
10-13 years	34-357 µg/g creatinine
14-17 years	24-302 µg/g creatinine
18-29 years	39-146 µg/g creatinine
30-39 years	32-134 µg/g creatinine
40-49 years	33-192 µg/g creatinine
>=50 years	21-153 µg/g creatinine

Normetanephrine:

3 months-4 years	Not Established
5-9 years	149-781 µg/g creatinine
10-13 years	38-523 µg/g creatinine
14-17 years	14-302 µg/g creatinine
18-29 years	91-365 µg/g creatinine
30-39 years	67-390 µg/g creatinine
40-49 years	85-514 µg/g creatinine
>=50 years	108-524 µg/g creatinine

Total metanephrines:

3 months-4 years Not Established

5-9 years	255-1167 µg/g creatinine
10-13 years	86-845 µg/g creatinine
14-17 years	39-578 µg/g creatinine
18-29 years	156-442 µg/g creatinine
30-39 years	94-445 µg/g creatinine
40-49 years	155-608 µg/g creatinine
>=50 years	149-603 µg/g creatinine

Stability (from collection to initiation):

Acidified urine: Room temperature 1 week, refrigerated 8 days, frozen at -20C 1 month

CPT Codes:

82570-90, 83835-90

LOINC Codes:
13771-1

Metaphase / Interphase FISH

CYFMB

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Set up daily, Monday-Friday

Methodology:
Fluorescent in-situ hybridization

Reported:
7-14 days

Additional Information:
A normal result indicates that there was no evidence of a deletion present. However, this does not exclude the possibility that an undetected mutation exists.

Non-Oncology probes:
Submicroscopic deletions in the regions listed below, associated with the specified syndromes, are detected by the examination of 10 metaphase cells using the appropriate probe set with an internal control. A normal result indicates there was no evidence of deletions or other abnormal hybridization patterns.

Syndrome	Test Code	Locus/Gene
Wolf Hirshhorn	WHS	4p16
Cri du Chat	CDCR	5p15
Williams	WMS	7q11.23
Retinoblastoma	RB1	13q14
Prader Willi	PW	SNRPN/CEP15/D15S10
Smith Magenis	SMS	17p11.2
Miller Dieker	MDIE	17p13.3
DiGeorge/VCF/distal 22q TUPLE1/ARSA	DGS	22q11.2/22q13
Kallman syndrome	KAL	Xp22.3
Steroid sulfatase deficiency	STSD	Xp22.3
SRY Region	SRY	Yp11.3
Angelman	AGM	D15S10/CEP15/PML
XY metaphase FISH	CYXY	CEPX/DYZ1
14/22 FISH	MAR	FISH for marker chromosome

**The DNA methylation test "PWA" must be done prior the FISH test for microdeletion detection for Prader Willi/Angelman syndrome.

See Molecular Diagnostics-test Prader Willi/Angelman for sample collection information.

Oncology probes:

Name	Test code
BCR/ABL	TR922
PML/RARA	TR1517
Trisomy 8	TRIS8
Monosomy 7/Deletion 7q	M7D7Q
Donor/Sex Specific (XXXY)	XXXY
Monosomy 5/Deletion 5q	M5D5Q
MLL 11q23	MLLQ23
Deletion 20q	DEL20Q
Duplication 1Q	DUP1Q
Deletion 13Q	DEL13Q
Translocation 4/14	TR414

Translocation 11/14	TR1114
Translocation 14/16	TR1416
Deletion 17p	DEL17P
Deletion 11Q	DEL11Q
Trisomy 12	TRIS12
Inv/Trans/del 16q	INV16Q
Translocation 8:21	TR821
Translocation 8/14	TR814
Translocation 14/18	TR1418
14q23 breakapart	IGHQ23

Each FISH test is developed and its performance characteristics determined by the UCSF Cytogenetics Laboratory as required by CLIA '88 regulations. It has not been cleared or approved for specific uses by the U.S. Food and Drug Administration. All FISH probes undergo internal validation and quality control testing at UCSF Cytogenetics Lab prior to use.

Reflex Testing:

If an abnormality is detected the Director will determine the appropriate additional studies to be performed to characterize the abnormality.

Additional testing may be omitted if specifically requested when the sample is submitted for cytogenetic analysis.

Synonyms:

- Cytogenetic analysis
- microdeletion
- chromosome analysis
- inherited disorders
- oncology FISH
- non-oncology FISH
- Karyotype
- Karyotyping
- Wolf Hirshhorn
- 4p16
- Cri du Chat
- 5p15
- Williams
- 7q11.23
- Retinoblastoma
- 13q14
- Prader Willi
- Angelman
- SNRPN
- 15q11-q13
- Smith
- Magenis
- 17p11.2
- Miller Dieker
- 17p13.3
- DiGeorge
- distal 22q
- TUPLE1
- ARSA
- 22q11.2/22q13
- Kallman syndrome
- Xp22.3
- Steroid sulfatase deficiency
- SRY Region
- Yp11.3
- BCR/ABL
- PML/RARA
- Trisomy 8
- Monosomy 7/Deletion 7q
- Donor/Sex Specific (XXXY)
- Monosomy 5/Deletion 5q
- MLL 11q23
- Deletion 20q
- Duplication 1Q
- Deletion 13Q
- Translocation 4/14
- Translocation 11/14
- Translocation 14/16
- Deletion 17p
- Deletion 11Q
- Trisomy 12
- Inv/Trans/del 16q
- Translocation 8:21
- Translocation 8/14
- Translocation 14/18
- 14q23 breakapart

Supplemental Test Request Form Required:

Yes

COLLECTION

Sample Type:

Heparinized whole blood, Amniotic fluid, CVS, Unfixed tissue

Collect:

Blood: Dark green top
Amniotic fluid: Sterile screw top container
CVS or POC: 15 mL centrifuge tube with transport media (RPMI, FBS, L-Glutamine, Sodium Heparin and PenStrep). Available from Cytogenetics.

Amount to Collect:
See preferred volume

Preferred Volume:
Whole blood, child or adult: 10 mL
Whole blood, infant: 3 mL
Amniotic Fluid: 10 mL
CVS: 10 mg
POC: 10 mg

Minimum Volume:
Whole blood, child or adult: 3 mL
Whole blood, infant: 1 mL
Amniotic Fluid: 5 mL
CVS: 5 mg
POC: 5 mg

Remarks:
Complete and submit a "UCSF Reproductive Genetics Lab Results" or a "UCSF Cytogenetic Requisition" form and send with the samples.

Keep samples at Room temperature. DO NOT CENTRIFUGE for any reason.

Stability (from collection to initiation):
48 hours

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

PROCESSING

Test Code:
CYFMB

Test Group:
Chromosome Analysis

Performing Lab:
Medical Genomics - Cytogenetics

Specimen Preparation:
Keep samples at Room temperature. DO NOT CENTRIFUGE for any reason. Send all tubes and completed paperwork asap to the Cytogenetics laboratory at China Basin.

Preferred Volume:
Whole blood, child or adult: 10 mL
Whole blood, infant: 3 mL
Amniotic Fluid: 10 mL
CVS: 10 mg
POC: 10 mg

Minimum Volume:
Whole blood, child or adult: 3 mL
Whole blood, infant: 1 mL
Amniotic Fluid: 5 mL
CVS: 5 mg
POC: 5 mg

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

Stability (from collection to initiation):
48 hours

RESULT INTERPRETATION

Reference Interval:
Normal. See Additional Information

Additional Information:
A normal result indicates that there was no evidence of a deletion present. However, this does not exclude the possibility that an undetected mutation exists.

Non-Oncology probes:
Submicroscopic deletions in the regions listed below, associated with the specified syndromes, are detected by the examination of 10 metaphase cells using the appropriate probe set with an internal control. A normal result indicates there was no evidence of deletions or other abnormal hybridization
patterns.

Syndrome	Test Code	Locus/Gene
Wolf Hirshhorn	WHS	4p16

Cri du Chat	CDCR	5p15
Williams	WMS	7q11.23
Retinoblastoma	RB1	13q14
Prader Willi	PW	SNRPN/CEP15/D15S10
Smith Magenis	SMS	17p11.2
Miller Dieker	MDIE	17p13.3
DiGeorge/VCF/distal 22q TUPLE1/ARSA	DGS	22q11.2/22q13
Kallman syndrome	KAL	Xp22.3
Steroid sulfatase deficiency	STSD	Xp22.3
SRY Region	SRY	Yp11.3
Angelman	AGM	D15S10/CEP15/PML
XY metaphase FISH	CYXY	CEPX/DYZ1
14/22 FISH	MAR	FISH for marker chromosome

**The DNA methylation test "PWA" must be done prior the FISH test for microdeletion detection for Prader Willi/Angelman syndrome.

See Molecular Diagnostics-test Prader Willi/Angelman for sample collection information.

Oncology probes:

Name	Test code
BCR/ABL	TR922
PML/RARA	TR1517
Trisomy 8	TRIS8
Monosomy 7/Deletion 7q	M7D7Q
Donor/Sex Specific (XXXY)	XXXY
Monosomy 5/Deletion 5q	M5D5Q
MLL 11q23	MLLQ23
Deletion 20q	DEL20Q
Duplication 1Q	DUP1Q
Deletion 13Q	DEL13Q
Translocation 4/14	TR414
Translocation 11/14	TR1114
Translocation 14/16	TR1416
Deletion 17p	DEL17P
Deletion 11Q	DEL11Q
Trisomy 12	TRIS12
Inv/Trans/del 16q	INV16Q
Translocation 8:21	TR821
Translocation 8/14	TR814
Translocation 14/18	TR1418
14q23 breakapart	IGHQ23

Each FISH test is developed and its performance characteristics determined by
the UCSF Cytogenetics Laboratory as required by CLIA '88 regulations. It has not been cleared or approved for specific uses by the U.S. Food and Drug Administration. All FISH probes undergo internal validation and quality control testing at UCSF Cytogenetics Lab prior to use.

ADMINISTRATIVE

CPT Codes:
88273, 88271

LDT or Modified FDA:
Yes

LOINC Codes:
48818-9

COMPLETE VIEW

Available Stat:
No

Test Code:
CYFMB

Test Group:
Chromosome Analysis

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Set up daily, Monday-Friday

Methodology:
Fluorescent in-situ hybridization

Remarks:
Complete and submit a "UCSF Reproductive Genetics Lab Results" or a "UCSF Cytogenetic Requisition" form and send with the samples.

Keep samples at Room temperature. DO NOT CENTRIFUGE for any reason.

Collect:
Blood: Dark green top
Amniotic fluid: Sterile screw top container
CVS or POC: 15 mL centrifuge tube with transport media (RPMI, FBS, L-Glutamine, Sodium Heparin and PenStrep). Available from Cytogenetics.

Amount to Collect:
See preferred volume

Sample Type:
Heparinized whole blood, Amniotic fluid, CVS, Unfixed tissue

Preferred Volume:
Whole blood, child or adult: 10 mL
Whole blood, infant: 3 mL
Amniotic Fluid: 10 mL
CVS: 10 mg
POC: 10 mg

Minimum Volume:
Whole blood, child or adult: 3 mL
Whole blood, infant: 1 mL
Amniotic Fluid: 5 mL
CVS: 5 mg
POC: 5 mg

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

Specimen Preparation:
Keep samples at Room temperature. DO NOT CENTRIFUGE for any reason. Send all tubes and completed paperwork asap to the Cytogenetics laboratory at China Basin.

Reference Interval:
Normal. See Additional Information

Synonyms:

- Cytogenetic analysis
- microdeletion
- chromosome analysis
- inherited disorders
- oncology FISH
- non-oncology FISH
- Karyotype
- Karyotyping
- Wolf Hirshhorn
- 4p16
- Cri du Chat
- 5p15
- Williams
- 7q11.23
- Retinoblastoma
- 13q14
- Prader Willi
- Angelman
- SNRPN
- 15q11-q13
- Smith
- Magenis
- 17p11.2
- Miller Dieker
- 17p13.3
- DiGeorge
- distal 22q
- TUPLE1
- ARSA
- 22q11.2/22q13
- Kallman syndrome
- Xp22.3
- Steroid sulfatase deficiency
- SRY Region
- Yp11.3
- BCR/ABL
- PML/RARA
- Trisomy 8
- Monosomy 7/Deletion 7q
- Donor/Sex Specific (XXXY)
- Monosomy 5/Deletion 5q
- MLL 11q23
- Deletion 20q
- Duplication 1Q
- Deletion 13Q
- Translocation 4/14
- Translocation 11/14
- Translocation 14/16
- Deletion 17p
- Deletion 11Q
- Trisomy 12
- Inv/Trans/del 16q
- Translocation 8:21
- Translocation 8/14
- Translocation 14/18
- 14q23 breakapart

Stability (from collection to initiation):
48 hours

Reported:
7-14 days

Reflex Testing:
If an abnormality is detected the Director will determine the appropriate additional studies to be performed to characterize the abnormality.

Additional testing may be omitted if specifically requested when the sample is submitted for cytogenetic analysis.

Additional Information:
A normal result indicates that there was no evidence of a deletion present. However, this does not exclude the possibility that an undetected mutation exists.

Non-Oncology probes:
Submicroscopic deletions in the regions listed below, associated with the specified syndromes, are detected by the examination of 10 metaphase cells using the appropriate probe set with an internal control. A normal result indicates there was no evidence of deletions or other abnormal hybridization
patterns.

Syndrome	Test Code	Locus/Gene
Wolf Hirshhorn	WHS	4p16
Cri du Chat	CDCR	5p15
Williams	WMS	7q11.23
Retinoblastoma	RB1	13q14
Prader Willi	PW	SNRPN/CEP15/D15S10
Smith Magenis	SMS	17p11.2
Miller Dieker	MDIE	17p13.3
DiGeorge/VCF/distal 22q TUPLE1/ARSA	DGS	22q11.2/22q13
Kallman syndrome	KAL	Xp22.3
Steroid sulfatase deficiency	STSD	Xp22.3
SRY Region	SRY	Yp11.3
Angelman	AGM	D15S10/CEP15/PML
XY metaphase FISH	CYXY	CEPX/DYZ1
14/22 FISH	MAR	FISH for marker chromosome

**The DNA methylation test "PWA" must be done prior the FISH test for microdeletion detection for Prader Willi/Angelman syndrome.

See Molecular Diagnostics-test Prader Willi/Angelman for sample collection information.

Oncology probes:

Name	Test code
BCR/ABL	TR922
PML/RARA	TR1517
Trisomy 8	TRIS8
Monosomy 7/Deletion 7q	M7D7Q
Donor/Sex Specific (XXXY)	XXXY
Monosomy 5/Deletion 5q	M5D5Q
MLL 11q23	MLLQ23
Deletion 20q	DEL20Q
Duplication 1Q	DUP1Q
Deletion 13Q	DEL13Q
Translocation 4/14	TR414
Translocation 11/14	TR1114
Translocation 14/16	TR1416
Deletion 17p	DEL17P
Deletion 11Q	DEL11Q
Trisomy 12	TRIS12
Inv/Trans/del 16q	INV16Q
Translocation 8:21	TR821
Translocation 8/14	TR814
Translocation 14/18	TR1418
14q23 breakapart	IGHQ23

Each FISH test is developed and its performance characteristics determined by
the UCSF Cytogenetics Laboratory as required by CLIA '88 regulations. It has not been cleared or approved for specific uses by the U.S. Food and Drug Administration. All FISH probes undergo internal validation and quality control testing at UCSF Cytogenetics Lab prior to use.

CPT Codes:
88273, 88271

LDT or Modified FDA:
Yes

LOINC Codes:
48818-9

Supplemental Test Request Form Required:
Yes

Methadone and Metabolite, Urine, Quantitative

MEDQNT

ORDERING

Ordering Recommendations:
Use to obtain quantitative results or to follow up a presumptive result. For general screening, the preferred test is Methadone Urine Screen with Reflex to Quantitation (2012245).

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Reported:
1-7 days

Synonyms:

- Amidone
- Dolophine
- EDDP
- Heptadon
- Methadone
- Methadose
- Pain Management
- Pain Management, Methadone, Quantitative, with medMATCH, Urine
- Pain Management, Methadone, with Confirmation with medMATCH, Urine
- Physeptone
- Symoron

COLLECTION

Collect:
Random urine.

Amount to Collect:
1 mL

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Stability (from collection to initiation):
Ambient: 1 week; Refrigerated: 1 month; Frozen: 3 years

Storage/Transport Temperature:
Room temperature.

Unacceptable Conditions:
Specimens exposed to repeated freeze/thaw cycles.

PROCESSING

Test Code:
MEDQNT

ARUP Test Code:
0090362

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transfer 1 mL with no additives or preservatives urine to an ARUP standard transport tube. (Min: 0.5 mL)

Additional Processing Instructions:
Aliquot and freeze sample. Transport to CB frozen. Order ARUP test code 0090362.

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Unacceptable Conditions:
Specimens exposed to repeated freeze/thaw cycles.

Stability (from collection to initiation):
Ambient: 1 week; Refrigerated: 1 month; Frozen: 3 years

Storage/Transport Temperature:
Room temperature.

RESULT INTERPRETATION

Reference Interval:

Drugs Covered	Cutoff Concentrations
Methadone	100 ng/mL
EDDP	100 ng/mL

Interpretive Data:
Methodology: Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Positive cutoff: 100 ng/mL

For medical purposes only; not valid for forensic use.

The absence of expected drug(s) and/or drug metabolite(s) may indicate noncompliance, inappropriate timing of specimen collection relative to drug administration, poor drug absorption, diluted/adulterated urine, or limitations of testing. The concentration value must be greater than or equal to the cutoff to be reported as positive. Interpretive questions should be directed to the laboratory.

ADMINISTRATIVE

CPT Codes:
80358 (Alt code: G0480)

LOINC:

- 3774-7
- 50542-0

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Use to obtain quantitative results or to follow up a presumptive result. For general screening, the preferred test is Methadone Urine Screen with Reflex to Quantitation (2012245).

Test Code:
MEDQNT

ARUP Test Code:
0090362

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Collect:
Random urine.

Amount to Collect:
1 mL

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Unacceptable Conditions:
Specimens exposed to repeated freeze/thaw cycles.

Specimen Preparation:
Transfer 1 mL with no additives or preservatives urine to an ARUP standard transport tube. (Min: 0.5 mL)

Additional Processing Instructions:
Aliquot and freeze sample. Transport to CB frozen. Order ARUP test code 0090362.

Reference Interval:

Drugs Covered	Cutoff Concentrations
Methadone	100 ng/mL
EDDP	100 ng/mL

Interpretive Data:
Methodology: Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Positive cutoff: 100 ng/mL

For medical purposes only; not valid for forensic use.

The absence of expected drug(s) and/or drug metabolite(s) may indicate noncompliance, inappropriate timing of specimen collection relative to drug administration, poor drug absorption, diluted/adulterated urine, or limitations of testing. The concentration value must be greater than or equal to the cutoff to be reported as positive. Interpretive questions should be directed to the laboratory.

Synonyms:

- Amidone
- Dolophine
- EDDP
- Heptadon
- Methadone
- Methadose
- Pain Management
- Pain Management, Methadone, Quantitative, with medMATCH, Urine
- Pain Management, Methadone, with Confirmation with medMATCH, Urine
- Physeptone
- Symoron

Storage/Transport Temperature:
Room temperature.

Stability (from collection to initiation):
Ambient: 1 week; Refrigerated: 1 month; Frozen: 3 years

Reported:
1-7 days

CPT Codes:
80358 (Alt code: G0480)

LOINC:

- 3774-7
- 50542-0

Notes:
Compare to Pain Management, Methadone, Quantitative, with medMATCH, Urine; Pain Management, Methadone, with Confirmation with medMATCH, Urine.

Methadone screen, urine

METHA

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus and Mission Bay Chemistry

Performed:
Test available 24 hours per day, 7 days a week.

Methodology:
Homogenous competitive enzyme immunoassay using G6PDH- labeling

Additional Information:
A concentration of <300 µg/L is considered negative by this test. A positive result is >= 300 µg/L and indicates the presence of methadone. This immunoassay is only a screening test and is not definitive. It is only designed to detect the parent drug, methadone, and NOT the major methadone metabolites (EDDP, EMDP).

Results cannot be used for medico-legal purposes.

Click here for a list of cross-reactive substances.

Positive results will NOT be automatically confirmed. If a confirmation is required, call the laboratory at 415 353 1667 within 7 days of sample collection to request to add-on a methadone confirmation (detects methadone and EDDP, the major metabolite; test code MEDQNT).

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
See preferred volume

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Stability (from collection to initiation):
Refrigerated for 7 days, frozen at -20C 1 month.

Storage/Transport Temperature:
Refrigerated 7 days, frozen at -20C 1 month

PROCESSING

Test Code:
METHA

Test Group:
Methadone

Performing Lab:
Parnassus and Mission Bay Chemistry

Specimen Preparation:
Refrigerate sample.

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Stability (from collection to initiation):
Refrigerated for 7 days, frozen at -20C 1 month.

Storage/Transport Temperature:
Refrigerated 7 days, frozen at -20C 1 month

RESULT INTERPRETATION

Reference Interval:
Negative

Note: a negative result indicates that methadone is not present, or it is present at a concentration below the cut-off concentration of 300 µg/L.

Additional Information:
A concentration of <300 µg/L is considered negative by this test. A positive result is >= 300 µg/L and indicates the presence of methadone. This immunoassay is only a screening test and is not definitive. It is only designed to detect the parent drug, methadone, and NOT the major methadone metabolites (EDDP, EMDP).

Results cannot be used for medico-legal purposes.

Click here for a list of cross-reactive substances.

Positive results will NOT be automatically confirmed. If a confirmation is required, call the laboratory at 415 353 1667 within 7 days of sample collection to request to add-on a methadone confirmation (detects methadone and EDDP, the major metabolite; test code MEDQNT).

ADMINISTRATIVE

CPT Codes:
80307

LOINC Codes:
19550-3

COMPLETE VIEW

Available Stat:
Yes

Test Code:
METHA

Test Group:
Methadone

Performing Lab:
Parnassus and Mission Bay Chemistry

Performed:
Test available 24 hours per day, 7 days a week.

Methodology:
Homogenous competitive enzyme immunoassay using G6PDH- labeling

Collect:
Urine cup

Amount to Collect:
See preferred volume

Sample Type:
Random urine

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Specimen Preparation:
Refrigerate sample.

Reference Interval:
Negative

Note: a negative result indicates that methadone is not present, or it is present at a concentration below the cut-off concentration of 300 µg/L.

Storage/Transport Temperature:
Refrigerated 7 days, frozen at -20C 1 month

Stability (from collection to initiation):
Refrigerated for 7 days, frozen at -20C 1 month.

Additional Information:

A concentration of <300 µg/L is considered negative by this test. A positive result is >= 300 µg/L and indicates the presence of methadone. This immunoassay is only a screening test and is not definitive. It is only designed to detect the parent drug, methadone, and NOT the major methadone metabolites (EDDP, EMDP).

Results cannot be used for medico-legal purposes.

Click here for a list of cross-reactive substances.

Positive results will NOT be automatically confirmed. If a confirmation is required, call the laboratory at 415 353 1667 within 7 days of sample collection to request to add-on a methadone confirmation (detects methadone and EDDP, the major metabolite; test code MEDQNT).

CPT Codes:

80307

LOINC Codes:

19550-3

Methadone, serum

MOLT

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
GC/MS

Reported:
Test run Thursday. Turnaround time: 1-8 days.

COLLECTION

Sample Type:
Serum

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
6 mL blood

Preferred Volume:
3 mL serum

Minimum Volume:
1 mL serum

Unacceptable Conditions:
Collected in Gold top

PROCESSING

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Test Group:
Methadone

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate. Order Quest # 16890

Preferred Volume:
3 mL serum

Minimum Volume:
1 mL serum

Unacceptable Conditions:
Collected in Gold top

RESULT INTERPRETATION

Units:
mg/L

Reference Interval:
Therapeutic: 0.05-1.0 mg/L
Toxic: > 1.0 mg/L

ADMINISTRATIVE

CPT Codes:
83840-90

COMPLETE VIEW

Available Stat:
No

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Test Group:
Methadone

Performing Lab:
Quest

Sendout:
Yes

Methodology:
GC/MS

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
6 mL blood

Sample Type:
Serum

Preferred Volume:
3 mL serum

Minimum Volume:
1 mL serum

Unacceptable Conditions:
Collected in Gold top

Specimen Preparation:
Refrigerate. Order Quest # 16890

Units:
mg/L

Reference Interval:
Therapeutic: 0.05-1.0 mg/L
Toxic: > 1.0 mg/L

Reported:
Test run Thursday. Turnaround time: 1-8 days.

CPT Codes:
83840-90

Methaqualone

MQL

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
GC/MS

Reported:
7-10 days

Additional Information:
Methaqualone was formerly marketed as a sedative and hypnotic; However there is no prescribed dosage form currently available. Abuse potential exists due to euphoric properties.

Synonyms:

- Quaalude

COLLECTION

Sample Type:
Urine

Collect:
Urine container

Amount to Collect:
30 mL

Preferred Volume:
30 mL

Minimum Volume:
1.5 mL

Stability (from collection to initiation):
Room temperature: 5 days
Refrigerated: 21 days
Frozen: 1 year

PROCESSING

Test Code:
MQL

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot and freeze specimen. Transport to CB frozen. Order Quest test code 6197Z.

Preferred Volume:
30 mL

Minimum Volume:
1.5 mL

Stability (from collection to initiation):
Room temperature: 5 days
Refrigerated: 21 days
Frozen: 1 year

RESULT INTERPRETATION

Additional Information:
Methaqualone was formerly marketed as a sedative and hypnotic; However there is no prescribed dosage form currently available. Abuse potential exists due to euphoric properties.

ADMINISTRATIVE

CPT Codes:
80368 - 90 (G0480-90)

LOINC Codes:
3786-1

COMPLETE VIEW

Available Stat:
No

Test Code:
MQL

Performing Lab:
Quest

Sendout:
Yes

Methodology:
GC/MS

Collect:
Urine container

Amount to Collect:
30 mL

Sample Type:
Urine

Preferred Volume:
30 mL

Minimum Volume:
1.5 mL

Specimen Preparation:
Aliquot and freeze specimen. Transport to CB frozen. Order Quest test code 6197Z.

Synonyms:

- Quaalude

Stability (from collection to initiation):
Room temperature: 5 days
Refrigerated: 21 days
Frozen: 1 year

Reported:
7-10 days

Additional Information:
Methaqualone was formerly marketed as a sedative and hypnotic; However there is no prescribed dosage form currently available. Abuse potential exists due to euphoric properties.

CPT Codes:
80368 - 90 (G0480-90)

LOINC Codes:
3786-1

Methicillin Resistant Staph aureus Screen

P114

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Daily

Methodology:
Culture with selective/differential media

Reported:
24-48 hours

Additional Information:
Per California law effective 1/1/2009 all patients admitted to UCSF who meet one or more of the following 5 criteria must be screened for MRSA within 24 hours of admission.

Screening Criteria:
1. Patients previously discharged from an acute care hospital within 30 days of UCSF admission
2. Patients admitted to an intensive care unit
3. Patients receiving inpatient dialysis
4. Patients transferred from skilled nursing facilities

Screening is performed on swabs from the patient's anterior nares only.

Synonyms:

- MRSA screen
- Staphylococcus aureus

COLLECTION

Patient Preparation:
None

Sample Type:
Anterior nares swab

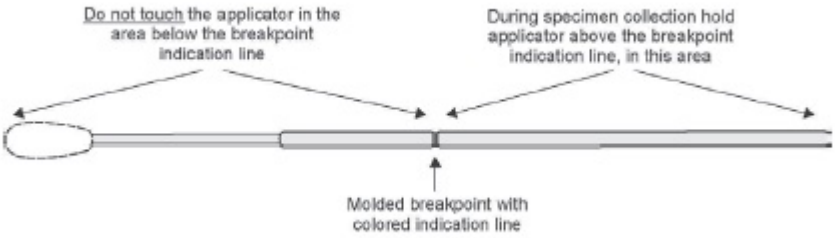
Collect:
Swabs in Amies transport media with charcoal or E-swab

Amount to Collect:
2 swabs in Amies transport media with charcoal or 1 E-swab

Preferred Volume:
2 swabs in Amies transport media with charcoal or 1 E-swab

Minimum Volume:
2 swabs in Amies transport media with charcoal or 1 E-swab

Remarks:
For Amies trasnport media with charcoal:1. Run both swabs quickly under tap water to slightly moisten the swabs.
2. Using both swabs at the same time, gently insert the swabs approx 1/4 " into the anterior nares (just inside the nasal orofice). Swab in a circular motion; and repeat in second nostril, using the same two (2) swabs.
3. Place swabs into Amies (charcoal) transport media, cap and deliver per protocol to Microbiology.
For E-swab:1. Do NOT prewet the swab.
2. Grasp the swab shaft at the very end.
3. Gently insert the swab approx 1/4 " into the anterior nares (just inside the nasal orofice). Swab in a circular motion; and repeat in second nostril, using the same swab.
4. After collection, break the swab off into the liquid media inside the tube at the colored breakpoint mark and tightly secure the cap.



Stability (from collection to initiation):
Room temperature or refrigerated 24 hours.

PROCESSING

Test Code:
P114

Test Group:
Bacterial culture

Performing Lab:
Microbiology

Specimen Preparation:
Refrigerate swab on receipt at China Basin until culture is set up.

Preferred Volume:
2 swabs in Amies transport media with charcoal or 1 E-swab

Minimum Volume:
2 swabs in Amies transport media with charcoal or 1 E-swab

Stability (from collection to initiation):
Room temperature or refrigerated 24 hours.

RESULT INTERPRETATION

Reference Interval:
No MRSA isolated

Additional Information:
Per California law effective 1/1/2009 all patients admitted to UCSF who meet one or more of the following 5 criteria must be screened for MRSA within 24 hours of admission.

Screening Criteria:
1. Patients previously discharged from an acute care hospital within 30 days of UCSF admission
2. Patients admitted to an intensive care unit
3. Patients receiving inpatient dialysis
4. Patients transferred from skilled nursing facilities

Screening is performed on swabs from the patient's anterior nares only.

ADMINISTRATIVE

CPT Codes:
87081

LOINC Codes:
52969-3

COMPLETE VIEW

Available Stat:
No

Test Code:
P114

Test Group:
Bacterial culture

Performing Lab:
Microbiology

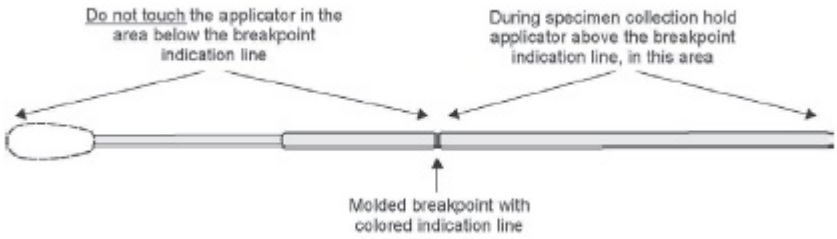
Performed:
Daily

Methodology:
Culture with selective/differential media

Patient Preparation:
None

Remarks:

For Amies trasnport media with charcoal:1. Run both swabs quickly under tap water to slightly moisten the swabs.
2. Using both swabs at the same time, gently insert the swabs approx 1/4 " into the anterior nares (just inside the nasal orofice). Swab in a circular motion; and repeat in second nostril, using the same two (2) swabs.
3. Place swabs into Amies (charcoal) transport media, cap and deliver per protocol to Microbiology.
For E-swab:1. Do NOT prewet the swab.
2. Grasp the swab shaft at the very end.
3. Gently insert the swab approx 1/4 " into the anterior nares (just inside the nasal orofice). Swab in a circular motion; and repeat in second nostril, using the same swab.
4. After collection, break the swab off into the liquid media inside the tube at the colored breakpoint mark and tightly secure the cap.



Collect:

Swabs in Amies transport media with charcoal or E-swab

Amount to Collect:

2 swabs in Amies transport media with charcoal or 1 E-swab

Sample Type:

Anterior nares swab

Preferred Volume:

2 swabs in Amies transport media with charcoal or 1 E-swab

Minimum Volume:

2 swabs in Amies transport media with charcoal or 1 E-swab

Specimen Preparation:

Refrigerate swab on receipt at China Basin until culture is set up.

Reference Interval:

No MRSA isolated

Synonyms:

- MRSA screen
- Staphylococcus aureus

Stability (from collection to initiation):

Room temperature or refrigerated 24 hours.

Reported:

24-48 hours

Additional Information:

Per California law effective 1/1/2009 all patients admitted to UCSF who meet one or more of the following 5 criteria must be screened for MRSA within 24 hours of admission.

Screening Criteria:
1. Patients previously discharged from an acute care hospital within 30 days of UCSF admission
2. Patients admitted to an intensive care unit
3. Patients receiving inpatient dialysis
4. Patients transferred from skilled nursing facilities

Screening is performed on swabs from the patient's anterior nares only.

CPT Codes:

87081

LOINC Codes:

52969-3

Methotrexate

MTX

ORDERING

Approval Required:
Approval is required for testing patients who have received carboxypeptidase rescue therapy.

Available Stat:
No

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
24 hours per day and 7 days per week

Methodology:
Homogeneous Enzyme immunoassay - ARK Diagnostics

Reported:
4 hours

Results on specimens received in the laboratory by 0900 will be available by 1030

Additional Information:
Breakdown products of methotrexate due to Carboxypeptidase rescue therapy are still detected by this assay and therefore continued monitoring of methotrexate in this situation by the in-house assay is problematic. Testing with the in-house assay after carboxypeptidase therapy is only done with approval from a pathologist.

Specimens from patients who have received carboxypeptidase G2 (CPDG2) as a form of emergency methotrexate (MTX) rescue therapy can contain a hydrolysis fragment of MTX designated 4-[[2,4-diamino-6-(pteridinyl)methyl]- methylamino]-benzoic acid (DAMPA) that cross-reacts with the methotrexate antibody used in this immunoassay. Administration of CPDG2 results in a rapid fall in the methotrexate level, however, the magnitude of the fall may be somewhat underestimated by the methotrexate immunoassay due to cross reaction with the DAMPA hydrolysis fragment. 15 minutes after administration of CPDG2, methotrexate levels have been reported to fall by a median of 97% (range 73 - 99%) as judged by methotrexate measurements performed using a specific HPLC assay not subject to the DAMPA interference. In contrast, use of the less specific immunoassay in this circumstance underestimates the fall in methotrexate levels and shows a median decrease of 87% (range 70-99%) (Buchen et al, British Journal of Cancer 92:480, 2005).

Because enzyme immunoassay interference can result in overestimation of serum MTX concentrations immediately after administration of carboxypeptidase enzyme treatment (glucarpidase), it may be helpful to measure MTX after the glucarpidase dosing using a more specific assay (e.g. LC-MS/MS). The LC-MS/MS testing for MTX in these cases can be obtained by sendout to Mayo Medical Laboratories for "Methotrexate Post Glucarpidase, Serum." Refer to the Mayo website for specimen requirements and interpretation of results

COLLECTION

Sample Type:
Serum or plasma

Collect:
Gold top or Light Green top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum or plasma

Remarks:
Note: Contact laboratory if patient has received Carboxypeptidase rescue therapy

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 21 days, frozen at -20C 15 month

PROCESSING

Test Code:
MTX

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
0.5 mL serum or plasma

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 21 days, frozen at -20C 15 month

RESULT INTERPRETATION

Units:
µmol/L

Reference Interval:
Non-toxic drug concentration after 72 hours following high-dose therapy: <0.1 µmol/L

Serum concentrations of methotrexate are commonly monitored during high-dose therapy (>50 mg/m2) to identify the time at which active intervention by leucovorin rescue should be initiated. Criteria for serum concentrations indicative of a potential for toxicity after single-bolus, high-dose therapy are as follows:
-Methotrexate >10 µmol/L 24 hours after dose
-Methotrexate >1 µmol/L 48 hours after dose
-Methotrexate >0.1 µmol/L 72 hours after dose

Additional Information:
Breakdown products of methotrexate due to Carboxypeptidase rescue therapy are still detected by this assay and therefore continued monitoring of methotrexate in this situation by the in-house assay is problematic. Testing with the in-house assay after carboxypeptidase therapy is only done with approval from a pathologist.

Specimens from patients who have received carboxypeptidase G2 (CPDG2) as a form of emergency methotrexate (MTX) rescue therapy can contain a hydrolysis fragment of MTX designated 4-[[2,4-diamino-6-(pteridinyl)methyl]- methylamino]-benzoic acid (DAMPA) that cross-reacts with the methotrexate antibody used in this immunoassay. Administration of CPDG2 results in a rapid fall in the methotrexate level, however, the magnitude of the fall may be somewhat underestimated by the methotrexate immunoassay due to cross reaction with the DAMPA hydrolysis fragment. 15 minutes after administration of CPDG2, methotrexate levels have been reported to fall by a median of 97% (range 73 - 99%) as judged by methotrexate measurements performed using a specific HPLC assay not subject to the DAMPA interference. In contrast, use of the less specific immunoassay in this circumstance underestimates the fall in methotrexate levels and shows a median decrease of 87% (range 70-99%) (Buchen et al, British Journal of Cancer 92:480, 2005).

Because enzyme immunoassay interference can result in overestimation of serum MTX concentrations immediately after administration of carboxypeptidase enzyme treatment (glucarpidase), it may be helpful to measure MTX after the glucarpidase dosing using a more specific assay (e.g. LC-MS/MS). The LC-MS/MS testing for MTX in these cases can be obtained by sendout to Mayo Medical Laboratories for "Methotrexate Post Glucarpidase, Serum." Refer to the Mayo website for specimen requirements and interpretation of results

ADMINISTRATIVE

CPT Codes:
80204

LOINC Codes:
14836-1

COMPLETE VIEW

Approval Required:
Approval is required for testing patients who have received carboxypeptidase rescue therapy.

Available Stat:
No

Test Code:
MTX

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
24 hours per day and 7 days per week

Methodology:
Homogeneous Enzyme immunoassay - ARK Diagnostics

Remarks:
Note: Contact laboratory if patient has received Carboxypeptidase rescue therapy

Collect:
Gold top or Light Green top

Amount to Collect:
1 mL blood

Sample Type:
Serum or plasma

Preferred Volume:
0.5 mL serum or plasma

Units:
µmol/L

Reference Interval:
Non-toxic drug concentration after 72 hours following high-dose therapy: <0.1 µmol/L

Serum concentrations of methotrexate are commonly monitored during high-dose therapy (>50 mg/m2) to identify the time at which active intervention by leucovorin rescue should be initiated. Criteria for serum concentrations indicative of a potential for toxicity after single-bolus, high-dose therapy are as follows:
-Methotrexate >10 µmol/L 24 hours after dose
-Methotrexate >1 µmol/L 48 hours after dose
-Methotrexate >0.1 µmol/L 72 hours after dose

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 21 days, frozen at -20C 15 month

Reported:
4 hours

Results on specimens received in the laboratory by 0900 will be available by 1030

Additional Information:
Breakdown products of methotrexate due to Carboxypeptidase rescue therapy are still detected by this assay and therefore continued monitoring of methotrexate in this situation by the in-house assay is problematic. Testing with the in-house assay after carboxypeptidase therapy is only done with approval from a pathologist.

Specimens from patients who have received carboxypeptidase G2 (CPDG2) as a form of emergency methotrexate (MTX) rescue therapy can contain a hydrolysis fragment of MTX designated 4-[[2,4-diamino-6-(pteridinyl)methyl]- methylamino]-benzoic acid (DAMPA) that cross-reacts with the methotrexate antibody used in this immunoassay. Administration of CPDG2 results in a rapid fall in the methotrexate level, however, the magnitude of the fall may be somewhat underestimated by the methotrexate immunoassay due to cross reaction with the DAMPA hydrolysis fragment. 15 minutes after administration of CPDG2, methotrexate levels have been reported to fall by a median of 97% (range 73 - 99%) as judged by methotrexate measurements performed using a specific HPLC assay not subject to the DAMPA interference. In contrast, use of the less specific immunoassay in this circumstance underestimates the fall in methotrexate levels and shows a median decrease of 87% (range 70-99%) (Buchen et al, British Journal of Cancer 92:480, 2005).

Because enzyme immunoassay interference can result in overestimation of serum MTX concentrations immediately after administration of carboxypeptidase enzyme treatment (glucarpidase), it may be helpful to measure MTX after the glucarpidase dosing using a more specific assay (e.g. LC-MS/MS). The LC-MS/MS testing for MTX in these cases can be obtained by sendout to Mayo Medical Laboratories for "Methotrexate Post Glucarpidase, Serum." Refer to the Mayo website for specimen requirements and interpretation of results

CPT Codes:
80204

LOINC Codes:
14836-1

Methylenetetrahydrofolate Reductase (*MTHFR*) 2 Variants

MTHFR

ORDERING

Ordering Recommendations:
Examines one genetic factor that contributes to hyperhomocysteinemia. Test is not recommended for recurrent pregnancy loss, thrombophilia screening, or neural tube defect risk assessment, or for family members of individuals with known MTHFR variants.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Polymerase Chain Reaction (PCR)/Fluorescence Monitoring

Reported:
2-6 days

Synonyms:

- MTHFR
- MTHFR DNA assay

COLLECTION

Sample Type:
Whole blood

Collect:
Lavender (EDTA), pink (K_2EDTA), or yellow (ACD Solution A or B).

Amount to Collect:
3 mL

Preferred Volume:
3 mL

Minimum Volume:
1 mL

Stability (from collection to initiation):
Ambient: 72 hours; Refrigerated: 1 week; Frozen: 1 month

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Plasma or serum. Heparinized specimens. Frozen specimens in glass collection tubes.

PROCESSING

Test Code:
MTHFR

ARUP Test Code:
0055655

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transport 3 mL whole blood. (Min: 1 mL)

Preferred Volume:
3 mL

Minimum Volume:
1 mL

Unacceptable Conditions:
Plasma or serum. Heparinized specimens. Frozen specimens in glass collection tubes.

Stability (from collection to initiation):
Ambient: 72 hours; Refrigerated: 1 week; Frozen: 1 month

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:
Negative: Neither of the MTHFR variants tested, c.665C>T (previously designated C677T) and c.1286A>C (previously designated A1298C), were detected. Other causes of elevated homocysteine levels were not evaluated.

Interpretive Data:
Background Information for Methylenetetrahydrofolate Reductase (MTHFR), 2 Variants:
Characteristics: Variants in the MTHFR gene may reduce enzyme activity contributing to hyperhomocysteinemia. Although hyperhomocysteinemia was previously reported to be a risk factor for many conditions, especially venous thrombosis and cardiovascular disease, recent meta-analysis casts doubt on whether lifelong moderate homocysteine elevation has an effect on cardiovascular disease. The American College of Medical Genetics Practice Guidelines indicate that individuals with elevated homocysteine and two copies of the c.665C>T variant have an odds ratio of 1.27 for venous thromboembolism. Thus, they recommend MTHFR genotyping not be ordered as part of a routine evaluation for recurrent pregnancy loss or thrombophilia due to questionable clinical significance.
Incidence: The allele frequency of the c.665C>T variant is 0.35 in European Caucasians, 0.5 in Hispanics, and 0.12 in African Americans.
Inheritance: Autosomal recessive; two copies of the c.665C>T variant may be a contributing factor to hyperhomocysteinemia.
Variants Tested: c.665C>T(p.Ala222Val) and c.1286A>C(p.Glu429Ala). (legacy names, C677T and A1298C, respectively).
Clinical Sensitivity: Undefined; hyperhomocysteinemia is caused by genetic, physiologic and environmental factors. MTHFR variants are only one contributing factor.
Methodology: Polymerase chain reaction (PCR) and fluorescence monitoring.
Analytical Sensitivity & Specificity: 99 percent.
Limitations: Only two MTHFR gene variants (c.665C>T and c.1286A>C) are tested. Diagnostic errors can occur due to rare sequence variations.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Counseling and informed consent are recommended for genetic testing. Consent forms are available online.

ADMINISTRATIVE

CPT Codes:
81291

LOINC:

- 28060-2
- 31208-2
- 28005-7
- 21709-1

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Examines one genetic factor that contributes to hyperhomocysteinemia. Test is not recommended for recurrent pregnancy loss, thrombophilia screening, or neural tube defect risk assessment, or for family members of individuals with known MTHFR variants.

Test Code:
MTHFR

ARUP Test Code:
0055655

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Polymerase Chain Reaction (PCR)/Fluorescence Monitoring

Collect:
Lavender (EDTA), pink (K_2EDTA), or yellow (ACD Solution A or B).

Amount to Collect:
3 mL

Sample Type:
Whole blood

Preferred Volume:
3 mL

Minimum Volume:
1 mL

Unacceptable Conditions:
Plasma or serum. Heparinized specimens. Frozen specimens in glass collection tubes.

Specimen Preparation:
Transport 3 mL whole blood. (Min: 1 mL)

Reference Interval:
Negative: Neither of the MTHFR variants tested, c.665C>T (previously designated C677T) and c.1286A>C (previously designated A1298C), were detected. Other causes of elevated homocysteine levels were not evaluated.

Interpretive Data:
Background Information for Methylenetetrahydrofolate Reductase (MTHFR), 2 Variants:
Characteristics: Variants in the MTHFR gene may reduce enzyme activity contributing to hyperhomocysteinemia. Although hyperhomocysteinemia was previously reported to be a risk factor for many conditions, especially venous thrombosis and cardiovascular disease, recent meta-analysis casts doubt on whether lifelong moderate homocysteine elevation has an effect on cardiovascular disease. The American College of Medical Genetics Practice Guidelines indicate that individuals with elevated homocysteine and two copies of the c.665C>T variant have an odds ratio of 1.27 for venous thromboembolism. Thus, they recommend MTHFR genotyping not be ordered as part of a routine evaluation for recurrent pregnancy loss or thrombophilia due to questionable clinical significance.
Incidence: The allele frequency of the c.665C>T variant is 0.35 in European Caucasians, 0.5 in Hispanics, and 0.12 in African Americans.
Inheritance: Autosomal recessive; two copies of the c.665C>T variant may be a contributing factor to hyperhomocysteinemia.
Variants Tested: c.665C>T(p.Ala222Val) and c.1286A>C(p.Glu429Ala). (legacy names, C677T and A1298C, respectively).
Clinical Sensitivity: Undefined; hyperhomocysteinemia is caused by genetic, physiologic and environmental factors. MTHFR variants are only one contributing factor.
Methodology: Polymerase chain reaction (PCR) and fluorescence monitoring.
Analytical Sensitivity & Specificity: 99 percent.
Limitations: Only two MTHFR gene variants (c.665C>T and c.1286A>C) are tested. Diagnostic errors can occur due to rare sequence variations.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Counseling and informed consent are recommended for genetic testing. Consent forms are available online.

Synonyms:

- MTHFR
- MTHFR DNA assay

Storage/Transport Temperature:
Refrigerated.

Stability (from collection to initiation):
Ambient: 72 hours; Refrigerated: 1 week; Frozen: 1 month

Reported:
2-6 days

CPT Codes:
81291

LOINC:

- 28060-2
- 31208-2
- 28005-7
- 21709-1

Methylmalonic Acid, Serum or Plasma (Vitamin B12 Status)

MMAS

ORDERING

Ordering Recommendations:
Use to evaluate vitamin B12 deficiency in individuals with macrocytic or unexplained anemia, or unexplained neurologic disease. Preferred test is Vitamin B12 with Reflex to Methylmalonic Acid, Serum (Vitamin B12 Status) (0055662).

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Reported:
1-3 days

Synonyms:

- Cobalamin Deficiency (Methylmalonic Acid, Serum or Plasma (Vitamin B12 Deficiency))
- Methylmalonate (Methylmalonic Acid, Serum or Plasma (Vitamin B12 Deficiency))
- MMA (Methylmalonic Acid, Serum or Plasma (Vitamin B12 Deficiency))
- Vitamin B12 Deficiency (Methylmalonic Acid, Serum or Plasma (Vitamin B12 Deficiency))

COLLECTION

Collect:
Plain red or serum separator tube. Also acceptable: Green (sodium heparin), green (lithium heparin), lavender (EDTA), or pink (K_2EDTA).

Stability (from collection to initiation):
After separation from cells: Ambient: Unacceptable; Refrigerated: 1 week; Frozen: 1 month

Storage/Transport Temperature:
Frozen.

Unacceptable Conditions:
Room temperature specimens. Grossly hemolyzed or lipemic specimens.

PROCESSING

Test Code:
MMAS

ARUP Test Code:
0099431

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Centrifuge and remove serum or plasma from cells within 2 hours of collection. Transfer 1.2 mL serum or plasma to an ARUP Standard Transport Tube and refrigerate or freeze immediately. (Min: 0.6 mL)

Unacceptable Conditions:
Room temperature specimens. Grossly hemolyzed or lipemic specimens.

Stability (from collection to initiation):
After separation from cells: Ambient: Unacceptable; Refrigerated: 1 week; Frozen: 1 month

Storage/Transport Temperature:
Frozen.

RESULT INTERPRETATION

Reference Interval:
0.00-0.40 µmol/L

Interpretive Data:
This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:
83921

LOINC:

- 13964-2

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Use to evaluate vitamin B12 deficiency in individuals with macrocytic or unexplained anemia, or unexplained neurologic disease. Preferred test is Vitamin B12 with Reflex to Methylmalonic Acid, Serum (Vitamin B12 Status) (0055662).

Test Code:
MMAS

ARUP Test Code:
0099431

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Collect:
Plain red or serum separator tube. Also acceptable: Green (sodium heparin), green (lithium heparin), lavender (EDTA), or pink (K_2EDTA).

Unacceptable Conditions:
Room temperature specimens. Grossly hemolyzed or lipemic specimens.

Specimen Preparation:
Centrifuge and remove serum or plasma from cells within 2 hours of collection. Transfer 1.2 mL serum or plasma to an ARUP Standard Transport Tube and refrigerate or freeze immediately. (Min: 0.6 mL)

Reference Interval:
0.00-0.40 µmol/L

Interpretive Data:
This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Synonyms:

- Cobalamin Deficiency (Methylmalonic Acid, Serum or Plasma (Vitamin B12 Deficiency))
- Methylmalonate (Methylmalonic Acid, Serum or Plasma (Vitamin B12 Deficiency))
- MMA (Methylmalonic Acid, Serum or Plasma (Vitamin B12 Deficiency))
- Vitamin B12 Deficiency (Methylmalonic Acid, Serum or Plasma (Vitamin B12 Deficiency))

Storage/Transport Temperature:
Frozen.

Stability (from collection to initiation):
After separation from cells: Ambient: Unacceptable; Refrigerated: 1 week; Frozen: 1 month

Reported:
1-3 days

CPT Codes:
83921

LOINC:

- 13964-2

Methylmalonic Acid, urine

MOLT

ORDERING

Available Stat:
No

Performing Lab:
Quest

Reported:
Test run Monday-Sunday. Turnaround: 2-4 days.

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
See preferred volume

Preferred Volume:
5 mL urine

Minimum Volume:
1 mL urine

PROCESSING

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Test Group:
Methylmalonic

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate. Order Quest # 6694

Preferred Volume:
5 mL urine

Minimum Volume:
1 mL urine

RESULT INTERPRETATION

Units:
mmol/mol creatinine

Reference Interval:
< 2.1 mmol/mol creatinine

ADMINISTRATIVE

CPT Codes:
82570-90, 83918-90

COMPLETE VIEW

Available Stat:
No

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Test Group:
Methylmalonic

Performing Lab:
Quest

Sendout:
Yes

Collect:
Urine cup

Amount to Collect:
See preferred volume

Sample Type:
Random urine

Preferred Volume:
5 mL urine

Minimum Volume:
1 mL urine

Specimen Preparation:
Refrigerate. Order Quest # 6694

Units:
mmol/mol creatinine

Reference Interval:
< 2.1 mmol/mol creatinine

Reported:
Test run Monday-Sunday. Turnaround: 2-4 days.

CPT Codes:
82570-90, 83918-90

Methylphenidate and Metabolite, Urine, Quantitative

METPM

ORDERING

Ordering Recommendations:
Useful for general testing in contexts of compliance and/or abuse. Preferred test to follow-up presumptive results.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Mon, Thu, Sat

Methodology:
Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Reported:
1-7 days

Synonyms:

- Attenade
- Concerta
- Daytrana
- Dexmethylphenidate
- Focalin (Methylphenidate and Metabolite - Confirmation/Quantitation - Urine)
- Metadate
- Methylin
- Methylphenidate
- Ritalin
- Ritalinic Acid
- Urine ritalin concentration

COLLECTION

Sample Type:
Random urine in container

Collect:
Random urine.

Amount to Collect:
>= 2 mL

Minimum Volume:
1 mL

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 3 weeks; Frozen: 3 months

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Room temperature specimens.

PROCESSING

Test Code:
METPM

ARUP Test Code:
2003115

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transfer 2 mL urine with no additives or preservatives to an ARUP Standard Transport Tube. (Min: 1 mL)

Minimum Volume:
1 mL

Unacceptable Conditions:
Room temperature specimens.

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 3 weeks; Frozen: 3 months

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:

Drugs Covered	Methylphenidate
Methylphenidate	10 ng/mL
Ritalinic acid	50 ng/mL

Interpretive Data:
Methodology: Quantitative Liquid Chromatography-Tandem Mass Spectrometry
Positive Cutoff: Methylphenidate: 10 ng/mL
Ritalinic acid: 50 ng/mL

The absence of expected drug(s) and/or drug metabolite(s) may indicate non-compliance, inappropriate timing of specimen collection relative to drug administration, poor drug absorption, diluted/adulterated urine, or limitations of testing. The concentration value must be greater than or equal to the cutoff to be reported as positive. Interpretive questions should be directed to the laboratory.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:
80360 (Alt code: G0480)

LOINC:

- 33507-5
- 3809-1

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Useful for general testing in contexts of compliance and/or abuse. Preferred test to follow-up presumptive results.

Test Code:
METPM

ARUP Test Code:
2003115

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Mon, Thu, Sat

Methodology:
Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Collect:
Random urine.

Amount to Collect:
>= 2 mL

Sample Type:
Random urine in container

Minimum Volume:
1 mL

Unacceptable Conditions:
Room temperature specimens.

Specimen Preparation:

Transfer 2 mL urine with no additives or preservatives to an ARUP Standard Transport Tube. (Min: 1 mL)

Reference Interval:

Drugs Covered	Methylphenidate
Methylphenidate	10 ng/mL
Ritalinic acid	50 ng/mL

Interpretive Data:

Methodology: Quantitative Liquid Chromatography-Tandem Mass Spectrometry
Positive Cutoff: Methylphenidate: 10 ng/mL
Ritalinic acid: 50 ng/mL

The absence of expected drug(s) and/or drug metabolite(s) may indicate non-compliance, inappropriate timing of specimen collection relative to drug administration, poor drug absorption, diluted/adulterated urine, or limitations of testing. The concentration value must be greater than or equal to the cutoff to be reported as positive. Interpretive questions should be directed to the laboratory.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Synonyms:

- Attenade
- Concerta
- Daytrana
- Dexmethylphenidate
- Focalin (Methylphenidate and Metabolite - Confirmation/Quantitation - Urine)
- Metadate
- Methylin
- Methylphenidate
- Ritalin
- Ritalinic Acid
- Urine ritalin concentration

Storage/Transport Temperature:

Refrigerated.

Stability (from collection to initiation):

Ambient: Unacceptable; Refrigerated: 3 weeks; Frozen: 3 months

Reported:

1-7 days

CPT Codes:

80360 (Alt code: G0480)

LOINC:

- 33507-5
- 3809-1

Mexiletine

MEXL

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Gas chromatography

Reported:
Test performed Monday, Wednesday, Friday. Turnaround time: 2-5 days.

COLLECTION

Sample Type:
Serum

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Unacceptable Conditions:
Collected in Gold top

PROCESSING

Test Code:
MEXL

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate serum. Order Quest # 4934Z.

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Unacceptable Conditions:
Collected in Gold top

RESULT INTERPRETATION

Units:
µg/mL (mcg/mL)

Reference Interval:
Therapeutic: 0.5-2.0 µg/mL
Toxic: >= 1.5 µg/mL

Critical Values:
Quest Priority-1: >= 5 µg/mL
Quest Priority-2: 2.0-4.9 µg/mL

ADMINISTRATIVE

CPT Codes:
80299-90

LOINC Codes:
3819-0

COMPLETE VIEW

Available Stat:
No

Test Code:
MEXL

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Gas chromatography

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
4 mL blood

Sample Type:
Serum

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Unacceptable Conditions:
Collected in Gold top

Specimen Preparation:
Refrigerate serum. Order Quest # 4934Z.

Units:
µg/mL (mcg/mL)

Reference Interval:
Therapeutic: 0.5-2.0 µg/mL
Toxic: >= 1.5 µg/mL

Critical Values:
Quest Priority-1: >= 5 µg/mL
Quest Priority-2: 2.0-4.9 µg/mL

Reported:
Test performed Monday, Wednesday, Friday. Turnaround time: 2-5 days.

CPT Codes:
80299-90

LOINC Codes:
3819-0

MGMT Promoter Methylation Assay

MGMT

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Molecular Diagnostics

Performed:
Run 1X per week, or as needed

Methodology:
DNA extraction, Bisulfite treatment, PCR and Next Generation DNA sequencing (NGS)

Reported:
2-3 weeks

Additional Information:
The binding of alkyl adducts to the O6 position of guanine cause double stranded DNA breaks and mispairing, resulting in apoptosis and cell death. The MGMT gene is ubiquitously expressed and encodes for a DNA repair protein that removes alkyl adducts from alkylated guanines. This process interferes with the alkylating agent temozolomide, which is used to treat glioblastoma. In some glioblastoma tumors, epigenetic methylation of CpG islands in the MGMT promoter, results in silencing or attenuation of MGMT expression, thus increasing the temozolomide induced-cytotoxicity and portending a better prognosis.

The coupling of MGMT promoter methylation with radiotherapy and alkylating chemotherapy drugs such as carmustine or temozolomide, has been shown to increase mean patient survival. Therefore, the MGMT methylation test is used as a prognostic indicator to treatment with alkylating agents.

This assay is based on bisulfite treatment of genomic DNA recovered from the tumor areas of the submitted slides. Next-Gen DNA sequencing of a 191 bp MGMT promoter region consisting of 17 CpG dinucleotides and spanning Sp1 and other transcription factor binding sites, is used to determine the extent of CpG methylation status in this region. The assay has approximately 2% of methylation detection sensitivity.

The result is reported as "POSITIVE: METHYLATED" if one or more CpG sites are methylated.

Reported values consist of:
1) A methylation index, ranging from 0 to 17 that reflects the number of methylated CpG sites.
2) A methylated fraction, ranging from >0 to 1, that provides an estimation of methylation sites in the analyzed specimen (reported only for positive specimens}.
3) An overall methylation score ranging from > 0 to 17 that consists of the multiplication of the methylation index with the methylation fraction (reported only for positive specimens}.

This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

Synonyms:

- O6 methylguanine DNA methyltransferase

Supplemental Test Request Form Required:
Yes

COLLECTION

Sample Type:
Formalin-fixed, paraffin-embedded 10-micron tissue sections on five (5) unstained, uncharged glass slides. One adjacent H&E stained slide should be included.

Remarks:
1- Tissue sections on slides selected for MGMT methylation analysis must optimally be at least 1 cm2.
2- A pathologist should circle the tumor area of an H&E slide.
3- Five (5) unstained additional slides cut serially and adjacent to the H&E slide must also be submitted.
4- Label slides with pathology case number and block identification.
5- All specimens must be accompanied with a pathology report.

Stability (from collection to initiation):
Formalin-fixed, paraffin-embedded tissues are stable indefinitely at room temperature

Unacceptable Conditions:

1- Insufficient tumor tissue present on slide as determined by pathologist and/or lab may not yield adequate results and could be reported as QNS.
2- Required number of slides not included.
3- Slides not labeled or not accompanied by completed requisition form (if not ordered directly through Department of Pathology).

PROCESSING

Test Code:

MGMT

Performing Lab:

Medical Genomics - Molecular Diagnostics

Unacceptable Conditions:

1- Insufficient tumor tissue present on slide as determined by pathologist and/or lab may not yield adequate results and could be reported as QNS.
2- Required number of slides not included.
3- Slides not labeled or not accompanied by completed requisition form (if not ordered directly through Department of Pathology).

Stability (from collection to initiation):

Formalin-fixed, paraffin-embedded tissues are stable indefinitely at room temperature

RESULT INTERPRETATION

Reference Interval:

NegativeNo methylationMethylation Index=0

Additional Information:

The binding of alkyl adducts to the O6 position of guanine cause double stranded DNA breaks and mispairing, resulting in apoptosis and cell death. The MGMT gene is ubiquitously expressed and encodes for a DNA repair protein that removes alkyl adducts from alkylated guanines. This process interferes with the alkylating agent temozolomide, which is used to treat glioblastoma. In some glioblastoma tumors, epigenetic methylation of CpG islands in the MGMT promoter, results in silencing or attenuation of MGMT expression, thus increasing the temozolomide induced-cytotoxicity and portending a better prognosis.

The coupling of MGMT promoter methylation with radiotherapy and alkylating chemotherapy drugs such as carmustine or temozolomide, has been shown to increase mean patient survival. Therefore, the MGMT methylation test is used as a prognostic indicator to treatment with alkylating agents.

This assay is based on bisulfite treatment of genomic DNA recovered from the tumor areas of the submitted slides. Next-Gen DNA sequencing of a 191 bp MGMT promoter region consisting of 17 CpG dinucleotides and spanning Sp1 and other transcription factor binding sites, is used to determine the extent of CpG methylation status in this region. The assay has approximately 2% of methylation detection sensitivity.

The result is reported as "POSITIVE: METHYLATED" if one or more CpG sites are methylated.

Reported values consist of:
1) A methylation index, ranging from 0 to 17 that reflects the number of methylated CpG sites.
2) A methylated fraction, ranging from >0 to 1, that provides an estimation of methylation sites in the analyzed specimen (reported only for positive specimens}.
3) An overall methylation score ranging from > 0 to 17 that consists of the multiplication of the methylation index with the methylation fraction (reported only for positive specimens}.

This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

ADMINISTRATIVE

CPT Codes:

81287

LDT or Modified FDA:

Yes

COMPLETE VIEW

Available Stat:

No

Test Code:

MGMT

Performing Lab:
Medical Genomics - Molecular Diagnostics

Performed:
Run 1X per week, or as needed

Methodology:
DNA extraction, Bisulfite treatment, PCR and Next Generation DNA sequencing (NGS)

Remarks:
1- Tissue sections on slides selected for MGMT methylation analysis must optimally be at least 1 cm2.
2- A pathologist should circle the tumor area of an H&E slide.
3- Five (5) unstained additional slides cut serially and adjacent to the H&E slide must also be submitted.
4- Label slides with pathology case number and block identification.
5- All specimens must be accompanied with a pathology report.

Sample Type:
Formalin-fixed, paraffin-embedded 10-micron tissue sections on five (5) unstained, uncharged glass slides. One adjacent H&E stained slide should be included.

Unacceptable Conditions:
1- Insufficient tumor tissue present on slide as determined by pathologist and/or lab may not yield adequate results and could be reported as QNS.
2- Required number of slides not included.
3- Slides not labeled or not accompanied by completed requisition form (if not ordered directly through Department of Pathology).

Reference Interval:
NegativeNo methylationMethylation Index=0

Synonyms:

- O6 methylguanine DNA methyltransferase

Stability (from collection to initiation):
Formalin-fixed, paraffin-embedded tissues are stable indefinitely at room temperature

Reported:
2-3 weeks

Additional Information:
The binding of alkyl adducts to the O6 position of guanine cause double stranded DNA breaks and mispairing, resulting in apoptosis and cell death. The MGMT gene is ubiquitously expressed and encodes for a DNA repair protein that removes alkyl adducts from alkylated guanines. This process interferes with the alkylating agent temozolomide, which is used to treat glioblastoma. In some glioblastoma tumors, epigenetic methylation of CpG islands in the MGMT promoter, results in silencing or attenuation of MGMT expression, thus increasing the temozolomide induced-cytotoxicity and portending a better prognosis.

The coupling of MGMT promoter methylation with radiotherapy and alkylating chemotherapy drugs such as carmustine or temozolomide, has been shown to increase mean patient survival. Therefore, the MGMT methylation test is used as a prognostic indicator to treatment with alkylating agents.

This assay is based on bisulfite treatment of genomic DNA recovered from the tumor areas of the submitted slides. Next-Gen DNA sequencing of a 191 bp MGMT promoter region consisting of 17 CpG dinucleotides and spanning Sp1 and other transcription factor binding sites, is used to determine the extent of CpG methylation status in this region. The assay has approximately 2% of methylation detection sensitivity.

The result is reported as "POSITIVE: METHYLATED" if one or more CpG sites are methylated.

Reported values consist of:
1) A methylation index, ranging from 0 to 17 that reflects the number of methylated CpG sites.
2) A methylated fraction, ranging from >0 to 1, that provides an estimation of methylation sites in the analyzed specimen (reported only for positive specimens}.
3) An overall methylation score ranging from > 0 to 17 that consists of the multiplication of the methylation index with the methylation fraction (reported only for positive specimens}.

This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

CPT Codes:
81287

LDT or Modified FDA:
Yes

Supplemental Test Request Form Required:
Yes

Mi-2 Antibody

MI2

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Radioimmunoprecipitation Assay

Reported:
10 - 12 days

COLLECTION

Sample Type:
Serum

Collect:
Red top or Gold top

Amount to Collect:
6 mL

Preferred Volume:
3 mL

Minimum Volume:
1 mL

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen 2 months.

PROCESSING

Test Code:
MI2

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot and ship to China Basin

Preferred Volume:
3 mL

Minimum Volume:
1 mL

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen 2 months.

RESULT INTERPRETATION

Reference Interval:
Not detected

ADMINISTRATIVE

CPT Codes:
86235-90

COMPLETE VIEW

Available Stat:
No

Test Code:
MI2

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Radioimmunoprecipitation Assay

Collect:
Red top or Gold top

Amount to Collect:
6 mL

Sample Type:
Serum

Preferred Volume:
3 mL

Minimum Volume:
1 mL

Specimen Preparation:
Aliquot and ship to China Basin

Reference Interval:
Not detected

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen 2 months.

Reported:
10 - 12 days

CPT Codes:
86235-90

MICA Antibody Testing

MICAAB (Sunquest: ILMICA)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Luminex-based

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Additional Information:
This test assigns cPRA (calculated PRA) and determines specific Class II antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring.

This test is NOT for evaluation of transfusion-related fever or refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

Reflex Testing:
Yes

Synonyms:

- Class II Single Antigen Testing by Luminex, Single Antigen Specificity Class II

COLLECTION

Sample Type:
Serum

Collect:
Red top x2

Amount to Collect:
12 mL blood

Preferred Volume:
6 mL serum

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

PROCESSING

Test Code:
MICAAB (Sunquest: ILMICA)

Test Group:
HLA Antibody Testing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Preferred Volume:
6 mL serum

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

RESULT INTERPRETATION

Additional Information:

This test assigns cPRA (calculated PRA) and determines specific Class II antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring.

This test is NOT for evaluation of transfusion-related fever or refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

ADMINISTRATIVE

CPT Codes:

86833

COMPLETE VIEW

Available Stat:

Yes

Test Code:

MICAAB (Sunquest: ILMICA)

Test Group:

HLA Antibody Testing

Performing Lab:

Immunogenetics & Transplantation Laboratory (ITL)

Sendout:

Yes

Methodology:

Luminex-based

Remarks:

SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Collect:

Red top x2

Amount to Collect:

12 mL blood

Sample Type:

Serum

Preferred Volume:

6 mL serum

Unacceptable Conditions:

Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

Specimen Preparation:

Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Synonyms:

- Class II Single Antigen Testing by Luminex, Single Antigen Specificity Class II

Stability (from collection to initiation):

If kept at ambient temperature, can be good for up to 72 hours

Reported:

Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Reflex Testing:

Yes

Additional Information:

This test assigns cPRA (calculated PRA) and determines specific Class II antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring.

This test is NOT for evaluation of transfusion-related fever or refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

CPT Codes:

86833

Microfilaria Exam

P409M

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Monday-Friday, day shift only

Methodology:
Giemsa stain of thick and thin smears

Reported:
1-3 days

Additional Information:
Requires appropriate symptoms including fever, and eosinophilia. Review the patient's history for possible periodicity and optimal time of sampling.

Also see entries for Onchocerca and for Parasites-Urine.

Reflex Testing:
If direct smears are negative, Knott concentration technique is performed and an additional charge is billed. Concentration includes centrifugation of RBC lysates and staining with Giemsa (for nuclear detail) with microscopic speciation.

Synonyms:

- Loa loa
- filaria
- Wucheria

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top

Amount to Collect:
3 mL blood

Remarks:
Call Microbiology at x3-1268 to arrange testing. Friday samples should be received by Microbiology by 1230 hours.

Note the exact time of blood draw. Two samples should be drawn, one between 1000 and 1400 hours, the other between 2200 and 0200 hours (arrange outpatient blood draw at night with the Emergency Department).

Stability (from collection to initiation):
Refrigerated 3 days

Unacceptable Conditions:
Improperly collected sample.

PROCESSING

Test Code:
P409M

Performing Lab:
Microbiology

Specimen Preparation:
Blood specimen may be held until the day shift for making smears.

Unacceptable Conditions:
Improperly collected sample.

Stability (from collection to initiation):
Refrigerated 3 days

RESULT INTERPRETATION

Reference Interval:
Negative

Critical Values:
Filiaria identified

Additional Information:
Requires appropriate symptoms including fever, and eosinophilia. Review the patient's history for possible periodicity and optimal time of sampling.

Also see entries for Onchocerca and for Parasites-Urine.

ADMINISTRATIVE

CPT Codes:
87207

LOINC Codes:
10663-3

COMPLETE VIEW

Available Stat:
No

Test Code:
P409M

Performing Lab:
Microbiology

Performed:
Monday-Friday, day shift only

Methodology:
Giemsa stain of thick and thin smears

Remarks:
Call Microbiology at x3-1268 to arrange testing. Friday samples should be received by Microbiology by 1230 hours.

Note the exact time of blood draw. Two samples should be drawn, one between 1000 and 1400 hours, the other between 2200 and 0200 hours (arrange outpatient blood draw at night with the Emergency Department).

Collect:
Lavender top

Amount to Collect:
3 mL blood

Sample Type:
EDTA whole blood

Unacceptable Conditions:
Improperly collected sample.

Specimen Preparation:
Blood specimen may be held until the day shift for making smears.

Reference Interval:
Negative

Critical Values:
Filiaria identified

Synonyms:

- Loa loa
- filaria
- Wucheria

Stability (from collection to initiation):
Refrigerated 3 days

Reported:
1-3 days

Reflex Testing:
If direct smears are negative, Knott concentration technique is performed and an additional charge is billed. Concentration includes centrifugation of RBC lysates and staining with Giemsa (for nuclear detail) with microscopic speciation.

Additional Information:
Requires appropriate symptoms including fever, and eosinophilia. Review the patient's history for possible periodicity and optimal time of sampling.

Also see entries for Onchocerca and for Parasites-Urine.

CPT Codes:
87207

LOINC Codes:
10663-3

Microsporidia

P414

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Monday-Friday, day shift

Methodology:
Modified trichrome stain

Reported:
1-3 days

Additional Information:
This test should only be ordered if tests for other bacterial and parasitic pathogens are negative.

Infection is most common in immmunosuppressed (usually HIV-positive) patients with chronic, non-bloody diarrhea, weight loss and epigastric pain.

COLLECTION

Sample Type:
Body Fluid, Duodenal aspirate, Sputum, Stool, Urine, Eye/Corneal scrapings (submit on clear glass microscope slide)

Collect:
Inpatients: Clean container
ED/Outpatients: SAF preservative for stool, clean container for other sample types

SAF vials and instructions available from Material Services (PMM # 44366 Vials SAF Sterile Child Resistant Cap 574-05-CRC-WB). Outpatients can obtain these from the laboratories' draw stations.

Amount to Collect:
See preferred volume

Preferred Volume:
10 mL

Note for SAF, fill container to red line on label

Minimum Volume:
5 mL

Note for SAF, fill container to red line on label

Remarks:
SAF vials and instructions available from Material Services (PMM # 44366 Vials SAF Sterile Child Resistant Cap 574-05-CRC-WB).

Outpatients can obtain these from the laboratories' draw stations.

Stability (from collection to initiation):
Unpreserved samples: 24 hours at room temperature, SAF preserved stool: 2 weeks at room temperature

Unacceptable Conditions:
Unpreserved stool received > 1 hour after collection. Stool in a preservative other than SAF. Stool not mixed well in SAF, or if preservative has been poured out. SAF container filled past the red line on the container label. More than one sample per week.

PROCESSING

Test Code:
P414

Performing Lab:
Microbiology

Specimen Preparation:
Transfer unpreserved stool to SAF preservative upon receipt in lab.

Preferred Volume:
10 mL

Note for SAF, fill container to red line on label

Minimum Volume:
5 mL

Note for SAF, fill container to red line on label

Unacceptable Conditions:
Unpreserved stool received > 1 hour after collection. Stool in a preservative other than SAF. Stool not mixed well in SAF, or if preservative has been poured out. SAF container filled past the red line on the container label. More than one sample per week.

Stability (from collection to initiation):
Unpreserved samples: 24 hours at room temperature, SAF preserved stool: 2 weeks at room temperature

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
This test should only be ordered if tests for other bacterial and parasitic pathogens are negative.

Infection is most common in immmunosuppressed (usually HIV-positive) patients with chronic, non-bloody diarrhea, weight loss and epigastric pain.

ADMINISTRATIVE

CPT Codes:
87207

LOINC Codes:
32819-5

COMPLETE VIEW

Available Stat:
No

Test Code:
P414

Performing Lab:
Microbiology

Performed:
Monday-Friday, day shift

Methodology:
Modified trichrome stain

Remarks:
SAF vials and instructions available from Material Services (PMM # 44366 Vials SAF Sterile Child Resistant Cap 574-05-CRC-WB).

Outpatients can obtain these from the laboratories' draw stations.

Collect:
Inpatients: Clean container
ED/Outpatients: SAF preservative for stool, clean container for other sample types

SAF vials and instructions available from Material Services (PMM # 44366 Vials SAF Sterile Child Resistant Cap 574-05-CRC-WB). Outpatients can obtain these from the laboratories' draw stations.

Amount to Collect:
See preferred volume

Sample Type:
Body Fluid, Duodenal aspirate, Sputum, Stool, Urine, Eye/Corneal scrapings (submit on clear glass microscope slide)

Preferred Volume:
10 mL

Note for SAF, fill container to red line on label

Minimum Volume:
5 mL

Note for SAF, fill container to red line on label

Unacceptable Conditions:

Unpreserved stool received > 1 hour after collection. Stool in a preservative other than SAF. Stool not mixed well in SAF, or if preservative has been poured out. SAF container filled past the red line on the container label. More than one sample per week.

Specimen Preparation:

Transfer unpreserved stool to SAF preservative upon receipt in lab.

Reference Interval:

Negative

Stability (from collection to initiation):

Unpreserved samples: 24 hours at room temperature, SAF preserved stool: 2 weeks at room temperature

Reported:

1-3 days

Additional Information:

This test should only be ordered if tests for other bacterial and parasitic pathogens are negative.

Infection is most common in immmunosuppressed (usually HIV-positive) patients with chronic, non-bloody diarrhea, weight loss and epigastric pain.

CPT Codes:

87207

LOINC Codes:

32819-5

Miscellaneous Toxicology Test

MTOX

ORDERING

Available Stat:
No

Additional Information:
These tests are utilized for specific drug levels, toxicology tests, or other laboratory tests which are of such low frequency that Clinical Labs does not itself perform the analysis. If requested "Stat" the specimen will be dispatched on the next routine pickup if one is scheduled shortly, or by taxi if waiting for a routine pickup would cause excessive delay. Results will be telephoned when available, and will be entered in the computer when we receive the written report. The patient will be charged for any stat transportation costs, and may also be charged an emergency processing fee by the reference laboratory.

PROCESSING

Test Code:
MTOX

Sendout:
Yes

RESULT INTERPRETATION

Additional Information:
These tests are utilized for specific drug levels, toxicology tests, or other laboratory tests which are of such low frequency that Clinical Labs does not itself perform the analysis. If requested "Stat" the specimen will be dispatched on the next routine pickup if one is scheduled shortly, or by taxi if waiting for a routine pickup would cause excessive delay. Results will be telephoned when available, and will be entered in the computer when we receive the written report. The patient will be charged for any stat transportation costs, and may also be charged an emergency processing fee by the reference laboratory.

COMPLETE VIEW

Available Stat:
No

Test Code:
MTOX

Sendout:
Yes

Additional Information:
These tests are utilized for specific drug levels, toxicology tests, or other laboratory tests which are of such low frequency that Clinical Labs does not itself perform the analysis. If requested "Stat" the specimen will be dispatched on the next routine pickup if one is scheduled shortly, or by taxi if waiting for a routine pickup would cause excessive delay. Results will be telephoned when available, and will be entered in the computer when we receive the written report. The patient will be charged for any stat transportation costs, and may also be charged an emergency processing fee by the reference laboratory.

Mitochondrial Antibody

MITOAB

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday (day shift)

Methodology:
EIA

Reported:
2 - 8 days

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
1.0 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Grossly hemolyzed, Icteric or lipemic serum

PROCESSING

Test Code:
MITOAB

Performing Lab:
Immunology

Specimen Preparation:
Freeze sample at -20C

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Grossly hemolyzed, Icteric or lipemic serum

RESULT INTERPRETATION

Units:
Units

Reference Interval:
Negative: <= 20 Units
Equivocal: 20.1 - 24.9 Units
Positive: >= 25 Units

ADMINISTRATIVE

CPT Codes:
86381

LOINC Codes:
51715-1

COMPLETE VIEW

Available Stat:
No

Test Code:
MITOAB

Performing Lab:
Immunology

Performed:
Monday (day shift)

Methodology:
EIA

Collect:
Gold top

Amount to Collect:
1.0 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Grossly hemolyzed, Icteric or lipemic serum

Specimen Preparation:
Freeze sample at -20C

Units:
Units

Reference Interval:
Negative: <= 20 Units
Equivocal: 20.1 - 24.9 Units
Positive: >= 25 Units

Reported:
2 - 8 days

CPT Codes:
86381

LOINC Codes:
51715-1

Mitragynine, Quantitative, Urine

MITRAG

ORDERING

Available Stat:
No

Performing Lab:
Quest

Performed:
Tuesday and Thursday

Methodology:
Chromatography/mass spectrometry

Reported:
2-5 days

COLLECTION

Sample Type:
Urine

Collect:
Urine container

Amount to Collect:
2 mL

Preferred Volume:
2 mL

Minimum Volume:
1 mL

Stability (from collection to initiation):
Ambient: 7 days
Refrigerated: 21 days
Frozen: 30 days

Storage/Transport Temperature:
Frozen

Unacceptable Conditions:
Non-urine specimens or preserved urine

PROCESSING

Test Code:
MITRAG

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
ALIQUOT AND FREEZE URINE. SEND TO CHINA BASIN FROZEN. ORDER QUEST TEST CODE 39240.

Preferred Volume:
2 mL

Minimum Volume:
1 mL

Unacceptable Conditions:
Non-urine specimens or preserved urine

Stability (from collection to initiation):
Ambient: 7 days
Refrigerated: 21 days
Frozen: 30 days

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Units:
ng/mL

Reference Interval:
< 2 ng/mL

ADMINISTRATIVE

CPT Codes:
80323

COMPLETE VIEW

Available Stat:
No

Test Code:
MITRAG

Performing Lab:
Quest

Sendout:
Yes

Performed:
Tuesday and Thursday

Methodology:
Chromatography/mass spectrometry

Collect:
Urine container

Amount to Collect:
2 mL

Sample Type:
Urine

Preferred Volume:
2 mL

Minimum Volume:
1 mL

Unacceptable Conditions:
Non-urine specimens or preserved urine

Specimen Preparation:
ALIQUOT AND FREEZE URINE. SEND TO CHINA BASIN FROZEN. ORDER QUEST TEST CODE 39240.

Units:
ng/mL

Reference Interval:
< 2 ng/mL

Storage/Transport Temperature:
Frozen

Stability (from collection to initiation):
Ambient: 7 days
Refrigerated: 21 days
Frozen: 30 days

Reported:
2-5 days

CPT Codes:
80323

MLL 11q23 FISH

MLLQ23, BMLL

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Fluorescent in-situ hybridization (FISH)

Reported:
1-2 weeks

Synonyms:

- MLLQ23
- BMLL

COLLECTION

Sample Type:
Heparinized whole blood, bone marrow, bone core

Collect:
Dark green top (Na-heparin)

Amount to Collect:
Bone marrow: 2 mL
Blood: 2 mL
Bone core: 2 cm

Preferred Volume:
Bone marrow: 2 mL
Blood: 2 mL
?Bone core: 2 cm

Minimum Volume:
Bone marrow: 1 mL
Blood: 1 mL
?Bone core: 2 cm

Remarks:
Maintain sample at room temperature

PROCESSING

Test Code:
BMLL: Blood
MLLQ23: Bone marrow

Test Group:
Oncology FISH

Performing Lab:
Medical Genomics - Cytogenetics

Specimen Preparation:
Maintain sample at room temperature

Preferred Volume:
Bone marrow: 2 mL
Blood: 2 mL
?Bone core: 2 cm

Minimum Volume:
Bone marrow: 1 mL
Blood: 1 mL
?Bone core: 2 cm

RESULT INTERPRETATION

Reference Interval:
No deletion detected

ADMINISTRATIVE

CPT Codes:
88271, 88275

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BMLL: Blood
MLLQ23: Bone marrow

Test Group:
Oncology FISH

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Fluorescent in-situ hybridization (FISH)

Remarks:
Maintain sample at room temperature

Collect:
Dark green top (Na-heparin)

Amount to Collect:
Bone marrow: 2 mL
Blood: 2 mL
Bone core: 2 cm

Sample Type:
Heparinized whole blood, bone marrow, bone core

Preferred Volume:
Bone marrow: 2 mL
Blood: 2 mL
?Bone core: 2 cm

Minimum Volume:
Bone marrow: 1 mL
Blood: 1 mL
?Bone core: 2 cm

Specimen Preparation:
Maintain sample at room temperature

Reference Interval:
No deletion detected

Synonyms:

- MLLQ23
- BMLL

Reported:
1-2 weeks

CPT Codes:
88271, 88275

LDT or Modified FDA:
Yes

mNGS Pathogen Dx

P710

ORDERING

Approval Required:

Yes, testing of UCSF patients requires approval by Microbiology in consultation with Infectious Disease or Neurology. UCSF outpatient testing requires insurance preauthorization. Please follow this link for an insurance preauthorization template (Microsoft Word format).

Requests from outside UCSF require an institutional account prior to sample submission. See https://nextgendiagnostics.ucsf.edu for details.

In select cases, plasma samples may be sent to Karius for testing (see 'Additional Information' below).

Available Stat:

No

Performing Lab:

Microbiology

Methodology:

mNGS

Reported:

1-2 weeks

Additional Information:

Note, CSF is the only sample type accepted from outside UCSF

Test is interpreted by the Microbiology lab director and discussed with treating physicians as part of the Clinical Microbial Sequencing Board.

See http://nextgendiagnostics.ucsf.edu for additional information.

For inquiries, please call 415-514-6599.

With approval from the Microbiology lab, plasma samples in select cases may be sent to Karius for testing. Order as "Microbiology - Test Not Listed (Special Sendout Test) (aka P319)."

For Karius collection and processing instructions, click here.

Synonyms:

- Metagenomic next-generation sequencing, deep sequencing

COLLECTION

Sample Type:

CSF, EDTA plasma (EDTA whole blood must be centrifuged and plasma separated from red cells within 6 hours of collection).

Collect:

CSF: Sterile black-top tube
Plasma: Lavender or pearl top. Needs a dedicated tube. A shared sample is unacceptable.

Preferred Volume:

2ml

Minimum Volume:

1ml

Remarks:

Lumbar puncture (CSF)

Stability (from collection to initiation):

CSF: Room temperature 6 hours or refrigerated 6 days, but prefer to freeze within 6 hours; stable frozen at -25C or -70C for 1 month.

Plasma: Room temperature up to 6 hours for whole blood; plasma frozen at -25C or -70C for 1 month.

Unacceptable Conditions:

Samples submitted in incorrect tube, grossly hemolyzed samples, plasma sample shared with other tests.

PROCESSING

Test Code:

P710

Performing Lab:
Microbiology

Specimen Preparation:
UCSF: Freeze at -70ºC on receipt at China Basin.Other sites: Freeze CSF and ship to China Basin microbiology. Aliquot (if necessary) only under sterile conditions.

Additional Processing Instructions:
With approval from the Microbiology lab, plasma samples in select cases may be sent to Karius for testing. Order as "Microbiology - Test Not Listed (Special Sendout Test) (aka P319)."

For Karius collection and processing instructions, click here.

Preferred Volume:
2ml

Minimum Volume:
1ml

Unacceptable Conditions:
Samples submitted in incorrect tube, grossly hemolyzed samples, plasma sample shared with other tests.

Stability (from collection to initiation):
CSF: Room temperature 6 hours or refrigerated 6 days, but prefer to freeze within 6 hours; stable frozen at -25C or -70C for 1 month.

Plasma: Room temperature up to 6 hours for whole blood; plasma frozen at -25C or -70C for 1 month.

RESULT INTERPRETATION

Reference Interval:
No microorganisms detected

Additional Information:
Note, CSF is the only sample type accepted from outside UCSF

Test is interpreted by the Microbiology lab director and discussed with treating physicians as part of the Clinical Microbial Sequencing Board.

See http://nextgendiagnostics.ucsf.edu for additional information.

For inquiries, please call 415-514-6599.

With approval from the Microbiology lab, plasma samples in select cases may be sent to Karius for testing. Order as "Microbiology - Test Not Listed (Special Sendout Test) (aka P319)."

For Karius collection and processing instructions, click here.

ADMINISTRATIVE

CPT Codes:
81479

LDT or Modified FDA:
Yes

COMPLETE VIEW

Approval Required:
Yes, testing of UCSF patients requires approval by Microbiology in consultation with Infectious Disease or Neurology. UCSF outpatient testing requires insurance preauthorization. Please follow this link for an insurance preauthorization template (Microsoft Word format).

Requests from outside UCSF require an institutional account prior to sample submission. See https://nextgendiagnostics.ucsf.edu for details.

In select cases, plasma samples may be sent to Karius for testing (see 'Additional Information' below).

Available Stat:
No

Test Code:
P710

Performing Lab:
Microbiology

Methodology:
mNGS

Remarks:
Lumbar puncture (CSF)

Collect:
CSF: Sterile black-top tube
Plasma: Lavender or pearl top. Needs a dedicated tube. A shared sample is unacceptable.

Sample Type:
CSF, EDTA plasma (EDTA whole blood must be centrifuged and plasma separated from red cells within 6 hours of collection).

Preferred Volume:
2ml

Minimum Volume:
1ml

Unacceptable Conditions:
Samples submitted in incorrect tube, grossly hemolyzed samples, plasma sample shared with other tests.

Specimen Preparation:
UCSF: Freeze at -70ºC on receipt at China Basin.Other sites: Freeze CSF and ship to China Basin microbiology. Aliquot (if necessary) only under sterile conditions.

Additional Processing Instructions:
With approval from the Microbiology lab, plasma samples in select cases may be sent to Karius for testing. Order as "Microbiology - Test Not Listed (Special Sendout Test) (aka P319)."

For Karius collection and processing instructions, click here.

Reference Interval:
No microorganisms detected

Synonyms:

- Metagenomic next-generation sequencing, deep sequencing

Stability (from collection to initiation):
CSF: Room temperature 6 hours or refrigerated 6 days, but prefer to freeze within 6 hours; stable frozen at -25C or -70C for 1 month.

Plasma: Room temperature up to 6 hours for whole blood; plasma frozen at -25C or -70C for 1 month.

Reported:
1-2 weeks

Additional Information:
Note, CSF is the only sample type accepted from outside UCSF

Test is interpreted by the Microbiology lab director and discussed with treating physicians as part of the Clinical Microbial Sequencing Board.

See http://nextgendiagnostics.ucsf.edu for additional information.

For inquiries, please call 415-514-6599.

With approval from the Microbiology lab, plasma samples in select cases may be sent to Karius for testing. Order as "Microbiology - Test Not Listed (Special Sendout Test) (aka P319)."

For Karius collection and processing instructions, click here.

CPT Codes:
81479

LDT or Modified FDA:
Yes

Modified Inhibitor Titer

MODIT

ORDERING

Available Stat:
No

Performing Lab:
Parnassus Hematology

Performed:
Monday-Friday 0800-1400

Methodology:
Clotting assay (STAGO)

Reported:
1-5 days

Additional Information:
Known factor VIII, factor IX, or factor XI deficient patients may develop antibodies to transfused factor, and thereby develop inhibitors. When there is a clinical indication to screen for inhibitors in factor deficient patients or there is clinical suspicion for inhibitor development, a modified inhibitor titer may be performed rather than a factor inhibitor screen (mixing study). The modified inhibitor titer can detect inhibitors as low as 0.25 Nijmegen Bethesda Units (NBU).

Because the modified inhibitor titer has a 2 hour incubation step, slow acting inhibitors may be detected. An in house UCSF study in the Fall of 2008 indicated that the modified inhibitor titer can detect low titer inhibitors missed by the factor inhibitor screen. This study also showed that the modified inhibitor screen can yield a result of <0.25 BU in patients for whom the factor inhibitor screen gave an equivocal result.

If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for

Reflex Testing:
If a Factor VIII, FIX, or FXI level has not been performed within the preceding 24 hours one will be automatically ordered and charged for before the inhibitor titer is performed.

Synonyms:

- FVIII titer
- Factor 8 specific mini titer
- FVIII, FIX, FXI titer
- Factor 8, 9, 11 specific mini titer

COLLECTION

Patient Preparation:
Deliver samples to Hematology for processing. Freeze platelet poor plasma at -20C

Sample Type:
Citrated plasma

Collect:
2.7 mL Blue top filled to full extent of vacuum x 2

Amount to Collect:
5.4 mL blood

Preferred Volume:
2 mL plasma

Minimum Volume:
1 mL plasma

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

For patients with Hct's >= 55% please contact Hematology (415-353-1747) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Stability (from collection to initiation):
4 hours

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

PROCESSING

Test Code:
MODIT

Test Group:
Factor Inhibitor titer

Performing Lab:
Parnassus Hematology

Preferred Volume:
2 mL plasma

Minimum Volume:
1 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Stability (from collection to initiation):
4 hours

RESULT INTERPRETATION

Units:
Nijmegen Bethesda Units (NBU)

Reference Interval:
< 0.25 NBU

Additional Information:
Known factor VIII, factor IX, or factor XI deficient patients may develop antibodies to transfused factor, and thereby develop inhibitors. When there is a clinical indication to screen for inhibitors in factor deficient patients or there is clinical suspicion for inhibitor development, a modified inhibitor titer may be performed rather than a factor inhibitor screen (mixing study). The modified inhibitor titer can detect inhibitors as low as 0.25 Nijmegen Bethesda Units (NBU).

Because the modified inhibitor titer has a 2 hour incubation step, slow acting inhibitors may be detected. An in house UCSF study in the Fall of 2008 indicated that the modified inhibitor titer can detect low titer inhibitors missed by the factor inhibitor screen. This study also showed that the modified inhibitor screen can yield a result of <0.25 BU in patients for whom the factor inhibitor screen gave an equivocal result.

If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for

ADMINISTRATIVE

CPT Codes:
85335

LDT or Modified FDA:
Yes

LOINC Codes:
3206-0

COMPLETE VIEW

Available Stat:
No

Test Code:
MODIT

Test Group:
Factor Inhibitor titer

Performing Lab:
Parnassus Hematology

Performed:
Monday-Friday 0800-1400

Methodology:
Clotting assay (STAGO)

Patient Preparation:
Deliver samples to Hematology for processing. Freeze platelet poor plasma at -20C

Remarks:

1. Check the expiration date on the label of the blue top vacutainer before drawing the patient
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

For patients with Hct's >= 55% please contact Hematology (415-353-1747) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Collect:
2.7 mL Blue top filled to full extent of vacuum x 2

Amount to Collect:
5.4 mL blood

Sample Type:
Citrated plasma

Preferred Volume:
2 mL plasma

Minimum Volume:
1 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Units:
Nijmegen Bethesda Units (NBU)

Reference Interval:
< 0.25 NBU

Synonyms:

- FVIII titer
- Factor 8 specific mini titer
- FVIII, FIX, FXI titer
- Factor 8, 9, 11 specific mini titer

Stability (from collection to initiation):
4 hours

Reported:
1-5 days

Reflex Testing:
If a Factor VIII, FIX, or FXI level has not been performed within the preceding 24 hours one will be automatically ordered and charged for before the inhibitor titer is performed.

Additional Information:
Known factor VIII, factor IX, or factor XI deficient patients may develop antibodies to transfused factor, and thereby develop inhibitors. When there is a clinical indication to screen for inhibitors in factor deficient patients or there is clinical suspicion for inhibitor development, a modified inhibitor titer may be performed rather than a factor inhibitor screen (mixing study). The modified inhibitor titer can detect inhibitors as low as 0.25 Nijmegen Bethesda Units (NBU).

Because the modified inhibitor titer has a 2 hour incubation step, slow acting inhibitors may be detected. An in house UCSF study in the Fall of 2008 indicated that the modified inhibitor titer can detect low titer inhibitors missed by the factor inhibitor screen. This study also showed that the modified inhibitor screen can yield a result of <0.25 BU in patients for whom the factor inhibitor screen gave an equivocal result.

If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for

CPT Codes:
85335

LDT or Modified FDA:
Yes

LOINC Codes:
3206-0

MOG Antibody, IgG

MOGFS

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
Fluorescence-Activated Cell Sorting Assay

Reported:
5-7 days

Additional Information:
USEFUL FOR:

Diagnosis of inflammatory demyelinating diseases (IDD) with similar phenotype
to neuromyelitis optica spectrum disorder (NMOSD), including optic neuritis (single or bilateral) and transverse myelitis

Diagnosis of autoimmune myelin oligodendrocyte glycoprotein (MOG)-opathy

Diagnosis of neuromyelitis optica (NMO)

Distinguishing NMOSD, acute disseminated encephalomyelitis (ADEM), optic neuritis, and transverse myelitis from multiple sclerosis early in the course of disease

Diagnosis of ADEM

Prediction of a relapsing disease course

Reflex Testing:
Yes, if positive titer test will be performed at an additional charge.

Synonyms:

- Myelin Oligodendrocyte Glycoprotein

COLLECTION

Sample Type:
Serum

Collect:
Red-top or Gold-top

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Stability (from collection to initiation):
Ambient: 72 hours
Refrigerated/Frozen: 28 days

PROCESSING

Test Code:
MOGFS

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Aliquot serum and freeze. Transport to CB frozen. Order Mayo test code MOGFS.

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Stability (from collection to initiation):
Ambient: 72 hours
Refrigerated/Frozen: 28 days

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
USEFUL FOR:

Diagnosis of inflammatory demyelinating diseases (IDD) with similar phenotype
to neuromyelitis optica spectrum disorder (NMOSD), including optic neuritis (single or bilateral) and transverse myelitis

Diagnosis of autoimmune myelin oligodendrocyte glycoprotein (MOG)-opathy

Diagnosis of neuromyelitis optica (NMO)

Distinguishing NMOSD, acute disseminated encephalomyelitis (ADEM), optic neuritis, and transverse myelitis from multiple sclerosis early in the course of disease

Diagnosis of ADEM

Prediction of a relapsing disease course

ADMINISTRATIVE

CPT Codes:
86255

COMPLETE VIEW

Available Stat:
No

Test Code:
MOGFS

Performing Lab:
Mayo

Sendout:
Yes

Methodology:
Fluorescence-Activated Cell Sorting Assay

Collect:
Red-top or Gold-top

Amount to Collect:
4 mL blood

Sample Type:
Serum

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Specimen Preparation:
Aliquot serum and freeze. Transport to CB frozen. Order Mayo test code MOGFS.

Reference Interval:
Negative

Synonyms:

- Myelin Oligodendrocyte Glycoprotein

Stability (from collection to initiation):
Ambient: 72 hours
Refrigerated/Frozen: 28 days

Reported:
5-7 days

Reflex Testing:

Yes, if positive titer test will be performed at an additional charge.

Additional Information:

USEFUL FOR:

Diagnosis of inflammatory demyelinating diseases (IDD) with similar phenotype to neuromyelitis optica spectrum disorder (NMOSD), including optic neuritis (single or bilateral) and transverse myelitis

Diagnosis of autoimmune myelin oligodendrocyte glycoprotein (MOG)-opathy

Diagnosis of neuromyelitis optica (NMO)

Distinguishing NMOSD, acute disseminated encephalomyelitis (ADEM), optic neuritis, and transverse myelitis from multiple sclerosis early in the course of disease

Diagnosis of ADEM

Prediction of a relapsing disease course

CPT Codes:

86255

Molybdenum, blood

MOLY

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Inductively couple plasma mass spectroscopy

Reported:
2-3 weeks

Additional Information:
Molybdenum is an essential trace element. In anemia, molybdenum concentration decreases in both erythrocytes and plasma. Toxic doses can cause anemia and abnormal copper metabolism.

Synonyms:

- Mb

COLLECTION

Patient Preparation:
Patient should refrain from taking mineral supplements 3 days before specimen collection and from eating legumes and leafy vegetables 2 days before specimen collection.

Sample Type:
EDTA whole blood

Collect:
Navy blue top (EDTA) tube

Amount to Collect:
4 mL blood

Preferred Volume:
4 mL blood

Minimum Volume:
2 mL blood

Stability (from collection to initiation):
Room temperature 48 hours, refrigerated 5 days.

Unacceptable Conditions:
Hemolyzed, clotted

Rejection Criteria:
Received frozen or room temp

PROCESSING

Test Code:
MOLY

Test Group:
Molybdenum

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Store whole blood in original collection tube or POUR whole blood into a plastic trace element shipping container (lavender label). Ship refrigerated. Order Quest # 56960P

Preferred Volume:
4 mL blood

Minimum Volume:
2 mL blood

Unacceptable Conditions:
Hemolyzed, clotted

Rejection Criteria:
Received frozen or room temp

Stability (from collection to initiation):
Room temperature 48 hours, refrigerated 5 days.

RESULT INTERPRETATION

Units:
µg/L (mcg/L)

Reference Interval:
< 2.1 µg/L

Additional Information:
Molybdenum is an essential trace element. In anemia, molybdenum concentration decreases in both erythrocytes and plasma. Toxic doses can cause anemia and abnormal copper metabolism.

ADMINISTRATIVE

CPT Codes:
83018-90

LOINC Codes:
5696-0

COMPLETE VIEW

Available Stat:
No

Test Code:
MOLY

Test Group:
Molybdenum

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Inductively couple plasma mass spectroscopy

Patient Preparation:
Patient should refrain from taking mineral supplements 3 days before specimen collection and from eating legumes and leafy vegetables 2 days before specimen collection.

Collect:
Navy blue top (EDTA) tube

Amount to Collect:
4 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
4 mL blood

Minimum Volume:
2 mL blood

Rejection Criteria:
Received frozen or room temp

Unacceptable Conditions:
Hemolyzed, clotted

Specimen Preparation:
Store whole blood in original collection tube or POUR whole blood into a plastic trace element shipping container (lavender label). Ship refrigerated. Order Quest # 56960P

Units:
µg/L (mcg/L)

Reference Interval:
< 2.1 µg/L

Synonyms:

- Mb

Stability (from collection to initiation):
Room temperature 48 hours, refrigerated 5 days.

Reported:
2-3 weeks

Additional Information:
Molybdenum is an essential trace element. In anemia, molybdenum concentration decreases in both erythrocytes and plasma. Toxic doses can cause anemia and abnormal copper metabolism.

CPT Codes:
83018-90

LOINC Codes:
5696-0

MONKEYPOX VIRUS DNA, QL PCR

MPXQL

ORDERING

Approval Required:

For suspected/confirmed case, notify Infection Prevention immediately.
Business hours (M-F 8AM- 4PM): Adults 628-248-9059 & Pediatrics 628-248-8503
After hours: Moffitt-Long 415-353-8036; BCH-SF 415-502-0728, MB Adults 415-502-0562

In addition to calling Infection Prevention, providers must complete a Confidential Morbidity Report (CMR) (https://www.sfcdcp.org/wp-content/uploads/2018/01/CMR-Reportable-Diseases-List-eff-2.11.22-FINAL.pdf) and submit it to the lab for each patient/case.

Available Stat:

No

Performing Lab:

Quest

Methodology:

Real-time polymerase chain reaction

Additional Information:

UCSF Hospital Epidemiology and Infection Prevention (HEIP) Tip Sheet:
https://infectioncontrol.ucsfmedicalcenter.org/sites/g/files/tkssra4681/f/Monkeypox%20Tip%20sheet_8.17.22.pdf

UCSF HEIP site: https://infectioncontrol.ucsfmedicalcenter.org/content/monkeypox

Provider guidance from SFDHP: https://www.sfcdcp.org/wp-content/uploads/2022/08/MPX-Provider-Evaluation-Guidance.pdf

Synonyms:

- Poxvirus
- mpox

COLLECTION

Sample Type:

Lesion swab collected in 3 mL Universal Transport Media (UTM) or equivalent

Collect:

Lesion swab collected in 3 mL Universal Transport Media (UTM) or equivalent

Remarks:

Swab the pustule/lesion vigorously and place the swab into a viral culture media (or equivalent) tube.

Lesion swabbing tips.

No additional confirmatory testing is required at the CDC, therefore a duplicate swab from the same lesion is not needed. If clinically indicated, consider submitting additional swabs if multiple lesions with different stages are present. Multiple specimens collected on a single patient should be submitted separately and be accompanied by its own separate requisition and transported in its own sealed bag.

Stability (from collection to initiation):

Room temperature: Unacceptable
Refrigerated: 7 days
Frozen: 30 days

Storage/Transport Temperature:

Frozen

Unacceptable Conditions:

Calcium Alginate swabs • Cotton swabs • Wooden shaft swabs • Dry swabs (e.g., not submitted in VCM or equivalent)

PROCESSING

Test Code:

MPXQL

Sendout:

Yes

Performing Lab:

Quest

Unacceptable Conditions:

Calcium Alginate swabs • Cotton swabs • Wooden shaft swabs • Dry swabs (e.g., not submitted in VCM or equivalent)

Stability (from collection to initiation):
Room temperature: Unacceptable
Refrigerated: 7 days
Frozen: 30 days

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Reference Interval:
Orthopoxvirus DNA, QL PCR: Not detected
Monkeypox Virus DNA,QL PCR: Not detected

Additional Information:
UCSF Hospital Epidemiology and Infection Prevention (HEIP) Tip Sheet:
https://infectioncontrol.ucsfmedicalcenter.org/sites/g/files/tkssra4681/f/Monkeypox%20Tip%20sheet_8.17.22.pdf

UCSF HEIP site: https://infectioncontrol.ucsfmedicalcenter.org/content/monkeypox

Provider guidance from SFDHP: https://www.sfcdcp.org/wp-content/uploads/2022/08/MPX-Provider-Evaluation-Guidance.pdf

ADMINISTRATIVE

CPT Codes:
87593 x 2

COMPLETE VIEW

Approval Required:
For suspected/confirmed case, notify Infection Prevention immediately.
Business hours (M-F 8AM- 4PM): Adults 628-248-9059 & Pediatrics 628-248-8503
After hours: Moffitt-Long 415-353-8036; BCH-SF 415-502-0728, MB Adults 415-502-0562

In addition to calling Infection Prevention, providers must complete a Confidential Morbidity Report (CMR) (https://www.sfcdcp.org/wp-content/uploads/2018/01/CMR-Reportable-Diseases-List-eff-2.11.22-FINAL.pdf) and submit it to the lab for each patient/case.

Available Stat:
No

Test Code:
MPXQL

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Real-time polymerase chain reaction

Remarks:
Swab the pustule/lesion vigorously and place the swab into a viral culture media (or equivalent) tube.

Lesion swabbing tips.

No additional confirmatory testing is required at the CDC, therefore a duplicate swab from the same lesion is not needed. If clinically indicated, consider submitting additional swabs if multiple lesions with different stages are present. Multiple specimens collected on a single patient should be submitted separately and be accompanied by its own separate requisition and transported in its own sealed bag.

Collect:
Lesion swab collected in 3 mL Universal Transport Media (UTM) or equivalent

Sample Type:
Lesion swab collected in 3 mL Universal Transport Media (UTM) or equivalent

Unacceptable Conditions:
Calcium Alginate swabs • Cotton swabs • Wooden shaft swabs • Dry swabs (e.g., not submitted in VCM or equivalent)

Reference Interval:
Orthopoxvirus DNA, QL PCR: Not detected
Monkeypox Virus DNA,QL PCR: Not detected

Synonyms:

- Poxvirus
- mpox

Storage/Transport Temperature:
Frozen

Stability (from collection to initiation):
Room temperature: Unacceptable
Refrigerated: 7 days
Frozen: 30 days

Additional Information:
UCSF Hospital Epidemiology and Infection Prevention (HEIP) Tip Sheet:
https://infectioncontrol.ucsfmedicalcenter.org/sites/g/files/tkssra4681/f/Monkeypox%20Tip%20sheet_8.17.22.pdf

UCSF HEIP site: https://infectioncontrol.ucsfmedicalcenter.org/content/monkeypox

Provider guidance from SFDHP: https://www.sfcdcp.org/wp-content/uploads/2022/08/MPX-Provider-Evaluation-Guidance.pdf

CPT Codes:
87593 x 2

Monoclonal Protein Study, Quantitative, Serum

MALD

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Performed:
Monday - Friday

Methodology:
Matrix-Assisted Laser Desorption/Ionization Time-of-Flight Mass Spectrometry (MALDI-TOF MS)
Nephelometry

Reported:
4-7 days

Additional Information:

Monoclonal Gammopathies:

-A monoclonal IgG or IgA of greater than 3 g/dL is consistent with multiple myeloma (MM).

-A monoclonal IgM of greater than 3 g/dL is consistent with macroglobulinemia.

-A monoclonal IgG, IgM or IgA of less than 3 g/dL may be consistent with monoclonal gammopathy of undetermined significance (MGUS), AL amyloidosis, well as other monoclonal gammopathies of clinical significance.

-The initial identification of a serum M-spike greater than 1.5 g/dL a follow-up MPU / Monoclonal Protein Studies, 24 Hour, Urine to evaluate renal impairment due to the M-protein

-The initial identification of an IgM, IgA, or IgG M-spike greater than 4 g/dL, greater than 5 g/dL, and greater than 6 g/dL, respectively, a SVISC / Viscosity, Serum should be tested to rule out hyperviscosity syndrome.

-Patients with monoclonal light chain diseases who have no serum or urine M-spike may be monitored with the quantitative serum FLC assay.

-Patients with IgD or IgE can be followed using quantitative IgD or IgE measurements.

-Patients with monoclonal Ig heavy chains (gamma, alpha and mu) can be detected by the Mass-Fix assay.

-A small subset of MM patients (<1%) have malignant plasma cells which do not secrete an M-protein. Thus, these Non-secretory MM patients need additional clinical testing to establish the diagnosis.

-Patients with normal serum protein electrophoresis and IFE can have positive results on Mass-Fix testing due to the increased sensitivity of the assay.

Detection of therapeutic monoclonal antibodies (t-mAbs)

-Patients who are receiving t-mAb therapies can have a pseudo" M-protein depending on the level of the t-mAb in the blood. These t-mAbs have predictable light chain mass to charge values. The lab has a limited (but expanding) number of t-mAbs for which we comment. If an M-protein is detected with a mass, isotype and concentration similar to a t-mAb in our database, a comment is added to the report : A monoclonal [isotype] is present with a light chain mass suggestive of [t-mAb name]. If the patient is not on [t-mAb name] the monoclonal [isotype] is indicative of a monoclonal gammopathy. Given that some M-proteins mass, isotype and concentration will match a t-mAb, it is possible that the named t-mAb is not present and is in fact a low-level M-protein associated with a monoclonal gammopathy. If the patient has no history of taking the named t-mAb, then the reported M-protein is likely associated with a monoclonal gammopathy.

-In studies performed at the Mayo Clinic, it is possible to see daratumumab for 9 months after the cessation of treatment.

-Mass-fix testing will not quantitate albumin, alpha-1-trypisin, alpha-2-macroglobulins or the beta fractions.

MGUS Prognosis:

-Low-risk MGUS patients are defined as having an M-spike of less than 1.5 g/dL, IgG monoclonal protein, and a normal FLC K/L ratio (0.25-1.65), and these patients have a lifetime risk of progression to MM of less than 5%.

-High-risk MGUS patients (M-spike >1.5, IgA or IgM, abnormal FLC ratio) have a lifetime risk of progression to MM of 60%.

Other Abnormal Findings:

-IgG and IgA and free light chain M-proteins with reported light chain glycosylation have demonstrated to be a risk factor for AL amyloidosis.

-IgM M-proteins with light chain glycosylation have been demonstrated to be associated with cold agglutinin disease.

-Persistent elevated immunoglobulins levels is consistent with autoimmune disease, IgG4 related disease and liver failure.

Reflex Testing:

If a light chain is identified without a corresponding heavy chain during initial testing, IFXED (immunofixation with immunoglobulin D [IgD] and immunoglobulin E [IgE] antisera), will be performed at an additional charge.

If a monoclonal IgD or IgE is identified during initial testing, IGD or IGE will be performed at an additional charge.

Synonyms:

- Isotyping
- Mass-Fix
- miRAMM
- Multiple myeloma
- MassFix

COLLECTION

Sample Type:
Serum

Collect:
Gold or red top

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL serum

Minimum Volume:
1.5 mL serum

Stability (from collection to initiation):
Refrigerated (preferred): 28 days
Frozen: 28 days
Ambient: 7 days

Storage/Transport Temperature:
Refrigerated

Unacceptable Conditions:
Gross lipemia

PROCESSING

Test Code:
MALD

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
If possible aliquot into two tubes, 1 mL per tube. Refrigerate and send to CB. Order Mayo test code QMPSS.

Preferred Volume:
2 mL serum

Minimum Volume:
1.5 mL serum

Unacceptable Conditions:
Gross lipemia

Stability (from collection to initiation):
Refrigerated (preferred): 28 days
Frozen: 28 days
Ambient: 7 days

Storage/Transport Temperature:
Refrigerated

RESULT INTERPRETATION

Reference Interval:
Monoclonal-protein Isotype Flag:

Negative

Interpretation:

No monoclonal protein detected.

Additional Information:

Monoclonal Gammopathies:

-A monoclonal IgG or IgA of greater than 3 g/dL is consistent with multiple myeloma (MM).

-A monoclonal IgM of greater than 3 g/dL is consistent with macroglobulinemia.

-A monoclonal IgG, IgM or IgA of less than 3 g/dL may be consistent with monoclonal gammopathy of undetermined significance (MGUS), AL amyloidosis, well as other monoclonal gammopathies of clinical significance.

-The initial identification of a serum M-spike greater than 1.5 g/dL a follow-up MPU / Monoclonal Protein Studies, 24 Hour, Urine to evaluate renal impairment due to the M-protein

-The initial identification of an IgM, IgA, or IgG M-spike greater than 4 g/dL, greater than 5 g/dL, and greater than 6 g/dL, respectively, a SVISC / Viscosity, Serum should be tested to rule out hyperviscosity syndrome.

-Patients with monoclonal light chain diseases who have no serum or urine M-spike may be monitored with the quantitative serum FLC assay.

-Patients with IgD or IgE can be followed using quantitative IgD or IgE measurements.

-Patients with monoclonal Ig heavy chains (gamma, alpha and mu) can be detected by the Mass-Fix assay.

-A small subset of MM patients (<1%) have malignant plasma cells which do not secrete an M-protein. Thus, these Non-secretory MM patients need additional clinical testing to establish the diagnosis.

-Patients with normal serum protein electrophoresis and IFE can have positive results on Mass-Fix testing due to the increased sensitivity of the assay.

Detection of therapeutic monoclonal antibodies (t-mAbs)

-Patients who are receiving t-mAb therapies can have a pseudo" M-protein depending on the level of the t-mAb in the blood. These t-mAbs have predictable light chain mass to charge values. The lab has a limited (but expanding) number of t-mAbs for which we comment. If an M-protein is detected with a mass, isotype and concentration similar to a t-mAb in our database, a comment is added to the report : A monoclonal [isotype] is present with a light chain mass suggestive of [t-mAb name]. If the patient is not on [t-mAb name] the monoclonal [isotype] is indicative of a monoclonal gammopathy. Given that some M-proteins mass, isotype and concentration will match a t-mAb, it is possible that the named t-mAb is not present and is in fact a low-level M-protein associated with a monoclonal gammopathy. If the patient has no history of taking the named t-mAb, then the reported M-protein is likely associated with a monoclonal gammopathy.

-In studies performed at the Mayo Clinic, it is possible to see daratumumab for 9 months after the cessation of treatment.

-Mass-fix testing will not quantitate albumin, alpha-1-trypisin, alpha-2-macroglobulins or the beta fractions.

MGUS Prognosis:

-Low-risk MGUS patients are defined as having an M-spike of less than 1.5 g/dL, IgG monoclonal protein, and a normal FLC K/L ratio (0.25-1.65), and these patients have a lifetime risk of progression to MM of less than 5%.

-High-risk MGUS patients (M-spike >1.5, IgA or IgM, abnormal FLC ratio) have a lifetime risk of progression to MM of 60%.

Other Abnormal Findings:

-IgG and IgA and free light chain M-proteins with reported light chain glycosylation have demonstrated to be a risk factor for AL amyloidosis.

-IgM M-proteins with light chain glycosylation have been demonstrated to be associated with cold agglutinin disease.

-Persistent elevated immunoglobulins levels is consistent with autoimmune disease, IgG4 related disease and liver failure.

Interpretive Data:

A characteristic monoclonal band (M-spike) is often found on serum protein electrophoresis (SPE) in the gamma globulin region and, more rarely, in the beta or alpha-2 regions. The finding of an M-spike, restricted migration, or hypogammaglobulinemic protein electrophoresis pattern is suggestive of a possible monoclonal protein.

Immunoaffinity purification followed by matrix-assisted laser desorption/ionization-time of flight mass spectrometry (MALDI-TOF MS) is performed to identify the immunoglobulin heavy and light chains.

ADMINISTRATIVE

CPT Codes:
0077U

82784 x 3

LOINC Codes:
104266-2

COMPLETE VIEW

Available Stat:
No

Test Code:
MALD

Performing Lab:
Mayo

Sendout:
Yes

Performed:
Monday - Friday

Methodology:
Matrix-Assisted Laser Desorption/Ionization Time-of-Flight Mass Spectrometry (MALDI-TOF MS)
Nephelometry

Collect:
Gold or red top

Amount to Collect:
4 mL blood

Sample Type:
Serum

Preferred Volume:
2 mL serum

Minimum Volume:
1.5 mL serum

Unacceptable Conditions:
Gross lipemia

Specimen Preparation:
If possible aliquot into two tubes, 1 mL per tube. Refrigerate and send to CB. Order Mayo test code QMPSS.

Reference Interval:
Monoclonal-protein Isotype Flag:

Negative

Interpretation:

No monoclonal protein detected.

Interpretive Data:
A characteristic monoclonal band (M-spike) is often found on serum protein electrophoresis (SPE) in the gamma globulin region and, more rarely, in the beta or alpha-2 regions. The finding of an M-spike, restricted migration, or hypogammaglobulinemic protein electrophoresis pattern is suggestive of a possible monoclonal protein.

Immunoaffinity purification followed by matrix-assisted laser desorption/ionization-time of flight mass spectrometry (MALDI-TOF MS) is performed to identify the immunoglobulin heavy and light chains.

Synonyms:

- Isotyping
- Mass-Fix
- miRAMM
- Multiple myeloma
- MassFix

Storage/Transport Temperature:
Refrigerated

Stability (from collection to initiation):

Refrigerated (preferred): 28 days
Frozen: 28 days
Ambient: 7 days

Reported:

4-7 days

Reflex Testing:

If a light chain is identified without a corresponding heavy chain during initial testing, IFXED (immunofixation with immunoglobulin D [IgD] and immunoglobulin E [IgE] antisera), will be performed at an additional charge.

If a monoclonal IgD or IgE is identified during initial testing, IGD or IGE will be performed at an additional charge.

Additional Information:

Monoclonal Gammopathies:

-A monoclonal IgG or IgA of greater than 3 g/dL is consistent with multiple myeloma (MM).

-A monoclonal IgM of greater than 3 g/dL is consistent with macroglobulinemia.

-A monoclonal IgG, IgM or IgA of less than 3 g/dL may be consistent with monoclonal gammopathy of undetermined significance (MGUS), AL amyloidosis, well as other monoclonal gammopathies of clinical significance.

-The initial identification of a serum M-spike greater than 1.5 g/dL a follow-up MPU / Monoclonal Protein Studies, 24 Hour, Urine to evaluate renal impairment due to the M-protein

-The initial identification of an IgM, IgA, or IgG M-spike greater than 4 g/dL, greater than 5 g/dL, and greater than 6 g/dL, respectively, a SVISC / Viscosity, Serum should be tested to rule out hyperviscosity syndrome.

-Patients with monoclonal light chain diseases who have no serum or urine M-spike may be monitored with the quantitative serum FLC assay.

-Patients with IgD or IgE can be followed using quantitative IgD or IgE measurements.

-Patients with monoclonal Ig heavy chains (gamma, alpha and mu) can be detected by the Mass-Fix assay.

-A small subset of MM patients (<1%) have malignant plasma cells which do not secrete an M-protein. Thus, these Non-secretory MM patients need additional clinical testing to establish the diagnosis.

-Patients with normal serum protein electrophoresis and IFE can have positive results on Mass-Fix testing due to the increased sensitivity of the assay.

Detection of therapeutic monoclonal antibodies (t-mAbs)

-Patients who are receiving t-mAb therapies can have a pseudo" M-protein depending on the level of the t-mAb in the blood. These t-mAbs have predictable light chain mass to charge values. The lab has a limited (but expanding) number of t-mAbs for which we comment. If an M-protein is detected with a mass, isotype and concentration similar to a t-mAb in our database, a comment is added to the report : A monoclonal [isotype] is present with a light chain mass suggestive of [t-mAb name]. If the patient is not on [t-mAb name] the monoclonal [isotype] is indicative of a monoclonal gammopathy. Given that some M-proteins mass, isotype and concentration will match a t-mAb, it is possible that the named t-mAb is not present and is in fact a low-level M-protein associated with a monoclonal gammopathy. If the patient has no history of taking the named t-mAb, then the reported M-protein is likely associated with a monoclonal gammopathy.

-In studies performed at the Mayo Clinic, it is possible to see daratumumab for 9 months after the cessation of treatment.

-Mass-fix testing will not quantitate albumin, alpha-1-trypisin, alpha-2-macroglobulins or the beta fractions.

MGUS Prognosis:

-Low-risk MGUS patients are defined as having an M-spike of less than 1.5 g/dL, IgG monoclonal protein, and a normal FLC K/L ratio (0.25-1.65), and these patients have a lifetime risk of progression to MM of less than 5%.

-High-risk MGUS patients (M-spike >1.5, IgA or IgM, abnormal FLC ratio) have a lifetime risk of progression to MM of 60%.

Other Abnormal Findings:

-IgG and IgA and free light chain M-proteins with reported light chain glycosylation have demonstrated to be a risk factor for AL amyloidosis.

-IgM M-proteins with light chain glycosylation have been demonstrated to be associated with cold agglutinin disease.

-Persistent elevated immunoglobulins levels is consistent with autoimmune disease, IgG4 related disease and liver failure.

CPT Codes:

0077U

82784 x 3

LOINC Codes:

104266-2

Monosomy 5 / Del5q FISH

M5D5Q, BM5D5Q

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Fluorescent in-situ hybridization

Synonyms:

- 5q-
- -5
- M5D5Q
- BM5D5Q

COLLECTION

Sample Type:
Heparinized whole blood, bone marrow, bone core

Collect:
Blood & bone marrow aspirate: 15 mL centrifuge tube with transport media (RPMI, FBS, L-Glutamine, Sodium Heparin and PenStrep). Available from Cytogenetics, 415-353-4844. Dark Green top also acceptable

Bone marrow core: 15 mL centrifuge tube with transport media (RPMI, FBS, L-Glutamine, Sodium Heparin and PenStrep). Available from Cytogenetics.

Amount to Collect:
Bone marrow: 2 mL
Blood: 2 mL
Bone core: 2 cm

Preferred Volume:
Bone marrow: 2 mL
Blood: 2 mL
?Bone core: 2 cm

Minimum Volume:
Bone marrow: 1 mL
Blood: 1 mL
?Bone core: 2 cm

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

PROCESSING

Test Code:
BM5D5Q: Blood
M5D5Q: Bone marrow

Test Group:
FISH

Performing Lab:
Medical Genomics - Cytogenetics

Specimen Preparation:
Maintain sample at room temperature. Transport to CB Cytogenetics within 24 hours

Preferred Volume:
Bone marrow: 2 mL
Blood: 2 mL
?Bone core: 2 cm

Minimum Volume:
Bone marrow: 1 mL
Blood: 1 mL
?Bone core: 2 cm

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

RESULT INTERPRETATION

Reference Interval:
Not detected

ADMINISTRATIVE

CPT Codes:
88275, 88271

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BM5D5Q: Blood
M5D5Q: Bone marrow

Test Group:
FISH

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Fluorescent in-situ hybridization

Collect:
Blood & bone marrow aspirate: 15 mL centrifuge tube with transport media (RPMI, FBS, L-Glutamine, Sodium Heparin and PenStrep). Available from Cytogenetics, 415-353-4844. Dark Green top also acceptable

Bone marrow core: 15 mL centrifuge tube with transport media (RPMI, FBS, L-Glutamine, Sodium Heparin and PenStrep). Available from Cytogenetics.

Amount to Collect:
Bone marrow: 2 mL
Blood: 2 mL
Bone core: 2 cm

Sample Type:
Heparinized whole blood, bone marrow, bone core

Preferred Volume:
Bone marrow: 2 mL
Blood: 2 mL
?Bone core: 2 cm

Minimum Volume:
Bone marrow: 1 mL
Blood: 1 mL
?Bone core: 2 cm

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

Specimen Preparation:
Maintain sample at room temperature. Transport to CB Cytogenetics within 24 hours

Reference Interval:
Not detected

Synonyms:

- 5q-
- -5
- M5D5Q
- BM5D5Q

CPT Codes:
88275, 88271

LDT or Modified FDA:
Yes

Monosomy 7 / Deletion 7q FISH

M7D7Q, BM7D7Q

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Fluorescent in-situ hybridization

Reported:
7-14 days

Synonyms:

- -7
- Del 7q
- M7D7Q
- BM7D7Q

COLLECTION

Sample Type:
Heparinized whole blood, bone marrow, bone core

Collect:
Blood & bone marrow aspirate: 15 mL centrifuge tube with transport media (RPMI, FBS, L-Glutamine, Sodium Heparin and PenStrep). Available from Cytogenetics, 415-353-4844. Dark Green top also acceptable.

Bone marrow core: 15 mL centrifuge tube with transport media (RPMI, FBS, L-Glutamine, Sodium Heparin and PenStrep). Available from Cytogenetics.

Amount to Collect:
Bone marrow: 2 mL
Blood: 2 mL
?Bone core: 2 cm

Preferred Volume:
Bone marrow: 2 mL
Blood: 2 mL
?Bone core: 2 cm

Minimum Volume:
Bone marrow: 1 mL
Blood: 1 mL
?Bone core: 2 cm

Stability (from collection to initiation):
48 hours

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

PROCESSING

Test Code:
BM7D7Q: Blood
M7D7Q: Bone marrow

Test Group:
FISH

Performing Lab:
Medical Genomics - Cytogenetics

Specimen Preparation:
Maintain sample at room temperature. Transport to CB Cytogenetics within 24 hours

Preferred Volume:
Bone marrow: 2 mL
Blood: 2 mL
?Bone core: 2 cm

Minimum Volume:
Bone marrow: 1 mL
Blood: 1 mL
?Bone core: 2 cm

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

Stability (from collection to initiation):
48 hours

RESULT INTERPRETATION

Reference Interval:
Not detected

ADMINISTRATIVE

CPT Codes:
88275, 88271x2

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BM7D7Q: Blood
M7D7Q: Bone marrow

Test Group:
FISH

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Fluorescent in-situ hybridization

Collect:
Blood & bone marrow aspirate: 15 mL centrifuge tube with transport media (RPMI, FBS, L-Glutamine, Sodium Heparin and PenStrep). Available from Cytogenetics, 415-353-4844. Dark Green top also acceptable.

Bone marrow core: 15 mL centrifuge tube with transport media (RPMI, FBS, L-Glutamine, Sodium Heparin and PenStrep). Available from Cytogenetics.

Amount to Collect:
Bone marrow: 2 mL
Blood: 2 mL
?Bone core: 2 cm

Sample Type:
Heparinized whole blood, bone marrow, bone core

Preferred Volume:
Bone marrow: 2 mL
Blood: 2 mL
?Bone core: 2 cm

Minimum Volume:
Bone marrow: 1 mL
Blood: 1 mL
?Bone core: 2 cm

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

Specimen Preparation:
Maintain sample at room temperature. Transport to CB Cytogenetics within 24 hours

Reference Interval:
Not detected

Synonyms:

- -7
- Del 7q
- M7D7Q
- BM7D7Q

Stability (from collection to initiation):
48 hours

Reported:
7-14 days

CPT Codes:
88275, 88271x2

LDT or Modified FDA:
Yes

Mucopolysaccharide Enzyme Analysis

MOLT

ORDERING

Ordering Recommendations:

This confirmatory testing is primarily ordered in patients who have been demonstrated to have elevated levels of mucopolysaccharides (glycosaminoglycans, GAG's) in urine. Alternatively it may be ordered in a patient where the diagnosis of a Mucopolysaccharidosis is highly suspect but the urine testing is negative.

Available Stat:

No

Performing Lab:

JMC

Reported:

Test run Thursdays. Turnaround time: 8-10 days.

Reflex Testing:

Additional assays for confirmatory testing may be run and charged separately.

Synonyms:

- Mucoploysacharidoses
- Mucopolysaccharidosis
- Hunter
- Hurler
- Sanfilippo
- Morquio
- Maroteaux-Lamy
- Sly
- hyaluronidase deficiency
- MPS type I
- MPS type II
- MPS type III
- MPS type IV
- MPS type VI
- MPS Type VII
- MPS type IX
- Glycosaminoglycans
- GAG's
- Mucolipidoses
- Mucolipidosis

COLLECTION

Sample Type:

Heparinized whole blood

Collect:

Dark Green top

Amount to Collect:

10 mL blood

Preferred Volume:

10 mL blood

Minimum Volume:

4 mL blood

Remarks:

A detailed clinical history must accompany the test request. Sample must arrive at performing laboratory within 24 hours of collection therefore collect Monday through Thursday noon only.

Keep sample at room temperature during storage and transport to the laboratory.

Unacceptable Conditions:

Samples collected outside of stated time frames

PROCESSING

Test Code:

MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Sendout:

Yes

Performing Lab:
JMC

Specimen Preparation:
Keep at room temperature-do NOT centrifuge or refrigerate.

Ship with clinical history by Federal Express, Monday-Thursday only, to:

Dr. David A. Wenger
Lysosomal Diseases Testing Laboratory
Jefferson Alumni Hall, Rm. 394
1020 Locust St.
Philadelphia, PA 19107
ph: (215)955-4923, fax 955-9554, email: david.wenger@mail.tju.edu

Preferred Volume:
10 mL blood

Minimum Volume:
4 mL blood

Unacceptable Conditions:
Samples collected outside of stated time frames

ADMINISTRATIVE

CPT Codes:
84311-90 x6

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
This confirmatory testing is primarily ordered in patients who have been demonstrated to have elevated levels of mucopolysaccharides (glycosaminoglycans, GAG's) in urine. Alternatively it may be ordered in a patient where the diagnosis of a Mucopolysaccharidosis is highly suspect but the urine testing is negative.

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Performing Lab:
JMC

Sendout:
Yes

Remarks:
A detailed clinical history must accompany the test request. Sample must arrive at performing laboratory within 24 hours of collection therefore collect Monday through Thursday noon only.

Keep sample at room temperature during storage and transport to the laboratory.

Collect:
Dark Green top

Amount to Collect:
10 mL blood

Sample Type:
Heparinized whole blood

Preferred Volume:
10 mL blood

Minimum Volume:
4 mL blood

Unacceptable Conditions:
Samples collected outside of stated time frames

Specimen Preparation:

Keep at room temperature-do NOT centrifuge or refrigerate.

Ship with clinical history by Federal Express, Monday-Thursday only, to:

Dr. David A. Wenger
Lysosomal Diseases Testing Laboratory
Jefferson Alumni Hall, Rm. 394
1020 Locust St.
Philadelphia, PA 19107
ph: (215)955-4923, fax 955-9554, email: david.wenger@mail.tju.edu

Synonyms:

- Mucoploysacharidoses
- Mucopolysaccharidosis
- Hunter
- Hurler
- Sanfilippo
- Morquio
- Maroteaux-Lamy
- Sly
- hyaluronidase deficiency
- MPS type I
- MPS type II
- MPS type III
- MPS type IV
- MPS type VI
- MPS Type VII
- MPS type IX
- Glycosaminoglycans
- GAG's
- Mucolipidoses
- Mucolipidosis

Reported:

Test run Thursdays. Turnaround time: 8-10 days.

Reflex Testing:

Additional assays for confirmatory testing may be run and charged separately.

CPT Codes:

84311-90 x6

Mucopolysaccharides, urine by TLC

MPSTLC

ORDERING

Ordering Recommendations:

This test should be ordered in conjunction with the quantitative assay (MPSQNT) when establishing or confirming a diagnosis of mucoplysacharidoses.

Once the diagnosis and type of mucoplysaccharidoses is established in a given patient monitoring typically only requires the quantitative assay be performed.

Available Stat:

No

Performing Lab:

Stanford Hospital Clinical Laboratory

Methodology:

Thin layer chromatography

Reported:

Turnaround time 5-7 days

Synonyms:

- Mucoploysacharidoses
- Mucopolysaccharidosis
- Hunter
- Hurler
- Sanfilippo
- Morquio
- Maroteaux-Lamy
- Sly
- hyaluronidase deficiency
- MPS type I
- MPS type II
- MPS type III
- MPS type IV
- MPS type VI
- MPS Type VII
- MPS type IX
- Glycosaminoglycans
- GAG's
- Mucolipidoses
- Mucolipidosis

COLLECTION

Sample Type:

Random urine

Collect:

Urine cup

Amount to Collect:

15 mL urine

Preferred Volume:

15 mL urine

Minimum Volume:

10 mL urine

Remarks:

Transport immediately to lab for processing

Unacceptable Conditions:

Sample received > 2 hours after collection

Rejection Criteria:

Sample received thawed

PROCESSING

Test Code:

MPSTLC

Test Group:
Mucopolysaccharides

Sendout:
Yes

Performing Lab:
Stanford Hospital Clinical Laboratory

Specimen Preparation:
Freeze urine immediately at -20C and transport frozen.

Preferred Volume:
15 mL urine

Minimum Volume:
10 mL urine

Unacceptable Conditions:
Sample received > 2 hours after collection

Rejection Criteria:
Sample received thawed

ADMINISTRATIVE

CPT Codes:
84375-90

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
This test should be ordered in conjunction with the quantitative assay (MPSQNT) when establishing or confirming a diagnosis of mucoplysacharidoses.

Once the diagnosis and type of mucoplysaccharidoses is established in a given patient monitoring typically only requires the quantitative assay be performed.

Test Code:
MPSTLC

Test Group:
Mucopolysaccharides

Performing Lab:
Stanford Hospital Clinical Laboratory

Sendout:
Yes

Methodology:
Thin layer chromatography

Remarks:
Transport immediately to lab for processing

Collect:
Urine cup

Amount to Collect:
15 mL urine

Sample Type:
Random urine

Preferred Volume:
15 mL urine

Minimum Volume:
10 mL urine

Rejection Criteria:
Sample received thawed

Unacceptable Conditions:
Sample received > 2 hours after collection

Specimen Preparation:
Freeze urine immediately at -20C and transport frozen.

Synonyms:

- Mucoploysacharidoses
- Mucopolysaccharidosis
- Hunter
- Hurler
- Sanfilippo
- Morquio
- Maroteaux-Lamy
- Sly
- hyaluronidase deficiency
- MPS type I
- MPS type II
- MPS type III
- MPS type IV
- MPS type VI
- MPS Type VII
- MPS type IX
- Glycosaminoglycans
- GAG's
- Mucolipidoses
- Mucolipidosis

Reported:

Turnaround time 5-7 days

CPT Codes:

84375-90

Mucopolysaccharides, urine Quantitation

MPSQNT

ORDERING

Ordering Recommendations:

This test should be ordered in conjunction with the TLC assay (MPSTLC) when establishing or confirming a diagnosis of mucoplysacharidoses.

Once the diagnosis and type of mucoplysaccharidoses is established in a given patient monitoring typically only requires the quantitative assay be performed.

Available Stat:

No

Performing Lab:

Stanford Hospital Clinical Laboratory

Methodology:

Spectrophotometry

Synonyms:

- Mucoploysacharidoses
- Mucopolysaccharidosis
- Hunter
- Hurler
- Sanfilippo
- Morquio
- Maroteaux-Lamy
- Sly
- hyaluronidase deficiency
- MPS type I
- MPS type II
- MPS type III
- MPS type IV
- MPS type VI
- MPS Type VII
- MPS type IX
- Glycosaminoglycans
- GAG's
- Mucolipidoses
- Mucolipidosis

COLLECTION

Sample Type:

Random urine

Collect:

Urine cup

Amount to Collect:

10 mL urine

Preferred Volume:

2 mL urine

Minimum Volume:

2 mL urine

Remarks:

Transport immediately to lab for processing

Unacceptable Conditions:

Sample received > 2 hours after collection

Rejection Criteria:

Sample received thawed

PROCESSING

Test Code:

MPSQNT

Test Group:

Mucopolysaccharides

Sendout:
Yes

Performing Lab:
Stanford Hospital Clinical Laboratory

Specimen Preparation:
Freeze urine immediately at -20C and transport frozen.

Preferred Volume:
2 mL urine

Minimum Volume:
2 mL urine

Unacceptable Conditions:
Sample received > 2 hours after collection

Rejection Criteria:
Sample received thawed

RESULT INTERPRETATION

Units:
mg/mmol creatinine

Reference Interval:
< 48 mg/mmol creatinine

ADMINISTRATIVE

CPT Codes:
83864-90

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
This test should be ordered in conjunction with the TLC assay (MPSTLC) when establishing or confirming a diagnosis of mucoplysacharidoses.

Once the diagnosis and type of mucoplysaccharidoses is established in a given patient monitoring typically only requires the quantitative assay be performed.

Test Code:
MPSQNT

Test Group:
Mucopolysaccharides

Performing Lab:
Stanford Hospital Clinical Laboratory

Sendout:
Yes

Methodology:
Spectrophotometry

Remarks:
Transport immediately to lab for processing

Collect:
Urine cup

Amount to Collect:
10 mL urine

Sample Type:
Random urine

Preferred Volume:
2 mL urine

Minimum Volume:
2 mL urine

Rejection Criteria:
Sample received thawed

Unacceptable Conditions:
Sample received > 2 hours after collection

Specimen Preparation:

Freeze urine immediately at -20C and transport frozen.

Units:

mg/mmol creatinine

Reference Interval:

< 48 mg/mmol creatinine

Synonyms:

- Mucoploysacharidoses
- Mucopolysaccharidosis
- Hunter
- Hurler
- Sanfilippo
- Morquio
- Maroteaux-Lamy
- Sly
- hyaluronidase deficiency
- MPS type I
- MPS type II
- MPS type III
- MPS type IV
- MPS type VI
- MPS Type VII
- MPS type IX
- Glycosaminoglycans
- GAG's
- Mucolipidoses
- Mucolipidosis

CPT Codes:

83864-90

Multiple Myeloma FISH Panel

CYMM, BCYMM

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Monday - Friday day shift

Methodology:
Fluorescence in situ Hybridization (FISH)

Reported:
1-2 weeks

Additional Information:
Includes FISH probes for the following markers: Duplication 1q, Translocation 4:14, Translocation 11:14, Deletion 13q, Translocation 14:16, Deletion 17p.

The individual FISH markers are orderable separately.

Synonyms:

- DUP1Q
- TR414
- TR1114
- DEL13Q
- TR1416
- DEL17P
- Duplication 1q
- Translocvation 4:14
- Translocation 11:14
- Deletion 13q
- Translocation 14:16
- Deletion 17p
- plasma cell dyscrasia
- monoclonal gammopathy
- CYMM
- BCYMM

COLLECTION

Sample Type:
Heparinized whole blood, bone marrow aspirate or bone marrow biopsy core

Collect:
Dark green top

Amount to Collect:
See preferred volume

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Remarks:
Transport samples at room temperature

Stability (from collection to initiation):
Room temperature 2 days

Unacceptable Conditions:
Frozen, cracked or mislabeled containers

PROCESSING

Test Code:
BCYMM: Blood
CYMM: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Specimen Preparation:
Do not centrifuge, store a room temperature. Transport samples to Cytogenetics as soon as possible.

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Frozen, cracked or mislabeled containers

Stability (from collection to initiation):
Room temperature 2 days

RESULT INTERPRETATION

Additional Information:
Includes FISH probes for the following markers: Duplication 1q, Translocation 4:14, Translocation 11:14, Deletion 13q, Translocation 14:16, Deletion 17p.

The individual FISH markers are orderable separately.

ADMINISTRATIVE

CPT Codes:
88271 x12,. 88275 x6

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BCYMM: Blood
CYMM: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Monday - Friday day shift

Methodology:
Fluorescence in situ Hybridization (FISH)

Remarks:
Transport samples at room temperature

Collect:
Dark green top

Amount to Collect:
See preferred volume

Sample Type:
Heparinized whole blood, bone marrow aspirate or bone marrow biopsy core

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Frozen, cracked or mislabeled containers

Specimen Preparation:
Do not centrifuge, store a room temperature. Transport samples to Cytogenetics as soon as possible.

Synonyms:

- DUP1Q
- TR414
- TR1114
- DEL13Q
- TR1416
- DEL17P
- Duplication 1q
- Translocvation 4:14
- Translocation 11:14
- Deletion 13q
- Translocation 14:16
- Deletion 17p
- plasma cell dyscrasia
- monoclonal gammopathy
- CYMM
- BCYMM

Stability (from collection to initiation):
Room temperature 2 days

Reported:
1-2 weeks

Additional Information:
Includes FISH probes for the following markers: Duplication 1q, Translocation 4:14, Translocation 11:14, Deletion 13q, Translocation 14:16, Deletion 17p.

The individual FISH markers are orderable separately.

CPT Codes:
88271 x12,. 88275 x6

LDT or Modified FDA:
Yes

Multiple Myeloma MRD, Flow

MRDPC

ORDERING

Performing Lab:
Immunology

Methodology:
IFAC

COLLECTION

Sample Type:
Bone marrow aspirate

Collect:
Lavender top

Amount to Collect:
4 mL

Minimum Volume:
2 mL

Storage/Transport Temperature:
Room temperature

PROCESSING

Performing Lab:
Immunology

Minimum Volume:
2 mL

Storage/Transport Temperature:
Room temperature

COMPLETE VIEW

Performing Lab:
Immunology

Methodology:
IFAC

Collect:
Lavender top

Amount to Collect:
4 mL

Sample Type:
Bone marrow aspirate

Minimum Volume:
2 mL

Storage/Transport Temperature:
Room temperature

Multiple Myeloma MRD, Flow

MRDMM

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
Flow cytometric immunophenotyping

Reported:
2 - 4 days

Additional Information:
High-sensitivity flow cytometry test for detection of minimal residual myeloma cells, post treatment

Adopted EuroFlow guidelines and Cytognos software

Sensitivity of 10(-5) or better, depending on the antigenic profile of abnormal plasma cells

Clinical Information

Multiple myeloma is an incurable malignant neoplasm of plasma cells. One of the best prognostic factors in multiple myeloma is the level of minimal residual disease post chemotherapy or autologous stem cell transplantation. The greater depth of the response (less malignant cells present), the longer time to progression and overall survival.(1)

Useful For

Detection of low level (minimal residual disease) myeloma cells after therapy

Interpretation

The interpretation of the test is done by an evaluating automated and manually gated populations to isolate abnormal plasma cells. If there is an abnormal plasma cell population (cluster of 20 cells or more), then the result is minimal residual disease (MRD)-positive, with the percentage of abnormal plasma cells out of total analyzed events. If no abnormal population is found, then the result will be interpreted as MRD-negative.

Cautions

There are situations in which current gating strategies are insufficient to identify abnormal plasma cells. This can occur if the abnormal plasma cells do not phenotypically differ from normal plasma cells. In addition, in patients who have undergone therapeutic antibody treatment (anti-CD38, for example), decreased antigen expression on plasma cells may interfere with the gating strategy.

Clinical Reference

1. Martinez-Lopez J, Lahuerta JJ, Pepin F, et al: Prognostic value of deep sequencing method for minimal residual disease detection in multiple myeloma. Blood. 2014 May 15;123(20):3073-3079

2. Rawstron AC, Child JA, de Tute RM, et al: Minimal residual disease assessed by multiparameter flow cytometry in multiple myeloma: impact on outcome in the medical research council myeloma IX Study. J Clin Oncol 2013 Jul 10;31(20):2540-2547

3. Roschewski M, Stetler-Stevenson M, Yuan C, et al: Minimal residual disease: What are the minimum requirements? J Clin Oncol 2014 32(5): 475-476

4. Rawstron AC, Orfao A, Beksac M, et al: Report of the European Myeloma Network on multiparametric flow cytometry in multiple myeloma and related disorders. Haematologica 2008 Mar;93(3): 431-438

5. Stetler-Stevenson M, Paiva B, Stoolman L, et al: Consensus guidelines for myeloma minimal residual disease sample staining and data acquisition. Cytometry B Clin Cytom 2016 Jan;90(1):26-30 doi: 10.1002/cyto.b.21249

Synonyms:

- Euroflow MRD

COLLECTION

Sample Type:
Bone marrow

Collect:
Lavender top, ACD

Amount to Collect:
See Preferred volume

Preferred Volume:
4 mL

Minimum Volume:
2 mL

Stability (from collection to initiation):
72 hours

PROCESSING

Test Code:
MRDMM

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Do not aliquot sample. Transport to CB ambient. Order Mayo test code MRDMM.

Preferred Volume:
4 mL

Minimum Volume:
2 mL

Stability (from collection to initiation):
72 hours

RESULT INTERPRETATION

Reference Interval:
An interpretive report will be provided.

This test will be processed as a laboratory consultation. An interpretation of the immunophenotypic findings and correlation with the previous patient history will be provided by a hematopathologist for every case.

Additional Information:

High-sensitivity flow cytometry test for detection of minimal residual myeloma cells, post treatment

Adopted EuroFlow guidelines and Cytognos software

Sensitivity of 10(-5) or better, depending on the antigenic profile of abnormal plasma cells

Clinical Information

Multiple myeloma is an incurable malignant neoplasm of plasma cells. One of the best prognostic factors in multiple myeloma is the level of minimal residual disease post chemotherapy or autologous stem cell transplantation. The greater depth of the response (less malignant cells present), the longer time to progression and overall survival.(1)

Useful For

Detection of low level (minimal residual disease) myeloma cells after therapy

Interpretation

The interpretation of the test is done by an evaluating automated and manually gated populations to isolate abnormal plasma cells. If there is an abnormal plasma cell population (cluster of 20 cells or more), then the result is minimal residual disease (MRD)-positive, with the percentage of abnormal plasma cells out of total analyzed events. If no abnormal population is found, then the result will be interpreted as MRD-negative.

Cautions

There are situations in which current gating strategies are insufficient to identify abnormal plasma cells. This can occur if the abnormal plasma cells do not phenotypically differ from normal plasma cells. In addition, in patients who have undergone therapeutic antibody treatment (anti-CD38, for example), decreased antigen expression on plasma cells may interfere with the gating strategy.

Clinical Reference

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ADMINISTRATIVE

CPT Codes:

88184, 88185, 88188

COMPLETE VIEW

Available Stat:

No

Test Code:

MRDMM

Performing Lab:

Mayo

Sendout:

Yes

Methodology:

Flow cytometric immunophenotyping

Collect:

Lavender top, ACD

Amount to Collect:

See Preferred volume

Sample Type:
Bone marrow

Preferred Volume:
4 mL

Minimum Volume:
2 mL

Specimen Preparation:
Do not aliquot sample. Transport to CB ambient. Order Mayo test code MRDMM.

Reference Interval:
An interpretive report will be provided.

This test will be processed as a laboratory consultation. An interpretation of the immunophenotypic findings and correlation with the previous patient history will be provided by a hematopathologist for every case.

Synonyms:

- Euroflow MRD

Stability (from collection to initiation):
72 hours

Reported:
2 - 4 days

Additional Information:
High-sensitivity flow cytometry test for detection of minimal residual myeloma cells, post treatment

Adopted EuroFlow guidelines and Cytognos software

Sensitivity of 10(-5) or better, depending on the antigenic profile of abnormal plasma cells

Clinical Information

Multiple myeloma is an incurable malignant neoplasm of plasma cells. One of the best prognostic factors in multiple myeloma is the level of minimal residual disease post chemotherapy or autologous stem cell transplantation. The greater depth of the response (less malignant cells present), the longer time to progression and overall survival.(1)

Useful For

Detection of low level (minimal residual disease) myeloma cells after therapy

Interpretation

The interpretation of the test is done by an evaluating automated and manually gated populations to isolate abnormal plasma cells. If there is an abnormal plasma cell population (cluster of 20 cells or more), then the result is minimal residual disease (MRD)-positive, with the percentage of abnormal plasma cells out of total analyzed events. If no abnormal population is found, then the result will be interpreted as MRD-negative.

Cautions

There are situations in which current gating strategies are insufficient to identify abnormal plasma cells. This can occur if the abnormal plasma cells do not phenotypically differ from normal plasma cells. In addition, in patients who have undergone therapeutic antibody treatment (anti-CD38, for example), decreased antigen expression on plasma cells may interfere with the gating strategy.

Clinical Reference

1. Martinez-Lopez J, Lahuerta JJ, Pepin F, et al: Prognostic value of deep sequencing method for minimal residual disease detection in multiple myeloma. Blood. 2014 May 15;123(20):3073-3079

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CPT Codes:

88184, 88185, 88188

Mumps Antibody, IgM

MUMM

ORDERING

Available Stat:
No

Performing Lab:
Focus via Quest

Methodology:
Immunofluorescent assay

Reported:
1-4 days

COLLECTION

Sample Type:
Serum

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Gross hemolysis or lipemia

Rejection Criteria:
Gross hemolysis or lipemia

PROCESSING

Test Code:
MUMM

Sendout:
Yes

Performing Lab:
Focus via Quest

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Gross hemolysis or lipemia

Rejection Criteria:
Gross hemolysis or lipemia

RESULT INTERPRETATION

Units:
Titer

Reference Interval:
< 1:20 titer

ADMINISTRATIVE

CPT Codes:
86735-90

COMPLETE VIEW

Available Stat:
No

Test Code:
MUMM

Performing Lab:
Focus via Quest

Sendout:
Yes

Methodology:
Immunofluorescent assay

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Rejection Criteria:
Gross hemolysis or lipemia

Unacceptable Conditions:
Gross hemolysis or lipemia

Units:
Titer

Reference Interval:
< 1:20 titer

Reported:
1-4 days

CPT Codes:
86735-90

Mumps virus Antibody, IgG

MUMG

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift)

Methodology:
Chemiluminescent Immunoassay

Reported:
1-4 days.

Additional Information:
This test is designed to measure IgG antibody. Positive results in neonates must be interpreted with caution, since maternal IgG is transferred passively from the mother to the fetus before birth. A definitive diagnosis requires viral isolation.

Samples collected very early in the course of an infection may not have detectable levels of IgG. In such cases, it is recommended that an IgM assay be performed.

Heterotypic antibodies exist between mumps and parainfluenza virus. Therefore, to confirm the clinical diagnosis of an atypical mumps infection, it is recommended that testing for parainfluenza be done simultaneously to rule out potential cross-reactivity.

Antibody response to vaccination is lower than that of a natural mumps infection.

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Unacceptable Conditions:
Grossly hemolyzed, lipemic or icteric samles

PROCESSING

Test Code:
MUMG

Test Group:
Mumps

Performing Lab:
Immunology

Specimen Preparation:
Freeze serum at -20C.

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Unacceptable Conditions:
Grossly hemolyzed, lipemic or icteric samles

RESULT INTERPRETATION

Units:
AU/mL

Reference Interval:
Negative / Not-immune: < 9.0
Equivocal: 9.0 - 10.9
Positive / Immune: >= 11.0

Additional Information:
This test is designed to measure IgG antibody. Positive results in neonates must be interpreted with caution, since maternal IgG is transferred passively from the mother to the fetus before birth. A definitive diagnosis requires viral isolation.

Samples collected very early in the course of an infection may not have detectable levels of IgG. In such cases, it is recommended that an IgM assay be performed.

Heterotypic antibodies exist between mumps and parainfluenza virus. Therefore, to confirm the clinical diagnosis of an atypical mumps infection, it is recommended that testing for parainfluenza be done simultaneously to rule out potential cross-reactivity.

Antibody response to vaccination is lower than that of a natural mumps infection.

ADMINISTRATIVE

CPT Codes:
86735

LOINC Codes:
6476-6

COMPLETE VIEW

Available Stat:
No

Test Code:
MUMG

Test Group:
Mumps

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift)

Methodology:
Chemiluminescent Immunoassay

Collect:
Gold top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Unacceptable Conditions:
Grossly hemolyzed, lipemic or icteric samles

Specimen Preparation:
Freeze serum at -20C.

Units:
AU/mL

Reference Interval:
Negative / Not-immune: < 9.0
Equivocal: 9.0 - 10.9
Positive / Immune: >= 11.0

Reported:
1-4 days.

Additional Information:

This test is designed to measure IgG antibody. Positive results in neonates must be interpreted with caution, since maternal IgG is transferred passively from the mother to the fetus before birth. A definitive diagnosis requires viral isolation.

Samples collected very early in the course of an infection may not have detectable levels of IgG. In such cases, it is recommended that an IgM assay be performed.

Heterotypic antibodies exist between mumps and parainfluenza virus. Therefore, to confirm the clinical diagnosis of an atypical mumps infection, it is recommended that testing for parainfluenza be done simultaneously to rule out potential cross-reactivity.

Antibody response to vaccination is lower than that of a natural mumps infection.

CPT Codes:

86735

LOINC Codes:

6476-6

Mumps virus RNA

P319

ORDERING

Approval Required:
Patient's physician must discuss the case and receive approval for submission of specimens from the SF Department of Public Health Communicable Disease Control Unit (415) 554-2830. Refer to https://www.cdph.ca.gov/Programs/CID/DCDC/CDPH%20Document%20Library/Mumps_Testing_VRDL.pdf for testing guidance.

Available Stat:
No

Performing Lab:
State Viral & Rickettsial Disease Lab

Methodology:
PCR, serology, culture (if indicated)

Reported:
PCR: 1 week
Culture: 3 weeks

Supplemental Test Request Form Required:
Yes

COLLECTION

Sample Type:
Buccal swab
Urine

Collect:
Flocked swab in Universal Transport Medium: Buccal swab
Sterile container: Urine (in cases with orchitis), first void preferable

Amount to Collect:
Buccal swab x1

Preferred Volume:
1 swab

Minimum Volume:
1 swab

Remarks:
Patient's physician must complete Viral & Rickettsial Disease Specimen Submittal Form found on CDPH website:

https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/VRDL_Specimen_Submittal_Forms.aspx

Submit form with an APeX requisition requesting this test.

Collect buccal swab as soon as possible but not later than 9 days of onset of parotitis. Swab the inner surface of cheek with swab and place swab in Universal Transport Medium.

Stability (from collection to initiation):
Refrigerated 3 days.

Rejection Criteria:
Swab not received in suitable transport medium

PROCESSING

Test Code:
P319

Test Group:
Mumps

Sendout:
Yes

Performing Lab:
State Viral & Rickettsial Disease Lab

Specimen Preparation:
Freeze specimen at -70 C.
Urine: Centrifuge at 500-600 x g for 10 minutes. Resuspend the pellet in 2-3 ml of viral transport medium and freeze at -70 C. If processing is not possible, store and ship the sample at 2°- 8°C within 24 hours.

Preferred Volume:
1 swab

Minimum Volume:
1 swab

Rejection Criteria:
Swab not received in suitable transport medium

Stability (from collection to initiation):
Refrigerated 3 days.

RESULT INTERPRETATION

Reference Interval:
No virus detected

COMPLETE VIEW

Approval Required:
Patient's physician must discuss the case and receive approval for submission of specimens from the SF Department of Public Health Communicable Disease Control Unit (415) 554-2830. Refer to https://www.cdph.ca.gov/Programs/CID/DCDC/CDPH%20Document%20Library/Mumps_Testing_VRDL.pdf for testing guidance.

Available Stat:
No

Test Code:
P319

Test Group:
Mumps

Performing Lab:
State Viral & Rickettsial Disease Lab

Sendout:
Yes

Methodology:
PCR, serology, culture (if indicated)

Remarks:
Patient's physician must complete Viral & Rickettsial Disease Specimen Submittal Form found on CDPH website:

https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/VRDL_Specimen_Submittal_Forms.aspx

Submit form with an APeX requisition requesting this test.

Collect buccal swab as soon as possible but not later than 9 days of onset of parotitis. Swab the inner surface of cheek with swab and place swab in Universal Transport Medium.

Collect:
Flocked swab in Universal Transport Medium: Buccal swab
Sterile container: Urine (in cases with orchitis), first void preferable

Amount to Collect:
Buccal swab x1

Sample Type:
Buccal swab
Urine

Preferred Volume:
1 swab

Minimum Volume:
1 swab

Rejection Criteria:
Swab not received in suitable transport medium

Specimen Preparation:
Freeze specimen at -70 C.
Urine: Centrifuge at 500-600 x g for 10 minutes. Resuspend the pellet in 2-3 ml of viral transport medium and freeze at -70 C. If processing is not possible, store and ship the sample at 2°- 8°C within 24 hours.

Reference Interval:
No virus detected

Stability (from collection to initiation):
Refrigerated 3 days.

Reported:

PCR: 1 week
Culture: 3 weeks

Supplemental Test Request Form Required:

Yes

MuSK Antibody

MUSK

ORDERING

Available Stat:
No

Performing Lab:
Athena via Quest

Methodology:
Radioimmunoassay

Reported:
1 week

Additional Information:
Detection of antibodies to muscle-specific receptor tyrosine kinase (MuSK) (titer test).

Synonyms:

- MuSK Autoantibody
- Muscle-specific receptor tyrosine kinase

COLLECTION

Sample Type:
Serum

Collect:
Gold top or Red top

Amount to Collect:
4 mL (blood)

Preferred Volume:
2 mL (serum)

Minimum Volume:
0.5 mL (serum)

Stability (from collection to initiation):
Room temperature: 72 hours
Refrigerated: 42 days
Frozen: 1 year

Rejection Criteria:
Hemolysis, Lipemia

PROCESSING

Test Code:
MUSK

Sendout:
Yes

Performing Lab:
Athena via Quest

Specimen Preparation:
Aliquot and freeze. Transport to CB frozen. Order Quest test code 18842.

Preferred Volume:
2 mL (serum)

Minimum Volume:
0.5 mL (serum)

Rejection Criteria:
Hemolysis, Lipemia

Stability (from collection to initiation):
Room temperature: 72 hours
Refrigerated: 42 days
Frozen: 1 year

RESULT INTERPRETATION

Units:
Titer

Reference Interval:
< 1:10

Additional Information:
Detection of antibodies to muscle-specific receptor tyrosine kinase (MuSK) (titer test).

ADMINISTRATIVE

CPT Codes:
86366

COMPLETE VIEW

Available Stat:
No

Test Code:
MUSK

Performing Lab:
Athena via Quest

Sendout:
Yes

Methodology:
Radioimmunoassay

Collect:
Gold top or Red top

Amount to Collect:
4 mL (blood)

Sample Type:
Serum

Preferred Volume:
2 mL (serum)

Minimum Volume:
0.5 mL (serum)

Rejection Criteria:
Hemolysis, Lipemia

Specimen Preparation:
Aliquot and freeze. Transport to CB frozen. Order Quest test code 18842.

Units:
Titer

Reference Interval:
< 1:10

Synonyms:

- MuSK Autoantibody
- Muscle-specific receptor tyrosine kinase

Stability (from collection to initiation):
Room temperature: 72 hours
Refrigerated: 42 days
Frozen: 1 year

Reported:
1 week

Additional Information:
Detection of antibodies to muscle-specific receptor tyrosine kinase (MuSK) (titer test).

CPT Codes:
86366

MYC Rearrangement Break Apart FISH

MYC, BMYC

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Fluorescent in-Situ Hybridization

Reported:
1-2 weeks

Synonyms:

- MYC Rearrangement FISH
- MYC
- BMYC

COLLECTION

Sample Type:
Heparinized blood or bone marrow aspirate
Bone biopsy

Collect:
Blood or marrow aspirate: Dark Green top

Amount to Collect:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow core: 1 cm

Remarks:
Mix blood and marrow aspirates well

Stability (from collection to initiation):
2 days at room temperature

Unacceptable Conditions:
Insufficient sample or not collected in heparin

PROCESSING

Test Code:
BMYC: Blood
MYC: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Specimen Preparation:
Maintain sample at room temperature; Do Not Refrigerate or freeze. Do Not centrifuge.

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow core: 1 cm

Unacceptable Conditions:
Insufficient sample or not collected in heparin

Stability (from collection to initiation):
2 days at room temperature

ADMINISTRATIVE

CPT Codes:
88271 x2, 88275

LDT or Modified FDA:
Yes

LOINC Codes:
59050-5, 29308-4

COMPLETE VIEW

Available Stat:
No

Test Code:
BMYC: Blood
MYC: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Fluorescent in-Situ Hybridization

Remarks:
Mix blood and marrow aspirates well

Collect:
Blood or marrow aspirate: Dark Green top

Amount to Collect:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Sample Type:
Heparinized blood or bone marrow aspirate
Bone biopsy

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow core: 1 cm

Unacceptable Conditions:
Insufficient sample or not collected in heparin

Specimen Preparation:
Maintain sample at room temperature; Do Not Refrigerate or freeze. Do Not centrifuge.

Synonyms:

- MYC Rearrangement FISH
- MYC
- BMYC

Stability (from collection to initiation):
2 days at room temperature

Reported:
1-2 weeks

CPT Codes:
88271 x2, 88275

LDT or Modified FDA:
Yes

LOINC Codes:
59050-5, 29308-4

Mycobacterium tuberculosis complex PCR

P290

ORDERING

Available Stat:
No

Performing Lab:
Sputum, BAL and bronchial wash: Microbiology
Other sample types: Quest

Performed:
Monday-Friday, day shift.

Methodology:
PCR

Reported:
Sputum, BAL and bronchial wash: 48 hours
Other sample types: 4 - 7 days

Additional Information:
Sensitivity has been found to be lower in smear negative sputum specimens than in smear positive sputum specimens.

This test was developed and its performance characteristics have been determined by the performing laboratory. It has not been cleared or approved by the U.S. FDA.

Positive results are automatically forwarded to California Public Health per regulations. However, this does not absolve the ordering provider from any additional reporting if such is required.

Reflex Testing:
Test performed automatically on first smear positive respiratory specimens. Test can be ordered w/out the reflex.

Synonyms:

- TB
- AFB
- tuberculosis

COLLECTION

Sample Type:
Sputum, trachael aspirate, bronchoalveolar lavage, bronchial wash

Collect:
Sterile, screw-cap container

Amount to Collect:
See preferred volume

Preferred Volume:
Sputum, trachael aspirate: 5 mL
Bronchoalveolar lavage, bronchial wash: 7 mL

Minimum Volume:
Sputum, trachael aspirate: 1 mL
Bronchoalveolar lavage, bronchial wash: 2 mL

Remarks:
For sputum, collect first morning sputum

Stability (from collection to initiation):
Refrigerated 2 weeks.

Rejection Criteria:
Received at room temperature

PROCESSING

Test Code:
P290

Sendout:
Sputum, BAL and bronchial wash: No
Other sample types: Yes

Performing Lab:
Sputum, BAL and bronchial wash: Microbiology
Other sample types: Quest

Specimen Preparation:
Specimens sent to Quest are accessioned as P319.

Send decontaminated and concentrated respiratory specimens to the reference lab in a sealed container. Keep specimen refrigerated and transport using cold packs.

Preferred Volume:
Sputum, trachael aspirate: 5 mL
Bronchoalveolar lavage, bronchial wash: 7 mL

Minimum Volume:
Sputum, trachael aspirate: 1 mL
Bronchoalveolar lavage, bronchial wash: 2 mL

Rejection Criteria:
Received at room temperature

Stability (from collection to initiation):
Refrigerated 2 weeks.

RESULT INTERPRETATION

Reference Interval:
Negative for Mycobacterium tuberculosis complex

Critical Values:
Inpatient results only. After hours outpatient results will be phoned the following morning. First positive M. tuberculosis PCR; Repeat call only for positive sample from different site or > 2 months since last call.

Additional Information:
Sensitivity has been found to be lower in smear negative sputum specimens than in smear positive sputum specimens.

This test was developed and its performance characteristics have been determined by the performing laboratory. It has not been cleared or approved by the U.S. FDA.

Positive results are automatically forwarded to California Public Health per regulations. However, this does not absolve the ordering provider from any additional reporting if such is required.

ADMINISTRATIVE

CPT Codes:
87556-90

LOINC Codes:
85362-2

COMPLETE VIEW

Available Stat:
No

Test Code:
P290

Performing Lab:
Sputum, BAL and bronchial wash: Microbiology
Other sample types: Quest

Sendout:
Sputum, BAL and bronchial wash: No
Other sample types: Yes

Performed:
Monday-Friday, day shift.

Methodology:
PCR

Remarks:
For sputum, collect first morning sputum

Collect:
Sterile, screw-cap container

Amount to Collect:
See preferred volume

Sample Type:
Sputum, trachael aspirate, bronchoalveolar lavage, bronchial wash

Preferred Volume:
Sputum, trachael aspirate: 5 mL
Bronchoalveolar lavage, bronchial wash: 7 mL

Minimum Volume:
Sputum, trachael aspirate: 1 mL
Bronchoalveolar lavage, bronchial wash: 2 mL

Rejection Criteria:
Received at room temperature

Specimen Preparation:
Specimens sent to Quest are accessioned as P319.

Send decontaminated and concentrated respiratory specimens to the reference lab in a sealed container. Keep specimen refrigerated and transport using cold packs.

Reference Interval:
Negative for Mycobacterium tuberculosis complex

Critical Values:
Inpatient results only. After hours outpatient results will be phoned the following morning. First positive M. tuberculosis PCR; Repeat call only for positive sample from different site or > 2 months since last call.

Synonyms:

- TB
- AFB
- tuberculosis

Stability (from collection to initiation):
Refrigerated 2 weeks.

Reported:
Sputum, BAL and bronchial wash: 48 hours
Other sample types: 4 - 7 days

Reflex Testing:
Test performed automatically on first smear positive respiratory specimens. Test can be ordered w/out the reflex.

Additional Information:
Sensitivity has been found to be lower in smear negative sputum specimens than in smear positive sputum specimens.

This test was developed and its performance characteristics have been determined by the performing laboratory. It has not been cleared or approved by the U.S. FDA.

Positive results are automatically forwarded to California Public Health per regulations. However, this does not absolve the ordering provider from any additional reporting if such is required.

CPT Codes:
87556-90

LOINC Codes:
85362-2

Mycophenolic Acid

MYCPA

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
LC/MS/MS

Reported:
Set up daily. Turnaround 2 days

Synonyms:

- CellCept
- Cell Cept
- MPA
- MPA glucuronide
- mycophenolic acid glucuronide

COLLECTION

Sample Type:
Serum

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Remarks:
Optimum time to collect sample: 0.5 to 1 hr before next dose (trough) at steady state (3-5 days after treatment with oral doses).

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 2 weeks, frozen 2 weeks.

Unacceptable Conditions:
Hemolysis, Lipemia , left at room temperature for more than 72 hrs. Collected in Gold top Specimens collected in other tube types not specified.

Rejection Criteria:
Hemolysis, Lipemia , left at room temperature for more than 72 hrs. Specimens collected in gel barrier tubes. Specimens collected in other tube types not specified.

PROCESSING

Test Code:
MYCPA

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Allow blood to clot at 15-28C for 20-30 min. Centrifuge 2500-2800 rpm for 8-10 min. Transfer serum to aliquot tubes, ship refrigerated to China Basin sendouts. Order Quest test #10662

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Unacceptable Conditions:
Hemolysis, Lipemia , left at room temperature for more than 72 hrs. Collected in Gold top Specimens collected in other tube types not specified.

Rejection Criteria:
Hemolysis, Lipemia , left at room temperature for more than 72 hrs. Specimens collected in gel barrier tubes. Specimens collected in other tube types not specified.

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 2 weeks, frozen 2 weeks.

RESULT INTERPRETATION

Units:
µg/mL

Reference Interval:
Mycophenolic acid: 1.0-3.5 µg/mL (trough)
MPA Glucuronide: 35.0-100.0 µg/mL (trough)

Critical Values:
Mycophenolic acid:
Quest Critical 1: < 0.5 µg/mL
Quest Priority 2: < 1.0 µg/mL or > 3.5 µg/mL

MPA Gluuronide: Priority 2 < 35 µg/mL

ADMINISTRATIVE

CPT Codes:
83789-90

COMPLETE VIEW

Available Stat:
No

Test Code:
MYCPA

Performing Lab:
Quest

Sendout:
Yes

Methodology:
LC/MS/MS

Remarks:
Optimum time to collect sample: 0.5 to 1 hr before next dose (trough) at steady state (3-5 days after treatment with oral doses).

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Rejection Criteria:
Hemolysis, Lipemia , left at room temperature for more than 72 hrs. Specimens collected in gel barrier tubes. Specimens collected in other tube types not specified.

Unacceptable Conditions:
Hemolysis, Lipemia , left at room temperature for more than 72 hrs. Collected in Gold top Specimens collected in other tube types not specified.

Specimen Preparation:
Allow blood to clot at 15-28C for 20-30 min. Centrifuge 2500-2800 rpm for 8-10 min. Transfer serum to aliquot tubes, ship refrigerated to China Basin sendouts. Order Quest test #10662

Units:
µg/mL

Reference Interval:
Mycophenolic acid: 1.0-3.5 µg/mL (trough)
MPA Glucuronide: 35.0-100.0 µg/mL (trough)

Critical Values:

Mycophenolic acid:
Quest Critical 1: < 0.5 µg/mL
Quest Priority 2: < 1.0 µg/mL or > 3.5 µg/mL

MPA Gluuronide: Priority 2 < 35 µg/mL

Synonyms:

- CellCept
- Cell Cept
- MPA
- MPA glucuronide
- mycophenolic acid glucuronide

Stability (from collection to initiation):

Room temperature 3 days, refrigerated 2 weeks, frozen 2 weeks.

Reported:

Set up daily. Turnaround 2 days

CPT Codes:

83789-90

Mycoplasma pneumoniae Antibody

MYCOP

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Enzyme Immunoassay

Reported:
Test set up 5x per week. Turnaround 3-5 days

Synonyms:

- M. pneumoniae Ab

COLLECTION

Sample Type:
Serum

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 1 week, frozen at -20C 1 month

PROCESSING

Test Code:
MYCOP

Test Group:
Mycoplasma

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate sample. Order Quest test # 54619N

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 1 week, frozen at -20C 1 month

RESULT INTERPRETATION

Units:
Index

Reference Interval:
< 0.5 Index

ADMINISTRATIVE

CPT Codes:
86738-90

LOINC Codes:
5253-0

COMPLETE VIEW

Available Stat:
No

Test Code:
MYCOP

Test Group:
Mycoplasma

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Enzyme Immunoassay

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Specimen Preparation:
Refrigerate sample. Order Quest test # 54619N

Units:
Index

Reference Interval:
< 0.5 Index

Synonyms:

- M. pneumoniae Ab

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 1 week, frozen at -20C 1 month

Reported:
Test set up 5x per week. Turnaround 3-5 days

CPT Codes:
86738-90

LOINC Codes:
5253-0

Mycoplasma pneumoniae DNA

P319

ORDERING

Available Stat:
No

Performing Lab:
Focus via Quest

Methodology:
Real time PCR

Additional Information:
Organisms may be detected by PCR prior to detection by immunological methods. This test was developed and its performance characteristics have been determined by Quest Diagnostics Nichols Institute. It has not been cleared or approved by the U.S. FDA

Synonyms:

- M. pneumoniae

COLLECTION

Sample Type:
Bronchial lavage/wash, sputum, NP swab, or CSF

Collect:
Bronchial lavage/wash, sputum: Sterile screw-cap container
NP swab: Flocked swab in Universal Transport Medium (UTM)
CSF: Sterile container

Amount to Collect:
Bronchial lavage/wash, sputum: 1 mL
NP swab: One swab in UTM
CSF: 1 mL

Preferred Volume:
Bronchial lavage/wash, sputum: 1 mL
NP swab: One swab in UTM
CSF: 1 mL

Minimum Volume:
Bronchial lavage/wash, sputum: 0.3 mL
NP swab: One swab in UTM
CSF: 0.5 mL

Stability (from collection to initiation):
Room temperature 48 hours, refrigerated 14 days, frozen 30 days

PROCESSING

Test Code:
P319

Test Group:
Mycoplasma

Sendout:
Yes

Performing Lab:
Focus via Quest

Specimen Preparation:
Order Quest test # 15498XRefrigerate sample during transport and freeze at -70ºC on receipt at China Basin.

Preferred Volume:
Bronchial lavage/wash, sputum: 1 mL
NP swab: One swab in UTM
CSF: 1 mL

Minimum Volume:
Bronchial lavage/wash, sputum: 0.3 mL
NP swab: One swab in UTM
CSF: 0.5 mL

Stability (from collection to initiation):
Room temperature 48 hours, refrigerated 14 days, frozen 30 days

RESULT INTERPRETATION

Reference Interval:
Not detected

Additional Information:
Organisms may be detected by PCR prior to detection by immunological methods. This test was developed and its performance characteristics have been determined by Quest Diagnostics Nichols Institute. It has not been cleared or approved by the U.S. FDA

ADMINISTRATIVE

CPT Codes:
87581-90

LOINC Codes:
29257-3

COMPLETE VIEW

Available Stat:
No

Test Code:
P319

Test Group:
Mycoplasma

Performing Lab:
Focus via Quest

Sendout:
Yes

Methodology:
Real time PCR

Collect:
Bronchial lavage/wash, sputum: Sterile screw-cap container
NP swab: Flocked swab in Universal Transport Medium (UTM)
CSF: Sterile container

Amount to Collect:
Bronchial lavage/wash, sputum: 1 mL
NP swab: One swab in UTM
CSF: 1 mL

Sample Type:
Bronchial lavage/wash, sputum, NP swab, or CSF

Preferred Volume:
Bronchial lavage/wash, sputum: 1 mL
NP swab: One swab in UTM
CSF: 1 mL

Minimum Volume:
Bronchial lavage/wash, sputum: 0.3 mL
NP swab: One swab in UTM
CSF: 0.5 mL

Specimen Preparation:
Order Quest test # 15498XRefrigerate sample during transport and freeze at -70ºC on receipt at China Basin.

Reference Interval:
Not detected

Synonyms:

- M. pneumoniae

Stability (from collection to initiation):
Room temperature 48 hours, refrigerated 14 days, frozen 30 days

Additional Information:
Organisms may be detected by PCR prior to detection by immunological methods. This test was developed and its performance characteristics have been determined by Quest Diagnostics Nichols Institute. It has not been cleared or approved by the U.S. FDA

CPT Codes:
87581-90

LOINC Codes:

29257-3

MYD88 L265P Mutation Detection by PCR, Qualitative

MYD88

ORDERING

Ordering Recommendations:

Detection of the MYD88 L265P mutation is useful in the diagnosis of lymphoplasmacytic lymphoma/Waldernstrom Macroglobulinemia. This mutation results in a gain of function that drives lymphomagenesis by promoting cell survival.

Available Stat:

No

Performing Lab:

Genomic Services - Molecular Diagnostics

Performed:

Run 1x per week, or as needed, day shift only

Methodology:

PCR and allele-specific hybridization

Reported:

7-10 days

Additional Information:

MYD88 L265P mutations are present in the majority of LPL cases
•Includes Waldenström macroglobulinemia
•Marker for risk of progression from monoclonal gammopathy of undetermined significance (MGUS) IgM to Waldenström macroglobulinemia
•Mutation also detected in a low percentage of chronic lymphocytic leukemia (CLL) and diffuse large B-cell lymphoma (DLBCL) patients
Structure/Function
MYD88 gene encodes for myeloid differentiation primary response 88 (MYD88), an adaptor protein that acts as a signal transducer in the interleukin-1 and toll-like receptor signaling pathways
MYD88 L265P mutation augments cell survival through increased NF-KB activity and JAK-STAT3 signaling

Limitations:
This assay has 1% DNA sensitivity of the MYD88 L265P mutation in a background of 99% DNA without the mutation.

This test was developed and its performance characteristics determined by the UCSF Clinical Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration. The FDA has determined that such clearance or approval is not necessary. Performance characteristics refer to the analytical performance of the test.

Reflex Testing:

An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Synonyms:

- Lymphoplasmacytic lymphoma
- Waldenstrom macroglobulinemia

COLLECTION

Sample Type:

Blood, bone marrow aspirate and FFPE sections

Collect:

Lavender top (EDTA)

Preferred Volume:

Blood: 3 mL
Bone marrow aspirate: 1 mL
FFPE: 10 micron sections x5 on uncharged, unstained, glass slides plus one H&E stained section

Minimum Volume:

Blood: 1 mL
Bone marrow aspirate: 0.5 mL
FFPE: 10 micron sections x3 on uncharged, unstained, glass slides plus one H&E stained section

Remarks:

Do not collect the sample in heparin. Keep sample refrigerated for overnight or longer storage.

Stability (from collection to initiation):

Room temperature 3 days, refrigerated 1 week, frozen at -20C Unacceptable.

Storage/Transport Temperature:

Room temperature

Unacceptable Conditions:

Heparinized sample submitted.

PROCESSING

Test Code:
MYD88

Performing Lab:
Genomic Services - Molecular Diagnostics

Specimen Preparation:
Do not centrifuge. Refrigerate sample but do not freeze. Ship room temperature.

Preferred Volume:
Blood: 3 mL
Bone marrow aspirate: 1 mL
FFPE: 10 micron sections x5 on uncharged, unstained, glass slides plus one H&E stained section

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 0.5 mL
FFPE: 10 micron sections x3 on uncharged, unstained, glass slides plus one H&E stained section

Unacceptable Conditions:
Heparinized sample submitted.

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 1 week, frozen at -20C Unacceptable.

Storage/Transport Temperature:
Room temperature

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
MYD88 L265P mutations are present in the majority of LPL cases
•Includes Waldenström macroglobulinemia
•Marker for risk of progression from monoclonal gammopathy of undetermined significance (MGUS) IgM to Waldenström macroglobulinemia
•Mutation also detected in a low percentage of chronic lymphocytic leukemia (CLL) and diffuse large B-cell lymphoma (DLBCL) patients
Structure/Function
MYD88 gene encodes for myeloid differentiation primary response 88 (MYD88), an adaptor protein that acts as a signal transducer in the interleukin-1 and toll-like receptor signaling pathways
MYD88 L265P mutation augments cell survival through increased NF-KB activity and JAK-STAT3 signaling

Limitations:
This assay has 1% DNA sensitivity of the MYD88 L265P mutation in a background of 99% DNA without the mutation.

This test was developed and its performance characteristics determined by the UCSF Clinical Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration. The FDA has determined that such clearance or approval is not necessary. Performance characteristics refer to the analytical performance of the test.

ADMINISTRATIVE

CPT Codes:
81305

LDT or Modified FDA:
Yes

LOINC Codes:
82140-5

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Detection of the MYD88 L265P mutation is useful in the diagnosis of lymphoplasmacytic lymphoma/Waldernstrom Macroglobulinemia. This mutation results in a gain of function that drives lymphomagenesis by promoting cell survival.

Test Code:
MYD88

Performing Lab:
Genomic Services - Molecular Diagnostics

Performed:
Run 1x per week, or as needed, day shift only

Methodology:
PCR and allele-specific hybridization

Remarks:
Do not collect the sample in heparin. Keep sample refrigerated for overnight or longer storage.

Collect:
Lavender top (EDTA)

Sample Type:
Blood, bone marrow aspirate and FFPE sections

Preferred Volume:
Blood: 3 mL
Bone marrow aspirate: 1 mL
FFPE: 10 micron sections x5 on uncharged, unstained, glass slides plus one H&E stained section

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 0.5 mL
FFPE: 10 micron sections x3 on uncharged, unstained, glass slides plus one H&E stained section

Unacceptable Conditions:
Heparinized sample submitted.

Specimen Preparation:
Do not centrifuge. Refrigerate sample but do not freeze. Ship room temperature.

Reference Interval:
Negative

Synonyms:

- Lymphoplasmacytic lymphoma
- Waldenstrom macroglobulinemia

Storage/Transport Temperature:
Room temperature

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 1 week, frozen at -20C Unacceptable.

Reported:
7-10 days

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Additional Information:
MYD88 L265P mutations are present in the majority of LPL cases
•Includes Waldenström macroglobulinemia
•Marker for risk of progression from monoclonal gammopathy of undetermined significance (MGUS) IgM to Waldenström macroglobulinemia
•Mutation also detected in a low percentage of chronic lymphocytic leukemia (CLL) and diffuse large B-cell lymphoma (DLBCL) patients
Structure/Function
MYD88 gene encodes for myeloid differentiation primary response 88 (MYD88), an adaptor protein that acts as a signal transducer in the interleukin-1 and toll-like receptor signaling pathways
MYD88 L265P mutation augments cell survival through increased NF-KB activity and JAK-STAT3 signaling

Limitations:
This assay has 1% DNA sensitivity of the MYD88 L265P mutation in a background of 99% DNA without the mutation.

This test was developed and its performance characteristics determined by the UCSF Clinical Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration. The FDA has determined that such clearance or approval is not necessary. Performance characteristics refer to the analytical performance of the test.

CPT Codes:
81305

LDT or Modified FDA:
Yes

LOINC Codes:
82140-5

Myelin associated glycoprotein antibody, IgM

MAGM

ORDERING

Approval Required:
Use restricted to Neurology service.

Available Stat:
No

Performing Lab:
Quest

Methodology:
EIA

Reported:
Performed 2x per week. Turn around 5-7 days

Additional Information:
MAG (myelin-associated glycoprotein) antibodies are commonly associated with demyelinating sensory-motor neuropathies.

Synonyms:

- myelin associated glycoprotein
- MAG

COLLECTION

Sample Type:
Serum

Collect:
Red top (Gold top acceptable)

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 1 week, frozen at -20C 1 month.

Rejection Criteria:
Received at room temperature

PROCESSING

Test Code:
MAGM

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate sample. Order Quest # 34134N

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Rejection Criteria:
Received at room temperature

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 1 week, frozen at -20C 1 month.

RESULT INTERPRETATION

Units:
titer

Reference Interval:
Normal: < 1:1600
Moderately Elevated: 1:1600-1:3200
Highly Elevated: >= 1:6400

Additional Information:
MAG (myelin-associated glycoprotein) antibodies are commonly associated with demyelinating sensory-motor neuropathies.

ADMINISTRATIVE

CPT Codes:
83520-90

LOINC Codes:
39087-2

COMPLETE VIEW

Approval Required:
Use restricted to Neurology service.

Available Stat:
No

Test Code:
MAGM

Performing Lab:
Quest

Sendout:
Yes

Methodology:
EIA

Collect:
Red top (Gold top acceptable)

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Rejection Criteria:
Received at room temperature

Specimen Preparation:
Refrigerate sample. Order Quest # 34134N

Units:
titer

Reference Interval:
Normal: < 1:1600
Moderately Elevated: 1:1600-1:3200
Highly Elevated: >= 1:6400

Synonyms:

- myelin associated glycoprotein
- MAG

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 1 week, frozen at -20C 1 month.

Reported:
Performed 2x per week. Turn around 5-7 days

Additional Information:
MAG (myelin-associated glycoprotein) antibodies are commonly associated with demyelinating sensory-motor neuropathies.

CPT Codes:
83520-90

LOINC Codes:
39087-2

Myelodysplastic Syndrome FISH Panel

CYMDS, BCYMDS

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Monday - Friday day shift

Methodology:
Fluorescence in situ Hybridization (FISH)

Reported:
1-2 weeks

Additional Information:
Includes FISH probes for the following markers: Trisomy 8, Deletion 20Q, Monosomy 5, Deletion 5q, Monosomy 7.

The individual FISH markers are orderable separately

Synonyms:

- M5D5Q
- M7D7Q
- TRIS8
- DEL20Q
- Myelodysplasia
- pre-leukemia
- Trisomy 8
- Deletion 20Q
- Monosomy 5
- Deletion 5q
- Monosomy 7
- Deletion 7q
- MDS
- CYMDS
- BCYMDS

COLLECTION

Sample Type:
Heparinized whole blood, bone marrow aspirate or bone marrow biopsy core

Collect:
Dark green top

Amount to Collect:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow core: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow core: 1 cm

Remarks:
Transport samples at room temperature

Stability (from collection to initiation):
Room temperature 2 days

Unacceptable Conditions:
Frozen, cracked or mislabeled containers

PROCESSING

Test Code:
BCYMDS: Blood
CYMDS: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Specimen Preparation:
Do not centrifuge, store a room temperature. Transport samples to Cytogenetics as soon as possible.

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow core: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow core: 1 cm

Unacceptable Conditions:
Frozen, cracked or mislabeled containers

Stability (from collection to initiation):
Room temperature 2 days

RESULT INTERPRETATION

Additional Information:
Includes FISH probes for the following markers: Trisomy 8, Deletion 20Q, Monosomy 5, Deletion 5q, Monosomy 7.

The individual FISH markers are orderable separately

ADMINISTRATIVE

CPT Codes:
88271 x6, 88275 x4

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BCYMDS: Blood
CYMDS: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Monday - Friday day shift

Methodology:
Fluorescence in situ Hybridization (FISH)

Remarks:
Transport samples at room temperature

Collect:
Dark green top

Amount to Collect:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Sample Type:
Heparinized whole blood, bone marrow aspirate or bone marrow biopsy core

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow core: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow core: 1 cm

Unacceptable Conditions:
Frozen, cracked or mislabeled containers

Specimen Preparation:
Do not centrifuge, store a room temperature. Transport samples to Cytogenetics as soon as possible.

Synonyms:

- M5D5Q
- M7D7Q
- TRIS8
- DEL20Q
- Myelodysplasia
- pre-leukemia
- Trisomy 8
- Deletion 20Q
- Monosomy 5
- Deletion 5q
- Monosomy 7
- Deletion 7q
- MDS
- CYMDS
- BCYMDS

Stability (from collection to initiation):
Room temperature 2 days

Reported:
1-2 weeks

Additional Information:
Includes FISH probes for the following markers: Trisomy 8, Deletion 20Q, Monosomy 5, Deletion 5q, Monosomy 7.

The individual FISH markers are orderable separately

CPT Codes:
88271 x6, 88275 x4

LDT or Modified FDA:
Yes

Myeloid Multigene Panel

MYEBL, MYENB

ORDERING

Ordering Recommendations:

Determine DNA variants and their allele frequencies in genes commonly mutated in myeloid malignancies and related disorders, at diagnosis, relapse and during remission. This assay serves as a primary approach and a complement to morphology, immunophenotyping by flow cytometry and cytogenetic workups.

Performing Lab:

Genomic Services - Molecular Diagnostics

Performed:

Run 1x per week, or as needed, day shift only

Methodology:

DNA extraction and Next Generation DNA sequencing (NGS) on the Illumina platform

Reported:

6-14 days

Additional Information:

This Myeloid Multi Gene Panel (MMGP) Next Generation Sequencing test detects and determines the variant allele frequency (VAF) of DNA variants in exons and flanking splice sites in 52 genes (listed below) that are commonly mutated in myeloid malignancies. Pathogenicity of the detected DNA variants are reported based on established criteria in databases such as ClinVar and COSMIC, while Variants of Unknown Significance (VUS) are reported based on their potential disruption of gene and/or protein function and whether they are unlisted or occur at very low allelic frequencies in general population databases such as GnomAD.

This assay is particularly relevant for the detection of DNA variants at diagnosis of suspected myeloid malignancies and for minimal residual disease (MRD) monitoring at relapse and during remission. The sensitivity of mutation detection of this assay routinely down to 1% variant allele frequency (VAF) includes FLT3-ITD and other variants, which can also be reported at < 1% when monitoring for previously detected variants in the same patient.

Myeloid Multi Gene Panel
ABL1, ASXL1, BCOR, BCORL1, BRAF, CALR, CBL, CDKN2A, CEBPA, CSF3R, CUX1, DDX41, DNMT3A, ETV6, EZH2, FLT3, GATA2, GNAS, HRAS, IDH1, IDH2, JAK2, JAK3, KIT, KMT2A, KRAS, MPL, NF1, NPM1, NRAS, PHF6, PIGA, PPM1D, PRPF8, PTEN, PTPN11, RAD21, RRAS2, RUNX1, SETBP1, SF3B1, SH2B3, SMC3, SRSF2, STAG2, STAT3, STAT5B, TET2, TP53, U2AF1, WT1 and ZRSR2.

Reflex Testing:

To determine the FLT3 ITD allele ratio, an automatic reflex FLT3 assay by capillary electrophoresis (CE) will be ordered (with an additional charge) if a FLT3 ITD is detected and the FLT3 CE assay was not previously ordered on the same specimen. To skip this reflex test, please call the lab directly at (415)514-8488 or email ClinLabMDx@ucsf.edu.

Synonyms:

- MYEBL
- MYENB
- Acute myeloid leukemia (AML)
- Chronic myeloid leukemia (CML)
- Myeloproliferative disorders (MPD)
- Myelodysplastic syndromes (MDS)
- Next Generation Sequencing (NGS)

COLLECTION

Sample Type:

Tumor sample: EDTA whole blood, Bone marrow aspirate and FFPE tissue

Germline sample: Buccal swabs

Collect:

Lavender top (EDTA)

Preferred Volume:

Tumor Sample
Blood: 3 mL
Bone marrow aspirate: 3 mL
FFPE: 10 micron sections x5 on uncharged, unstained, glass slides

Germline Sample
Collect 4-6 cytobrushes/cotton swabs on each side of the mouth, place swabs in transport tubes, 2 swabs per tube.

Minimum Volume:
Tumor Sample
Blood: 2 mL
Bone marrow aspirate: 2 mL
FFPE: 10 micron sections x3 on uncharged, unstained, glass slides

Germline Sample
Collect 2-4 cytobrushes/cotton swabs on each side of the mouth, place swabs in transport tubes, 2 swabs per tube.

Remarks:
Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Stability (from collection to initiation):
Refrigerated 1 week, frozen at -20C unacceptable.

Storage/Transport Temperature:
Refrigerated

Unacceptable Conditions:
Heparinized sample submitted.

PROCESSING

Test Code:
MYEBL: Blood
MYENB: Non-blood

Performing Lab:
Genomic Services - Molecular Diagnostics

Preferred Volume:
Tumor Sample
Blood: 3 mL
Bone marrow aspirate: 3 mL
FFPE: 10 micron sections x5 on uncharged, unstained, glass slides

Germline Sample
Collect 4-6 cytobrushes/cotton swabs on each side of the mouth, place swabs in transport tubes, 2 swabs per tube.

Minimum Volume:
Tumor Sample
Blood: 2 mL
Bone marrow aspirate: 2 mL
FFPE: 10 micron sections x3 on uncharged, unstained, glass slides

Germline Sample
Collect 2-4 cytobrushes/cotton swabs on each side of the mouth, place swabs in transport tubes, 2 swabs per tube.

Unacceptable Conditions:
Heparinized sample submitted.

Stability (from collection to initiation):
Refrigerated 1 week, frozen at -20C unacceptable.

Storage/Transport Temperature:
Refrigerated

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:

This Myeloid Multi Gene Panel (MMGP) Next Generation Sequencing test detects and determines the variant allele frequency (VAF) of DNA variants in exons and flanking splice sites in 52 genes (listed below) that are commonly mutated in myeloid malignancies. Pathogenicity of the detected DNA variants are reported based on established criteria in databases such as ClinVar and COSMIC, while Variants of Unknown Significance (VUS) are reported based on their potential disruption of gene and/or protein function and whether they are unlisted or occur at very low allelic frequencies in general population databases such as GnomAD.

This assay is particularly relevant for the detection of DNA variants at diagnosis of suspected myeloid malignancies and for minimal residual disease (MRD) monitoring at relapse and during remission. The sensitivity of mutation detection of this assay routinely down to 1% variant allele frequency (VAF) includes FLT3-ITD and other variants, which can also be reported at < 1% when monitoring for previously detected variants in the same patient.

Myeloid Multi Gene Panel
ABL1, ASXL1, BCOR, BCORL1, BRAF, CALR, CBL, CDKN2A, CEBPA, CSF3R, CUX1, DDX41, DNMT3A, ETV6, EZH2, FLT3, GATA2, GNAS, HRAS, IDH1, IDH2, JAK2, JAK3, KIT, KMT2A, KRAS, MPL, NF1, NPM1, NRAS, PHF6, PIGA, PPM1D, PRPF8, PTEN, PTPN11, RAD21, RRAS2, RUNX1, SETBP1, SF3B1, SH2B3, SMC3, SRSF2, STAG2, STAT3, STAT5B, TET2, TP53, U2AF1, WT1 and ZRSR2.

ADMINISTRATIVE

CPT Codes:
81450

LDT or Modified FDA:
Yes

COMPLETE VIEW

Ordering Recommendations:
Determine DNA variants and their allele frequencies in genes commonly mutated in myeloid malignancies and related disorders, at diagnosis, relapse and during remission. This assay serves as a primary approach and a complement to morphology, immunophenotyping by flow cytometry and cytogenetic workups.

Test Code:
MYEBL: Blood
MYENB: Non-blood

Performing Lab:
Genomic Services - Molecular Diagnostics

Performed:
Run 1x per week, or as needed, day shift only

Methodology:
DNA extraction and Next Generation DNA sequencing (NGS) on the Illumina platform

Remarks:
Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Collect:
Lavender top (EDTA)

Sample Type:
Tumor sample: EDTA whole blood, Bone marrow aspirate and FFPE tissue

Germline sample: Buccal swabs

Preferred Volume:
Tumor Sample
Blood: 3 mL
Bone marrow aspirate: 3 mL
FFPE: 10 micron sections x5 on uncharged, unstained, glass slides

Germline Sample
Collect 4-6 cytobrushes/cotton swabs on each side of the mouth, place swabs in transport tubes, 2 swabs per tube.

Minimum Volume:
Tumor Sample
Blood: 2 mL
Bone marrow aspirate: 2 mL
FFPE: 10 micron sections x3 on uncharged, unstained, glass slides

Germline Sample
Collect 2-4 cytobrushes/cotton swabs on each side of the mouth, place swabs in transport tubes, 2 swabs per tube.

Unacceptable Conditions:
Heparinized sample submitted.

Reference Interval:
Negative

Synonyms:

- MYEBL
- MYENB
- Acute myeloid leukemia (AML)
- Chronic myeloid leukemia (CML)
- Myeloproliferative disorders (MPD)
- Myelodysplastic syndromes (MDS)
- Next Generation Sequencing (NGS)

Storage/Transport Temperature:
Refrigerated

Stability (from collection to initiation):
Refrigerated 1 week, frozen at -20C unacceptable.

Reported:
6-14 days

Reflex Testing:
To determine the FLT3 ITD allele ratio, an automatic reflex FLT3 assay by capillary electrophoresis (CE) will be ordered (with an additional charge) if a FLT3 ITD is detected and the FLT3 CE assay was not previously ordered on the same specimen. To skip this reflex test, please call the lab directly at (415)514-8488 or email ClinLabMDx@ucsf.edu.

Additional Information:
This Myeloid Multi Gene Panel (MMGP) Next Generation Sequencing test detects and determines the variant allele frequency (VAF) of DNA variants in exons and flanking splice sites in 52 genes (listed below) that are commonly mutated in myeloid malignancies. Pathogenicity of the detected DNA variants are reported based on established criteria in databases such as ClinVar and COSMIC, while Variants of Unknown Significance (VUS) are reported based on their potential disruption of gene and/or protein function and whether they are unlisted or occur at very low allelic frequencies in general population databases such as GnomAD.

This assay is particularly relevant for the detection of DNA variants at diagnosis of suspected myeloid malignancies and for minimal residual disease (MRD) monitoring at relapse and during remission. The sensitivity of mutation detection of this assay routinely down to 1% variant allele frequency (VAF) includes FLT3-ITD and other variants, which can also be reported at < 1% when monitoring for previously detected variants in the same patient.

Myeloid Multi Gene Panel
ABL1, ASXL1, BCOR, BCORL1, BRAF, CALR, CBL, CDKN2A, CEBPA, CSF3R, CUX1, DDX41, DNMT3A, ETV6, EZH2, FLT3, GATA2, GNAS, HRAS, IDH1, IDH2, JAK2, JAK3, KIT, KMT2A, KRAS, MPL, NF1, NPM1, NRAS, PHF6, PIGA, PPM1D, PRPF8, PTEN, PTPN11, RAD21, RRAS2, RUNX1, SETBP1, SF3B1, SH2B3, SMC3, SRSF2, STAG2, STAT3, STAT5B, TET2, TP53, U2AF1, WT1 and ZRSR2.

CPT Codes:
81450

LDT or Modified FDA:
Yes

Myeloid Multigene Panel with RNA fusions

MYEBMX, MYEBLX

ORDERING

Ordering Recommendations:
Determine mutations that may be relevant for the diagnosis and/or prognosis of AML, myelodysplastic syndromes, myeloproliferative neoplasms or other overlap disorders.

Performing Lab:
Genomic Services - Molecular Diagnostics

Performed:
Run 1x per week, or as needed, day shift only

Methodology:
DNA & RNA extraction and Next Generation DNA sequencing (NGS)

Reported:
10-14 days

Additional Information:
Myeloid malignancies are clonal disorders of hematopoietic stem and progenitor cells that include myelodysplastic syndromes (MDS), myeloproliferative neoplasms (MPN), myelodysplastic/myeloproliferative neoplasms (MDS/MPN), and acute myeloid leukemia (AML). Mutations in specific genes may be clinically relevant for the diagnosis, prognosis and management of myeloid disorders. The exquisite sensitivity of mutation detection by Next Generation Sequencing (NGS) is particularly relevant for the detection of minimal residual disease (MRD) at various stages of treatment and during remission. This test can serve as a primary or complement flow and cytogenetic workup of myeloid malignancies. It can also detect over 200 RNA fusions that have been known to be associated with myeloid disorders.

Genes on the NGS Panel
ABL1, ASXL1, BRAF, CALR, CBL, CEBPA, CSF3R, DNMT3A, ETV6, EZH2, FLT3, HRAS, IDH1, IDH2, JAK2, KIT, KRAS, MPL, NPM1, NRAS, PTPN11, RUNX1, SETBP1, SF3B1, SRSF2, TET2, TP53, U2AF1, WT1, & ZRSR2

Reflex Testing:
If unusual findings are noted a pathologist review and intrepretation may be performed and separately billed for.

Synonyms:

- MYEBMX
- MYEBLX
- Acute myeloid leukemia (AML)
- Aplastic anemia (AA)
- Chronic myeloid leukemias (CML)
- Myeloproliferative disorders (MPD)
- Myelodysplastic syndromes (MDS)

COLLECTION

Sample Type:
Blood and bone marrow aspirate

Collect:
Lavender top (EDTA)

Preferred Volume:
Blood: 3 mL
Bone marrow aspirate: 3 mL

Minimum Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL

Remarks:
Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Stability (from collection to initiation):
Refrigerated 3 days, frozen at -20C unacceptable.

Storage/Transport Temperature:
Refrigerated

Unacceptable Conditions:
Heparinized sample submitted.

PROCESSING

Test Code:
MYEBMX: Non blood
MYEBLX: Blood

Performing Lab:
Genomic Services - Molecular Diagnostics

Specimen Preparation:
Do not centrifuge. Refrigerate sample but do not freeze. Ship refrigerated.

Preferred Volume:
Blood: 3 mL
Bone marrow aspirate: 3 mL

Minimum Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL

Unacceptable Conditions:
Heparinized sample submitted.

Stability (from collection to initiation):
Refrigerated 3 days, frozen at -20C unacceptable.

Storage/Transport Temperature:
Refrigerated

RESULT INTERPRETATION

Additional Information:
Myeloid malignancies are clonal disorders of hematopoietic stem and progenitor cells that include myelodysplastic syndromes (MDS), myeloproliferative neoplasms (MPN), myelodysplastic/myeloproliferative neoplasms (MDS/MPN), and acute myeloid leukemia (AML). Mutations in specific genes may be clinically relevant for the diagnosis, prognosis and management of myeloid disorders. The exquisite sensitivity of mutation detection by Next Generation Sequencing (NGS) is particularly relevant for the detection of minimal residual disease (MRD) at various stages of treatment and during remission. This test can serve as a primary or complement flow and cytogenetic workup of myeloid malignancies. It can also detect over 200 RNA fusions that have been known to be associated with myeloid disorders.

Genes on the NGS Panel
ABL1, ASXL1, BRAF, CALR, CBL, CEBPA, CSF3R, DNMT3A, ETV6, EZH2, FLT3, HRAS, IDH1, IDH2, JAK2, KIT, KRAS, MPL, NPM1, NRAS, PTPN11, RUNX1, SETBP1, SF3B1, SRSF2, TET2, TP53, U2AF1, WT1, & ZRSR2

ADMINISTRATIVE

CPT Codes:
81450, 81455

LDT or Modified FDA:
Yes

COMPLETE VIEW

Ordering Recommendations:
Determine mutations that may be relevant for the diagnosis and/or prognosis of AML, myelodysplastic syndromes, myeloproliferative neoplasms or other overlap disorders.

Test Code:
MYEBMX: Non blood
MYEBLX: Blood

Performing Lab:
Genomic Services - Molecular Diagnostics

Performed:
Run 1x per week, or as needed, day shift only

Methodology:
DNA & RNA extraction and Next Generation DNA sequencing (NGS)

Remarks:
Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Collect:
Lavender top (EDTA)

Sample Type:
Blood and bone marrow aspirate

Preferred Volume:
Blood: 3 mL
Bone marrow aspirate: 3 mL

Minimum Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL

Unacceptable Conditions:
Heparinized sample submitted.

Specimen Preparation:
Do not centrifuge. Refrigerate sample but do not freeze. Ship refrigerated.

Synonyms:

- MYEBMX
- MYEBLX
- Acute myeloid leukemia (AML)
- Aplastic anemia (AA)
- Chronic myeloid leukemias (CML)
- Myeloproliferative disorders (MPD)
- Myelodysplastic syndromes (MDS)

Storage/Transport Temperature:
Refrigerated

Stability (from collection to initiation):
Refrigerated 3 days, frozen at -20C unacceptable.

Reported:
10-14 days

Reflex Testing:
If unusual findings are noted a pathologist review and intrepretation may be performed and separately billed for.

Additional Information:
Myeloid malignancies are clonal disorders of hematopoietic stem and progenitor cells that include myelodysplastic syndromes (MDS), myeloproliferative neoplasms (MPN), myelodysplastic/myeloproliferative neoplasms (MDS/MPN), and acute myeloid leukemia (AML). Mutations in specific genes may be clinically relevant for the diagnosis, prognosis and management of myeloid disorders. The exquisite sensitivity of mutation detection by Next Generation Sequencing (NGS) is particularly relevant for the detection of minimal residual disease (MRD) at various stages of treatment and during remission. This test can serve as a primary or complement flow and cytogenetic workup of myeloid malignancies. It can also detect over 200 RNA fusions that have been known to be associated with myeloid disorders.

Genes on the NGS Panel
ABL1, ASXL1, BRAF, CALR, CBL, CEBPA, CSF3R, DNMT3A, ETV6, EZH2, FLT3, HRAS, IDH1, IDH2, JAK2, KIT, KRAS, MPL, NPM1, NRAS, PTPN11, RUNX1, SETBP1, SF3B1, SRSF2, TET2, TP53, U2AF1, WT1, & ZRSR2

CPT Codes:
81450, 81455

LDT or Modified FDA:
Yes

Myeloperoxidase detection by flow cytometry

MPO

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday-Saturday (day shift)

Methodology:
Flow cytometry

Reported:
Results phoned within 48 hours. Written interpretive report sent within 7 days.

Additional Information:
This test is generally only performed when results from the peroxidase stain performed in the Hematology section are negative or equivocal. This test is performed as part of the Leukemia/Lymphoma markers evaluation.

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Synonyms:

- MPO
- Leukemia phenotyping
- flow cytometry

COLLECTION

Sample Type:
EDTA whole blood, Marrow, Unfixed tissue

Collect:
Lavender top

Amount to Collect:
3 mL blood

Preferred Volume:
Amount of specimen needed varies call Immunology, x3-1712, for consultation.

PROCESSING

Test Code:
MPO

Performing Lab:
Immunology

Specimen Preparation:
Typically ordered by Immunology only, if order received on a requisition contact Immunology to confirm.

This test is often confused with the test for Anti-Neutrophil antibodies (ANCA). Clarify what the requester is actually asking for.

Do not refrigerate

Preferred Volume:
Amount of specimen needed varies call Immunology, x3-1712, for consultation.

RESULT INTERPRETATION

Additional Information:
This test is generally only performed when results from the peroxidase stain performed in the Hematology section are negative or equivocal. This test is performed as part of the Leukemia/Lymphoma markers evaluation.

ADMINISTRATIVE

CPT Codes:
88346

LDT or Modified FDA:
Yes

LOINC Codes:
32759-3

COMPLETE VIEW

Available Stat:
No

Test Code:
MPO

Performing Lab:
Immunology

Performed:
Monday-Saturday (day shift)

Methodology:
Flow cytometry

Collect:
Lavender top

Amount to Collect:
3 mL blood

Sample Type:
EDTA whole blood, Marrow, Unfixed tissue

Preferred Volume:
Amount of specimen needed varies call Immunology, x3-1712, for consultation.

Specimen Preparation:
Typically ordered by Immunology only, if order received on a requisition contact Immunology to confirm.

This test is often confused with the test for Anti-Neutrophil antibodies (ANCA). Clarify what the requester is actually asking for.

Do not refrigerate

Synonyms:

- MPO
- Leukemia phenotyping
- flow cytometry

Reported:
Results phoned within 48 hours. Written interpretive report sent within 7 days.

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Additional Information:
This test is generally only performed when results from the peroxidase stain performed in the Hematology section are negative or equivocal. This test is performed as part of the Leukemia/Lymphoma markers evaluation.

CPT Codes:
88346

LDT or Modified FDA:
Yes

LOINC Codes:
32759-3

Myoglobin, Urine

MOLT

ORDERING

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative Electrochemiluminescent Immunoassay

Reported:
Within 24 hours

Synonyms:

- Rhabdomyolysis
- myoglobinuria
- Urine myoglobin

COLLECTION

Sample Type:
Random urine; ARUP Standard Transport Tube prefilled with Sodium Carbonate (ARUP) supply #48096

Collect:
Random or 24-hour urine. Refrigerate during collection.

Preferred Volume:
4 mL

Minimum Volume:
0.5 mL

Stability (from collection to initiation):
pH 8-9: Ambient: 4 hours; Refrigerated: 72 hours; Frozen: 1 month

Storage/Transport Temperature:
Refrigerated.

Rejection Criteria:
Test received in non-Myoglobin Transport Tube. pH < 8.0, past stability or unrefrigerated

PROCESSING

Test Code:
MOLT

ARUP Test Code:
0020223

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Thoroughly mix entire collection, then, perform one of the two processing options below:
Option 1: Immediately after collection, adjust pH to 8-9 by adding 10 percent Na2CO3. Transfer 1 mL aliquot urine to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Option 2: Immediately after collection, transfer a maximum of 4 mL urine to an ARUP Standard Transport Tube prefilled with Sodium Carbonate (ARUP)supply #48096). (Min: 0.5 mL) Available online through eSupply using ARUP Connect or contact ARUP Client Services at (800) 522-2787.

Preferred Volume:
4 mL

Minimum Volume:
0.5 mL

Rejection Criteria:
Test received in non-Myoglobin Transport Tube. pH < 8.0, past stability or unrefrigerated

Stability (from collection to initiation):
pH 8-9: Ambient: 4 hours; Refrigerated: 72 hours; Frozen: 1 month

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:
0-1 mg/L

Interpretive Data:
Patients with urine myoglobin greater than 15 mg/L are at risk of acute renal failure. Usual results are less than 1 mg/L. Results between 1 and 15 mg/L are associated with vigorous exercise, myocardial infarct, mild muscle injury, and other conditions.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:
83874

LOINC:

- 2641-9

COMPLETE VIEW

Available Stat:
No

Test Code:
MOLT

ARUP Test Code:
0020223

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative Electrochemiluminescent Immunoassay

Collect:
Random or 24-hour urine. Refrigerate during collection.

Sample Type:
Random urine; ARUP Standard Transport Tube prefilled with Sodium Carbonate (ARUP) supply #48096

Preferred Volume:
4 mL

Minimum Volume:
0.5 mL

Rejection Criteria:
Test received in non-Myoglobin Transport Tube. pH < 8.0, past stability or unrefrigerated

Specimen Preparation:
Thoroughly mix entire collection, then, perform one of the two processing options below:
Option 1: Immediately after collection, adjust pH to 8-9 by adding 10 percent Na_2CO_3. Transfer 1 mL aliquot urine to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Option 2: Immediately after collection, transfer a maximum of 4 mL urine to an ARUP Standard Transport Tube prefilled with Sodium Carbonate (ARUP)supply #48096). (Min: 0.5 mL) Available online through eSupply using ARUP Connect or contact ARUP Client Services at (800) 522-2787.

Reference Interval:
0-1 mg/L

Interpretive Data:

Patients with urine myoglobin greater than 15 mg/L are at risk of acute renal failure. Usual results are less than 1 mg/L. Results between 1 and 15 mg/L are associated with vigorous exercise, myocardial infarct, mild muscle injury, and other conditions.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Synonyms:

- Rhabdomyolysis
- myoglobinuria
- Urine myoglobin

Storage/Transport Temperature:

Refrigerated.

Stability (from collection to initiation):

pH 8-9: Ambient: 4 hours; Refrigerated: 72 hours; Frozen: 1 month

Reported:

Within 24 hours

CPT Codes:

83874

LOINC:

- 2641-9

N-acetylaspartate quantitation

MOLT

ORDERING

Available Stat:
No

Performing Lab:
UC San Diego

Methodology:
GC-MS

Reported:
7 days

Additional Information:
Gross elevations may be useful in the diagnosis of Canavan disease.

References:
Matalon R. 1997 Canavan disease: diagnosis and molecular analysis Genet. Test 1:21-25
Matalon R, Michals K, Sebesta D, Deanching M, Gashkoff P, Casanova J. 1988. Aspartoacylase deficiency and N-acetylaspartic aciduria in patients with Canavan disease. Amer. J. Med Genet. 29:463-471.

COLLECTION

Sample Type:
Random urine w/out preservative

Collect:
Urine cup

Amount to Collect:
See preferred volume

Preferred Volume:
20 mL urine

Minimum Volume:
5 mL urine

PROCESSING

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Sendout:
Yes

Performing Lab:
UC San Diego

Specimen Preparation:
Freeze at -20C and ship on dry ice

Preferred Volume:
20 mL urine

Minimum Volume:
5 mL urine

RESULT INTERPRETATION

Additional Information:
Gross elevations may be useful in the diagnosis of Canavan disease.

References:
Matalon R. 1997 Canavan disease: diagnosis and molecular analysis Genet. Test 1:21-25
Matalon R, Michals K, Sebesta D, Deanching M, Gashkoff P, Casanova J. 1988. Aspartoacylase deficiency and N-acetylaspartic aciduria in patients with Canavan disease. Amer. J. Med Genet. 29:463-471.

COMPLETE VIEW

Available Stat:
No

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Performing Lab:
UC San Diego

Sendout:
Yes

Methodology:
GC-MS

Collect:
Urine cup

Amount to Collect:
See preferred volume

Sample Type:
Random urine w/out preservative

Preferred Volume:
20 mL urine

Minimum Volume:
5 mL urine

Specimen Preparation:
Freeze at -20C and ship on dry ice

Reported:
7 days

Additional Information:
Gross elevations may be useful in the diagnosis of Canavan disease.

References:
Matalon R. 1997 Canavan disease: diagnosis and molecular analysis Genet. Test 1:21-25
Matalon R, Michals K, Sebesta D, Deanching M, Gashkoff P, Casanova J. 1988. Aspartoacylase deficiency and N-acetylaspartic aciduria in patients with Canavan disease. Amer. J. Med Genet. 29:463-471.

Neisseria gonorrhoeae Culture

P128

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Daily, all shifts

Methodology:
Culture

Reported:
Up to 3 days

Additional Information:
Nucleic acid detection is a sensitive method for diagnosis of CT / NG infections and is the recommended method for most patients. Culture for Neisseria gonorrhoeae can be ordered to assess clinical treatment failure (where DNA may persist post-treatment), cases of suspected sexual abuse, or for sample types other than cervical, urethral, rectal, pharyngeal, vaginal and urine (e.g. eye swab, tissue, extra-genital infection sites).

Reflex Testing:
Gram stain is performed on specimens other than endocervical, vaginal, rectal, and throat, and is billed separately.

Synonyms:

- Bacterial culture
- N. gonorrheae
- Neisseria gonorrhoeae
- STD
- Sexually transmitted disease

COLLECTION

Sample Type:
Swab of genital, rectal, throat, and other sites

Collect:
E-swab (liquid Amies elution medium) or Amies transport medium with charcoal. Amies Gel and Amies/Stuart Liquid Swab Transport Systems have also been validated for culture.

Remarks:
Male urethra: Use a wire swab. Insert the swab and twirl it gently for a few seconds. Place swab in liquid Amies elution medium (E-swab) or Amies transport medium with charcoal.

Other sites: Use the swab supplied in the E-swab (liquid Amies elution medium) or Amies transport medium with charcoal collection kits. For cervical or rectal samples insert the swab and twirl it gently for a few seconds. Swab throat for throat specimens.

Specimens should be held at room temperature and transported to the laboratory for inoculation within 6 hours of collection.

Stability (from collection to initiation):
6 hours in appropriate transport media. Samples received 6-12 hours after collection may be compromised.

Unacceptable Conditions:
Refrigerated samples, samples delivered to lab >12 hours after collection, swabs not received in transport medium

PROCESSING

Test Code:
P128

Test Group:
Gonococcus

Performing Lab:
Microbiology

Specimen Preparation:
Maintain sample at room temperature

Unacceptable Conditions:
Refrigerated samples, samples delivered to lab >12 hours after collection, swabs not received in transport medium

Stability (from collection to initiation):
6 hours in appropriate transport media. Samples received 6-12 hours after collection may be compromised.

RESULT INTERPRETATION

Reference Interval:
No Neisseria gonorrhoeae isolated

Critical Values:
Positive culture from sterile sites only

Additional Information:
Nucleic acid detection is a sensitive method for diagnosis of CT / NG infections and is the recommended method for most patients. Culture for Neisseria gonorrhoeae can be ordered to assess clinical treatment failure (where DNA may persist post-treatment), cases of suspected sexual abuse, or for sample types other than cervical, urethral, rectal, pharyngeal, vaginal and urine (e.g. eye swab, tissue, extra-genital infection sites).

ADMINISTRATIVE

CPT Codes:
87081, 87205 (gram stain)

LOINC Codes:
698-1

COMPLETE VIEW

Available Stat:
No

Test Code:
P128

Test Group:
Gonococcus

Performing Lab:
Microbiology

Performed:
Daily, all shifts

Methodology:
Culture

Remarks:
Male urethra: Use a wire swab. Insert the swab and twirl it gently for a few seconds. Place swab in liquid Amies elution medium (E-swab) or Amies transport medium with charcoal.

Other sites: Use the swab supplied in the E-swab (liquid Amies elution medium) or Amies transport medium with charcoal collection kits. For cervical or rectal samples insert the swab and twirl it gently for a few seconds. Swab throat for throat specimens.

Specimens should be held at room temperature and transported to the laboratory for inoculation within 6 hours of collection.

Collect:
E-swab (liquid Amies elution medium) or Amies transport medium with charcoal. Amies Gel and Amies/Stuart Liquid Swab Transport Systems have also been validated for culture.

Sample Type:
Swab of genital, rectal, throat, and other sites

Unacceptable Conditions:
Refrigerated samples, samples delivered to lab >12 hours after collection, swabs not received in transport medium

Specimen Preparation:
Maintain sample at room temperature

Reference Interval:
No Neisseria gonorrhoeae isolated

Critical Values:
Positive culture from sterile sites only

Synonyms:

- Bacterial culture
- N. gonorrheae
- Neisseria gonorrhoeae
- STD
- Sexually transmitted disease

Stability (from collection to initiation):
6 hours in appropriate transport media. Samples received 6-12 hours after collection may be compromised.

Reported:
Up to 3 days

Reflex Testing:
Gram stain is performed on specimens other than endocervical, vaginal, rectal, and throat, and is billed separately.

Additional Information:
Nucleic acid detection is a sensitive method for diagnosis of CT / NG infections and is the recommended method for most patients. Culture for Neisseria gonorrhoeae can be ordered to assess clinical treatment failure (where DNA may persist post-treatment), cases of suspected sexual abuse, or for sample types other than cervical, urethral, rectal, pharyngeal, vaginal and urine (e.g. eye swab, tissue, extra-genital infection sites).

CPT Codes:
87081, 87205 (gram stain)

LOINC Codes:
698-1

Neonatal Alloimmune Neutropenia - Parental evaluation

MOLT

ORDERING

Approval Required:

REQUIRED PATIENT INSURANCE INFORMATION AND AUTHORIZATION FROM HEALTH INSURANCE PROVIDER BEFORE COLLECTION OF SAMPLES. Contact Send Outs Section of the Clinical Lab 3-1349.

As test methodology and requirements are undergoing changes, provider should first confirm sample requirements with Versiti Lab to coordinate sample collection. Provider should complete the Versiti Platelet and Neutrophil Immunology Lab requisition and order the appropriate test(s):

1. Neonatal Alloimmune Neutropenia (NAN)(5125/5126): This test panel includes Neutrophil Genotyping - HNA-1,3,4 and 5 on the mother and father as well as Neutrophil Antibody Identification and HLA antibody Screen on the mother.

2. Neutrophil Antibody Screen (5102): This includes screen tests for the detection and identification of neutrophil antibodies.

3. Neutrophil Antigen Genotyping Panel (or HNA-1, HNA-3, HNA-4, HNA-5): Genotyping for HNA-1,3,4 and 5 or individual antigen(s).

Provider should place a Miscellaneous Outside Laboratory Test (MOLT) order in Apex.

Available Stat:

No

Performing Lab:

Versiti via Blood Center of Wisconsin

Methodology:

Flow cytometry, PCR

Reported:

1-2 weeks

Additional Information:

In NAN, the mother is immunized by fetal neutrophil antigens inherited from the father. Maternal IgG antibodies cross the placenta and destroy fetal neutrophils. The most common neutrophil alloantigen incompatibilities are HNA-1a, -1b, -1c and NB1. Unlike its erythrocyte counterpart, hemolytic disease of the newborn, NAN can occurred during the first pregnancy and has been estimated to occur once in every 500 live births. Antibodies can be detected in the maternal serum by testing with a panel of normal donor neutrophils. Testing with the father's neutrophils is necessary to detect antibodies to low frequency antigens. Neutrophil genotyping of both parents can be useful for confirming maternal antibody specificity and in providing counseling regarding future pregnancies.

Synonyms:

- NAIN
- NAN
- Neutrophil Antibody Screen
- Neutrophil Antigen Genotyping

Supplemental Test Request Form Required:

Yes

COLLECTION

Sample Type:

EDTA Whole Blood and serum

Collect:

Mother: Lavender top (EDTA, 6mL) x2 and Red top (6mL) x 3
Father: Lavender top (EDTA, 6mL) x2

Amount to Collect:

Mother: 10mL EDTA whole blood and 10mL serum
Father: 10mL EDTA whole blood

Minimum Volume:

Mother: 5mL EDTA whole blood and 5mL serum
Father: 5mL EDTA whole blood

Remarks:

Specimen requirements here are specific for the Neonatal Alloimmune Neutroenia (NAN) panel. Please refer to the back of the Verisiti requisition for specimen requirements specific to Neutrophil Antibody Screen or Neutrophil Antigen Genotyping only requests.

Specimens are accepted 8 AM - 5 PM Monday through Thursday and 8 AM - 12 Noon on Friday.

Provider must fill out the Versiti requisition form.

https://media.versiti.org/versiti/versiti/media/downloadables/diagnostic-labs/requisitions/pnil_requisition.pdf?_ga=2.88586079.573452753.1671484325-543083915.1671484325

Submit form, APEX MOLT order requisition and specimens to Central Processing.

Pediatric Collection:

Mother: 3 mL EDTA Whole Blood and 3mL Serum
Father: 2mL EDTA Whole Blood

Stability (from collection to initiation):

7 days within draw date

Storage/Transport Temperature:

Refrigerated

Unacceptable Conditions:

Frozen whole blood. Received > 7 days from draw date. Not refrigerated.

PROCESSING

Test Code:

MOLT

Test Group:

Neonatal Alloimmune Neutropenia

Sendout:

Yes

Performing Lab:

Versiti via Blood Center of Wisconsin

Specimen Preparation:

Provider must fill out the outside lab (Blood Center of Wisconsin) requisition form.

https://www.versiti.org/Custom/Files/Versiti/7a/7ab41667-0451-476f-b554-2802fcb05e2c.pdf

Submit form, APEX MOLT order requisition and specimens to Central Processing.

Store refrigerated. Send samples refrigerated. Do not freeze whole blood. Samples must be received within 7 days of draw date.

Minimum Volume:

Mother: 5mL EDTA whole blood and 5mL serum
Father: 5mL EDTA whole blood

Unacceptable Conditions:

Frozen whole blood. Received > 7 days from draw date. Not refrigerated.

Stability (from collection to initiation):

7 days within draw date

Storage/Transport Temperature:

Refrigerated

RESULT INTERPRETATION

Reference Interval:

Negative

Critical Values:

Positive

Additional Information:

In NAN, the mother is immunized by fetal neutrophil antigens inherited from the father. Maternal IgG antibodies cross the placenta and destroy fetal neutrophils. The most common neutrophil alloantigen incompatibilities are HNA-1a, -1b, -1c and NB1. Unlike its erythrocyte counterpart, hemolytic disease of the newborn, NAN can occurred during the first pregnancy and has been estimated to occur once in every 500 live births. Antibodies can be detected in the maternal serum by testing with a panel of normal donor neutrophils. Testing with the father's neutrophils is necessary to detect antibodies to low frequency antigens. Neutrophil genotyping of both parents can be useful for confirming maternal antibody specificity and in providing counseling regarding future pregnancies.

ADMINISTRATIVE

CPT Codes:
NAN: 81479x2, 86021, 86849, 86808
Neutrophil Antibody Screen: 86021
Neutrophil Antigen Genotyping Panel: 81479
HNA-1 Genotyping: 81479
HNA-3 Genotyping: 81479
HNA-4 Genotyping: 81479
HNA-5 Genotyping: 81479

COMPLETE VIEW

Approval Required:
REQUIRED PATIENT INSURANCE INFORMATION AND AUTHORIZATION FROM HEALTH INSURANCE PROVIDER BEFORE COLLECTION OF SAMPLES. Contact Send Outs Section of the Clinical Lab 3-1349.

As test methodology and requirements are undergoing changes, provider should first confirm sample requirements with Versiti Lab to coordinate sample collection. Provider should complete the Versiti Platelet and Neutrophil Immunology Lab requisition and order the appropriate test(s):

1. Neonatal Alloimmune Neutropenia (NAN)(5125/5126): This test panel includes Neutrophil Genotyping - HNA-1,3,4 and 5 on the mother and father as well as Neutrophil Antibody Identification and HLA antibody Screen on the mother.

2. Neutrophil Antibody Screen (5102): This includes screen tests for the detection and identification of neutrophil antibodies.

3. Neutrophil Antigen Genotyping Panel (or HNA-1, HNA-3, HNA-4, HNA-5): Genotyping for HNA-1,3,4 and 5 or individual antigen(s).

Provider should place a Miscellaneous Outside Laboratory Test (MOLT) order in Apex.

Available Stat:
No

Test Code:
MOLT

Test Group:
Neonatal Alloimmune Neutropenia

Performing Lab:
Versiti via Blood Center of Wisconsin

Sendout:
Yes

Methodology:
Flow cytometry, PCR

Pediatric Collection:
Mother: 3 mL EDTA Whole Blood and 3mL Serum
Father: 2mL EDTA Whole Blood

Remarks:
Specimen requirements here are specific for the Neonatal Alloimmune Neutroenia (NAN) panel. Please refer to the back of the Verisiti requisition for specimen requirements specific to Neutrophil Antibody Screen or Neutrophil Antigen Genotyping only requests.

Specimens are accepted 8 AM - 5 PM Monday through Thursday and 8 AM - 12 Noon on Friday.

Provider must fill out the Versiti requisition form.

https://media.versiti.org/versiti/versiti/media/downloadables/diagnostic-labs/requisitions/pnil_requisition.pdf?_ga=2.88586079.573452753.1671484325-543083915.1671484325

Submit form, APEX MOLT order requisition and specimens to Central Processing.

Collect:
Mother: Lavender top (EDTA, 6mL) x2 and Red top (6mL) x 3
Father: Lavender top (EDTA, 6mL) x2

Amount to Collect:
Mother: 10mL EDTA whole blood and 10mL serum
Father: 10mL EDTA whole blood

Sample Type:
EDTA Whole Blood and serum

Minimum Volume:
Mother: 5mL EDTA whole blood and 5mL serum
Father: 5mL EDTA whole blood

Unacceptable Conditions:
Frozen whole blood. Received > 7 days from draw date. Not refrigerated.

Specimen Preparation:
Provider must fill out the outside lab (Blood Center of Wisconsin) requisition form.

https://www.versiti.org/Custom/Files/Versiti/7a/7ab41667-0451-476f-b554-2802fcb05e2c.pdf

Submit form, APEX MOLT order requisition and specimens to Central Processing.

Store refrigerated. Send samples refrigerated. Do not freeze whole blood. Samples must be received within 7 days of draw date.

Reference Interval:
Negative

Critical Values:
Positive

Synonyms:

- NAIN
- NAN
- Neutrophil Antibody Screen
- Neutrophil Antigen Genotyping

Storage/Transport Temperature:
Refrigerated

Stability (from collection to initiation):
7 days within draw date

Reported:
1-2 weeks

Additional Information:
In NAN, the mother is immunized by fetal neutrophil antigens inherited from the father. Maternal IgG antibodies cross the placenta and destroy fetal neutrophils. The most common neutrophil alloantigen incompatibilities are HNA-1a, -1b, -1c and NB1. Unlike its erythrocyte counterpart, hemolytic disease of the newborn, NAN can occurred during the first pregnancy and has been estimated to occur once in every 500 live births. Antibodies can be detected in the maternal serum by testing with a panel of normal donor neutrophils. Testing with the father's neutrophils is necessary to detect antibodies to low frequency antigens. Neutrophil genotyping of both parents can be useful for confirming maternal antibody specificity and in providing counseling regarding future pregnancies.

CPT Codes:
NAN: 81479x2, 86021, 86849, 86808
Neutrophil Antibody Screen: 86021
Neutrophil Antigen Genotyping Panel: 81479
HNA-1 Genotyping: 81479
HNA-3 Genotyping: 81479
HNA-4 Genotyping: 81479
HNA-5 Genotyping: 81479

Supplemental Test Request Form Required:
Yes

Neonatal Alloimmune Thrombocytopenia - Parental evaluation

MOLT

ORDERING

Available Stat:
No

Performing Lab:
Versiti via Blood Center of Wisconsin

Methodology:
ELISA, Flow cytometry, PCR

Reported:
1-2 weeks

Additional Information:
Mothers with normal platelet counts may deliver a baby with low platelet counts. There is a possibility of neonatal alloimmune thrombocytopenia (NATP) in which the mother lacks a platelet antigen that the baby inherits from the father. A maternal antibody is formed against the father's platelet antigen that crosses the placenta and causes the fetus to be thrombocytopenic.

Synonyms:

- NAIT
- anti-platelet antibodies
- platelet specific antibodies
- PIA1
- Bak
- Pen
- NAT
- NATP
- flow cytometry

Supplemental Test Request Form Required:
Yes

COLLECTION

Sample Type:
ACD whole blood **AND** Serum

Collect:
Mother: Yellow top (ACD) x3 and Red top x3
Father: Yellow top (ACD) x3

Amount to Collect:
See preferred volume

Preferred Volume:
Mother: 30 ml ACD-A whole blood AND 10 ML serum
Father: 30 ml ACD-A whole blood

Minimum Volume:
Mother: 25.5 mL ACD whole blood and 10 mL serum
Father: 25.5 mL ACD whole blood

Remarks:
Specimens are only accepted 8 AM-5 PM Monday through Thursday and 8 AM-12 Noon on Friday.

Provider must fill out the outside lab (BCW) requisition form.

https://media.versiti.org/versiti/versiti/media/downloadables/diagnostic-labs/requisitions/pnil_requisition.pdf?_ga=2.88586079.573452753.1671484325-543083915.1671484325

Submit form, APEX MOLT order requisition and specimen to Central Processing

Unacceptable Conditions:
Samples collected outside of stated time frames.

Rejection Criteria:
Sample > 4 days old when received

PROCESSING

Test Code:
MOLT

Test Group:
Neonatal Alloimmune Thrombocytopenia

Sendout:
Yes

Performing Lab:
Versiti via Blood Center of Wisconsin

Specimen Preparation:
Provider must fill out the outside lab (BCW) requisition form.

https://media.versiti.org/versiti/versiti/media/downloadables/diagnostic-labs/requisitions/pnil_requisition.pdf?_ga=2.88586079.573452753.1671484325-543083915.1671484325

Submit form, APEX MOLT order requisition and specimen to Central Processing

Store refrigerated. Send samples refrigerated. Samples must be received within 4 days of draw date.

Preferred Volume:
Mother: 30 ml ACD-A whole blood AND 10 ML serum
Father: 30 ml ACD-A whole blood

Minimum Volume:
Mother: 25.5 mL ACD whole blood and 10 mL serum
Father: 25.5 mL ACD whole blood

Unacceptable Conditions:
Samples collected outside of stated time frames.

Rejection Criteria:
Sample > 4 days old when received

RESULT INTERPRETATION

Additional Information:
Mothers with normal platelet counts may deliver a baby with low platelet counts. There is a possibility of neonatal alloimmune thrombocytopenia (NATP) in which the mother lacks a platelet antigen that the baby inherits from the father. A maternal antibody is formed against the father's platelet antigen that crosses the placenta and causes the fetus to be thrombocytopenic.

ADMINISTRATIVE

CPT Codes:
83891-90 x2, 83900-90 x2, 83901-90 x10, 83912-90 x2, 83896-90 x36, 86022-90 x16

COMPLETE VIEW

Available Stat:
No

Test Code:
MOLT

Test Group:
Neonatal Alloimmune Thrombocytopenia

Performing Lab:
Versiti via Blood Center of Wisconsin

Sendout:
Yes

Methodology:
ELISA, Flow cytometry, PCR

Remarks:
Specimens are only accepted 8 AM-5 PM Monday through Thursday and 8 AM-12 Noon on Friday.

Provider must fill out the outside lab (BCW) requisition form.

https://media.versiti.org/versiti/versiti/media/downloadables/diagnostic-labs/requisitions/pnil_requisition.pdf?_ga=2.88586079.573452753.1671484325-543083915.1671484325

Submit form, APEX MOLT order requisition and specimen to Central Processing

Collect:
Mother: Yellow top (ACD) x3 and Red top x3
Father: Yellow top (ACD) x3

Amount to Collect:
See preferred volume

Sample Type:
ACD whole blood **AND** Serum

Preferred Volume:
Mother: 30 ml ACD-A whole blood AND 10 ML serum
Father: 30 ml ACD-A whole blood

Minimum Volume:
Mother: 25.5 mL ACD whole blood and 10 mL serum
Father: 25.5 mL ACD whole blood

Rejection Criteria:
Sample > 4 days old when received

Unacceptable Conditions:
Samples collected outside of stated time frames.

Specimen Preparation:
Provider must fill out the outside lab (BCW) requisition form.

https://media.versiti.org/versiti/versiti/media/downloadables/diagnostic-labs/requisitions/pnil_requisition.pdf?_ga=2.88586079.573452753.1671484325-543083915.1671484325

Submit form, APEX MOLT order requisition and specimen to Central Processing

Store refrigerated. Send samples refrigerated. Samples must be received within 4 days of draw date.

Synonyms:

- NAIT
- anti-platelet antibodies
- platelet specific antibodies
- PIA1
- Bak
- Pen
- NAT
- NATP
- flow cytometry

Reported:
1-2 weeks

Additional Information:
Mothers with normal platelet counts may deliver a baby with low platelet counts. There is a possibility of neonatal alloimmune thrombocytopenia (NATP) in which the mother lacks a platelet antigen that the baby inherits from the father. A maternal antibody is formed against the father's platelet antigen that crosses the placenta and causes the fetus to be thrombocytopenic.

CPT Codes:
83891-90 x2, 83900-90 x2, 83901-90 x10, 83912-90 x2, 83896-90 x36, 86022-90 x16

Supplemental Test Request Form Required:
Yes

Neonatal Alloimmune Thrombocytopenia-Fetal evaluation

MOLT

ORDERING

Approval Required:

REQUIRES PATIENT INSURANCE INFORMATION AND AUTHORIZATION FROM HEALTH INSURANCE PROVIDER BEFORE COLLECTION OF SAMPLES. Contact Send Outs Section of the Clinical Lab 3-1349.

As test methodology and requirements are undergoing changes, provider should first confirm sample requirements with Versiti Lab and also contact UCSF cytogenetics laboratory to coordinate sample collection and expansion. Provider should complete the Versiti Platelet and Neutrophil Immunology Lab requisition and order the appropriate test. Provider should place a Miscellaneous Outside Laboratory Test (MOLT) order in APEX.

Available Stat:

No

Performing Lab:

Versiti Platelet and Neutrophil Immunology Laboratory, Wisconsin

Methodology:

PCR

Reported:

1 week

Synonyms:

- Fetal platelet antigen genotyping
- NAIT
- anti-platelet antibodies
- platelet specific antibodies
- PIA1
- Bak
- Pen
- NAT
- NATP

Supplemental Test Request Form Required:

Yes

COLLECTION

Sample Type:

Fetal: Amniotic Fluid, CVS, Cultured Amniocytes or Cultured CVS

Collect:

Orange top polypropylene x2

Amount to Collect:

Please confirm sample requirements with Versiti Lab before proceeding:

30 mL amniotic fluid. Discard first 2 mL of fluid. Sample should be collected in two 15 ml. orange screw top polypropylene tubes (less if early amniocentesis). If the sample is grossly bloody, the results may be inconclusive and a repeat sample will be requested.

Preferred Volume:

7-15 ml Amniotic Fluid or 5-10 mg CVS, backup culture of Amniocytes or CVS is highly recommended; Two T25 flasks Cultured Amniocytes or CVS (5x10e6 minimum)

Minimum Volume:

Call Versiti Laboratory

Remarks:

See information under "Approval Required" BEFORE collecting sample

Specimens are only accepted 8 AM-5 PM Monday through Thursday and 8 AM-12 Noon on Friday.

Provider must fill out the Versiti requisition form.

https://media.versiti.org/versiti/versiti/media/downloadables/diagnostic-labs/requisitions/pnil_requisition.pdf?_ga=2.88586079.573452753.1671484325-543083915.1671484325

Submit form, APEX "MOLT" order requisition and specimen to Central Processing

Stability (from collection to initiation):

24 hrs from time media is added to cell culture.

PROCESSING

Test Code:
MOLT

Test Group:
Platelet Antigen Genotyping

Sendout:
Yes

Performing Lab:
Versiti Platelet and Neutrophil Immunology Laboratory, Wisconsin

Specimen Preparation:
Please confirm sample requirements with Versiti Lab:

Keep samples at room temperature. DO NOT CENTRIFUGE for any reason.
Send all tubes and completed paperwork immediately to the Cytogenetics Laboratory at China Basin. Cytogenetics Laboratory will expand amniocytes to two T25 flasks and arrange shipping to Versiti (previously known as Blood Center of Wisconsin) through the send out department at China Basin. A minimum of 5 x 10e6 cultured amniotic cells are required.

Shipping instructions: Please confirm with Versiti Lab:

Cultured cells: Media should be added to the flasks by Cytogenetics, sealed to avoid leakage and shipped at room temperature or refrigerated.

Package specimens and ship at room temperature by Federal Express Monday - Thursday only.

All samples should reach Versiti within 24 hours of addition of media and no later than 1 pm on Friday. Mark box with Keep at Room Temperature and UP arrows to indicate the box must be maintained upright during shipment. Mark OVERNIGHT on Federal Express form.

Shipping Address:
Versiti Wisconsin - Platelet & Neutrophil Laboratory
638 North 18th Street
Milwaukee, WI 53233 2121

Please call the laboratory (800-245-3117 extension 6255) for advice if you plan to ship samples near a major holiday.

Preferred Volume:
7-15 ml Amniotic Fluid or 5-10 mg CVS, backup culture of Amniocytes or CVS is highly recommended; Two T25 flasks Cultured Amniocytes or CVS (5x10e6 minimum)

Minimum Volume:
Call Versiti Laboratory

Stability (from collection to initiation):
24 hrs from time media is added to cell culture.

ADMINISTRATIVE

CPT Codes:
Genotyping panel: 81105, 81106, 81107, 81108, 81109, 81110, 81111, 81112

Individual antigen systems:
HPA-1: 81105
HPA-2: 81106
HPA-3: 81107
HPA-4: 81108
HPA-5: 81109
HPA-6: 81110
HPA-9: 81111
HPA-15: 81112

COMPLETE VIEW

Approval Required:
REQUIRES PATIENT INSURANCE INFORMATION AND AUTHORIZATION FROM HEALTH INSURANCE PROVIDER BEFORE COLLECTION OF SAMPLES. Contact Send Outs Section of the Clinical Lab 3-1349.

As test methodology and requirements are undergoing changes, provider should first confirm sample requirements with Versiti Lab and also contact UCSF cytogenetics laboratory to coordinate sample collection and expansion. Provider should complete the Versiti Platelet and Neutrophil Immunology Lab requisition and order the appropriate test. Provider should place a Miscellaneous Outside Laboratory Test (MOLT) order in APEX.

Available Stat:
No

Test Code:
MOLT

Test Group:
Platelet Antigen Genotyping

Performing Lab:
Versiti Platelet and Neutrophil Immunology Laboratory, Wisconsin

Sendout:
Yes

Methodology:
PCR

Remarks:
See information under "Approval Required" BEFORE collecting sample

Specimens are only accepted 8 AM-5 PM Monday through Thursday and 8 AM-12 Noon on Friday.

Provider must fill out the Versiti requisition form.

https://media.versiti.org/versiti/versiti/media/downloadables/diagnostic-labs/requisitions/pnil_requisition.pdf?_ga=2.88586079.573452753.1671484325-543083915.1671484325

Submit form, APEX "MOLT" order requisition and specimen to Central Processing

Collect:
Orange top polypropylene x2

Amount to Collect:
Please confirm sample requirements with Versiti Lab before proceeding:

30 mL amniotic fluid. Discard first 2 mL of fluid. Sample should be collected in two 15 ml. orange screw top polypropylene tubes (less if early amniocentesis). If the sample is grossly bloody, the results may be inconclusive and a repeat sample will be requested.

Sample Type:
Fetal: Amniotic Fluid, CVS, Cultured Amniocytes or Cultured CVS

Preferred Volume:
7-15 ml Amniotic Fluid or 5-10 mg CVS, backup culture of Amniocytes or CVS is highly recommended; Two T25 flasks Cultured Amniocytes or CVS (5x10e6 minimum)

Minimum Volume:
Call Versiti Laboratory

Specimen Preparation:
Please confirm sample requirements with Versiti Lab:

Keep samples at room temperature. DO NOT CENTRIFUGE for any reason.
Send all tubes and completed paperwork immediately to the Cytogenetics Laboratory at China Basin. Cytogenetics Laboratory will expand amniocytes to two T25 flasks and arrange shipping to Versiti (previously known as Blood Center of Wisconsin) through the send out department at China Basin. A minimum of 5 x 10e6 cultured amniotic cells are required.

Shipping instructions: Please confirm with Versiti Lab:

Cultured cells: Media should be added to the flasks by Cytogenetics, sealed to avoid leakage and shipped at room temperature or refrigerated.

Package specimens and ship at room temperature by Federal Express Monday - Thursday only.

All samples should reach Versiti within 24 hours of addition of media and no later than 1 pm on Friday. Mark box with Keep at Room Temperature and UP arrows to indicate the box must be maintained upright during shipment. Mark OVERNIGHT on Federal Express form.

Shipping Address:
Versiti Wisconsin - Platelet & Neutrophil Laboratory
638 North 18th Street
Milwaukee, WI 53233 2121

Please call the laboratory (800-245-3117 extension 6255) for advice if you plan to ship samples near a major holiday.

Synonyms:

- Fetal platelet antigen genotyping
- NAIT
- anti-platelet antibodies
- platelet specific antibodies
- PIA1
- Bak
- Pen
- NAT
- NATP

Stability (from collection to initiation):
24 hrs from time media is added to cell culture.

Reported:
1 week

CPT Codes:
Genotyping panel: 81105, 81106, 81107, 81108, 81109, 81110, 81111, 81112

Individual antigen systems:
HPA-1: 81105
HPA-2: 81106
HPA-3: 81107
HPA-4: 81108
HPA-5: 81109
HPA-6: 81110
HPA-9: 81111
HPA-15: 81112

Supplemental Test Request Form Required:
Yes

Neonatal Drug Screen, Meconium

ABUSM

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Immunoassay, GC/MS

Reported:
4 - 5 days

Additional Information:
Strategies to improve the detection and treatment ofsubstance abuse during pregnancy are the focus of growing interest to those involved in perinatal care. Meconium is an effective biological marker of in-utero illicit drug exposure, and can provide insights leading to improved neonatal outcomes, as well as provide evidence to ensure appropriate rehabilitation of mothers suffering from addiction.

Synonyms:

- Drugs of abuse

COLLECTION

Sample Type:
Meconium

Collect:
Leak proof container

Amount to Collect:
5 gm meconium

Preferred Volume:
5 gm

Minimum Volume:
1 gm

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 1 week, frozen 1 month.

PROCESSING

Test Code:
ABUSM

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
DO not aliquot. Freeze sample and transport to China Basin frozen. Order Quest test code 30427X

Preferred Volume:
5 gm

Minimum Volume:
1 gm

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 1 week, frozen 1 month.

RESULT INTERPRETATION

Additional Information:
Strategies to improve the detection and treatment ofsubstance abuse during pregnancy are the focus of growing interest to those involved in perinatal care. Meconium is an effective biological marker of in-utero illicit drug exposure, and can provide insights leading to improved neonatal outcomes, as well as provide evidence to ensure appropriate rehabilitation of mothers suffering from addiction.

ADMINISTRATIVE

CPT Codes:
80307

COMPLETE VIEW

Available Stat:
No

Test Code:
ABUSM

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Immunoassay, GC/MS

Collect:
Leak proof container

Amount to Collect:
5 gm meconium

Sample Type:
Meconium

Preferred Volume:
5 gm

Minimum Volume:
1 gm

Specimen Preparation:
DO not aliquot. Freeze sample and transport to China Basin frozen. Order Quest test code 30427X

Synonyms:

- Drugs of abuse

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 1 week, frozen 1 month.

Reported:
4 - 5 days

Additional Information:
Strategies to improve the detection and treatment ofsubstance abuse during pregnancy are the focus of growing interest to those involved in perinatal care. Meconium is an effective biological marker of in-utero illicit drug exposure, and can provide insights leading to improved neonatal outcomes, as well as provide evidence to ensure appropriate rehabilitation of mothers suffering from addiction.

CPT Codes:
80307

Neonatal Screen

NNEO

ORDERING

Available Stat:
No

Performing Lab:
Provided through the California Department of Public Health

Reported:
9-12 days

Additional Information:
A Newborn Screening Specimen Collection Form must be completed by the ordering provider prior to specimen collection. For information on how to obtain these forms from CADPH please click here.

For information regarding the specific disorders detectable by newborn screening please click here.

IF AN ABNORMALITY IS DETECTED There is no direct patient charge for a neonate recalled by the state Screening Program or for the parents; contact the Newborn Screening Area Service Center for the San Francisco region at Stanford University Medical Center (650) 812-0353 for instructions. If this patient is being followed at UCSF, contact the Genetics Counselor for the Biochemical Genetics Service, x69997. Beeper Monday-Friday 8-5 PM 719-6813 or the Genetics Fellow on-call evening/weekends 719-9075.

Synonyms:

- Cord blood
- newborn screen
- state screening
- Guthrie spots
- NBS

Supplemental Test Request Form Required:
Yes

COLLECTION

Sample Type:
Blood

Collect:
Filter paper

Preferred Volume:
5 completely filled blood spots

Recommend that one full EDTA (Lavender top) vacutainer of cord blood be submitted to be held by the blood bank should further testing be required.

Remarks:
A Newborn Screening Specimen Collection Form must be completed by the ordering provider prior to specimen collection. For information on how to obtain these forms from CADPH please click here.

Draw > 12 hours after birth or immediately prior to an earlier blood transfusion.

Do not use capillary tubes for collection of the blood spot specimen and do not collect from a site other than a heel stick: deviations from the standard collection method of direct spotting of heel stick blood onto the filter paper can give false-negative results.

It is advised to submit a sample of cord blood in a Lavender top tube (label it "NSP") to the blood bank for follow-up hemoblobinopathy testing if required.

PROCESSING

Test Code:
NNEO

Sendout:
Yes

Performing Lab:
Provided through the California Department of Public Health

Specimen Preparation:

1. Collect all received NNEO forms.
2. Fill in each NNEO sample information into the transport log (MRN/Newborn's Name/Sex/ TRF number)
3. Place GLS shipping transport tracking number on the GLS envelope and tracking number on yellow copy
4. File yellow copy in NNEO binder
5. Place original transport log in GLS shipping envelope with NNEO forms
6. Seal envelope for GLS pickup at 5pm (Monday-Saturday) in room M2339.
7. GLS courier to sign transport log for confirmation of pickup.

Preferred Volume:

5 completely filled blood spots

Recommend that one full EDTA (Lavender top) vacutainer of cord blood be submitted to be held by the blood bank should further testing be required.

RESULT INTERPRETATION

Units:

See normals

Reference Interval:

Acylcarnitine profile:

FC	12-220 µmol/L
FC/(C16+C18) ratio	0-100
C-2	5-85 µmol/L
C-3	0-6.5 µmol/L
CO3/CO2 ratio	0.025
C-3DC	0-0.3 µmol/L
C-4	0-1.8 µmol/L
C-4DC	0-2.6 µmol/L
C-5	0-1.2 µmol/L
C5:1	0-0.4 µmol/L
C-5OH	0-1.2 µmol/L
C-5DC	0-0.35 µmol/L
C-6	0-0.7 µmol/L
C-8	0-0.5 µmol/L
CO8/C10 ratio	Not given
C-8.1	0-0.9 µmol/L
C-10	0-0.6 µmol/L
C10:1	0-0.45 µmol/L
C-12	0-2 µmol/L
C-12:1	Not given
C-14	0-1.1 µmol/L
C14:1	0-0.8 µmol/L
C14:1/C12:1 ratio	Not given
C-14OH	0-0.4 µmol/L
C-16	0-10 µmol/L
C-16:1	0-1.2 µmol/L
C-16OH	0-0.3 µmol/L
C-18	0-3.5 µmol/L
C-18:1	0-4 µmol/L
C-18:2	Not given
C-18OH	0-0.4 µmol/L
C18:1OH	0-0.35 µmol/L

Amino acids:

Glycine	Not given
Alanine	0-900 µmol/L
Valine	Not given

Leucine/Isoleucine	0-200 µmol/L
Leucine/Alanine ratio	0-1.5
Phenylalanine	0-140 µmol/L
Phenylalanine/Tyrosine ratio	0-2.3
Tyrosine	0-700 µmol/L
Methionine	0-100 µmol/L
Citrulline	0-90 µmol/L
Citrulline/Arginine ratio	Not given
Ornithine	0-500 µmol/L
Ornithine/Citrulline ratio	Not given
Arginine	0-200 µmol/L
Arginine/Ornithine ratio	Not given
Proline	0-100 µmol/L
5-Oxoproline	Not given

Other analytes:

Immunoreactive trypsinogen	< 62 ng/mL
Biotinidase	> 10 ERU
Gal-1-Uridyl Transferase	> 50 enzyme units
TSH	0-25 mIU/L
17 Hydroxyprogesterone	< 180 nmol/L
T-cell Receptor Excision Circle (TREC)	> 25 copies/µL

Additional Information:

A Newborn Screening Specimen Collection Form must be completed by the ordering provider prior to specimen collection. For information on how to obtain these forms from CADPH please click here.

For information regarding the specific disorders detectable by newborn screening please click here.

IF AN ABNORMALITY IS DETECTED There is no direct patient charge for a neonate recalled by the state Screening Program or for the parents; contact the Newborn Screening Area Service Center for the San Francisco region at Stanford University Medical Center (650) 812-0353 for instructions. If this patient is being followed at UCSF, contact the Genetics Counselor for the Biochemical Genetics Service, x69997. Beeper Monday-Friday 8-5 PM 719-6813 or the Genetics Fellow on-call evening/weekends 719-9075.

ADMINISTRATIVE

CPT Codes:
S3620

LOINC Codes:
54089-8

COMPLETE VIEW

Available Stat:
No

Test Code:
NNEO

Performing Lab:
Provided through the California Department of Public Health

Sendout:
Yes

Remarks:

A Newborn Screening Specimen Collection Form must be completed by the ordering provider prior to specimen collection. For information on how to obtain these forms from CADPH please click here.

Draw > 12 hours after birth or immediately prior to an earlier blood transfusion.

Do not use capillary tubes for collection of the blood spot specimen and do not collect from a site other than a heel stick: deviations from the standard collection method of direct spotting of heel stick blood onto the filter paper can give false-negative results.

It is advised to submit a sample of cord blood in a Lavender top tube (label it "NSP") to the blood bank for follow-up hemoblobinopathy testing if required.

Collect:

Filter paper

Sample Type:

Blood

Preferred Volume:

5 completely filled blood spots

Recommend that one full EDTA (Lavender top) vacutainer of cord blood be submitted to be held by the blood bank should further testing be required.

Specimen Preparation:

1. Collect all received NNEO forms.
2. Fill in each NNEO sample information into the transport log (MRN/Newborn's Name/Sex/ TRF number)
3. Place GLS shipping transport tracking number on the GLS envelope and tracking number on yellow copy
4. File yellow copy in NNEO binder
5. Place original transport log in GLS shipping envelope with NNEO forms
6. Seal envelope for GLS pickup at 5pm (Monday-Saturday) in room M2339.
7. GLS courier to sign transport log for confirmation of pickup.

Units:

See normals

Reference Interval:

Acylcarnitine profile:

FC	12-220 µmol/L
FC/(C16+C18) ratio	0-100
C-2	5-85 µmol/L
C-3	0-6.5 µmol/L
CO3/CO2 ratio	0.025
C-3DC	0-0.3 µmol/L
C-4	0-1.8 µmol/L
C-4DC	0-2.6 µmol/L
C-5	0-1.2 µmol/L
C5:1	0-0.4 µmol/L
C-5OH	0-1.2 µmol/L
C-5DC	0-0.35 µmol/L
C-6	0-0.7 µmol/L
C-8	0-0.5 µmol/L
CO8/C10 ratio	Not given
C-8.1	0-0.9 µmol/L
C-10	0-0.6 µmol/L
C10:1	0-0.45 µmol/L
C-12	0-2 µmol/L
C-12:1	Not given
C-14	0-1.1 µmol/L
C14:1	0-0.8 µmol/L
C14:1/C12:1 ratio	Not given
C-14OH	0-0.4 µmol/L
C-16	0-10 µmol/L
C-16:1	0-1.2 µmol/L
C-16OH	0-0.3 µmol/L

C-18	0-3.5 µmol/L
C-18:1	0-4 µmol/L
C-18:2	Not given
C-18OH	0-0.4 µmol/L
C18:1OH	0-0.35 µmol/L

Amino acids:

Glycine	Not given
Alanine	0-900 µmol/L
Valine	Not given
Leucine/Isoleucine	0-200 µmol/L
Leucine/Alanine ratio	0-1.5
Phenylalanine	0-140 µmol/L
Phenylalanine/Tyrosine ratio	0-2.3
Tyrosine	0-700 µmol/L
Methionine	0-100 µmol/L
Citrulline	0-90 µmol/L
Citrulline/Arginine ratio	Not given
Ornithine	0-500 µmol/L
Ornithine/Citrulline ratio	Not given
Arginine	0-200 µmol/L
Arginine/Ornithine ratio	Not given
Proline	0-100 µmol/L
5-Oxoproline	Not given

Other analytes:

Immunoreactive trypsinogen	< 62 ng/mL
Biotinidase	> 10 ERU
Gal-1-Uridyl Transferase	> 50 enzyme units
TSH	0-25 mIU/L
17 Hydroxyprogesterone	< 180 nmol/L
T-cell Receptor Excision Circle (TREC)	> 25 copies/µL

Synonyms:

- Cord blood
- newborn screen
- state screening
- Guthrie spots
- NBS

Reported:

9-12 days

Additional Information:

A Newborn Screening Specimen Collection Form must be completed by the ordering provider prior to specimen collection. For information on how to obtain these forms from CADPH please click here.

For information regarding the specific disorders detectable by newborn screening please click here.

IF AN ABNORMALITY IS DETECTED There is no direct patient charge for a neonate recalled by the state Screening Program or for the parents; contact the Newborn Screening Area Service Center for the San Francisco region at Stanford University Medical Center (650) 812-0353 for instructions. If this patient is being followed at UCSF, contact the Genetics Counselor for the Biochemical Genetics Service, x69997. Beeper Monday-Friday 8-5 PM 719-6813 or the Genetics Fellow on-call evening/weekends 719-9075.

CPT Codes:

S3620

LOINC Codes:

54089-8

Supplemental Test Request Form Required:

Yes

Neuron Specific Enolase, CSF

NSECSF

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
Immunochemiluminometric assay

Reported:
Performed 2x per week. Turnaround 5-7 days

Synonyms:

- NSE

COLLECTION

Sample Type:
CSF

Collect:
CSF tube or sterile collection tube

Amount to Collect:
0.5 mL CSF

Preferred Volume:
0.5 mL CSF

Minimum Volume:
0.1 mL CSF

PROCESSING

Test Code:
NSECSF

Test Group:
Neuron Specific Enolase

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Non-B&T patients: Refrigerate CSF. Order Mayo test #81796.

B&T patients: Freeze CSF. Order LabCorp #829032

Preferred Volume:
0.5 mL CSF

Minimum Volume:
0.1 mL CSF

RESULT INTERPRETATION

Units:
ng/mL

Reference Interval:
Normal: < 20 ng/mL
Mildly elevated: 20-35 ng/mL
Indicative of CJD: > 35 ng/ml

ADMINISTRATIVE

CPT Codes:
83520-90

LOINC Codes:
44802-7

COMPLETE VIEW

Available Stat:
No

Test Code:
NSECSF

Test Group:
Neuron Specific Enolase

Performing Lab:
Mayo

Sendout:
Yes

Methodology:
Immunochemiluminometric assay

Collect:
CSF tube or sterile collection tube

Amount to Collect:
0.5 mL CSF

Sample Type:
CSF

Preferred Volume:
0.5 mL CSF

Minimum Volume:
0.1 mL CSF

Specimen Preparation:
Non-B&T patients: Refrigerate CSF. Order Mayo test #81796.

B&T patients: Freeze CSF. Order LabCorp #829032

Units:
ng/mL

Reference Interval:
Normal: < 20 ng/mL
Mildly elevated: 20-35 ng/mL
Indicative of CJD: > 35 ng/ml

Synonyms:

- NSE

Reported:
Performed 2x per week. Turnaround 5-7 days

CPT Codes:
83520-90

LOINC Codes:
44802-7

Neuron Specific Enolase, serum

NSE

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
EIA

Reported:
Performed 2x per week Turnaround time 3-6 days.

Additional Information:
Neuron Specific Enolase cannot be used as a diagnostic test without confirmation by another established test or procedure. Values obtained by different laboratories are generally not comparable. This test is performed using the Can Ag. EIA method.

Test is useful in monitoring disease progression and therapy in patients with small cell lung cancer and neuroendocrine tumors Neuroblastoma, Medullary Thyroid Ca, Pheochromocytoma and other malignancies that can secrete NSE such as Pancreatic Islet Cell Cancer

Synonyms:

- NSE

COLLECTION

Sample Type:
Serum

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Unacceptable Conditions:
Hemolysis, or plasma sample.

PROCESSING

Test Code:
NSE

Test Group:
Neuron Specific Enolase

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Order Quest Test # 22251P

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Unacceptable Conditions:
Hemolysis, or plasma sample.

RESULT INTERPRETATION

Units:
µg/L (mcg/L)

Reference Interval:

Age	Normal range
Newborn	4.8-19.5 µg/L
12-17 years	<= 12.0 µg/L
>= 18 year olds	< 8.6 µg/L

Additional Information:

Neuron Specific Enolase cannot be used as a diagnostic test without confirmation by another established test or procedure. Values obtained by different laboratories are generally not comparable. This test is performed using the Can Ag. EIA method.

Test is useful in monitoring disease progression and therapy in patients with small cell lung cancer and neuroendocrine tumors Neuroblastoma, Medullary Thyroid Ca, Pheochromocytoma and other malignancies that can secrete NSE such as Pancreatic Islet Cell Cancer

ADMINISTRATIVE

CPT Codes:
83520-90

LOINC Codes:
57371-7

COMPLETE VIEW

Available Stat:
No

Test Code:
NSE

Test Group:
Neuron Specific Enolase

Performing Lab:
Quest

Sendout:
Yes

Methodology:
EIA

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Unacceptable Conditions:
Hemolysis, or plasma sample.

Specimen Preparation:
Order Quest Test # 22251P

Units:
µg/L (mcg/L)

Reference Interval:

Age	Normal range
Newborn	4.8-19.5 µg/L
12-17 years	<= 12.0 µg/L
>= 18 year olds	< 8.6 µg/L

Synonyms:

- NSE

Reported:
Performed 2x per week Turnaround time 3-6 days.

Additional Information:

Neuron Specific Enolase cannot be used as a diagnostic test without confirmation by another established test or procedure. Values obtained by different laboratories are generally not comparable. This test is performed using the Can Ag. EIA method.

Test is useful in monitoring disease progression and therapy in patients with small cell lung cancer and neuroendocrine tumors Neuroblastoma, Medullary Thyroid Ca, Pheochromocytoma and other malignancies that can secrete NSE such as Pancreatic Islet Cell Cancer

CPT Codes:

83520-90

LOINC Codes:

57371-7

Neutrophil Antibodies

NEUAB

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Flow cytometry

Reported:
5 -7 days

Additional Information:
Used for possible immune neutropenia unrelated to transfusion. For Granulomatosis with polyangiitis (GPA), see Neutrophil Cytoplasmic Antibodies.

Neutrophil-associated IgG and IgM are quantitated after incubating the patient's serum with formalin-fixed neutrophils. The test does NOT distinguish specific anti-neutrophil immunoglobulins from antibodies directed against HLA antigens.

Synonyms:

- Anti-Neutrophil Antibodies
- flow cytometry

COLLECTION

Sample Type:
Serum

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.1 mL serum

PROCESSING

Test Code:
NEUAB

Test Group:
Neutrophil Antibodies

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze at -20C and ship to China Basin

Preferred Volume:
1 mL serum

Minimum Volume:
0.1 mL serum

RESULT INTERPRETATION

Reference Interval:
None detected

Additional Information:
Used for possible immune neutropenia unrelated to transfusion. For Granulomatosis with polyangiitis (GPA), see Neutrophil Cytoplasmic Antibodies.

Neutrophil-associated IgG and IgM are quantitated after incubating the patient's serum with formalin-fixed neutrophils. The test does NOT distinguish specific anti-neutrophil immunoglobulins from antibodies directed against HLA antigens.

ADMINISTRATIVE

CPT Codes:
86021-90

COMPLETE VIEW

Available Stat:
No

Test Code:
NEUAB

Test Group:
Neutrophil Antibodies

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Flow cytometry

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.1 mL serum

Specimen Preparation:
Freeze at -20C and ship to China Basin

Reference Interval:
None detected

Synonyms:

- Anti-Neutrophil Antibodies
- flow cytometry

Reported:
5 -7 days

Additional Information:
Used for possible immune neutropenia unrelated to transfusion. For Granulomatosis with polyangiitis (GPA), see Neutrophil Cytoplasmic Antibodies.

Neutrophil-associated IgG and IgM are quantitated after incubating the patient's serum with formalin-fixed neutrophils. The test does NOT distinguish specific anti-neutrophil immunoglobulins from antibodies directed against HLA antigens.

CPT Codes:
86021-90

Neutrophil Cytoplasmic Antibodies

ANCA

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday (day shift)

Methodology:
Chemiluminescence

Reported:
2-8 days

Additional Information:
This test may be useful in discriminating among the various vasculitides. Cytoplasmic (c-ANCA) antibodies giving diffuse cytoplasmic staining are directed against Proteinase-3, and are suggestive of a spectrum of diseases which includes granulomatosis with polyangiitis (GPA), polyarteritis nodosa, Churg-Strauss syndrome, and primary necrotizing and crescentic glomerulonephritis. Perinuclear (p-ANCA) staining is due to antibodies to myeloperoxidase (MPO) and other antigens such as elastase and lactoferrin, and is less specific.

Synonyms:

- ANCA
- Anti-Neutrophil Antibodies
- anti-MPO
- Myeloperoxidase antibodies
- anti-myeloperoxidase
- Proteinase-3 Antibody
- anti-Proteinase-3 Antibody
- PR3
- anti-PR3

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Remarks:
Avoid hemolysis

Unacceptable Conditions:
Grossly Hemolyzed, Lipemic or Icteric

PROCESSING

Test Code:
ANCA

Test Group:
Neutrophil Antibodies

Performing Lab:
Immunology

Specimen Preparation:
Freeze serum at -20°C.

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Grossly Hemolyzed, Lipemic or Icteric

RESULT INTERPRETATION

Units:
Chemiluminescence units (CU)

Reference Interval:
Myeloperoxidase Antibody (MPO) and Proteinase-3 Antibody (PR3):

Negative: < 20.0 CU
Positive: >= 20.0 CU

Additional Information:
This test may be useful in discriminating among the various vasculitides. Cytoplasmic (c-ANCA) antibodies giving diffuse cytoplasmic staining are directed against Proteinase-3, and are suggestive of a spectrum of diseases which includes granulomatosis with polyangiitis (GPA), polyarteritis nodosa, Churg-Strauss syndrome, and primary necrotizing and crescentic glomerulonephritis. Perinuclear (p-ANCA) staining is due to antibodies to myeloperoxidase (MPO) and other antigens such as elastase and lactoferrin, and is less specific.

ADMINISTRATIVE

CPT Codes:
86036 X 2

LOINC Codes:
45151-8

COMPLETE VIEW

Available Stat:
No

Test Code:
ANCA

Test Group:
Neutrophil Antibodies

Performing Lab:
Immunology

Performed:
Monday (day shift)

Methodology:
Chemiluminescence

Remarks:
Avoid hemolysis

Collect:
Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Grossly Hemolyzed, Lipemic or Icteric

Specimen Preparation:
Freeze serum at -20°C.

Units:
Chemiluminescence units (CU)

Reference Interval:
Myeloperoxidase Antibody (MPO) and Proteinase-3 Antibody (PR3):

Negative: < 20.0 CU
Positive: >= 20.0 CU

Synonyms:

- ANCA
- Anti-Neutrophil Antibodies
- anti-MPO
- Myeloperoxidase antibodies
- anti-myeloperoxidase
- Proteinase-3 Antibody
- anti-Proteinase-3 Antibody
- PR3
- anti-PR3

Reported:

2-8 days

Additional Information:

This test may be useful in discriminating among the various vasculitides. Cytoplasmic (c-ANCA) antibodies giving diffuse cytoplasmic staining are directed against Proteinase-3, and are suggestive of a spectrum of diseases which includes granulomatosis with polyangiitis (GPA), polyarteritis nodosa, Churg-Strauss syndrome, and primary necrotizing and crescentic glomerulonephritis. Perinuclear (p-ANCA) staining is due to antibodies to myeloperoxidase (MPO) and other antigens such as elastase and lactoferrin, and is less specific.

CPT Codes:

86036 X 2

LOINC Codes:

45151-8

Neutrophil Oxidative Index

NOI

ORDERING

Approval Required:
Yes, Contact Immunology at x3-1712

Available Stat:
No

Performing Lab:
Immunology

Performed:
Tuesday, Wednesday only (day shift) by appointment. Contact Immunology at x3-1712

Methodology:
Flow Cytometry

Reported:
6-10 days

Additional Information:
This more sensitive assay replaces the NBT test in detecting defects in the generation of peroxide by the monophosphate shunt, and is capable of detecting the carrier state.

The neutrophil oxidative index and the net fluorescence are compared with those of a healthy control and the results are interpreted in a separate report.

This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Synonyms:

- NBT
- Nitro-blue tetrazolium
- CGD
- Chronic granulomatous disease
- NOI
- flow cytometry

COLLECTION

Sample Type:
Heparinized whole blood

Collect:
Dark Green top

Amount to Collect:
3 mL blood

Preferred Volume:
3 mL whole blood

Minimum Volume:
2 mL whole blood

Remarks:
By appointment only with Immunology, call x3-1712

Sample should be delivered to the laboratory IMMEDIATELY and no later than 1000 on the day of testing. The specimen must reach the Immunology laboratory within FOUR hours of collection.

Unacceptable Conditions:
Unscheduled samples will be rejected. Samples greater than 4 hours old will be rejected. Samples delivered to processing lab > 30 min after collection or after 10:00 AM Monday-Friday will be rejected.

PROCESSING

Test Code:
NOI

Performing Lab:
Immunology

Specimen Preparation:
Sample must be kept at room temperature and DO NOT centrifuge. Notify Immunology at x3-1712 after sample is drawn. Deliver to Immunology at China Basin as soon as possible.

Preferred Volume:
3 mL whole blood

Minimum Volume:
2 mL whole blood

Unacceptable Conditions:
Unscheduled samples will be rejected. Samples greater than 4 hours old will be rejected. Samples delivered to processing lab > 30 min after collection or after 10:00 AM Monday-Friday will be rejected.

RESULT INTERPRETATION

Additional Information:
This more sensitive assay replaces the NBT test in detecting defects in the generation of peroxide by the monophosphate shunt, and is capable of detecting the carrier state.

The neutrophil oxidative index and the net fluorescence are compared with those of a healthy control and the results are interpreted in a separate report.

This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

ADMINISTRATIVE

CPT Codes:
86352

LDT or Modified FDA:
Yes

LOINC Codes:
32631-4

COMPLETE VIEW

Approval Required:
Yes, Contact Immunology at x3-1712

Available Stat:
No

Test Code:
NOI

Performing Lab:
Immunology

Performed:
Tuesday, Wednesday only (day shift) by appointment. Contact Immunology at x3-1712

Methodology:
Flow Cytometry

Remarks:
By appointment only with Immunology, call x3-1712

Sample should be delivered to the laboratory IMMEDIATELY and no later than 1000 on the day of testing. The specimen must reach the Immunology laboratory within FOUR hours of collection.

Collect:
Dark Green top

Amount to Collect:
3 mL blood

Sample Type:
Heparinized whole blood

Preferred Volume:
3 mL whole blood

Minimum Volume:
2 mL whole blood

Unacceptable Conditions:
Unscheduled samples will be rejected. Samples greater than 4 hours old will be rejected. Samples delivered to processing lab > 30 min after collection or after 10:00 AM Monday-Friday will be rejected.

Specimen Preparation:

Sample must be kept at room temperature and DO NOT centrifuge. Notify Immunology at x3-1712 after sample is drawn. Deliver to Immunology at China Basin as soon as possible.

Synonyms:

- NBT
- Nitro-blue tetrazolium
- CGD
- Chronic granulomatous disease
- NOI
- flow cytometry

Reported:

6-10 days

Reflex Testing:

An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Additional Information:

This more sensitive assay replaces the NBT test in detecting defects in the generation of peroxide by the monophosphate shunt, and is capable of detecting the carrier state.

The neutrophil oxidative index and the net fluorescence are compared with those of a healthy control and the results are interpreted in a separate report.

This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

CPT Codes:

86352

LDT or Modified FDA:

Yes

LOINC Codes:

32631-4

Newborn DAT Testing

NEWDAT

ORDERING

Available Stat:
No

Performing Lab:
Mission Bay Transfusion Service

Performed:
Test Available 24 hours per day 7 days a week

Reported:
Routine 4 hours

Additional Information:
Testing includes DAT-IgG only. Cord Blood sample preferred. Please indicate source of specimen (Cord Blood or Peripheral sample) when submitting specimen for testing.

Synonyms:

- Cord Blood

COLLECTION

Sample Type:
EDTA whole blood or Cord Blood

Collect:
Lavender top (6mL preferred)

Amount to Collect:
6 mL blood

Preferred Volume:
6 mL

Minimum Volume:
3 mL

Unacceptable Conditions:
Unsigned, mislabeled, unlabeled, or hemolyzed sample. Samples without a collection date and time.

PROCESSING

Test Code:
NEWDAT

Performing Lab:
Mission Bay Transfusion Service

Preferred Volume:
6 mL

Minimum Volume:
3 mL

Unacceptable Conditions:
Unsigned, mislabeled, unlabeled, or hemolyzed sample. Samples without a collection date and time.

RESULT INTERPRETATION

Additional Information:
Testing includes DAT-IgG only. Cord Blood sample preferred. Please indicate source of specimen (Cord Blood or Peripheral sample) when submitting specimen for testing.

COMPLETE VIEW

Available Stat:
No

Test Code:
NEWDAT

Performing Lab:
Mission Bay Transfusion Service

Performed:
Test Available 24 hours per day 7 days a week

Collect:
Lavender top (6mL preferred)

Amount to Collect:
6 mL blood

Sample Type:
EDTA whole blood or Cord Blood

Preferred Volume:
6 mL

Minimum Volume:
3 mL

Unacceptable Conditions:
Unsigned, mislabeled, unlabeled, or hemolyzed sample. Samples without a collection date and time.

Synonyms:

- Cord Blood

Reported:
Routine 4 hours

Additional Information:
Testing includes DAT-IgG only. Cord Blood sample preferred. Please indicate source of specimen (Cord Blood or Peripheral sample) when submitting specimen for testing.

Newborn Rh Testing

NEWRH

ORDERING

Available Stat:
No

Performing Lab:
Mission Bay Transfusion Service

Performed:
Test Available 24 hours per day 7 days a week

Reported:
Routine 4 hours

Additional Information:
Testing includes Rh type and DAT-IgG only. Cord Blood sample preferred. Please indicate source of specimen (Cord Blood or Peripheral sample) when submitting specimen for testing.

Synonyms:

- Cord Blood

COLLECTION

Sample Type:
EDTA whole blood or Cord Blood

Collect:
Lavender top (6mL preferred)

Amount to Collect:
6 mL blood

Preferred Volume:
6 mL

Minimum Volume:
3 mL

Unacceptable Conditions:
Unsigned, mislabeled, unlabeled, or hemolyzed sample. Samples without a collection date and time.

PROCESSING

Test Code:
NEWRH

Performing Lab:
Mission Bay Transfusion Service

Preferred Volume:
6 mL

Minimum Volume:
3 mL

Unacceptable Conditions:
Unsigned, mislabeled, unlabeled, or hemolyzed sample. Samples without a collection date and time.

RESULT INTERPRETATION

Additional Information:
Testing includes Rh type and DAT-IgG only. Cord Blood sample preferred. Please indicate source of specimen (Cord Blood or Peripheral sample) when submitting specimen for testing.

COMPLETE VIEW

Available Stat:
No

Test Code:
NEWRH

Performing Lab:
Mission Bay Transfusion Service

Performed:
Test Available 24 hours per day 7 days a week

Collect:
Lavender top (6mL preferred)

Amount to Collect:
6 mL blood

Sample Type:
EDTA whole blood or Cord Blood

Preferred Volume:
6 mL

Minimum Volume:
3 mL

Unacceptable Conditions:
Unsigned, mislabeled, unlabeled, or hemolyzed sample. Samples without a collection date and time.

Synonyms:

- Cord Blood

Reported:
Routine 4 hours

Additional Information:
Testing includes Rh type and DAT-IgG only. Cord Blood sample preferred. Please indicate source of specimen (Cord Blood or Peripheral sample) when submitting specimen for testing.

Nicotine and Cotinine, urine

NICUR

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
LC/MS/MS

Additional Information:
This assay is used for the detection of nicotine and cotinine in serum and plasma to determine the tobacco exposure status of the individual. Nicotine has a short half-life of approximately forty minutes; Its presence may indicate recent tobacco exposure. Cotinine, the major nicotine metabolite, has a half-life of 24 hours and is detectable for several days after cessation of tobacco exposure.

Synonyms:

- cigarette
- smoking
- tobacco

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
10 mL urine

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 2 weeks, frozen 1 month

PROCESSING

Test Code:
NICUR

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot and refrigerate sample. Transport to CB refrigerated. Order Quest test code 90646

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 2 weeks, frozen 1 month

RESULT INTERPRETATION

Units:
ng/mL

Reference Interval:

Nicotine:
Smokers: 200-700 ng/mL
Non-Smokers: <= 17 ng/mL

Cotinine:
Smokers: 300-1300 ng/mL
Non-Smokers: <= 20 ng/mL

Additional Information:

This assay is used for the detection of nicotine and cotinine in serum and plasma to determine the tobacco exposure status of the individual. Nicotine has a short half-life of approximately forty minutes; Its presence may indicate recent tobacco exposure. Cotinine, the major nicotine metabolite, has a half-life of 24 hours and is detectable for several days after cessation of tobacco exposure.

ADMINISTRATIVE

CPT Codes:

80323

COMPLETE VIEW

Available Stat:

No

Test Code:

NICUR

Performing Lab:

Quest

Sendout:

Yes

Methodology:

LC/MS/MS

Collect:

Urine cup

Amount to Collect:

10 mL urine

Sample Type:

Random urine

Preferred Volume:

1 mL urine

Minimum Volume:

0.5 mL urine

Specimen Preparation:

Aliquot and refrigerate sample. Transport to CB refrigerated. Order Quest test code 90646

Units:

ng/mL

Reference Interval:

Nicotine:
Smokers: 200-700 ng/mL
Non-Smokers: <= 17 ng/mL

Cotinine:
Smokers: 300-1300 ng/mL
Non-Smokers: <= 20 ng/mL

Synonyms:

- cigarette
- smoking
- tobacco

Stability (from collection to initiation):

Room temperature 3 days, refrigerated 2 weeks, frozen 1 month

Additional Information:

This assay is used for the detection of nicotine and cotinine in serum and plasma to determine the tobacco exposure status of the individual. Nicotine has a short half-life of approximately forty minutes; Its presence may indicate recent tobacco exposure. Cotinine, the major nicotine metabolite, has a half-life of 24 hours and is detectable for several days after cessation of tobacco exposure.

CPT Codes:
80323

N-methyl-D-Aspartate Receptor (NMDAR) Antibody, IgG by CBA-IFA, CSF With Reflex to Titer

NMDC

ORDERING

Ordering Recommendations:
Confirm diagnosis of anti-NMDAR encephalitis. May be used in monitoring treatment response in individuals who are antibody positive.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Semi-Quantitative Cell-Based Indirect Fluorescent Antibody

Reported:
1-5 days

Synonyms:

- anti-GluN1
- Anti-NMDA CSF
- anti-NR1
- Glutamate Receptor Antibodies
- N-Methyl D-Aspartate Ab CSF
- NMDA R
- NMDA Receptor Ab CSF

COLLECTION

Collect:
CSF.

Stability (from collection to initiation):
Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Contaminated, hemolyzed, or severely lipemic specimens.

PROCESSING

Test Code:
NMDC

ARUP Test Code:
2005164

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transfer 0.5 mL CSF to an ARUP standard transport tube. (Min: 0.15 mL)

Unacceptable Conditions:
Contaminated, hemolyzed, or severely lipemic specimens.

Stability (from collection to initiation):
Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:
Less than 1:1

Interpretive Data:

NMDA receptor antibody is found in a subset of patients with autoimmune limbic encephalitis and may occur with or without associated tumor. Decreasing antibody levels may be associated with therapeutic response. In addition, positive results have been reported in patients with nonautoimmune phenotypes. A negative test result does not rule out a diagnosis of autoimmune limbic encephalitis. Results should be interpreted in correlation with the patients clinical history and other laboratory findings.

This indirect fluorescent antibody assay utilizes full-length GluN1 transfected cell lines for the detection and semiquantification of NMDA receptor IgG antibody.

ADMINISTRATIVE

CPT Codes:

86255; if reflexed, add 86256

LOINC:

- 80220-7

COMPLETE VIEW

Available Stat:

No

Ordering Recommendations:

Confirm diagnosis of anti-NMDAR encephalitis. May be used in monitoring treatment response in individuals who are antibody positive.

Test Code:

NMDC

ARUP Test Code:

2005164

Performing Lab:

ARUP

Sendout:

Yes

Performed:

Sun-Sat

Methodology:

Semi-Quantitative Cell-Based Indirect Fluorescent Antibody

Collect:

CSF.

Unacceptable Conditions:

Contaminated, hemolyzed, or severely lipemic specimens.

Specimen Preparation:

Transfer 0.5 mL CSF to an ARUP standard transport tube. (Min: 0.15 mL)

Reference Interval:

Less than 1:1

Interpretive Data:

NMDA receptor antibody is found in a subset of patients with autoimmune limbic encephalitis and may occur with or without associated tumor. Decreasing antibody levels may be associated with therapeutic response. In addition, positive results have been reported in patients with nonautoimmune phenotypes. A negative test result does not rule out a diagnosis of autoimmune limbic encephalitis. Results should be interpreted in correlation with the patients clinical history and other laboratory findings.

This indirect fluorescent antibody assay utilizes full-length GluN1 transfected cell lines for the detection and semiquantification of NMDA receptor IgG antibody.

Synonyms:

- anti-GluN1
- Anti-NMDA CSF
- anti-NR1
- Glutamate Receptor Antibodies
- N-Methyl D-Aspartate Ab CSF
- NMDA R
- NMDA Receptor Ab CSF

Storage/Transport Temperature:
Refrigerated.

Stability (from collection to initiation):
Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

Reported:
1-5 days

CPT Codes:
86255; if reflexed, add 86256

LOINC:

- 80220-7

Notes:
If NMDA CSF antibody IgG is positive, then an NMDA CSF antibody IgG titer is reported. Additional charges apply.

N-methyl-D-Aspartate Receptor (NMDAR) Antibody, IgG by CBA-IFA, Serum With Reflex to Titer

NMDS

ORDERING

Ordering Recommendations:
Confirm diagnosis of anti-NMDAR encephalitis. May be used in monitoring treatment response in individuals who are antibody positive.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Semi-Quantitative Cell-Based Indirect Fluorescent Antibody

Reported:
1-5 days

Synonyms:

- Anti-GluN1
- Anti-NMDA
- Anti-NR1
- Glutamate Receptor Antibodies
- N-Methyl D-Aspartate Ab
- NMDA R
- NMDA Receptor Ab
- NMDA Reflex
- NMDA Titer

COLLECTION

Collect:
Serum separator tube.

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
CSF or plasma. Contaminated, hemolyzed, or severely lipemic specimens.

PROCESSING

Test Code:
NMDS

ARUP Test Code:
2004221

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate serum from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP standard transport tube. (Min: 0.15 mL)

Unacceptable Conditions:
CSF or plasma. Contaminated, hemolyzed, or severely lipemic specimens.

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:
Less than 1:10

Interpretive Data:
NMDA receptor antibody is found in a subset of patients with autoimmune limbic encephalitis and may occur with or without associated tumor. Decreasing antibody levels may be associated with therapeutic response. In addition, positive results have been reported in patients with nonautoimmune phenotypes. A negative test result does not rule out a diagnosis of autoimmune limbic encephalitis. Results should be interpreted in correlation with the patients clinical history and other laboratory findings. Serum testing should be paired with CSF testing for improved diagnostic sensitivity.

This indirect fluorescent antibody assay utilizes full-length GluN1 transfected cell lines for the detection and semiquantification of NMDA receptor IgG antibody..

ADMINISTRATIVE

CPT Codes:
86255; if reflexed, add 86256

LOINC:

- 80221-5

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Confirm diagnosis of anti-NMDAR encephalitis. May be used in monitoring treatment response in individuals who are antibody positive.

Test Code:
NMDS

ARUP Test Code:
2004221

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Semi-Quantitative Cell-Based Indirect Fluorescent Antibody

Collect:
Serum separator tube.

Unacceptable Conditions:
CSF or plasma. Contaminated, hemolyzed, or severely lipemic specimens.

Specimen Preparation:
Separate serum from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP standard transport tube. (Min: 0.15 mL)

Reference Interval:
Less than 1:10

Interpretive Data:
NMDA receptor antibody is found in a subset of patients with autoimmune limbic encephalitis and may occur with or without associated tumor. Decreasing antibody levels may be associated with therapeutic response. In addition, positive results have been reported in patients with nonautoimmune phenotypes. A negative test result does not rule out a diagnosis of autoimmune limbic encephalitis. Results should be interpreted in correlation with the patients clinical history and other laboratory findings. Serum testing should be paired with CSF testing for improved diagnostic sensitivity.

This indirect fluorescent antibody assay utilizes full-length GluN1 transfected cell lines for the detection and semiquantification of NMDA receptor IgG antibody..

Synonyms:

- Anti-GluN1
- Anti-NMDA
- Anti-NR1
- Glutamate Receptor Antibodies
- N-Methyl D-Aspartate Ab
- NMDA R
- NMDA Receptor Ab
- NMDA Reflex
- NMDA Titer

Storage/Transport Temperature:
Refrigerated.

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

Reported:
1-5 days

CPT Codes:
86255; if reflexed, add 86256

LOINC:

- 80221-5

Notes:
If NMDA antibody IgG is positive, then an NMDA antibody IgG titer is reported. Additional charges apply.

N-Methylhistamine

NMHIN

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
LC-MS/MS

Reported:
3-7 days

Additional Information:
Screening for and monitoring of mastocytosis and disorders of systemic mast-cell activation, such as anaphylaxis and other forms of severe systemic allergic reactions

Monitoring therapeutic progress in conditions that are associated with secondary, localized, low-grade persistent, mast-cell proliferation and activation such as interstitial cystitis

Synonyms:

- 1-Methylhistamine
- Histamine Metabolites
- Urinary N-Methylhistamine

COLLECTION

Sample Type:
Urine

Collect:
Urine container

Amount to Collect:
5 mL

Preferred Volume:
5 mL

Minimum Volume:
3 mL

Remarks:
No preservative required.

Stability (from collection to initiation):
Refrigerated (preferred): 8 days
Frozen: 14 days
Ambient: 24 hours

PROCESSING

Test Code:
NMHIN

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Aliquot and freeze specimen. Transport to CB frozen. Order Mayo test code NMHIN.

Preferred Volume:
5 mL

Minimum Volume:
3 mL

Stability (from collection to initiation):
Refrigerated (preferred): 8 days
Frozen: 14 days
Ambient: 24 hours

RESULT INTERPRETATION

Units:
mcg/g Cr

Reference Interval:
30-200

Additional Information:
Screening for and monitoring of mastocytosis and disorders of systemic mast-cell activation, such as anaphylaxis and other forms of severe systemic allergic reactions

Monitoring therapeutic progress in conditions that are associated with secondary, localized, low-grade persistent, mast-cell proliferation and activation such as interstitial cystitis

ADMINISTRATIVE

CPT Codes:
82542-90

LOINC Codes:
44340-8

COMPLETE VIEW

Available Stat:
No

Test Code:
NMHIN

Performing Lab:
Mayo

Sendout:
Yes

Methodology:
LC-MS/MS

Remarks:
No preservative required.

Collect:
Urine container

Amount to Collect:
5 mL

Sample Type:
Urine

Preferred Volume:
5 mL

Minimum Volume:
3 mL

Specimen Preparation:
Aliquot and freeze specimen. Transport to CB frozen. Order Mayo test code NMHIN.

Units:
mcg/g Cr

Reference Interval:
30-200

Synonyms:

- 1-Methylhistamine
- Histamine Metabolites
- Urinary N-Methylhistamine

Stability (from collection to initiation):
Refrigerated (preferred): 8 days
Frozen: 14 days
Ambient: 24 hours

Reported:
3-7 days

Additional Information:

Screening for and monitoring of mastocytosis and disorders of systemic mast-cell activation, such as anaphylaxis and other forms of severe systemic allergic reactions

Monitoring therapeutic progress in conditions that are associated with secondary, localized, low-grade persistent, mast-cell proliferation and activation such as interstitial cystitis

CPT Codes:

82542-90

LOINC Codes:

44340-8

NMO/AQP-4 Antibody, IgG

NMO

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
ELISA

Reported:
1-2 weeks

Additional Information:
Neuromyelitis optica (NMO, sometimes called Devic disease) is a severe, relapsing, autoimmune, inflammatory and demyelinating central nervous system disease that predominantly affects optic nerves and the spinal cord. The disorder is now recognized as a spectrum of autoimmunity targeting the astrocytic water channel aquaporin-4 (AQP4). NMO spectrum disorders (NMOSD) may involve the brain and brainstem with symptoms of encephalopathy (particularly in children). The initial symptoms may be bouts of intractable nausea and vomiting. Magnetic resonance imaging typically reveals large inflammatory spinal cord lesions involving 3 or more vertebral segments. During acute attacks, the cerebrospinal fluid contains inflammatory cells, but usually lacks evidence of intrathecal IgG synthesis. The clinical course is characterized by relapses of optic neuritis or transverse myelitis, or both.

Prior to introducing a serological biomarker for NMO, the disorder was thought to be confined exclusively to the optic nerves and spinal cord, that the clinical course was monophasic and that NMO was a subset of multiple sclerosis (MS). The discovery of a highly specific disease marker for NMO (NMO-IgG/AQP4-IgG) helped to define the full clinical spectrum of NMOSD and to distinguish these disorders from MS. Attacks are often severe resulting in a rapid accumulation of disability (blindness and paraplegia). Within 5 years, 50% of patients lose functional vision in at least 1 eye or are unable to walk independently. Many patients with NMOSD are misdiagnosed as having MS. Importantly, the prognosis and optimal treatments for the 2 diseases differ. NMOSD typically has a worse natural history than MS, with frequent and early relapses. Treatments for NMOSD include corticosteroids and plasmapheresis for acute attacks and mycophenolate mofetil, azathioprine and rituximab for relapse prevention. Beta-interferon, a treatment promoted for MS, exacerbates NMOSD. Therefore, early diagnosis and initiation of NMO-appropriate immunosuppressant treatment is important to optimize the clinical outcome by preventing further attacks.

Detection of AQP4-IgG by enzyme-linked immunosorbent assay allows distinction of NMOSD (65%-77% are positive) from MS (0% positive), and is indicative of a relapsing disease, mandating initiation of immunosuppression, even after the first attack, thereby reducing attack frequency and disability in the future.

Synonyms:

- Devic disease
- Neuromyelitis optica
- NMO spectrum disorders

COLLECTION

Sample Type:
Serum or CSF

Collect:
Red top, Gold top, CSF tube or sterile collection tube

Amount to Collect:
6 mL blood
3 mL CSF

Preferred Volume:
3 mL serum or CSF

Minimum Volume:
2 mL serum or CSF

Stability (from collection to initiation):
Frozen, 2 weeks

PROCESSING

Test Code:
NMO

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Freeze serum and ship to China Basin frozen

Preferred Volume:
3 mL serum or CSF

Minimum Volume:
2 mL serum or CSF

Stability (from collection to initiation):
Frozen, 2 weeks

RESULT INTERPRETATION

Units:
U/mL

Reference Interval:
< 1.6 U/mL

Additional Information:
Neuromyelitis optica (NMO, sometimes called Devic disease) is a severe, relapsing, autoimmune, inflammatory and demyelinating central nervous system disease that predominantly affects optic nerves and the spinal cord. The disorder is now recognized as a spectrum of autoimmunity targeting the astrocytic water channel aquaporin-4 (AQP4). NMO spectrum disorders (NMOSD) may involve the brain and brainstem with symptoms of encephalopathy (particularly in children). The initial symptoms may be bouts of intractable nausea and vomiting. Magnetic resonance imaging typically reveals large inflammatory spinal cord lesions involving 3 or more vertebral segments. During acute attacks, the cerebrospinal fluid contains inflammatory cells, but usually lacks evidence of intrathecal IgG synthesis. The clinical course is characterized by relapses of optic neuritis or transverse myelitis, or both.

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Detection of AQP4-IgG by enzyme-linked immunosorbent assay allows distinction of NMOSD (65%-77% are positive) from MS (0% positive), and is indicative of a relapsing disease, mandating initiation of immunosuppression, even after the first attack, thereby reducing attack frequency and disability in the future.

ADMINISTRATIVE

CPT Codes:
83520-90

COMPLETE VIEW

Available Stat:
No

Test Code:
NMO

Performing Lab:
Mayo

Sendout:
Yes

Methodology:
ELISA

Collect:
Red top, Gold top, CSF tube or sterile collection tube

Amount to Collect:
6 mL blood
3 mL CSF

Sample Type:
Serum or CSF

Preferred Volume:
3 mL serum or CSF

Minimum Volume:
2 mL serum or CSF

Specimen Preparation:
Freeze serum and ship to China Basin frozen

Units:
U/mL

Reference Interval:
< 1.6 U/mL

Synonyms:

- Devic disease
- Neuromyelitis optica
- NMO spectrum disorders

Stability (from collection to initiation):
Frozen, 2 weeks

Reported:
1-2 weeks

Additional Information:
Neuromyelitis optica (NMO, sometimes called Devic disease) is a severe, relapsing, autoimmune, inflammatory and demyelinating central nervous system disease that predominantly affects optic nerves and the spinal cord. The disorder is now recognized as a spectrum of autoimmunity targeting the astrocytic water channel aquaporin-4 (AQP4). NMO spectrum disorders (NMOSD) may involve the brain and brainstem with symptoms of encephalopathy (particularly in children). The initial symptoms may be bouts of intractable nausea and vomiting. Magnetic resonance imaging typically reveals large inflammatory spinal cord lesions involving 3 or more vertebral segments. During acute attacks, the cerebrospinal fluid contains inflammatory cells, but usually lacks evidence of intrathecal IgG synthesis. The clinical course is characterized by relapses of optic neuritis or transverse myelitis, or both.

Prior to introducing a serological biomarker for NMO, the disorder was thought to be confined exclusively to the optic nerves and spinal cord, that the clinical course was monophasic and that NMO was a subset of multiple sclerosis (MS). The discovery of a highly specific disease marker for NMO (NMO-IgG/AQP4-IgG) helped to define the full clinical spectrum of NMOSD and to distinguish these disorders from MS. Attacks are often severe resulting in a rapid accumulation of disability (blindness and paraplegia). Within 5 years, 50% of patients lose functional vision in at least 1 eye or are unable to walk independently. Many patients with NMOSD are misdiagnosed as having MS. Importantly, the prognosis and optimal treatments for the 2 diseases differ. NMOSD typically has a worse natural history than MS, with frequent and early relapses. Treatments for NMOSD include corticosteroids and plasmapheresis for acute attacks and mycophenolate mofetil, azathioprine and rituximab for relapse prevention. Beta-interferon, a treatment promoted for MS, exacerbates NMOSD. Therefore, early diagnosis and initiation of NMO-appropriate immunosuppressant treatment is important to optimize the clinical outcome by preventing further attacks.

Detection of AQP4-IgG by enzyme-linked immunosorbent assay allows distinction of NMOSD (65%-77% are positive) from MS (0% positive), and is indicative of a relapsing disease, mandating initiation of immunosuppression, even after the first attack, thereby reducing attack frequency and disability in the future.

CPT Codes:
83520-90

Norovirus RNA

P380

ORDERING

Ordering Recommendations:
Patient testing for norovirus is included in Gastrointestinal Pathogen Panel PCR. Norovirus PCR may be ordered and sent by the microbiology laboratory in conjunction with Infection Control as part of exposure workup.

Available Stat:
No

Performing Lab:
Viracor

Methodology:
RT-PCR, Qualitative

Reported:
Turnaround time 2-5 days

Additional Information:
This assay differentiates between Norovirus Group I and Group II. Genogroup I and Genogroup II assays show slight cross-reactivity with high titers of Norovirus Genotype IV RNA.

Synonyms:

- Norwalk-like virus

COLLECTION

Sample Type:
Stool

Collect:
Clean container (urine cup)

Amount to Collect:
2 mL

Preferred Volume:
2 mL

Minimum Volume:
Pea size of formed stool or 2 mL of liquid stool

Remarks:
Submit stool sample in clean container. Do NOT collect stool in preservative.

Stability (from collection to initiation):
Room temp or refrigerated 96 hours, frozen 1 month.

Rejection Criteria:
Stool received in preservative

PROCESSING

Test Code:
P380

Sendout:
Yes

Performing Lab:
Viracor

Specimen Preparation:
Specimen sent out by Microbiology. Freeze specimen and ship frozen. Seal lid of container with parafilm to prevent leakage during transit. Order Viracor test # 2400

Preferred Volume:
2 mL

Minimum Volume:
Pea size of formed stool or 2 mL of liquid stool

Rejection Criteria:
Stool received in preservative

Stability (from collection to initiation):
Room temp or refrigerated 96 hours, frozen 1 month.

RESULT INTERPRETATION

Reference Interval:
Not detected

Additional Information:
This assay differentiates between Norovirus Group I and Group II. Genogroup I and Genogroup II assays show slight cross-reactivity with high titers of Norovirus Genotype IV RNA.

ADMINISTRATIVE

CPT Codes:
87798-90 x2

LOINC Codes:
56748-7

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Patient testing for norovirus is included in Gastrointestinal Pathogen Panel PCR. Norovirus PCR may be ordered and sent by the microbiology laboratory in conjunction with Infection Control as part of exposure workup.

Test Code:
P380

Performing Lab:
Viracor

Sendout:
Yes

Methodology:
RT-PCR, Qualitative

Remarks:
Submit stool sample in clean container. Do NOT collect stool in preservative.

Collect:
Clean container (urine cup)

Amount to Collect:
2 mL

Sample Type:
Stool

Preferred Volume:
2 mL

Minimum Volume:
Pea size of formed stool or 2 mL of liquid stool

Rejection Criteria:
Stool received in preservative

Specimen Preparation:
Specimen sent out by Microbiology. Freeze specimen and ship frozen. Seal lid of container with parafilm to prevent leakage during transit. Order Viracor test # 2400

Reference Interval:
Not detected

Synonyms:

- Norwalk-like virus

Stability (from collection to initiation):
Room temp or refrigerated 96 hours, frozen 1 month.

Reported:
Turnaround time 2-5 days

Additional Information:
This assay differentiates between Norovirus Group I and Group II. Genogroup I and Genogroup II assays show slight cross-reactivity with high titers of Norovirus Genotype IV RNA.

CPT Codes:
87798-90 x2

LOINC Codes:
56748-7

Nortriptyline

NRT

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Liquid Chromatography Tandem Mass Spectrometry

Reported:
Test performed Monday-Saturday. Turnaround time: 2-5 days.

Synonyms:

- Aventyl

COLLECTION

Sample Type:
Serum

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
8 mL blood

Preferred Volume:
4 mL serum

Minimum Volume:
1.5 mL serum

Unacceptable Conditions:
Sample collected in Gold top

PROCESSING

Test Code:
NRT

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
If both Nortriptyline and Amitriptyline (Elavil) are requested, order Amitriptyline (AMTR) only.

Separate serum promptly. Refrigerate. Order Quest # 272

Preferred Volume:
4 mL serum

Minimum Volume:
1.5 mL serum

Unacceptable Conditions:
Sample collected in Gold top

RESULT INTERPRETATION

Units:
µg/L (mcg/L)

Reference Interval:
Therapeutic: 50-150 µg/L
Potentially toxic: > 500 µg/L

Critical Values:
Quest Priority-1: >= 500 µg/L

ADMINISTRATIVE

CPT Codes:
80335-90

LOINC Codes:
3872-9

COMPLETE VIEW

Available Stat:
No

Test Code:
NRT

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Liquid Chromatography Tandem Mass Spectrometry

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
8 mL blood

Sample Type:
Serum

Preferred Volume:
4 mL serum

Minimum Volume:
1.5 mL serum

Unacceptable Conditions:
Sample collected in Gold top

Specimen Preparation:
If both Nortriptyline and Amitriptyline (Elavil) are requested, order Amitriptyline (AMTR) only.

Separate serum promptly. Refrigerate. Order Quest # 272

Units:
µg/L (mcg/L)

Reference Interval:
Therapeutic: 50-150 µg/L
Potentially toxic: > 500 µg/L

Critical Values:
Quest Priority-1: >= 500 µg/L

Synonyms:

- Aventyl

Reported:
Test performed Monday-Saturday. Turnaround time: 2-5 days.

CPT Codes:
80335-90

LOINC Codes:
3872-9

NPM1 Exon 12 Mutations, Qualitative

NPM1

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Molecular Diagnostics

Performed:
Run 1st and 3rd Tuesday of every month, day shift only

Methodology:
Fluorescent PCR with analysis by capillary electrophoresis

Reported:
10-14 days

Additional Information:
Mutations in exon 12 of NPM1 are the most frequent molecular alterations in AML with normal karyotype, found in 60% of AML cases (one third of adult cases). This mutation causes mislocalization of NPM1 and its aberrant accumulation in the cytoplasm. NPM1 mutations are associated with other recurrent genetic changes, including chromosome abnormalities such as +8, +4, del(9q), and additional gene mutations, most importantly in FLT3.

Prognosis of cytogenetically normal AML with NPM1 mutations, particularly in the absence of FLT3 internal tandem duplication (ITD) mutation, is favorable when treated with high dose daunorubicin chemotherapy (Patel et al, N Engl J Med. 2012).

Results from this test do not exclude the presence of NPM1 mutations below the detection limit of this assay (2.5%), or the presence of other NPM1 mutations not detected by this assay. Results of this test should be interpreted within the clinical context to determine whether additional testing is necessary. This test is not intended to detect minimal residual disease.

This test was developed and its performance characteristics determined by the UCSF Clinical Laboratories. It has not been cleared or approved by the Food and Drug Administration. The FDA has determined that such clearance or approval is not necessary. This test is used for clinical purposes. It should not be regarded as investigational or for research. This laboratory is certified under the Clinical Laboratory Improvement Amendments of 1988 (CLIA-88) as qualified to perform high complexity clinical laboratory testing.

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Synonyms:

- Nucleophosmin
- nucleolar phosphoprotein B23
- numatrin
- NPM-1

COLLECTION

Sample Type:
Blood, bone marrow aspirate, FFPE sections

Collect:
Lavender top (EDTA)

Amount to Collect:
Blood: 5 mL
Bone marrow aspirate: 3 mL
FFPE: 10 micron sections x5 on uncharged, unstained, glass slides plus one H&E stained section

Preferred Volume:
Blood: 5 mL
Bone marrow aspirate: 3 mL
?FFPE: 10 micron sections x5 on uncharged, unstained, glass slides plus one H&E stained section

Minimum Volume:
Blood: 2 mL
Bone marrow aspirate: 3 mL
?FFPE: 10 micron sections x3 on uncharged, unstained, glass slides plus one H&E stained section

Remarks:
Avoid hemolysis. Due to stability issues these samples should only be collected at UCSF Monday through noon Friday.

Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 1 week, frozen unacceptable.

PROCESSING

Test Code:
NPM1

Test Group:
AML molecular markers

Performing Lab:
Medical Genomics - Molecular Diagnostics

Specimen Preparation:
Do not freeze blood or bone marrow samples. Ship to CB as soon as possible.

Preferred Volume:
Blood: 5 mL
Bone marrow aspirate: 3 mL
?FFPE: 10 micron sections x5 on uncharged, unstained, glass slides plus one H&E stained section

Minimum Volume:
Blood: 2 mL
Bone marrow aspirate: 3 mL
?FFPE: 10 micron sections x3 on uncharged, unstained, glass slides plus one H&E stained section

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 1 week, frozen unacceptable.

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
Mutations in exon 12 of NPM1 are the most frequent molecular alterations in AML with normal karyotype, found in 60% of AML cases (one third of adult cases). This mutation causes mislocalization of NPM1 and its aberrant accumulation in the cytoplasm. NPM1 mutations are associated with other recurrent genetic changes, including chromosome abnormalities such as +8, +4, del(9q), and additional gene mutations, most importantly in FLT3.

Prognosis of cytogenetically normal AML with NPM1 mutations, particularly in the absence of FLT3 internal tandem duplication (ITD) mutation, is favorable when treated with high dose daunorubicin chemotherapy (Patel et al, N Engl J Med. 2012).

Results from this test do not exclude the presence of NPM1 mutations below the detection limit of this assay (2.5%), or the presence of other NPM1 mutations not detected by this assay. Results of this test should be interpreted within the clinical context to determine whether additional testing is necessary. This test is not intended to detect minimal residual disease.

This test was developed and its performance characteristics determined by the UCSF Clinical Laboratories. It has not been cleared or approved by the Food and Drug Administration. The FDA has determined that such clearance or approval is not necessary. This test is used for clinical purposes. It should not be regarded as investigational or for research. This laboratory is certified under the Clinical Laboratory Improvement Amendments of 1988 (CLIA-88) as qualified to perform high complexity clinical laboratory testing.

ADMINISTRATIVE

CPT Codes:
81310

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
NPM1

Test Group:
AML molecular markers

Performing Lab:
Medical Genomics - Molecular Diagnostics

Performed:
Run 1st and 3rd Tuesday of every month, day shift only

Methodology:
Fluorescent PCR with analysis by capillary electrophoresis

Remarks:

Avoid hemolysis. Due to stability issues these samples should only be collected at UCSF Monday through noon Friday.

Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Collect:

Lavender top (EDTA)

Amount to Collect:

Blood: 5 mL
Bone marrow aspirate: 3 mL
FFPE: 10 micron sections x5 on uncharged, unstained, glass slides plus one H&E stained section

Sample Type:

Blood, bone marrow aspirate, FFPE sections

Preferred Volume:

Blood: 5 mL
Bone marrow aspirate: 3 mL
?FFPE: 10 micron sections x5 on uncharged, unstained, glass slides plus one H&E stained section

Minimum Volume:

Blood: 2 mL
Bone marrow aspirate: 3 mL
?FFPE: 10 micron sections x3 on uncharged, unstained, glass slides plus one H&E stained section

Specimen Preparation:

Do not freeze blood or bone marrow samples. Ship to CB as soon as possible.

Reference Interval:

Negative

Synonyms:

- Nucleophosmin
- nucleolar phosphoprotein B23
- numatrin
- NPM-1

Stability (from collection to initiation):

Room temperature 3 days, refrigerated 1 week, frozen unacceptable.

Reported:

10-14 days

Reflex Testing:

An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Additional Information:

Mutations in exon 12 of NPM1 are the most frequent molecular alterations in AML with normal karyotype, found in 60% of AML cases (one third of adult cases). This mutation causes mislocalization of NPM1 and its aberrant accumulation in the cytoplasm. NPM1 mutations are associated with other recurrent genetic changes, including chromosome abnormalities such as +8, +4, del(9q), and additional gene mutations, most importantly in FLT3.

Prognosis of cytogenetically normal AML with NPM1 mutations, particularly in the absence of FLT3 internal tandem duplication (ITD) mutation, is favorable when treated with high dose daunorubicin chemotherapy (Patel et al, N Engl J Med. 2012).

Results from this test do not exclude the presence of NPM1 mutations below the detection limit of this assay (2.5%), or the presence of other NPM1 mutations not detected by this assay. Results of this test should be interpreted within the clinical context to determine whether additional testing is necessary. This test is not intended to detect minimal residual disease.

This test was developed and its performance characteristics determined by the UCSF Clinical Laboratories. It has not been cleared or approved by the Food and Drug Administration. The FDA has determined that such clearance or approval is not necessary. This test is used for clinical purposes. It should not be regarded as investigational or for research. This laboratory is certified under the Clinical Laboratory Improvement Amendments of 1988 (CLIA-88) as qualified to perform high complexity clinical laboratory testing.

CPT Codes:

81310

LDT or Modified FDA:

Yes

N-Telopeptide, 24 hour urine

MOLT

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Enhanced Chemiluminescence

Reported:
Test run Tuesday-Sunday Turnaround time: 2-6 days.

Additional Information:
This assay reflects breakdown of bone matrix by collagenase. A value within the premenopausal range does not exclude osteoporosis or the need for therapy.

Results are primarily of use in monitoring the response to treatment. A decline of >= 30% following 6 months of estrogen replacement therapy is indicative of a positive therapeutic response in postmenopausal women and in 88% of women was associated with maintained or increased bone mineral density

Ref: Chestnut CH et al. Amer J Med 1997;192:29

Synonyms:

- Collagen-Crosslinked
- Bone markers
- osteoporosis

COLLECTION

Sample Type:
24 hour urine collection

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container

Amount to Collect:
Entire 24 hour urine output

Preferred Volume:
2 mL urine

Minimum Volume:
1 mL urine

Remarks:
For 24 hour specimen keep container refrigerated during collection.

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 5 days, frozen at -20C 1 month

Unacceptable Conditions:
Preserved or acidified sample. 24 hour collection container not refrigerated during collection.

PROCESSING

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot 2 mL and freeze at -20C. Order Quest #36421X

Preferred Volume:
2 mL urine

Minimum Volume:
1 mL urine

Unacceptable Conditions:
Preserved or acidified sample. 24 hour collection container not refrigerated during collection.

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 5 days, frozen at -20C 1 month

RESULT INTERPRETATION

Units:
nmol BCE/mmol creatinine

Reference Interval:

>= 18 year old premenopausal females	5-79 nmol BCE/mmol creatinine

>= 18 year old males:

18-29 years	5-88 nmol BCE/mmol creatinine
30-39 years	7-51 nmol BCE/mmol creatinine
40-49 years	5-47 nmol BCE/mmol creatinine
50-60 years	6-43 nmol BCE/mmol creatinine

Additional Information:
This assay reflects breakdown of bone matrix by collagenase. A value within the premenopausal range does not exclude osteoporosis or the need for therapy.

Results are primarily of use in monitoring the response to treatment. A decline of >= 30% following 6 months of estrogen replacement therapy is indicative of a positive therapeutic response in postmenopausal women and in 88% of women was associated with maintained or increased bone mineral density

Ref: Chestnut CH et al. Amer J Med 1997;192:29

ADMINISTRATIVE

CPT Codes:
82523-90

COMPLETE VIEW

Available Stat:
No

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Enhanced Chemiluminescence

Remarks:
For 24 hour specimen keep container refrigerated during collection.

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container

Amount to Collect:
Entire 24 hour urine output

Sample Type:
24 hour urine collection

Preferred Volume:
2 mL urine

Minimum Volume:
1 mL urine

Unacceptable Conditions:
Preserved or acidified sample. 24 hour collection container not refrigerated during collection.

Specimen Preparation:
Aliquot 2 mL and freeze at -20C. Order Quest #36421X

Units:
nmol BCE/mmol creatinine

Reference Interval:

>= 18 year old premenopausal females	5-79 nmol BCE/mmol creatinine

>= 18 year old males:

18-29 years	5-88 nmol BCE/mmol creatinine
30-39 years	7-51 nmol BCE/mmol creatinine
40-49 years	5-47 nmol BCE/mmol creatinine
50-60 years	6-43 nmol BCE/mmol creatinine

Synonyms:

- Collagen-Crosslinked
- Bone markers
- osteoporosis

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 5 days, frozen at -20C 1 month

Reported:
Test run Tuesday-Sunday Turnaround time: 2-6 days.

Additional Information:
This assay reflects breakdown of bone matrix by collagenase. A value within the premenopausal range does not exclude osteoporosis or the need for therapy.

Results are primarily of use in monitoring the response to treatment. A decline of >= 30% following 6 months of estrogen replacement therapy is indicative of a positive therapeutic response in postmenopausal women and in 88% of women was associated with maintained or increased bone mineral density

Ref: Chestnut CH et al. Amer J Med 1997;192:29

CPT Codes:
82523-90

N-Telopeptide, random urine

NTX

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Enhanced Chemiluminescence

Reported:
Test run Tuesday-Sunday Turnaround time: 2-6 days.

Additional Information:
This assay reflects breakdown of bone matrix by collagenase. A value within the premenopausal range does not exclude osteoporosis or the need for therapy.

Results are primarily of use in monitoring the response to treatment. A decline of >= 30% following 6 months of estrogen replacement therapy is indicative of a positive therapeutic response in postmenopausal women and in 88% of women was associated with maintained or increased bone mineral density

Ref: Chestnut CH et al. Amer J Med 1997;192:29

Synonyms:

- Collagen-Crosslinked
- Bone markers
- osteoporosis

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
Random urine

Preferred Volume:
2 mL urine

Minimum Volume:
1 mL urine

Remarks:
The preferred sample is a second void urine. have patient void first morning urine and collected second void.

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 5 days, frozen at -20C 1 month

Unacceptable Conditions:
Preserved or acidified sample.

PROCESSING

Test Code:
NTX

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot 2 mL and freeze at -20C. Order Quest #36167X

Preferred Volume:
2 mL urine

Minimum Volume:
1 mL urine

Unacceptable Conditions:
Preserved or acidified sample.

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 5 days, frozen at -20C 1 month

RESULT INTERPRETATION

Units:
nmol BCE/mmol creatinine (BCE = Bone Collagen Equivalents)

Reference Interval:
Pediatric:

0-6 months	2-32 nmol BCE/mmol creatinine
7-11 months	2-36 nmol BCE/mmol creatinine
1-2 years	2-128 nmol BCE/mmol creatinine
3-8 years	2-149 nmol BCE/mmol creatinine
9-12 years	2-183 nmol BCE/mmol creatinine
12-18 years male	20-370 nmol BCE/mmol creatinine
> 12 years female	20-320 nmol BCE/mmol creatinine

Premenopausal Females	4-64 nmol BCE/mmol creatinine

Males:

18-29 years	12-99 nmol BCE/mmol creatinine
30-59 years	9-60 nmol BCE/mmol creatinine

Additional Information:
This assay reflects breakdown of bone matrix by collagenase. A value within the premenopausal range does not exclude osteoporosis or the need for therapy.

Results are primarily of use in monitoring the response to treatment. A decline of >= 30% following 6 months of estrogen replacement therapy is indicative of a positive therapeutic response in postmenopausal women and in 88% of women was associated with maintained or increased bone mineral density

Ref: Chestnut CH et al. Amer J Med 1997;192:29

ADMINISTRATIVE

CPT Codes:
82523-90

LOINC Codes:
14115-0

COMPLETE VIEW

Available Stat:
No

Test Code:
NTX

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Enhanced Chemiluminescence

Remarks:
The preferred sample is a second void urine. have patient void first morning urine and collected second void.

Collect:
Urine cup

Amount to Collect:
Random urine

Sample Type:
Random urine

Preferred Volume:
2 mL urine

Minimum Volume:
1 mL urine

Unacceptable Conditions:
Preserved or acidified sample.

Specimen Preparation:
Aliquot 2 mL and freeze at -20C. Order Quest #36167X

Units:
nmol BCE/mmol creatinine (BCE = Bone Collagen Equivalents)

Reference Interval:
Pediatric:

0-6 months	2-32 nmol BCE/mmol creatinine
7-11 months	2-36 nmol BCE/mmol creatinine
1-2 years	2-128 nmol BCE/mmol creatinine
3-8 years	2-149 nmol BCE/mmol creatinine
9-12 years	2-183 nmol BCE/mmol creatinine
12-18 years male	20-370 nmol BCE/mmol creatinine
> 12 years female	20-320 nmol BCE/mmol creatinine

Premenopausal Females	4-64 nmol BCE/mmol creatinine

Males:

18-29 years	12-99 nmol BCE/mmol creatinine
30-59 years	9-60 nmol BCE/mmol creatinine

Synonyms:

- Collagen-Crosslinked
- Bone markers
- osteoporosis

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 5 days, frozen at -20C 1 month

Reported:
Test run Tuesday-Sunday Turnaround time: 2-6 days.

Additional Information:
This assay reflects breakdown of bone matrix by collagenase. A value within the premenopausal range does not exclude osteoporosis or the need for therapy.

Results are primarily of use in monitoring the response to treatment. A decline of >= 30% following 6 months of estrogen replacement therapy is indicative of a positive therapeutic response in postmenopausal women and in 88% of women was associated with maintained or increased bone mineral density

Ref: Chestnut CH et al. Amer J Med 1997;192:29

CPT Codes:
82523-90

LOINC Codes:
14115-0

NTRK3 Break Apart Rearrangement FISH

BNTRK3, NTRK3

ORDERING

Available Stat:
No

Performing Lab:
Cytogenetics

Performed:
Mon-Fri 9 am to 5 pm

Methodology:
FISH

Reported:
7-14 days

Synonyms:

- BNTRK3
- NTRK3
- NTRK3 15q25.3 BA FISH

COLLECTION

Sample Type:
Blood, bone marrow aspirate, bone marrow core

Collect:
Blood: Dark Green Top Sodium Heparin tube for Blood
Bone marrow: Dark Green Top Sodium Heparin tube for Bone Marrow, Sterile container with medium for Bone Core

Amount to Collect:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Room Temperature

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

PROCESSING

Test Code:
Blood: BNTRK3
Bone marrow: NTRK3

Performing Lab:
Cytogenetics

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Room Temperature

ADMINISTRATIVE

CPT Codes:
88271x2, 88275x1

COMPLETE VIEW

Available Stat:
No

Test Code:
Blood: BNTRK3
Bone marrow: NTRK3

Performing Lab:
Cytogenetics

Performed:
Mon-Fri 9 am to 5 pm

Methodology:
FISH

Collect:
Blood: Dark Green Top Sodium Heparin tube for Blood
Bone marrow: Dark Green Top Sodium Heparin tube for Bone Marrow, Sterile container with medium for Bone Core

Amount to Collect:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Sample Type:
Blood, bone marrow aspirate, bone marrow core

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

Synonyms:

- BNTRK3
- NTRK3
- NTRK3 15q25.3 BA FISH

Storage/Transport Temperature:
Room Temperature

Stability (from collection to initiation):
2 days

Reported:
7-14 days

CPT Codes:
88271x2, 88275x1

Nucleated Bone Marrow Cell Count

BMNC

ORDERING

Available Stat:
No

Performing Lab:
Parnassus Hematology

Performed:
Test available 24 hours per day 7 days per week

Reported:
15 min

Additional Information:
Available stat for determining the adequacy of bone marrow collection for storage and transplantation

COLLECTION

Sample Type:
Heparinized Bone marrow

Collect:
Dark green top

PROCESSING

Test Code:
BMNC

Performing Lab:
Parnassus Hematology

Specimen Preparation:
Deliver immediately to Hematology.

RESULT INTERPRETATION

Reference Interval:
Anticoagulated bone marrow sample (usually heparinized and submitted in a Red top)

Additional Information:
Available stat for determining the adequacy of bone marrow collection for storage and transplantation

ADMINISTRATIVE

CPT Codes:
85048

LOINC Codes:
55792-6

COMPLETE VIEW

Available Stat:
No

Test Code:
BMNC

Performing Lab:
Parnassus Hematology

Performed:
Test available 24 hours per day 7 days per week

Collect:
Dark green top

Sample Type:
Heparinized Bone marrow

Specimen Preparation:
Deliver immediately to Hematology.

Reference Interval:
Anticoagulated bone marrow sample (usually heparinized and submitted in a Red top)

Reported:
15 min

Additional Information:
Available stat for determining the adequacy of bone marrow collection for storage and transplantation

CPT Codes:
85048

LOINC Codes:
55792-6

NUP 98 Break-apart Rearrangement FISH

NUP98, BNUP98

ORDERING

Available Stat:
No

Performing Lab:
Cytogenetics

Performed:
Monday - Friday, 9 am to 5 pm

Methodology:
FISH

Reported:
7-14 days

Synonyms:

- NUP98
- BNUP98
- NUP98 11p15 Break-apart FISH

COLLECTION

Sample Type:
Blood, bone marrow aspirate, bone marrow core

Collect:
Blood and bone marrow aspirate: Dark green top (sodium heparin)
Bone marrow core: Sterile container

Amount to Collect:
See Preferred Volume

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Room temperature

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

PROCESSING

Test Code:
Blood: BNUP98
Bone marrow: NUP98

Performing Lab:
Cytogenetics

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Room temperature

ADMINISTRATIVE

CPT Codes:
88271x2, 88275x1

COMPLETE VIEW

Available Stat:
No

Test Code:
Blood: BNUP98
Bone marrow: NUP98

Performing Lab:
Cytogenetics

Performed:
Monday - Friday, 9 am to 5 pm

Methodology:
FISH

Collect:
Blood and bone marrow aspirate: Dark green top (sodium heparin)
Bone marrow core: Sterile container

Amount to Collect:
See Preferred Volume

Sample Type:
Blood, bone marrow aspirate, bone marrow core

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

Synonyms:

- NUP98
- BNUP98
- NUP98 11p15 Break-apart FISH

Storage/Transport Temperature:
Room temperature

Stability (from collection to initiation):
2 days

Reported:
7-14 days

CPT Codes:
88271x2, 88275x1

Oligoclonal Bands in CSF and Serum

OLIGOB, OLIGS

ORDERING

Ordering Recommendations:
May be used in the assessment of multiple sclerosis to detect unique IgG oligoclonal bands in cerebrospinal fluid (CSF) in conjunction with a matched serum specimen. The preferred test to assess for multiple sclerosis is Oligoclonal Band Profile (0080440).

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Qualitative Isoelectric Focusing/Electrophoresis

Reported:
1-3 days

Synonyms:

- CSF oligoclonal bands
- Oligoclonal Bands Only
- Oligoclonal IgG, CSF
- Oliogoclonal bands, CSF
- OLIGOB
- OLIGS

COLLECTION

Sample Type:
CSF AND Serum

Collect:
CSF AND serum separator tube or plain red.

Preferred Volume:
CSF: 1.5 mL
Serum: 1 mL

Minimum Volume:
CSF: 0.7 mL
Serum: 0.6 mL

Remarks:
Recommendation is for CSF and serum to be collected within 24 hours of each other. Specimens collected outside this timeframe will be accepted at ordering provider's discretion.

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 2 weeks; Frozen: 6 months

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Grossly bloody or hemolyzed specimens or severe lipemia

PROCESSING

Test Code:
OLIGOB: CSF
OLIGS: Serum

ARUP Test Code:
0081135

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Allow serum to clot completely at room temperature. Separate serum from cells ASAP or within 2 hours of collection. Transport two specimens. Transfer 1.5 mL CSF to an ARUP standard transport tube (Min: 0.7 mL) AND transfer 1 mL serum to an ARUP standard transport tube. (Min: 0.6 mL).

Preferred Volume:
CSF: 1.5 mL
Serum: 1 mL

Minimum Volume:
CSF: 0.7 mL
Serum: 0.6 mL

Unacceptable Conditions:
Grossly bloody or hemolyzed specimens or severe lipemia

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 2 weeks; Frozen: 6 months

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:
Effective August 6, 2012

Components	Reference Interval
Oligoclonal Bands, CSF	Negative
Oligoclonal Bands Number, CSF	0 - 1 Bands
Interpretation	By report

Interpretive Data:
To ensure accurate result interpretation, it is recommended that both CSF and serum specimens be collected on the same day. If specimens are not collected within this specified timeframe, it is advised to exercise caution when interpreting the results.

ADMINISTRATIVE

CPT Codes:
83916

LOINC:

- 49852-7
- 49293-4
- 48668-8

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
May be used in the assessment of multiple sclerosis to detect unique IgG oligoclonal bands in cerebrospinal fluid (CSF) in conjunction with a matched serum specimen. The preferred test to assess for multiple sclerosis is Oligoclonal Band Profile (0080440).

Test Code:
OLIGOB: CSF
OLIGS: Serum

ARUP Test Code:
0081135

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Qualitative Isoelectric Focusing/Electrophoresis

Remarks:
Recommendation is for CSF and serum to be collected within 24 hours of each other. Specimens collected outside this timeframe will be accepted at ordering provider's discretion.

Collect:
CSF AND serum separator tube or plain red.

Sample Type:
CSF AND Serum

Preferred Volume:
CSF: 1.5 mL
Serum: 1 mL

Minimum Volume:
CSF: 0.7 mL
Serum: 0.6 mL

Unacceptable Conditions:
Grossly bloody or hemolyzed specimens or severe lipemia

Specimen Preparation:
Allow serum to clot completely at room temperature. Separate serum from cells ASAP or within 2 hours of collection. Transport two specimens. Transfer 1.5 mL CSF to an ARUP standard transport tube (Min: 0.7 mL) AND transfer 1 mL serum to an ARUP standard transport tube. (Min: 0.6 mL).

Reference Interval:
Effective August 6, 2012

Components	Reference Interval
Oligoclonal Bands, CSF	Negative
Oligoclonal Bands Number, CSF	0 - 1 Bands
Interpretation	By report

Interpretive Data:
To ensure accurate result interpretation, it is recommended that both CSF and serum specimens be collected on the same day. If specimens are not collected within this specified timeframe, it is advised to exercise caution when interpreting the results.

Synonyms:

- CSF oligoclonal bands
- Oligoclonal Bands Only
- Oligoclonal IgG, CSF
- Oliogoclonal bands, CSF
- OLIGOB
- OLIGS

Storage/Transport Temperature:
Refrigerated.

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 2 weeks; Frozen: 6 months

Reported:
1-3 days

CPT Codes:
83916

LOINC:

- 49852-7
- 49293-4
- 48668-8

Notes:
Specimens must be assayed together for interpretation.
This test reports only the number of oligoclonal bands; a patient is considered positive for CSF oligoclonal bands if there are two or more bands in the CSF immunoglobulin region that are not present in the serum. In order to confirm local production of oligoclonal IgG in CSF, a matched serum sample is required. Oligoclonal bands present in CSF, but not in serum, indicate central nervous system production. Oligoclonal bands are performed using isoelectric focusing and immunofixation.

Oligosaccharides

OSTLC

ORDERING

Available Stat:
No

Performing Lab:
Stanford Hospital Clinical Laboratory

Methodology:
Mass Spectometry

Reported:
Turnaround time 5-7 days

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
10 mL urine

Preferred Volume:
2 mL urine

Minimum Volume:
1 mL urine

Remarks:
Transport immediately to lab for processing

Rejection Criteria:
Received thawed

PROCESSING

Test Code:
OSTLC

Sendout:
Yes

Performing Lab:
Stanford Hospital Clinical Laboratory

Specimen Preparation:
Freeze urine immediately at -20C and transport frozen.

Preferred Volume:
2 mL urine

Minimum Volume:
1 mL urine

Rejection Criteria:
Received thawed

ADMINISTRATIVE

CPT Codes:
84375-90

COMPLETE VIEW

Available Stat:
No

Test Code:
OSTLC

Performing Lab:
Stanford Hospital Clinical Laboratory

Sendout:
Yes

Methodology:
Mass Spectometry

Remarks:
Transport immediately to lab for processing

Collect:
Urine cup

Amount to Collect:
10 mL urine

Sample Type:
Random urine

Preferred Volume:
2 mL urine

Minimum Volume:
1 mL urine

Rejection Criteria:
Received thawed

Specimen Preparation:
Freeze urine immediately at -20C and transport frozen.

Reported:
Turnaround time 5-7 days

CPT Codes:
84375-90

Opiates Screen, Urine

OPI

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Homogeneous competitive enzyme immunoassay

Reported:
Stat 2 hours, Routine 4 hours

Additional Information:
Morphine can be detected within 11-54 hours after use and can be detected as long as 11 days after use. (From: Verstraete AG. Detection Times of Drugs of Abuse in Blood, Urine and Oral Fluid. Ther Drug Monit, 26(2) April 2004, 200-205)

A concentration of < 300 µg/L is considered negative by this test. A positive result is >= 300 µg/L and indicates the presence of this class of drugs. This immunoassay is only a screening test and is not definitive. Results cannot be used for medico-legal purposes.

This is a presumptive screen for possible heroin or morphine use within the past 1-2 days. It may also detect morphine from the metabolism of codeine or morphine and codeine from the consumption of poppy seeds.

False positive results may occur due to other cross reacting substances, however, positive results are NOT routinely confirmed by a second method. If confirmation of the test result is required, it is the responsibility of the physician to separately order a specific confirmatory test for the drug identified. Samples are held for 7 days. Contact laboratory at x 31667 to request confirmatory testing. Confirmation test code OPIQNT.

Click here for List of Cross Reactive Substances

The assay is not sensitive in detecting most prescribed opiates such as hydrocodone, hydromorphone, oxycodone and oxymorphone. A separate oxycodone screen is available at UCSF (test code: OXYU) that detects oxycodone and oxymorphone. If hydrocodone or hydromorphone use is suspected, an opiate confirmation should be ordered from ARUP (test code: OPIQNT).

False negative results may also occur as use of synthetic and some semi-synthetic opiates cannot be ruled out by this assay. Specifically, this assay will not detect use of fentanyl, methadone, meperidine or tramadol. A separate methadone screen is available at UCSF (test code: METHA). If use of opiates not detected by this screen is suspected, immunoassay screens can be ordered from ARUP [e.g. fentanyl (ARUP#2012284), meperidine (ARUP#2012288) or tramadol (ARUP#2012297).

See also Drug Screening.

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
See preferred volume

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Stability (from collection to initiation):
Refrigerated 7 days, frozen at -20C 2 weeks

PROCESSING

Test Code:
OPI

Test Group:
Opiate

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Stability (from collection to initiation):
Refrigerated 7 days, frozen at -20C 2 weeks

RESULT INTERPRETATION

Reference Interval:
Negative

Note: a negative result indicates that this class of drugs is not present, or they are present at a concentration below the cut-off concentration of 300 µg/L

Additional Information:
Morphine can be detected within 11-54 hours after use and can be detected as long as 11 days after use. (From: Verstraete AG. Detection Times of Drugs of Abuse in Blood, Urine and Oral Fluid. Ther Drug Monit, 26(2) April 2004, 200-205)

A concentration of < 300 µg/L is considered negative by this test. A positive result is >= 300 µg/L and indicates the presence of this class of drugs. This immunoassay is only a screening test and is not definitive. Results cannot be used for medico-legal purposes.

This is a presumptive screen for possible heroin or morphine use within the past 1-2 days. It may also detect morphine from the metabolism of codeine or morphine and codeine from the consumption of poppy seeds.

False positive results may occur due to other cross reacting substances, however, positive results are NOT routinely confirmed by a second method. If confirmation of the test result is required, it is the responsibility of the physician to separately order a specific confirmatory test for the drug identified. Samples are held for 7 days. Contact laboratory at x 31667 to request confirmatory testing. Confirmation test code OPIQNT.

Click here for List of Cross Reactive Substances

The assay is not sensitive in detecting most prescribed opiates such as hydrocodone, hydromorphone, oxycodone and oxymorphone. A separate oxycodone screen is available at UCSF (test code: OXYU) that detects oxycodone and oxymorphone. If hydrocodone or hydromorphone use is suspected, an opiate confirmation should be ordered from ARUP (test code: OPIQNT).

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See also Drug Screening.

ADMINISTRATIVE

CPT Codes:
80307

LOINC Codes:
19296-3

COMPLETE VIEW

Available Stat:
Yes

Test Code:
OPI

Test Group:
Opiate

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Homogeneous competitive enzyme immunoassay

Collect:
Urine cup

Amount to Collect:
See preferred volume

Sample Type:
Random urine

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Reference Interval:
Negative

Note: a negative result indicates that this class of drugs is not present, or they are present at a concentration below the cut-off concentration of 300 µg/L

Stability (from collection to initiation):
Refrigerated 7 days, frozen at -20C 2 weeks

Reported:
Stat 2 hours, Routine 4 hours

Additional Information:
Morphine can be detected within 11-54 hours after use and can be detected as long as 11 days after use. (From: Verstraete AG. Detection Times of Drugs of Abuse in Blood, Urine and Oral Fluid. Ther Drug Monit, 26(2) April 2004, 200-205)

A concentration of < 300 µg/L is considered negative by this test. A positive result is >= 300 µg/L and indicates the presence of this class of drugs. This immunoassay is only a screening test and is not definitive. Results cannot be used for medico-legal purposes.

This is a presumptive screen for possible heroin or morphine use within the past 1-2 days. It may also detect morphine from the metabolism of codeine or morphine and codeine from the consumption of poppy seeds.

False positive results may occur due to other cross reacting substances, however, positive results are NOT routinely confirmed by a second method. If confirmation of the test result is required, it is the responsibility of the physician to separately order a specific confirmatory test for the drug identified. Samples are held for 7 days. Contact laboratory at x 31667 to request confirmatory testing. Confirmation test code OPIQNT.

Click here for List of Cross Reactive Substances

The assay is not sensitive in detecting most prescribed opiates such as hydrocodone, hydromorphone, oxycodone and oxymorphone. A separate oxycodone screen is available at UCSF (test code: OXYU) that detects oxycodone and oxymorphone. If hydrocodone or hydromorphone use is suspected, an opiate confirmation should be ordered from ARUP (test code: OPIQNT).

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See also Drug Screening.

CPT Codes:
80307

LOINC Codes:
19296-3

Opiates, Urine, Quantitative

OPIQNT

ORDERING

Ordering Recommendations:

Preferred test to follow-up presumptive results. For general screening, Opiates, Urine Screen with Reflex to Quantitation (2005093) is preferred.

Available Stat:

No

Performing Lab:

ARUP

Performed:

Sun-Sat

Methodology:

Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Reported:

1-4 days

Synonyms:

- 6-Acetylmorphine
- 6-AM
- 6-MAM
- Anexsia
- Avinza
- Codeine
- Combunox
- Depalgos
- DepoDur
- Diacetylmorphine
- Diamorphine
- Dicodid
- Dihydromorphinone
- Dilaudid
- Dimorphone
- Drocode
- Duodin
- Duramorph
- Endocet
- Exalgo
- Heroin
- Histinex
- Hycet
- Hycodan
- Hycomine
- Hycotuss
- Hydrococet
- Hydrocodone
- Hydromet
- Hydromorphone
- Hydrovo
- Kadian
- Kolikodol
- Laudicon
- Loracet
- Lortab
- Mercodinone
- Methylmorphine
- Morphine
- MS Contin
- MS-Contin
- Norco
- Novahistex
- Numorphan
- Numorphone
- Opana
- Opium
- Oramorph
- Orthoxycol
- Oxycodone
- Oxymorphone
- Pain Management
- Pain Management, Opiates Expanded, Quantitative, with medMATCH, Urine
- Pain Management, Oxycodone, Quantitative, with medMATCH, Urine
- Palladone
- Paracodeine
- Paragoric
- Parzone
- Percocet
- Percodan
- Roxanol
- Roxicet
- Roxicodone
- Roxiprin
- Symtan
- Synkonin
- Targin
- Tussionex
- Tylox
- Vicodin
- Vicoprofen
- Zydone

COLLECTION

Collect:
Random urine.

Stability (from collection to initiation):
Ambient: 1 week; Refrigerated: 1 month; Frozen: 3 years

Storage/Transport Temperature:
Room temperature.

Unacceptable Conditions:
Specimens exposed to repeated freeze/thaw cycles.

PROCESSING

Test Code:
OPIQNT

ARUP Test Code:
0090364

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transfer 0.5 mL with no additives or preservatives urine to an ARUP Standard Transport Tube. (Min: 0.3 mL)

Unacceptable Conditions:
Specimens exposed to repeated freeze/thaw cycles.

Stability (from collection to initiation):
Ambient: 1 week; Refrigerated: 1 month; Frozen: 3 years

Storage/Transport Temperature:
Room temperature.

RESULT INTERPRETATION

Reference Interval:
Effective August 17, 2015

Drugs Covered	Cutoff Concentrations
Codeine	20 ng/mL
Morphine	20 ng/mL
6-acetylmorphine	10 ng/mL
Hydrocodone	20 ng/mL
Norhydrocodone	20 ng/mL
Hydromorphone	20 ng/mL
Oxycodone	20 ng/mL
Noroxycodone	20 ng/mL
Oxymorphone	20 ng/mL
Noroxymorphone	20 ng/mL

Interpretive Data:

Methodology: Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Positive cutoff: 20 ng/mL except as specified below:
6-acetylmorphine10 ng/mL

For medical purposes only; not valid for forensic use.

Identification of specific drug(s) taken by specimen donor is problematic due to common metabolites, some of which are prescription drugs themselves. The absence of expected drug(s) and/or drug metabolite(s) may indicate non-compliance, inappropriate timing of specimen collection relative to drug administration, poor drug absorption, diluted/adulterated urine, or limitations of testing. All drug analytes covered are in the non-glucuronidated (free) forms. The concentration value must be greater than or equal to the cutoff to be reported as positive. A very small amount of an unexpected drug analyte in the presence of a large amount of an expected drug analyte may reflect pharmaceutical impurity. Interpretive questions should be directed to the laboratory.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:

80361; 80365 (Alt code: G0480)

LOINC:

- 16250-3
- 19593-3
- 16249-5
- 90894-7
- 61422-2
- 61425-5
- 16251-1
- 16998-7
- 16252-9
- 17395-5

COMPLETE VIEW

Available Stat:

No

Ordering Recommendations:

Preferred test to follow-up presumptive results. For general screening, Opiates, Urine Screen with Reflex to Quantitation (2005093) is preferred.

Test Code:

OPIQNT

ARUP Test Code:

0090364

Performing Lab:

ARUP

Sendout:

Yes

Performed:

Sun-Sat

Methodology:

Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Collect:

Random urine.

Unacceptable Conditions:

Specimens exposed to repeated freeze/thaw cycles.

Specimen Preparation:

Transfer 0.5 mL with no additives or preservatives urine to an ARUP Standard Transport Tube. (Min: 0.3 mL)

Reference Interval:

Effective August 17, 2015

Drugs Covered	Cutoff Concentrations
Codeine	20 ng/mL
Morphine	20 ng/mL
6-acetylmorphine	10 ng/mL
Hydrocodone	20 ng/mL
Norhydrocodone	20 ng/mL
Hydromorphone	20 ng/mL
Oxycodone	20 ng/mL
Noroxycodone	20 ng/mL
Oxymorphone	20 ng/mL
Noroxymorphone	20 ng/mL

Interpretive Data:

Methodology: Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Positive cutoff: 20 ng/mL except as specified below:
6-acetylmorphine10 ng/mL

For medical purposes only; not valid for forensic use.

Identification of specific drug(s) taken by specimen donor is problematic due to common metabolites, some of which are prescription drugs themselves. The absence of expected drug(s) and/or drug metabolite(s) may indicate non-compliance, inappropriate timing of specimen collection relative to drug administration, poor drug absorption, diluted/adulterated urine, or limitations of testing. All drug analytes covered are in the non-glucuronidated (free) forms. The concentration value must be greater than or equal to the cutoff to be reported as positive. A very small amount of an unexpected drug analyte in the presence of a large amount of an expected drug analyte may reflect pharmaceutical impurity. Interpretive questions should be directed to the laboratory.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Synonyms:

- 6-Acetylmorphine
- 6-AM
- 6-MAM
- Anexsia
- Avinza
- Codeine
- Combunox
- Depalgos
- DepoDur
- Diacetylmorphine
- Diamorphine
- Dicodid
- Dihydromorphinone
- Dilaudid
- Dimorphone
- Drocode
- Duodin
- Duramorph
- Endocet
- Exalgo
- Heroin
- Histinex
- Hycet
- Hycodan
- Hycomine
- Hycotuss
- Hydrococet
- Hydrocodone
- Hydromet
- Hydromorphone
- Hydrovo
- Kadian
- Kolikodol
- Laudicon
- Loracet
- Lortab
- Mercodinone
- Methylmorphine
- Morphine
- MS Contin
- MS-Contin
- Norco
- Novahistex
- Numorphan
- Numorphone
- Opana
- Opium
- Oramorph
- Orthoxycol
- Oxycodone
- Oxymorphone
- Pain Management
- Pain Management, Opiates Expanded, Quantitative, with medMATCH, Urine
- Pain Management, Oxycodone, Quantitative, with medMATCH, Urine
- Palladone
- Paracodeine
- Paragoric
- Parzone
- Percocet
- Percodan
- Roxanol
- Roxicet
- Roxicodone
- Roxiprin
- Symtan
- Synkonin
- Targin
- Tussionex
- Tylox
- Vicodin
- Vicoprofen
- Zydone

Storage/Transport Temperature:
Room temperature.

Stability (from collection to initiation):
Ambient: 1 week; Refrigerated: 1 month; Frozen: 3 years

Reported:
1-4 days

CPT Codes:
80361; 80365 (Alt code: G0480)

LOINC:

- 16250-3
- 19593-3
- 16249-5
- 90894-7
- 61422-2
- 61425-5
- 16251-1
- 16998-7
- 16252-9
- 17395-5

OR Coagulation Panel 1

ORCO

ORDERING

Available Stat:
Yes

Additional Information:
Panel contains the following tests: prothrombin time, activated partial thromboplastin time, fibrinogen and thromboelastogram w/heparin neutralization

COLLECTION

Collect:
Blue top filled to full extent of vacuum

PROCESSING

Test Code:
ORCO

Specimen Preparation:
Contains the following test codes: PT, PTT, FIB

RESULT INTERPRETATION

Additional Information:
Panel contains the following tests: prothrombin time, activated partial thromboplastin time, fibrinogen and thromboelastogram w/heparin neutralization

ADMINISTRATIVE

CPT Codes:
85384, 85610, 85730

COMPLETE VIEW

Available Stat:
Yes

Test Code:
ORCO

Collect:
Blue top filled to full extent of vacuum

Specimen Preparation:
Contains the following test codes: PT, PTT, FIB

Additional Information:
Panel contains the following tests: prothrombin time, activated partial thromboplastin time, fibrinogen and thromboelastogram w/heparin neutralization

CPT Codes:
85384, 85610, 85730

Organic Acids, Qualitative

OAX

ORDERING

Available Stat:
No

Performing Lab:
Lucille-Packard Children's Hospital

Methodology:
GC/MS

Reported:
Test batched, twice weekly. Result available: 5 business days.

Additional Information:
This qualitative screen identifies abnormalities in over 200 different organic acids, using Gas Chromatography/Mass Spectrometry. Inborn errors of metabolism detected by this test include methymalonic academia, propionic academia, isovaleric academia, Canavan disease and many others.

Synonyms:

- Homogentisic Acid

COLLECTION

Sample Type:
Random urine, without preservatives

Collect:
Urine cup

Amount to Collect:
20 mL urine

Preferred Volume:
5 mL urine

Minimum Volume:
3 mL urine

PROCESSING

Test Code:
OAX

Sendout:
Yes

Performing Lab:
Lucille-Packard Children's Hospital

Specimen Preparation:
Store frozen at -20C. Specimen pickup by Stanford Courier Services Monday-Friday. Maintain specimen in frozen condition to Stanford Hospital Clinical Laboratories.

Preferred Volume:
5 mL urine

Minimum Volume:
3 mL urine

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
This qualitative screen identifies abnormalities in over 200 different organic acids, using Gas Chromatography/Mass Spectrometry. Inborn errors of metabolism detected by this test include methymalonic academia, propionic academia, isovaleric academia, Canavan disease and many others.

ADMINISTRATIVE

CPT Codes:
83919-90

LOINC Codes:
2676-5

COMPLETE VIEW

Available Stat:
No

Test Code:
OAX

Performing Lab:
Lucille-Packard Children's Hospital

Sendout:
Yes

Methodology:
GC/MS

Collect:
Urine cup

Amount to Collect:
20 mL urine

Sample Type:
Random urine, without preservatives

Preferred Volume:
5 mL urine

Minimum Volume:
3 mL urine

Specimen Preparation:
Store frozen at -20C. Specimen pickup by Stanford Courier Services Monday-Friday. Maintain specimen in frozen condition to Stanford Hospital Clinical Laboratories.

Reference Interval:
Negative

Synonyms:

- Homogentisic Acid

Reported:
Test batched, twice weekly. Result available: 5 business days.

Additional Information:
This qualitative screen identifies abnormalities in over 200 different organic acids, using Gas Chromatography/Mass Spectrometry. Inborn errors of metabolism detected by this test include methymalonic academia, propionic academia, isovaleric academia, Canavan disease and many others.

CPT Codes:
83919-90

LOINC Codes:
2676-5

Orotic Acid, Urine

OROT

ORDERING

Available Stat:
No

Performing Lab:
Lucille-Packard Childrens Hospital

Methodology:
Stable isotope dilution, tandem MS

Synonyms:

- orotic acid quantitative
- orotic acid qualitative

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
20 mL urine

Preferred Volume:
3 mL urine

Minimum Volume:
3 mL urine

Remarks:
Bring sample to laboratory immediately for freezing

Unacceptable Conditions:
Delivered to lab > 30 min after collection

PROCESSING

Test Code:
OROT

Sendout:
Yes

Performing Lab:
Lucille-Packard Childrens Hospital

Specimen Preparation:
Freeze at -20C and ship frozen to China Basin. Ship on dry ice Monday-Friday only by Stanford Courier to: Stanford University Medical Center Biochemical Genetics Laboratory

Preferred Volume:
3 mL urine

Minimum Volume:
3 mL urine

Unacceptable Conditions:
Delivered to lab > 30 min after collection

RESULT INTERPRETATION

Units:
mmol/mol creatinine

Reference Interval:
< 4.4 mmol/mol creatinine

ADMINISTRATIVE

CPT Codes:
83789-90

LOINC Codes:
32262-8

COMPLETE VIEW

Available Stat:
No

Test Code:
OROT

Performing Lab:
Lucille-Packard Childrens Hospital

Sendout:
Yes

Methodology:
Stable isotope dilution, tandem MS

Remarks:
Bring sample to laboratory immediately for freezing

Collect:
Urine cup

Amount to Collect:
20 mL urine

Sample Type:
Random urine

Preferred Volume:
3 mL urine

Minimum Volume:
3 mL urine

Unacceptable Conditions:
Delivered to lab > 30 min after collection

Specimen Preparation:
Freeze at -20C and ship frozen to China Basin. Ship on dry ice Monday-Friday only by Stanford Courier to: Stanford University Medical Center Biochemical Genetics Laboratory

Units:
mmol/mol creatinine

Reference Interval:
< 4.4 mmol/mol creatinine

Synonyms:

- orotic acid quantitative
- orotic acid qualitative

CPT Codes:
83789-90

LOINC Codes:
32262-8

Osmolality, Fecal

OSMF

ORDERING

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative Freezing Point

Reported:
1-2 days

Synonyms:

- Fecal Osmolality
- Osmolal gap
- osmolality, feces
- Osmotic gap
- stool osmotic gap

COLLECTION

Collect:
Liquid stool.

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 1 week; Frozen: 1 month

Storage/Transport Temperature:
Frozen

Unacceptable Conditions:
Formed stool. Specimens in media or preservatives.

PROCESSING

Test Code:
OSMF

ARUP Test Code:
0098122

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Do not add saline or water to liquefy sample. Transfer 5 mL liquid stool to an unpreserved stool transport vial (ARUP Supply #40910). Available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at (800) 522-2787. (Min: 0.5 mL)

Unacceptable Conditions:
Formed stool. Specimens in media or preservatives.

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 1 week; Frozen: 1 month

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Reference Interval:
0-16 years: 271-296 mOsm/kg
17 years and older: 280-303 mOsm/kg

ADMINISTRATIVE

CPT Codes:
84999

LOINC:

- 2693-0

COMPLETE VIEW

Available Stat:
No

Test Code:
OSMF

ARUP Test Code:
0098122

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative Freezing Point

Collect:
Liquid stool.

Unacceptable Conditions:
Formed stool. Specimens in media or preservatives.

Specimen Preparation:
Do not add saline or water to liquefy sample. Transfer 5 mL liquid stool to an unpreserved stool transport vial (ARUP Supply #40910). Available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at (800) 522-2787. (Min: 0.5 mL)

Reference Interval:
0-16 years: 271-296 mOsm/kg
17 years and older: 280-303 mOsm/kg

Synonyms:

- Fecal Osmolality
- Osmolal gap
- osmolality, feces
- Osmotic gap
- stool osmotic gap

Storage/Transport Temperature:
Frozen

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 1 week; Frozen: 1 month

Reported:
1-2 days

CPT Codes:
84999

LOINC:

- 2693-0

Osmolality, Plasma / Serum

OSM

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Freezing point depression

Reported:
STAT 1 hour, Routine same or next day

Additional Information:
Each 0.10 g/dL of ethanol contributes about 22 mmol/kg to the endogenous osmolality of serum.

Predicted value = 2xNa [mmol/L] + Glucose [mg/dL]/18 + BUN [mg/dL]/2.8.

A measured value exceeding the predicted value by > 10 is consistent with, e.g., ethanol, methanol or ethylene glycol ingestion.

If specific testing for methanol, ethylene glycol and/or isopropanol is desired see entry for Drug screening - Volatiles

Synonyms:

- volatiles
- ethanol
- etoh
- ethylene glycol
- methanol
- alcohol

COLLECTION

Sample Type:
Plasma or Serum

Collect:
Gold top or Light Green top

Amount to Collect:
0.8 mL blood

Preferred Volume:
0.4 mL plasma or serum

Minimum Volume:
0.1 mL plasma or serum

Stability (from collection to initiation):
Room Temperature/Refrigerated: 48 hours

PROCESSING

Test Code:
OSM

Test Group:
Osmolality

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
0.4 mL plasma or serum

Minimum Volume:
0.1 mL plasma or serum

Stability (from collection to initiation):
Room Temperature/Refrigerated: 48 hours

RESULT INTERPRETATION

Units:
mmol/kg (equiv. to mOsmol/Kg)

Reference Interval:
283-301 mmol/kg

Critical Values:
< 240 mmol/kg or > 320 mmol/kg

Additional Information:
Each 0.10 g/dL of ethanol contributes about 22 mmol/kg to the endogenous osmolality of serum.

Predicted value = 2xNa [mmol/L] + Glucose [mg/dL]/18 + BUN [mg/dL]/2.8.

A measured value exceeding the predicted value by > 10 is consistent with, e.g., ethanol, methanol or ethylene glycol ingestion.

If specific testing for methanol, ethylene glycol and/or isopropanol is desired see entry for Drug screening - Volatiles

ADMINISTRATIVE

CPT Codes:
83930

LOINC Codes:
2692-2

COMPLETE VIEW

Available Stat:
Yes

Test Code:
OSM

Test Group:
Osmolality

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Freezing point depression

Collect:
Gold top or Light Green top

Amount to Collect:
0.8 mL blood

Sample Type:
Plasma or Serum

Preferred Volume:
0.4 mL plasma or serum

Minimum Volume:
0.1 mL plasma or serum

Units:
mmol/kg (equiv. to mOsmol/Kg)

Reference Interval:
283-301 mmol/kg

Critical Values:
< 240 mmol/kg or > 320 mmol/kg

Synonyms:

- volatiles
- ethanol
- etoh
- ethylene glycol
- methanol
- alcohol

Stability (from collection to initiation):
Room Temperature/Refrigerated: 48 hours

Reported:

STAT 1 hour, Routine same or next day

Additional Information:

Each 0.10 g/dL of ethanol contributes about 22 mmol/kg to the endogenous osmolality of serum.

Predicted value = 2xNa [mmol/L] + Glucose [mg/dL]/18 + BUN [mg/dL]/2.8.

A measured value exceeding the predicted value by > 10 is consistent with, e.g., ethanol, methanol or ethylene glycol ingestion.

If specific testing for methanol, ethylene glycol and/or isopropanol is desired see entry for Drug screening - Volatiles

CPT Codes:

83930

LOINC Codes:

2692-2

Osmolality, urine

OSMU

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Freezing point depression

Reported:
Same or next day

Additional Information:
Toluene interferes with this assay

Synonyms:

- volatiles
- ethanol
- etoh
- ethylene glycol
- methanol
- alcohol

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
See preferred volume

Preferred Volume:
0.4 mL urine

Minimum Volume:
0.1 mL urine

Stability (from collection to initiation):
Room Temperature/Refrigerated: 24 hours

PROCESSING

Test Code:
OSMU

Test Group:
Osmolality

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
0.4 mL urine

Minimum Volume:
0.1 mL urine

Stability (from collection to initiation):
Room Temperature/Refrigerated: 24 hours

RESULT INTERPRETATION

Units:
mmol/kg (equiv. to mOsmol/Kg)

Reference Interval:
300-900 mmol/kg

Additional Information:
Toluene interferes with this assay

ADMINISTRATIVE

CPT Codes:
83935

LOINC Codes:
2695-5

COMPLETE VIEW

Available Stat:
Yes

Test Code:
OSMU

Test Group:
Osmolality

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Freezing point depression

Collect:
Urine cup

Amount to Collect:
See preferred volume

Sample Type:
Random urine

Preferred Volume:
0.4 mL urine

Minimum Volume:
0.1 mL urine

Units:
mmol/kg (equiv. to mOsmol/Kg)

Reference Interval:
300-900 mmol/kg

Synonyms:

- volatiles
- ethanol
- etoh
- ethylene glycol
- methanol
- alcohol

Stability (from collection to initiation):
Room Temperature/Refrigerated: 24 hours

Reported:
Same or next day

Additional Information:
Toluene interferes with this assay

CPT Codes:
83935

LOINC Codes:
2695-5

Osmotic Fragility, Erythrocyte

OFRAG

ORDERING

Ordering Recommendations:
Functional testing of red blood cell sensitivity to osmotic stress. Do not use to distinguish between spherocytes in hereditary spherocytosis and acquired autoimmune hemolytic anemia.

Performing Lab:
ARUP

Performed:
Mon-Fri

Methodology:
Spectrophotometry

Reported:
1-5 days

Synonyms:

- FRAGILITY, OSMOTIC (RBC)
- Osmotic Fragility
- RBC Fragility, Erythrocytes
- Red Cell Fragility
- Spherocytic Hemolytic Disease

COLLECTION

Sample Type:
Blood

Collect:
Green (sodium or lithium heparin) or lavender (EDTA).

Preferred Volume:
5 mL

Minimum Volume:
1 mL

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 72 hours; Frozen: Unacceptable

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Grossly hemolyzed specimens.

PROCESSING

Test Code:
OFRAG

ARUP Test Code:
2002257

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transport 5mL whole blood. (Min: 1mL) Specimens should be refrigerated within 30 minutes after collection.

Preferred Volume:
5 mL

Minimum Volume:
1 mL

Unacceptable Conditions:
Grossly hemolyzed specimens.

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 72 hours; Frozen: Unacceptable

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:
Within normal curve limits.

Interpretive Data:
For patients with acute hemolysis, a normal red cell osmotic fragility test result cannot exclude an osmotic fragility abnormality since the osmotically labile cells may be hemolyzed and not present. Recommend testing during a state of prolonged homeostasis with stable hematocrit.

ADMINISTRATIVE

CPT Codes:
85555

LOINC:

- 34964-7

COMPLETE VIEW

Ordering Recommendations:
Functional testing of red blood cell sensitivity to osmotic stress. Do not use to distinguish between spherocytes in hereditary spherocytosis and acquired autoimmune hemolytic anemia.

Test Code:
OFRAG

ARUP Test Code:
2002257

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Mon-Fri

Methodology:
Spectrophotometry

Collect:
Green (sodium or lithium heparin) or lavender (EDTA).

Sample Type:
Blood

Preferred Volume:
5 mL

Minimum Volume:
1 mL

Unacceptable Conditions:
Grossly hemolyzed specimens.

Specimen Preparation:
Transport 5mL whole blood. (Min: 1mL) Specimens should be refrigerated within 30 minutes after collection.

Reference Interval:
Within normal curve limits.

Interpretive Data:
For patients with acute hemolysis, a normal red cell osmotic fragility test result cannot exclude an osmotic fragility abnormality since the osmotically labile cells may be hemolyzed and not present. Recommend testing during a state of prolonged homeostasis with stable hematocrit.

Synonyms:

- FRAGILITY, OSMOTIC (RBC)
- Osmotic Fragility
- RBC Fragility, Erythrocytes
- Red Cell Fragility
- Spherocytic Hemolytic Disease

Storage/Transport Temperature:
Refrigerated.

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 72 hours; Frozen: Unacceptable

Reported:
1-5 days

CPT Codes:
85555

LOINC:

- 34964-7

Osteocalcin

OCAL

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Electrochemiluminescence (ECLIA)

Reported:
Test performed Tuesday and Thursday. Turnaround time: 3-9 days.

Additional Information:
This test is not a MediCal benefit; outpatients must be informed of this in writing and warned that they could be financially responsible for the cost of testing.

COLLECTION

Patient Preparation:
An 8 hour fast before specimen collection is preferred. Patients should not receive Biotin within 8 hours prior to collection

Sample Type:
Serum

Collect:
Red top or Gold Top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Refrigerated 1 day, frozen at -20C 3 weeks

Unacceptable Conditions:
Hemolysis

Rejection Criteria:
Hemolysis

PROCESSING

Test Code:
OCAL

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze serum at -20C. Order Quest #16322, if patient is Brown/Toland order LabCorp #010249.

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Hemolysis

Rejection Criteria:
Hemolysis

Stability (from collection to initiation):
Refrigerated 1 day, frozen at -20C 3 weeks

RESULT INTERPRETATION

Units:
ng/mL

Reference Interval:

5-9 years	47-142 ng/mL
10-13 years	49-167 ng/mL
14-17 year old males	26-203 ng/mL
14-17 year old females	14-85 ng/mL
Males > 17 years	9-38 ng/mL
Females > 17 years	8-32 ng/mL

Additional Information:
This test is not a MediCal benefit; outpatients must be informed of this in writing and warned that they could be financially responsible for the cost of testing.

ADMINISTRATIVE

CPT Codes:
83937-90

LOINC Codes:
2697-1

COMPLETE VIEW

Available Stat:
No

Test Code:
OCAL

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Electrochemiluminescence (ECLIA)

Patient Preparation:
An 8 hour fast before specimen collection is preferred. Patients should not receive Biotin within 8 hours prior to collection

Collect:
Red top or Gold Top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Rejection Criteria:
Hemolysis

Unacceptable Conditions:
Hemolysis

Specimen Preparation:
Freeze serum at -20C. Order Quest #16322, if patient is Brown/Toland order LabCorp #010249.

Units:
ng/mL

Reference Interval:

5-9 years	47-142 ng/mL
10-13 years	49-167 ng/mL
14-17 year old males	26-203 ng/mL
14-17 year old females	14-85 ng/mL
Males > 17 years	9-38 ng/mL
Females > 17 years	8-32 ng/mL

Stability (from collection to initiation):
Refrigerated 1 day, frozen at -20C 3 weeks

Reported:

Test performed Tuesday and Thursday. Turnaround time: 3-9 days.

Additional Information:

This test is not a MediCal benefit; outpatients must be informed of this in writing and warned that they could be financially responsible for the cost of testing.

CPT Codes:

83937-90

LOINC Codes:

2697-1

Ova and Parasite Exam

P401

ORDERING

Ordering Recommendations:

Patient testing for common parasites causing diarrhea is included in Gastrointestinal Pathogen PCR Panel. Order Ova and Parasite Exam in cases of suspected helminth (worm) infection, primarily in returning travelers. Additional testing for rare causes of diarrhea in immunocompromised patients (primarily HIV) can be ordered with Coccidia Exam and Microsporidia Exam.

Approval Required:

Contact Microbiology at x3-1268 for Stool O&P requests on inpatients > 72 hours after admission.

Available Stat:

No

Performing Lab:

Microbiology

Performed:

Monday-Friday, day shift

Methodology:

Microscopy

Reported:

1-3 days

Additional Information:

Includes concentration and iron-hematoxylin smear, and Kinyoun stain of unconcentrated sample for Cyclospora, Cryptosporidia, and Cystoisospora.

Aspirates are not acceptable for Giardia Antigen or Entamoeba histolytica antigen.

Also see entries for Coccidia Exam and Microsporidia.

For hepatic abscess aspirates: If the specimen is QNS to prepare stained smears, a wet mount alone will be done and procedure P412 charged.

Synonyms:

- Ova & Parasites
- O&P
- scolex
- Protozoan concentration
- Coccidia
- Entamoeba histolytica

COLLECTION

Patient Preparation:

Patient should be off ALL antibiotics for >= 2 weeks before for an O&P examination to be valid.

Sample Type:

Stool; Duodenal/Colonic/Stool aspirates; Hepatic abscess aspirates

Collect:

Hepatic abscess aspirates: Sterile container

All other samples: SAF vial

Stool specimens received into the lab between the hours of 23:30-06:30 should be submitted to the lab in SAF fixative.

SAF vials and instructions available from Material Services (PMM # 44366 Vials SAF Sterile Child Resistant Cap 574-05-CRC-WB).

Outpatients can obtain these from the laboratories' draw stations.

Amount to Collect:

See preferred volume

Preferred Volume:

Stool: 10 mL (fill SAF vial to red line on container label)

Duodenal/Colonic/Stool aspirates: 15 mL

Hepatic abscess aspirates: 2 mL

Minimum Volume:
5 mL (2 mL for Hepatic abscess aspirates)

Remarks:
Collect 3 stool samples (one every 48 hours preferred, one per day is acceptable) to improve the chance of a positive result.

Aspirates submitted in a sterile container or leuken trap should be received in laboratory within 30 minutes of collection.

Stability (from collection to initiation):
Preserved: 2 weeks

Unpreserved: 1 hour (aspirates will be accepted >1 hour, but results may be compromised).

Rejection Criteria:
Unpreserved stool received > 1 hour after collection.
Stool in a preservative other than SAF.
More than one stool sample received within 24 hours.
Stool not mixed well in SAF, or if preservative has been poured out or is expired.
SAF container filled past the red line on the container label.

PROCESSING

Test Code:
P401

Test Group:
Parasites

Performing Lab:
Microbiology

Specimen Preparation:
Hepatic abscess aspirates: Put 1 ml of the specimen into a 15 ml centrifuge tube and add 2 parts SAF to 1 part specimen. Label tube as SAF preserved." The remaining unpreserved aspirate should be refrigerated.

Transfer all other unpreserved samples to SAF preservative upon receipt in lab.

Do not reject unpreserved aspirates >1 hour post collection. Enter COMPRO in SREQ.

When receiving O&Ps by mail open each box individually. If necessary, label sample with patient name from information sheet in box. If information sheet is not filled out, give mailing container to parasitologist to investigate. If collection date is missing from specimens, accession each specimen and freetext note in SREQ No collection date provided."

Preferred Volume:
Stool: 10 mL (fill SAF vial to red line on container label)

Duodenal/Colonic/Stool aspirates: 15 mL

Hepatic abscess aspirates: 2 mL

Minimum Volume:
5 mL (2 mL for Hepatic abscess aspirates)

Rejection Criteria:
Unpreserved stool received > 1 hour after collection.
Stool in a preservative other than SAF.
More than one stool sample received within 24 hours.
Stool not mixed well in SAF, or if preservative has been poured out or is expired.
SAF container filled past the red line on the container label.

Stability (from collection to initiation):
Preserved: 2 weeks

Unpreserved: 1 hour (aspirates will be accepted >1 hour, but results may be compromised).

RESULT INTERPRETATION

Reference Interval:
No parasites seen

Critical Values:
Entamoeba histolytica in hepatic aspirate

Additional Information:

Includes concentration and iron-hematoxylin smear, and Kinyoun stain of unconcentrated sample for Cyclospora, Cryptosporidia, and Cystoisospora.

Aspirates are not acceptable for Giardia Antigen or Entamoeba histolytica antigen.

Also see entries for Coccidia Exam and Microsporidia.

For hepatic abscess aspirates: If the specimen is QNS to prepare stained smears, a wet mount alone will be done and procedure P412 charged.

ADMINISTRATIVE

CPT Codes:

87177, 87207, 87209

LOINC Codes:

10704-5

COMPLETE VIEW

Approval Required:

Contact Microbiology at x3-1268 for Stool O&P requests on inpatients > 72 hours after admission.

Available Stat:

No

Ordering Recommendations:

Patient testing for common parasites causing diarrhea is included in Gastrointestinal Pathogen PCR Panel. Order Ova and Parasite Exam in cases of suspected helminth (worm) infection, primarily in returning travelers. Additional testing for rare causes of diarrhea in immunocompromised patients (primarily HIV) can be ordered with Coccidia Exam and Microsporidia Exam.

Test Code:

P401

Test Group:

Parasites

Performing Lab:

Microbiology

Performed:

Monday-Friday, day shift

Methodology:

Microscopy

Patient Preparation:

Patient should be off ALL antibiotics for >= 2 weeks before for an O&P examination to be valid.

Remarks:

Collect 3 stool samples (one every 48 hours preferred, one per day is acceptable) to improve the chance of a positive result.

Aspirates submitted in a sterile container or leuken trap should be received in laboratory within 30 minutes of collection.

Collect:

Hepatic abscess aspirates: Sterile container

All other samples: SAF vial

Stool specimens received into the lab between the hours of 23:30-06:30 should be submitted to the lab in SAF fixative.

SAF vials and instructions available from Material Services (PMM # 44366 Vials SAF Sterile Child Resistant Cap 574-05-CRC-WB).

Outpatients can obtain these from the laboratories' draw stations.

Amount to Collect:

See preferred volume

Sample Type:

Stool; Duodenal/Colonic/Stool aspirates; Hepatic abscess aspirates

Preferred Volume:

Stool: 10 mL (fill SAF vial to red line on container label)

Duodenal/Colonic/Stool aspirates: 15 mL

Hepatic abscess aspirates: 2 mL

Minimum Volume:
5 mL (2 mL for Hepatic abscess aspirates)

Rejection Criteria:
Unpreserved stool received > 1 hour after collection.
Stool in a preservative other than SAF.
More than one stool sample received within 24 hours.
Stool not mixed well in SAF, or if preservative has been poured out or is expired.
SAF container filled past the red line on the container label.

Specimen Preparation:
Hepatic abscess aspirates: Put 1 ml of the specimen into a 15 ml centrifuge tube and add 2 parts SAF to 1 part specimen. Label tube as SAF preserved." The remaining unpreserved aspirate should be refrigerated.

Transfer all other unpreserved samples to SAF preservative upon receipt in lab.

Do not reject unpreserved aspirates >1 hour post collection. Enter COMPRO in SREQ.

When receiving O&Ps by mail open each box individually. If necessary, label sample with patient name from information sheet in box. If information sheet is not filled out, give mailing container to parasitologist to investigate. If collection date is missing from specimens, accession each specimen and freetext note in SREQ No collection date provided."

Reference Interval:
No parasites seen

Critical Values:
Entamoeba histolytica in hepatic aspirate

Synonyms:

- Ova & Parasites
- O&P
- scolex
- Protozoan concentration
- Coccidia
- Entamoeba histolytica

Stability (from collection to initiation):
Preserved: 2 weeks

Unpreserved: 1 hour (aspirates will be accepted >1 hour, but results may be compromised).

Reported:
1-3 days

Additional Information:
Includes concentration and iron-hematoxylin smear, and Kinyoun stain of unconcentrated sample for Cyclospora, Cryptosporidia, and Cystoisospora.

Aspirates are not acceptable for Giardia Antigen or Entamoeba histolytica antigen.

Also see entries for Coccidia Exam and Microsporidia.

For hepatic abscess aspirates: If the specimen is QNS to prepare stained smears, a wet mount alone will be done and procedure P412 charged.

CPT Codes:
87177, 87207, 87209

LOINC Codes:
10704-5

Oxalate, Plasma

OXALP

ORDERING

Ordering Recommendations:
Assess the body pool size of oxalate.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Mon, Fri

Methodology:
Quantitative Spectrophotometry

Reported:
1-5 days

Synonyms:

- Oxalate

COLLECTION

Patient Preparation:
Patient should avoid ingestion of vitamin C for 24 hours prior to sample collection.

Sample Type:
Plasma

Collect:
Green (lithium or sodium heparin) or Lavender (EDTA) or pink (K_2EDTA).

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL plasma

Minimum Volume:
1.5 mL plasma

Stability (from collection to initiation):
After separation from cells: Ambient: Unacceptable; Refrigerated: Unacceptable; Frozen: 1 week

Storage/Transport Temperature:
CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

Unacceptable Conditions:
Samples that are not plasma. Samples not received frozen.

PROCESSING

Test Code:
OXALP

Test Group:
Oxalate

ARUP Test Code:
2011697

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Place tube on wet ice immediately after collection. Separate plasma from cells ASAP or within 1 hour of collection. Transfer 2 mL plasma to an ARUP Standard Transport Tube and freeze immediately. (Min: 1.5 mL)

Preferred Volume:
2 mL plasma

Minimum Volume:
1.5 mL plasma

Unacceptable Conditions:
Samples that are not plasma. Samples not received frozen.

Stability (from collection to initiation):
After separation from cells: Ambient: Unacceptable; Refrigerated: Unacceptable; Frozen: 1 week

Storage/Transport Temperature:
CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

RESULT INTERPRETATION

Units:
µmol/L

Reference Interval:
Less than or equal to 2.0 µmol/L

Interpretive Data:
This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:
83945

LOINC:

- 15085-4

LOINC Codes:
15085-4

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Assess the body pool size of oxalate.

Test Code:
OXALP

Test Group:
Oxalate

ARUP Test Code:
2011697

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Mon, Fri

Methodology:
Quantitative Spectrophotometry

Patient Preparation:
Patient should avoid ingestion of vitamin C for 24 hours prior to sample collection.

Collect:
Green (lithium or sodium heparin) or Lavender (EDTA) or pink (K_2EDTA).

Amount to Collect:
4 mL blood

Sample Type:
Plasma

Preferred Volume:
2 mL plasma

Minimum Volume:
1.5 mL plasma

Unacceptable Conditions:
Samples that are not plasma. Samples not received frozen.

Specimen Preparation:
Place tube on wet ice immediately after collection. Separate plasma from cells ASAP or within 1 hour of collection. Transfer 2 mL plasma to an ARUP Standard Transport Tube and freeze immediately. (Min: 1.5 mL)

Units:
µmol/L

Reference Interval:
Less than or equal to 2.0 µmol/L

Interpretive Data:
This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Synonyms:

- Oxalate

Storage/Transport Temperature:
CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

Stability (from collection to initiation):
After separation from cells: Ambient: Unacceptable; Refrigerated: Unacceptable; Frozen: 1 week

Reported:
1-5 days

CPT Codes:
83945

LOINC:

- 15085-4

LOINC Codes:
15085-4

Oxalic acid, 24 hour urine

OXAU

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Spectrophotometric, enzymatic

Reported:
Test run Monday-Friday Turnaround time: 2-5 days.

Additional Information:
To convert mg/d to µmol/d (SI units) multiply by 11.4.

Urinary creatinine is assayed as a measure of the completeness of urine collection. If the total creatinine excretion is not within normal limits for the patient's age and sex (see entry for Creatinine) and the patient has normal renal function, the urine collection is probably incomplete and the result is invalid.

Synonyms:

- Oxalate

COLLECTION

Patient Preparation:
Patient should refrain from eating chocolate, nuts, rhubarb, spinach, tea and vitamin C for 48 hours prior to collection.

Sample Type:
24 hour urine collection

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container, 30mL 6N HCL

Amount to Collect:
Entire 24 hour urine output

Preferred Volume:
10 mL urine

Minimum Volume:
2 mL urine

PROCESSING

Test Code:
OXAU

Test Group:
Oxalate

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Mix well before aliquoting. Adjust aliquot to pH of 3 or less with 6N HCL (Formula: Use 0.1ml 6N HCL per 10ml of urine and check pH, adjust if needed) Refrigerate. For 24 hour urine order Quest # 5421N.

Preferred Volume:
10 mL urine

Minimum Volume:
2 mL urine

RESULT INTERPRETATION

Units:
mg/24 h

Reference Interval:
3.6-38 mg/24 h

Additional Information:
To convert mg/d to µmol/d (SI units) multiply by 11.4.

Urinary creatinine is assayed as a measure of the completeness of urine collection. If the total creatinine excretion is not within normal limits for the patient's age and sex (see entry for Creatinine) and the patient has normal renal function, the urine collection is probably incomplete and the result is invalid.

ADMINISTRATIVE

CPT Codes:
83945-90

LOINC Codes:
2701-1

COMPLETE VIEW

Available Stat:
No

Test Code:
OXAU

Test Group:
Oxalate

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Spectrophotometric, enzymatic

Patient Preparation:
Patient should refrain from eating chocolate, nuts, rhubarb, spinach, tea and vitamin C for 48 hours prior to collection.

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container, 30mL 6N HCL

Amount to Collect:
Entire 24 hour urine output

Sample Type:
24 hour urine collection

Preferred Volume:
10 mL urine

Minimum Volume:
2 mL urine

Specimen Preparation:
Mix well before aliquoting. Adjust aliquot to pH of 3 or less with 6N HCL (Formula: Use 0.1ml 6N HCL per 10ml of urine and check pH, adjust if needed) Refrigerate. For 24 hour urine order Quest # 5421N.

Units:
mg/24 h

Reference Interval:
3.6-38 mg/24 h

Synonyms:

- Oxalate

Reported:
Test run Monday-Friday Turnaround time: 2-5 days.

Additional Information:
To convert mg/d to µmol/d (SI units) multiply by 11.4.

Urinary creatinine is assayed as a measure of the completeness of urine collection. If the total creatinine excretion is not within normal limits for the patient's age and sex (see entry for Creatinine) and the patient has normal renal function, the urine collection is probably incomplete and the result is invalid.

CPT Codes:
83945-90

LOINC Codes:
2701-1

Oxalic acid, random urine

OXALR

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Spectrophotometry

Reported:
Run 5x per week. Turnaround 3-5 days

Synonyms:

- Oxalate

COLLECTION

Patient Preparation:
Patient should refrain from eating chocolate, nuts, rhubarb, spinach, tea and vitamin C for 48 hours prior to collection.

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
10 mL urine

Preferred Volume:
10 mL urine

Minimum Volume:
2 mL urine

Stability (from collection to initiation):
Acidified random urine: Room temperature 6 days, refrigerated 1 week, frozen at -20C 4 months

PROCESSING

Test Code:
OXALR

Test Group:
Oxalate

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Adjust pH to 2.0 - 3.0 with 6 N HCl. Refrigerate aliquot at 4C. Order Quest test # 10456X

Preferred Volume:
10 mL urine

Minimum Volume:
2 mL urine

Stability (from collection to initiation):
Acidified random urine: Room temperature 6 days, refrigerated 1 week, frozen at -20C 4 months

RESULT INTERPRETATION

Units:
mg/g Creatinine

Reference Interval:
Male: 3-30 mg/g Creatinine
Female: 3-40 mg/g Creatinine

ADMINISTRATIVE

CPT Codes:
82570-90, 83945-90

LOINC Codes:
13483-3

COMPLETE VIEW

Available Stat:
No

Test Code:
OXALR

Test Group:
Oxalate

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Spectrophotometry

Patient Preparation:
Patient should refrain from eating chocolate, nuts, rhubarb, spinach, tea and vitamin C for 48 hours prior to collection.

Collect:
Urine cup

Amount to Collect:
10 mL urine

Sample Type:
Random urine

Preferred Volume:
10 mL urine

Minimum Volume:
2 mL urine

Specimen Preparation:
Adjust pH to 2.0 - 3.0 with 6 N HCl. Refrigerate aliquot at 4C. Order Quest test # 10456X

Units:
mg/g Creatinine

Reference Interval:
Male: 3-30 mg/g Creatinine
Female: 3-40 mg/g Creatinine

Synonyms:

- Oxalate

Stability (from collection to initiation):
Acidified random urine: Room temperature 6 days, refrigerated 1 week, frozen at -20C 4 months

Reported:
Run 5x per week. Turnaround 3-5 days

CPT Codes:
82570-90, 83945-90

LOINC Codes:
13483-3

Oxcarbazepine

OXCBP

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Liquid Chromatography Tandem Mass Spectrometry

Reported:
5-7 days

Synonyms:

- Trileptal
- 10-hydroxycarbazepine

COLLECTION

Sample Type:
Serum or EDTA plasma

Collect:
Red top or Lavendar top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 2 weeks, frozen 2 months

PROCESSING

Test Code:
OXCBP

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate sample

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 2 weeks, frozen 2 months

RESULT INTERPRETATION

Units:
µg/mL (mcg/mL)

Reference Interval:
Therapeutic: 8.0-35.0 mcg/mL
Toxic: > 35.0 mcg/mL
Lower Detection limit: 0.5 mcg/mL

ADMINISTRATIVE

CPT Codes:
83789-90

COMPLETE VIEW

Available Stat:
No

Test Code:
OXCBP

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Liquid Chromatography Tandem Mass Spectrometry

Collect:
Red top or Lavendar top

Amount to Collect:
2 mL blood

Sample Type:
Serum or EDTA plasma

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Specimen Preparation:
Refrigerate sample

Units:
µg/mL (mcg/mL)

Reference Interval:
Therapeutic: 8.0-35.0 mcg/mL
Toxic: > 35.0 mcg/mL
Lower Detection limit: 0.5 mcg/mL

Synonyms:

- Trileptal
- 10-hydroxycarbazepine

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 2 weeks, frozen 2 months

Reported:
5-7 days

CPT Codes:
83789-90

Oxycodone screen, urine

OXYU

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Homogeneous competitive enzyme immunoassay method using DRI technology

Reported:
Stat: 2 hours
Routine: 4 hours

Additional Information:
This assay detects both oxycodone and oxymorphone. Oxymorphone is the principal active metabolite of oxycodone, and a prescription drug in its own right (Baselt RC and Stewart CB, Determination of oxycodone and a major metabolite in urine by electron-capture GLC. J Anal Toxicol 2(3):107-109, 1978)

NOTE: The assay is not sensitive in detecting most prescribed opiates such as morphine, codeine, hydrocodone, hydromorphone, or heroin use. The opiate immunoassay screen (OPI) or an opiate confirmation assay (OPIQNT) should be ordered to measure these other compounds. Additionally, this oxycodone screen will not detect fentanyl, methadone or mepiridine.

For a list of cross-reacting substances of this assay click here.

A concentration of < 100 µg/L is considered negative by this test. A positive result is >= 100 µg/L and indicates presence of oxycodone or oxymorphone. This immunoassay is only a screening test and is not definitive. Results cannot be used for medico-legal purposes.

This is a presumptive screen for possible oxycodone and oxymorphone use within the past 1-3 days. False positive results may occur due to other cross reacting substances, however, positive results are NOT routinely confirmed by a second method. If confirmation of the test result is required, it is the responsibility of the physician to separately order a specific confirmatory test for the drug identified. Samples are held for 7 days. Contact laboratory at x 31667 to request confirmatory testing (Test code OPIQNT)

Synonyms:

- OxyContin
- Percocet
- Percodan
- Oxymorphone
- Opana
- Numorphan
- Numorphone,

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
10 mL urine

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Stability (from collection to initiation):
Refrigerated 1 week, frozen 1 month

PROCESSING

Test Code:
OXYU

Test Group:
Oxycodone

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Stability (from collection to initiation):
Refrigerated 1 week, frozen 1 month

RESULT INTERPRETATION

Reference Interval:
Negative

(Note: a negative result indicates that oxycodone is not present, or it is present at a concentration below the cut-off concentration of 100 µg/L)

Additional Information:
This assay detects both oxycodone and oxymorphone. Oxymorphone is the principal active metabolite of oxycodone, and a prescription drug in its own right (Baselt RC and Stewart CB, Determination of oxycodone and a major metabolite in urine by electron-capture GLC. J Anal Toxicol 2(3):107-109, 1978)

NOTE: The assay is not sensitive in detecting most prescribed opiates such as morphine, codeine, hydrocodone, hydromorphone, or heroin use. The opiate immunoassay screen (OPI) or an opiate confirmation assay (OPIQNT) should be ordered to measure these other compounds. Additionally, this oxycodone screen will not detect fentanyl, methadone or mepiridine.

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ADMINISTRATIVE

CPT Codes:
80307

LOINC Codes:
19296-3

COMPLETE VIEW

Available Stat:
Yes

Test Code:
OXYU

Test Group:
Oxycodone

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Homogeneous competitive enzyme immunoassay method using DRI technology

Collect:
Urine cup

Amount to Collect:
10 mL urine

Sample Type:
Random urine

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Reference Interval:
Negative

(Note: a negative result indicates that oxycodone is not present, or it is present at a concentration below the cut-off concentration of 100 µg/L)

Synonyms:

- OxyContin
- Percocet
- Percodan
- Oxymorphone
- Opana
- Numorphan
- Numorphone,

Stability (from collection to initiation):
Refrigerated 1 week, frozen 1 month

Reported:
Stat: 2 hours
Routine: 4 hours

Additional Information:
This assay detects both oxycodone and oxymorphone. Oxymorphone is the principal active metabolite of oxycodone, and a prescription drug in its own right (Baselt RC and Stewart CB, Determination of oxycodone and a major metabolite in urine by electron-capture GLC. J Anal Toxicol 2(3):107-109, 1978)

NOTE: The assay is not sensitive in detecting most prescribed opiates such as morphine, codeine, hydrocodone, hydromorphone, or heroin use. The opiate immunoassay screen (OPI) or an opiate confirmation assay (OPIQNT) should be ordered to measure these other compounds. Additionally, this oxycodone screen will not detect fentanyl, methadone or mepiridine.

For a list of cross-reacting substances of this assay click here.

A concentration of < 100 µg/L is considered negative by this test. A positive result is >= 100 µg/L and indicates presence of oxycodone or oxymorphone. This immunoassay is only a screening test and is not definitive. Results cannot be used for medico-legal purposes.

This is a presumptive screen for possible oxycodone and oxymorphone use within the past 1-3 days. False positive results may occur due to other cross reacting substances, however, positive results are NOT routinely confirmed by a second method. If confirmation of the test result is required, it is the responsibility of the physician to separately order a specific confirmatory test for the drug identified. Samples are held for 7 days. Contact laboratory at x 31667 to request confirmatory testing (Test code OPIQNT)

CPT Codes:
80307

LOINC Codes:
19296-3

Pancreatic Elastase, Fecal by Immunoassay

ELAS

ORDERING

Ordering Recommendations:
Tests for exocrine pancreatic insufficiency.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative Chemiluminescent Immunoassay (CLIA)

Reported:
1-4 days

Additional Information:
Pancreatic elastase can be decreased in a variety of diseases resulting in pancreatic insufficiency. Decreases are most often seen in acute and chronic pancreatitis, cystic fibrosis, and diabetes mellitus.Reference values from: Loser C, Mollgaard A, Folsch UR. 1996. Fecal elastase 1: A novel, highly sensitive, and specific tubeless pancreatic function test. Gut. 39(4):580-586.

Synonyms:

- fecal elastase
- EL1
- Elastase
- Elastase-1
- Fecal Elastase
- Pancreatic Elastase Stool
- pancreatic stool elastase
- pancreatic stool elastase concentration
- PE stool

COLLECTION

Sample Type:
Container without preservative

Collect:
Stool.

Amount to Collect:
5 g stool

Minimum Volume:
1 g stool

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 2 weeks; Frozen: 30 days.

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Stool in media or preservative. Swabs.

PROCESSING

Test Code:
ELAS

ARUP Test Code:
3002858

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transfer 5 g stool to an unpreserved stool transport vial (ARUP supply #40910). Available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at 800-522-2787. (Min: 1 g)

Minimum Volume:
1 g stool

Unacceptable Conditions:
Stool in media or preservative. Swabs.

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 2 weeks; Frozen: 30 days.

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:
Effective August 17, 2020

Greater or equal to 200 µg/g	Normal
100 to <200 µg/g	Moderate to mild exocrine pancreatic insufficiency
Less than 100 µg/g	Severe exocrine pancreatic insufficiency

Additional Information:
Pancreatic elastase can be decreased in a variety of diseases resulting in pancreatic insufficiency. Decreases are most often seen in acute and chronic pancreatitis, cystic fibrosis, and diabetes mellitus.Reference values from: Loser C, Mollgaard A, Folsch UR. 1996. Fecal elastase 1: A novel, highly sensitive, and specific tubeless pancreatic function test. Gut. 39(4):580-586.

Interpretive Data:
Reference range does not apply for infants less than one month old.

ADMINISTRATIVE

CPT Codes:
82653

LOINC:

- 25907-7

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Tests for exocrine pancreatic insufficiency.

Test Code:
ELAS

ARUP Test Code:
3002858

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative Chemiluminescent Immunoassay (CLIA)

Collect:
Stool.

Amount to Collect:
5 g stool

Sample Type:
Container without preservative

Minimum Volume:
1 g stool

Unacceptable Conditions:
Stool in media or preservative. Swabs.

Specimen Preparation:

Transfer 5 g stool to an unpreserved stool transport vial (ARUP supply #40910). Available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at 800-522-2787. (Min: 1 g)

Reference Interval:

Effective August 17, 2020

Greater or equal to 200 µg/g	Normal
100 to <200 µg/g	Moderate to mild exocrine pancreatic insufficiency
Less than 100 µg/g	Severe exocrine pancreatic insufficiency

Interpretive Data:

Reference range does not apply for infants less than one month old.

Synonyms:

- fecal elastase
- EL1
- Elastase
- Elastase-1
- Fecal Elastase
- Pancreatic Elastase Stool
- pancreatic stool elastase
- pancreatic stool elastase concentration
- PE stool

Storage/Transport Temperature:

Refrigerated.

Stability (from collection to initiation):

Ambient: Unacceptable; Refrigerated: 2 weeks; Frozen: 30 days.

Reported:

1-4 days

Additional Information:

Pancreatic elastase can be decreased in a variety of diseases resulting in pancreatic insufficiency. Decreases are most often seen in acute and chronic pancreatitis, cystic fibrosis, and diabetes mellitus.Reference values from: Loser C, Mollgaard A, Folsch UR. 1996. Fecal elastase 1: A novel, highly sensitive, and specific tubeless pancreatic function test. Gut. 39(4):580-586.

CPT Codes:

82653

LOINC:

- 25907-7

Notes:

Enzyme substitution therapy does not influence the determination of Pancreatic Elastase-1.

Pancreatic Polypeptide

PPEP

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Extraction, RIA

Reported:
Test run Thursday. Turnaround: 7-14 days.

COLLECTION

Patient Preparation:
An 8 hour fast before specimen collection is required.

No radioisotopes should be administered during the 24 hours prior to specimen collection.

Sample Type:
EDTA plasma (Serum for B&T patients)

Collect:
Lavender top (Red top or Gold top for B&T patients)

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL serum or plasma

Minimum Volume:
0.6 mL serum or plasma

Remarks:
For Brown & Toland patients, collect **serum** in Red top or Gold top tube instead of plasma.

Stability (from collection to initiation):
Refrigerated 1 week, frozen at -20C 1 month

PROCESSING

Test Code:
PPEP

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Process immediately and freeze plasma at -20C in plastic tube. Order Quest # 4789X

For Brown & Toland patients, collect SERUM in Red top or SST tube. Process within 4 hours of collection, freeze immediately and ship frozen to sendout at China Basin. Order LabCorp test # 146704. Patient should fast for 10 hours prior to specimen collection.

Preferred Volume:
2 mL serum or plasma

Minimum Volume:
0.6 mL serum or plasma

Stability (from collection to initiation):
Refrigerated 1 week, frozen at -20C 1 month

RESULT INTERPRETATION

Units:
pg/mL

Reference Interval:

Age	Reference Range
< 3 years	Not established
3-9 years	<= 519 pg/mL
10-13 years	<= 361 pg/mL
14-17 years	<= 297 pg/mL
18-29 years	< 480 pg/mL
30-39 years	70-400 pg/mL
40-49 years	70-430 pg/mL
60-52 years	100-780 pg/mL

ADMINISTRATIVE

CPT Codes:
83519-90

LOINC Codes:
2721-9

COMPLETE VIEW

Available Stat:
No

Test Code:
PPEP

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Extraction, RIA

Patient Preparation:
An 8 hour fast before specimen collection is required.

No radioisotopes should be administered during the 24 hours prior to specimen collection.

Remarks:
For Brown & Toland patients, collect **serum** in Red top or Gold top tube instead of plasma.

Collect:
Lavender top (Red top or Gold top for B&T patients)

Amount to Collect:
4 mL blood

Sample Type:
EDTA plasma (Serum for B&T patients)

Preferred Volume:
2 mL serum or plasma

Minimum Volume:
0.6 mL serum or plasma

Specimen Preparation:
Process immediately and freeze plasma at -20C in plastic tube. Order Quest # 4789X

For Brown & Toland patients, collect SERUM in Red top or SST tube. Process within 4 hours of collection, freeze immediately and ship frozen to sendout at China Basin. Order LabCorp test # 146704. Patient should fast for 10 hours prior to specimen collection.

Units:
pg/mL

Reference Interval:

Age	Reference Range
< 3 years	Not established
3-9 years	<= 519 pg/mL
10-13 years	<= 361 pg/mL
14-17 years	<= 297 pg/mL
18-29 years	< 480 pg/mL
30-39 years	70-400 pg/mL
40-49 years	70-430 pg/mL
60-52 years	100-780 pg/mL

Stability (from collection to initiation):
Refrigerated 1 week, frozen at -20C 1 month

Reported:
Test run Thursday. Turnaround: 7-14 days.

CPT Codes:
83519-90

LOINC Codes:
2721-9

Paracoccidioides Serology

MOLT

ORDERING

Available Stat:
No

Performing Lab:
LabCorp

Methodology:
Immunodiffusion

Reported:
5-7 days

Additional Information:
For diagnosis of infection due to Paracoccidioides brasiliensis. Cross-reactions at low titer may occur with other fungal infections. A rise in titer is significant, the titer correlating with the severity of disease.

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
3 mL blood

Preferred Volume:
1.5 mL serum

Minimum Volume:
1 mL serum

Stability (from collection to initiation):
Refrigerated 3 days, frozen 1 week

PROCESSING

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Sendout:
Yes

Performing Lab:
LabCorp

Specimen Preparation:
Order LabCorp test # 138452

Preferred Volume:
1.5 mL serum

Minimum Volume:
1 mL serum

Stability (from collection to initiation):
Refrigerated 3 days, frozen 1 week

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
For diagnosis of infection due to Paracoccidioides brasiliensis. Cross-reactions at low titer may occur with other fungal infections. A rise in titer is significant, the titer correlating with the severity of disease.

ADMINISTRATIVE

CPT Codes:
86671-90

COMPLETE VIEW

Available Stat:
No

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Performing Lab:
LabCorp

Sendout:
Yes

Methodology:
Immunodiffusion

Collect:
Gold top

Amount to Collect:
3 mL blood

Sample Type:
Serum

Preferred Volume:
1.5 mL serum

Minimum Volume:
1 mL serum

Specimen Preparation:
Order LabCorp test # 138452

Reference Interval:
Negative

Stability (from collection to initiation):
Refrigerated 3 days, frozen 1 week

Reported:
5-7 days

Additional Information:
For diagnosis of infection due to Paracoccidioides brasiliensis. Cross-reactions at low titer may occur with other fungal infections. A rise in titer is significant, the titer correlating with the severity of disease.

CPT Codes:
86671-90

Parainfluenza Antibodies

PFL1

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Complement fixation

Reported:
Set up 5 days a week. Turnaround time 4-7 days.

Additional Information:
Includes testing for Parainfluenza types 1, 2 and 3

Single antibody titers of >= 1:64 are indicative or recent infection. Titers of 1:8 to 1:32 may be indicative of either past or recent infection,
since CF antibody levels persist for only a few months.

A four-fold or greater increase in titer between
acute and convalescent specimens confirms the diagnosis.

After initial infection, antibody responses at a later date are often heterotypic and exhibit crossreactivity with other paramyxoviruses (e.g., mumps).

Synonyms:

- Paraflu

COLLECTION

Sample Type:
Serum

Collect:
Red top or Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature 7 days, refrigerated 17 days, frozen at -20C 1 month

Unacceptable Conditions:
Hemolysis

Rejection Criteria:
Hemolysis

PROCESSING

Test Code:
PFL1

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate serum at 4C. Order Quest test #5157N

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Hemolysis

Rejection Criteria:
Hemolysis

Stability (from collection to initiation):
Room temperature 7 days, refrigerated 17 days, frozen at -20C 1 month

RESULT INTERPRETATION

Units:
Titer

Reference Interval:
Negative: < 1:8 titer

Additional Information:
Includes testing for Parainfluenza types 1, 2 and 3

Single antibody titers of >= 1:64 are indicative or recent infection. Titers of 1:8 to 1:32 may be indicative of either past or recent infection,
since CF antibody levels persist for only a few months.

A four-fold or greater increase in titer between
acute and convalescent specimens confirms the diagnosis.

After initial infection, antibody responses at a later date are often heterotypic and exhibit crossreactivity with other paramyxoviruses (e.g., mumps).

ADMINISTRATIVE

CPT Codes:
86790-90 x 3

LOINC Codes:
49713-1

COMPLETE VIEW

Available Stat:
No

Test Code:
PFL1

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Complement fixation

Collect:
Red top or Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Rejection Criteria:
Hemolysis

Unacceptable Conditions:
Hemolysis

Specimen Preparation:
Refrigerate serum at 4C. Order Quest test #5157N

Units:
Titer

Reference Interval:
Negative: < 1:8 titer

Synonyms:

- Paraflu

Stability (from collection to initiation):
Room temperature 7 days, refrigerated 17 days, frozen at -20C 1 month

Reported:
Set up 5 days a week. Turnaround time 4-7 days.

Additional Information:
Includes testing for Parainfluenza types 1, 2 and 3

Single antibody titers of >= 1:64 are indicative or recent infection. Titers of 1:8 to 1:32 may be indicative of either past or recent infection,
since CF antibody levels persist for only a few months.

A four-fold or greater increase in titer between
acute and convalescent specimens confirms the diagnosis.

After initial infection, antibody responses at a later date are often heterotypic and exhibit crossreactivity with other paramyxoviruses (e.g., mumps).

CPT Codes:
86790-90 x 3

LOINC Codes:
49713-1

Paraneoplastic Antibody Evaluation, CSF

PAECSF

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
IFA

Reported:
1-2 weeks

Additional Information:
List of antibodies tested and reference ranges.

Reflex Testing:
Additional testing may be initiated based on results of initial immunofluorescent screening assays aand separately charged.

COLLECTION

Sample Type:
CSF

Collect:
CSF tube or sterile collection tube

Amount to Collect:
4 mL CSF

Preferred Volume:
4 mL CSF

Minimum Volume:
3 mL CSF

Stability (from collection to initiation):
Room temperature 3 days, frozen 2 weeks.

PROCESSING

Test Code:
PAECSF

Test Group:
Paraneoplastic antibodies

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Freeze CSF and ship frozen to China Basin

Preferred Volume:
4 mL CSF

Minimum Volume:
3 mL CSF

Stability (from collection to initiation):
Room temperature 3 days, frozen 2 weeks.

RESULT INTERPRETATION

Units:
Titer

Reference Interval:

Antibody	Titer
Antineuronal Nuclear Antibody-Type 1 (ANNA-1)	Negative at <1:2
Antineuronal Nuclear Antibody-Type 2 (ANNA-2)	Negative at <1:2
Antineuronal Nuclear Antibody-Type 3 (ANNA-3)	Negative at <1:2
Anti-Glial/Neuronal Nuclear Antibody, Type 1 (AGNA-1)	Negative at <1:2
Purkinje Cell Cytoplasmic Antibody, Type 1 (PCA-1)	Negative at <1:2
Purkinje Cell Cytoplasmic Antibody, Type 2 (PCA-2)	Negative at <1:2
Purkinje Cell Cytoplasmic Antibody, Type Tr (PCA-Tr)	Negative at <1:2
Amphiphysin Antibody	Negative at <1:2
CRMP-5-IgG	Negative at <1:2

Note: Titers lower than 1:2 are detectable by recombinant CRMP-5 Western blot analysis. CRMP-5 Western blot analysis will be done on request on stored spinal fluid (held 4 weeks). This supplemental testing is recommended in cases of chorea, vision loss, cranial neuropathy, and myelopathy. Call the Neuroimmunology Laboratory at 800-533-1710 or 507-266-5700 to request CRMP-5 Western blot.

Additional Information:

List of antibodies tested and reference ranges.

ADMINISTRATIVE

CPT Codes:

See vendor website.

LOINC Codes:

See vendor website.

COMPLETE VIEW

Available Stat:

No

Test Code:

PAECSF

Test Group:

Paraneoplastic antibodies

Performing Lab:

Mayo

Sendout:

Yes

Methodology:

IFA

Collect:

CSF tube or sterile collection tube

Amount to Collect:

4 mL CSF

Sample Type:

CSF

Preferred Volume:

4 mL CSF

Minimum Volume:

3 mL CSF

Specimen Preparation:

Freeze CSF and ship frozen to China Basin

Units:

Titer

Reference Interval:

Antibody	Titer
Antineuronal Nuclear Antibody-Type 1 (ANNA-1)	Negative at <1:2
Antineuronal Nuclear Antibody-Type 2 (ANNA-2)	Negative at <1:2
Antineuronal Nuclear Antibody-Type 3 (ANNA-3)	Negative at <1:2
Anti-Glial/Neuronal Nuclear Antibody, Type 1 (AGNA-1)	Negative at <1:2
Purkinje Cell Cytoplasmic Antibody, Type 1 (PCA-1)	Negative at <1:2
Purkinje Cell Cytoplasmic Antibody, Type 2 (PCA-2)	Negative at <1:2
Purkinje Cell Cytoplasmic Antibody, Type Tr (PCA-Tr)	Negative at <1:2
Amphiphysin Antibody	Negative at <1:2
CRMP-5-IgG	Negative at <1:2

Note: Titers lower than 1:2 are detectable by recombinant CRMP-5 Western blot analysis. CRMP-5 Western blot analysis will be done on request on stored spinal fluid (held 4 weeks). This supplemental testing is recommended in cases of chorea, vision loss, cranial neuropathy, and myelopathy. Call the Neuroimmunology Laboratory at 800-533-1710 or 507-266-5700 to request CRMP-5 Western blot.

Stability (from collection to initiation):

Room temperature 3 days, frozen 2 weeks.

Reported:

1-2 weeks

Reflex Testing:

Additional testing may be initiated based on results of initial immunofluorescent screening assays aand separately charged.

Additional Information:

List of antibodies tested and reference ranges.

CPT Codes:

See vendor website.

LOINC Codes:

See vendor website.

Paraneoplastic Antibody Evaluation, Serum

PAE

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
IFA, RIA, EIA

Reported:
3-4 weeks

Additional Information:
List of antibodies tested and reference ranges.

Reflex Testing:
Additional testing may be initiated based on results of initial immunofluorescent screening assays aand separately charged.

COLLECTION

Sample Type:
Serum

Collect:
Red top, Gold top

Amount to Collect:
6 mL blood

Preferred Volume:
3 mL serum

Minimum Volume:
2 mL serum

Stability (from collection to initiation):
Room temperature 3 days, refrigerated or frozen 4 weeks.

PROCESSING

Test Code:
PAE

Test Group:
Paraneoplastic antibodies

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Refrigerate serum and ship to China Basin refrigerated. Do not freeze. Should be shipped same day as collection.

Preferred Volume:
3 mL serum

Minimum Volume:
2 mL serum

Stability (from collection to initiation):
Room temperature 3 days, refrigerated or frozen 4 weeks.

RESULT INTERPRETATION

Units:
Titer

Reference Interval:

Antibody	Titer
Antineuronal Nuclear Antibody-Type 1 (ANNA-1)	<1:240
Antineuronal Nuclear Antibody -Type 2 (ANNA-2)	<1:240
Antineuronal Nuclear Antibody -Type 3 (ANNA-3)	<1:240
Anti-Glial/Neuronal Nuclear Antibody-Type 1 (AGNA-1)	<1:240
Purkinje Cell Cytoplasmic Antibody, Type 1 (PCA-1)	<1:240
Purkinje Cell Cytoplasmic Antibody, Type 2 (PCA-2)	<1:240
Purkinje Cell Cytoplasmic Antibody, Type Tr (PCA-Tr)	<1:240
Amphiphysin Antibody	<1:240
CRMP-5-IgG	<1:240*
Striational (Striated Muscle) Antibodies	<1:60
N-Type Calcium Channel Antibody	<= 0.03 nmol/L
P/Q-Type Calcium Channel Antibody	<= 0.02 nmol/L
ACh Receptor (Muscle) Binding Antibody	<= 0.02 nmol/L
AChR Ganglionic Neuronal Antibody	<= 0.02 nmol/L
Neuronal VGKC Autoantibody	<= 0.02 nmol/L

*Note: Titers lower than 1:240 are detectable by recombinant CRMP-5 Western blot analysis. CRMP-5 Western blot analysis will be done on request on stored serum (held 4 weeks). This supplemental testing is recommended in cases of chorea, vision loss, cranial neuropathy, and myelopathy. Call the Neuroimmunology Laboratory at 800-533-1710 or 507-266-5700 to request CRMP-5 Western blot.

Neuron-restricted patterns of IgG staining that do not fulfill criteria for amphiphysin, ANNA-1, ANNA-2, ANNA-3, AGNA-1, PCA-1, PCA-2, PCA-Tr, or CRMP-5-IgG may be reported as "unclassified antineuronal IgG." Complex patterns that include non-neuronal elements may be reported as "uninterpretable."

Additional Information:

List of antibodies tested and reference ranges.

ADMINISTRATIVE

CPT Codes:

See vendor website.

LOINC Codes:

See vendor website.

COMPLETE VIEW

Available Stat:

No

Test Code:

PAE

Test Group:

Paraneoplastic antibodies

Performing Lab:

Mayo

Sendout:

Yes

Methodology:

IFA, RIA, EIA

Collect:

Red top, Gold top

Amount to Collect:

6 mL blood

Sample Type:

Serum

Preferred Volume:

3 mL serum

Minimum Volume:

2 mL serum

Specimen Preparation:
Refrigerate serum and ship to China Basin refrigerated. Do not freeze. Should be shipped same day as collection.

Units:
Titer

Reference Interval:

Antibody	Titer
Antineuronal Nuclear Antibody-Type 1 (ANNA-1)	<1:240
Antineuronal Nuclear Antibody -Type 2 (ANNA-2)	<1:240
Antineuronal Nuclear Antibody -Type 3 (ANNA-3)	<1:240
Anti-Glial/Neuronal Nuclear Antibody-Type 1 (AGNA-1)	<1:240
Purkinje Cell Cytoplasmic Antibody, Type 1 (PCA-1)	<1:240
Purkinje Cell Cytoplasmic Antibody, Type 2 (PCA-2)	<1:240
Purkinje Cell Cytoplasmic Antibody, Type Tr (PCA-Tr)	<1:240
Amphiphysin Antibody	<1:240
CRMP-5-IgG	<1:240*
Striational (Striated Muscle) Antibodies	<1:60
N-Type Calcium Channel Antibody	<= 0.03 nmol/L
P/Q-Type Calcium Channel Antibody	<= 0.02 nmol/L
ACh Receptor (Muscle) Binding Antibody	<= 0.02 nmol/L
AChR Ganglionic Neuronal Antibody	<= 0.02 nmol/L
Neuronal VGKC Autoantibody	<= 0.02 nmol/L

*Note: Titers lower than 1:240 are detectable by recombinant CRMP-5 Western blot analysis. CRMP-5 Western blot analysis will be done on request on stored serum (held 4 weeks). This supplemental testing is recommended in cases of chorea, vision loss, cranial neuropathy, and myelopathy. Call the Neuroimmunology Laboratory at 800-533-1710 or 507-266-5700 to request CRMP-5 Western blot.

Neuron-restricted patterns of IgG staining that do not fulfill criteria for amphiphysin, ANNA-1, ANNA-2, ANNA-3, AGNA-1, PCA-1, PCA-2, PCA-Tr, or CRMP-5-IgG may be reported as "unclassified antineuronal IgG." Complex patterns that include non-neuronal elements may be reported as "uninterpretable."

Stability (from collection to initiation):
Room temperature 3 days, refrigerated or frozen 4 weeks.

Reported:
3-4 weeks

Reflex Testing:
Additional testing may be initiated based on results of initial immunofluorescent screening assays aand separately charged.

Additional Information:
List of antibodies tested and reference ranges.

CPT Codes:
See vendor website.

LOINC Codes:
See vendor website.

Parasite identification

P404

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Monday-Friday, day shift

Reported:
1-3 days

Additional Information:
For genus, species and stage of worm.

Scolex idetification is not offered as effective therapy destroys the scolex.

Synonyms:

- Scolex

COLLECTION

Sample Type:
Worm, or proglottid

Collect:
Fresh specimen preferred on moistened gauze in clean container. Samples submitted in 70% ethanol or 10% formalin acceptable.

Stability (from collection to initiation):
Refrigerated 24 hours

PROCESSING

Test Code:
P404

Test Group:
Parasites

Performing Lab:
Microbiology

Stability (from collection to initiation):
Refrigerated 24 hours

RESULT INTERPRETATION

Additional Information:
For genus, species and stage of worm.

Scolex idetification is not offered as effective therapy destroys the scolex.

ADMINISTRATIVE

CPT Codes:
87169

LOINC Codes:
673-4

COMPLETE VIEW

Available Stat:
No

Test Code:
P404

Test Group:
Parasites

Performing Lab:
Microbiology

Performed:
Monday-Friday, day shift

Collect:
Fresh specimen preferred on moistened gauze in clean container. Samples submitted in 70% ethanol or 10% formalin acceptable.

Sample Type:
Worm, or proglottid

Synonyms:

- Scolex

Stability (from collection to initiation):
Refrigerated 24 hours

Reported:
1-3 days

Additional Information:
For genus, species and stage of worm.

Scolex idetification is not offered as effective therapy destroys the scolex.

CPT Codes:
87169

LOINC Codes:
673-4

Parasite Wet Mount

P412

ORDERING

Ordering Recommendations:

Specify suspected parasite so appropriate method can be performed.

If submitting sputum for Strongyloides, Ascaris, or Hookworm, also submit stool for Ova and Parasite exam (P401).

CSF specimens should be ordered as P417 Acanthamoeba Culture and Smear, which includes wet mount for Naegleria, Balamuthia and other free-amoeba.

Available Stat:

No

Performing Lab:

China Basin Microbiology

Performed:

Monday - Friday, dayshift

Methodology:

Microscopy

Reported:

1 - 3 days

Additional Information:

Liver aspirates for Entamoeba histolytica should submitted as P401 Ova and Parasite Exam.

Tissue biopsies for amebiasis should be submitted to Surgical Pathology.

Reflex Testing:

Negative direct exams may require a concentration procedure to be employed at an additional charge.

If Microfilaria are present, a Giemsa stain may be ordered at an additional charge.

Synonyms:

- Strongyloides
- Ascaris
- Hookworm
- Paragonimus
- Schistosoma haematobium
- Onchocerca
- Microfilaria
- Echinococcus
- Hydatid cyst

COLLECTION

Sample Type:

Urine, sputum, BAL, skin snips

Liver aspirates and hydatid cyst fluid may be submitted for Echinococcus detection.

Bladder or Rectal biopsy for determining viability of Schistosoma eggs and need for therapy.

Other sample types may be accepted at the discretion of the Parasitologist.

Collect:

Sterile container (24 hour urine container for S. haematobium)

Amount to Collect:

See Preferred Volume.

Preferred Volume:

Sputum or BAL: 2 - 5 ml

Skin snips: 6 snips each 2 - 3 mm in diameter

Minimum Volume:

Sputum or BAL: 2 ml

Remarks:

Urine for Schistosoma haematobium: Collect all urine voided between 1000 - 1400 (peak egg excretion).

For microfilaria (Onchocerca volvulus), submit skin snips taken from an affected area or from scapular, gluteal, calf areas (African form), or from scapular, gluteal, deltoid areas (Central American form). Collect samples using a corneoscleral punch or by lifting the skin with a needle point and excising epidermis and dermis with a razor. Place each snip in a separate container with a small amount of physiologic saline.

Stability (from collection to initiation):

1- 2 days

Skin snips and tissue biopsies should be read on the day of collection whenever possible.

Storage/Transport Temperature:

Urine, sputum and BAL should be refrigerated.

Skin snips should be placed in a 35 degree incubator if received after hours.

PROCESSING

Test Code:

P412

Test Group:

Parasitology

Performing Lab:

China Basin Microbiology

Specimen Preparation:

If urine for S. haematobium cannot be examined within 72 hours, add 2 ml undiluted household bleach to each 100ml of specimen prior to refrigeration.

Do not reject sample types not listed. Consult with Supervisor or Parasitology CLS if necessary.

Preferred Volume:

Sputum or BAL: 2 - 5 ml

Skin snips: 6 snips each 2 - 3 mm in diameter

Minimum Volume:

Sputum or BAL: 2 ml

Stability (from collection to initiation):

1- 2 days

Skin snips and tissue biopsies should be read on the day of collection whenever possible.

Storage/Transport Temperature:

Urine, sputum and BAL should be refrigerated.

Skin snips should be placed in a 35 degree incubator if received after hours.

RESULT INTERPRETATION

Reference Interval:

No parasites seen.

Additional Information:

Liver aspirates for Entamoeba histolytica should submitted as P401 Ova and Parasite Exam.

Tissue biopsies for amebiasis should be submitted to Surgical Pathology.

ADMINISTRATIVE

CPT Codes:

87210

LOINC Codes:

33017-5

COMPLETE VIEW

Available Stat:

No

Ordering Recommendations:

Specify suspected parasite so appropriate method can be performed.

If submitting sputum for Strongyloides, Ascaris, or Hookworm, also submit stool for Ova and Parasite exam (P401).

CSF specimens should be ordered as P417 Acanthamoeba Culture and Smear, which includes wet mount for Naegleria, Balamuthia and other free-amoeba.

Test Code:

P412

Test Group:

Parasitology

Performing Lab:

China Basin Microbiology

Performed:

Monday - Friday, dayshift

Methodology:

Microscopy

Remarks:

Urine for Schistosoma haematobium: Collect all urine voided between 1000 - 1400 (peak egg excretion).

For microfilaria (Onchocerca volvulus), submit skin snips taken from an affected area or from scapular, gluteal, calf areas (African form), or from scapular, gluteal, deltoid areas (Central American form). Collect samples using a corneoscleral punch or by lifting the skin with a needle point and excising epidermis and dermis with a razor. Place each snip in a separate container with a small amount of physiologic saline.

Collect:

Sterile container (24 hour urine container for S. haematobium)

Amount to Collect:

See Preferred Volume.

Sample Type:

Urine, sputum, BAL, skin snips

Liver aspirates and hydatid cyst fluid may be submitted for Echinococcus detection.

Bladder or Rectal biopsy for determining viability of Schistosoma eggs and need for therapy.

Other sample types may be accepted at the discretion of the Parasitologist.

Preferred Volume:

Sputum or BAL: 2 - 5 ml

Skin snips: 6 snips each 2 - 3 mm in diameter

Minimum Volume:

Sputum or BAL: 2 ml

Specimen Preparation:

If urine for S. haematobium cannot be examined within 72 hours, add 2 ml undiluted household bleach to each 100ml of specimen prior to refrigeration.

Do not reject sample types not listed. Consult with Supervisor or Parasitology CLS if necessary.

Reference Interval:

No parasites seen.

Synonyms:

- Strongyloides
- Ascaris
- Hookworm
- Paragonimus
- Schistosoma haematobium
- Onchocerca
- Microfilaria
- Echinococcus
- Hydatid cyst

Storage/Transport Temperature:

Urine, sputum and BAL should be refrigerated.

Skin snips should be placed in a 35 degree incubator if received after hours.

Stability (from collection to initiation):

1- 2 days

Skin snips and tissue biopsies should be read on the day of collection whenever possible.

Reported:

1 - 3 days

Reflex Testing:

Negative direct exams may require a concentration procedure to be employed at an additional charge.

If Microfilaria are present, a Giemsa stain may be ordered at an additional charge.

Additional Information:

Liver aspirates for Entamoeba histolytica should submitted as P401 Ova and Parasite Exam.

Tissue biopsies for amebiasis should be submitted to Surgical Pathology.

CPT Codes:

87210

LOINC Codes:

33017-5

Parasites, blood

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Malaria: Stat: Daily all shifts
Other parasites: Monday-Friday, day shift

Additional Information:
see Filaria, Leishmania, Malaria and Trypanosoma

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top

Amount to Collect:
3 mL blood

Stability (from collection to initiation):
Room temperature 24 hours

PROCESSING

Test Group:
Parasites

Performing Lab:
Microbiology

Stability (from collection to initiation):
Room temperature 24 hours

RESULT INTERPRETATION

Critical Values:
Positive smear

Additional Information:
see Filaria, Leishmania, Malaria and Trypanosoma

COMPLETE VIEW

Available Stat:
No

Test Group:
Parasites

Performing Lab:
Microbiology

Performed:
Malaria: Stat: Daily all shifts
Other parasites: Monday-Friday, day shift

Collect:
Lavender top

Amount to Collect:
3 mL blood

Sample Type:
EDTA whole blood

Critical Values:
Positive smear

Stability (from collection to initiation):
Room temperature 24 hours

Additional Information:

see Filaria, Leishmania, Malaria and Trypanosoma

Parasites, Respiratory

P412, P407, P414, P403

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Monday-Friday, day shift

Methodology:
Wet mount, Acid-fast smear, Modified trichrome smear, Giemsa stain as appropriate

Reported:
1-3 days

Additional Information:
Parasites and methods of detection:

Ascaris lumbricoides larva, Echinococcus, Paragonimus, and Strongyloides stercoralis detected by wet mount.

Cryptosporidium detected by acid fast smear.

Microsporidia detected by modified Trichrome stain.

Toxoplasma gondii detected by Giemsa stain.

A concentration procedure will be performed on sputum if appropriate, and at an additional charge.

COLLECTION

Sample Type:
Sputum, BAL

Collect:
Urine cup

Amount to Collect:
See preferred volume

Preferred Volume:
5 mL BAL or sputum

Minimum Volume:
2 mL BAL or sputum

Remarks:
Specify suspected parasite so appropriate method can be performed. For suspected Strongyloides stercoralis infection, submit stool as well.

Stability (from collection to initiation):
Refrigerated 2 days

PROCESSING

Test Code:
Wet Mount (P412), Coccidia Exam (P407), Microsporidium Stain (P414), Intracellular Parasite Stain (P403)

Test Group:
Parasites

Performing Lab:
Microbiology

Specimen Preparation:
Refrigerate sample

Preferred Volume:
5 mL BAL or sputum

Minimum Volume:
2 mL BAL or sputum

Stability (from collection to initiation):
Refrigerated 2 days

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
Parasites and methods of detection:

Ascaris lumbricoides larva, Echinococcus, Paragonimus, and Strongyloides stercoralis detected by wet mount.

Cryptosporidium detected by acid fast smear.

Microsporidia detected by modified Trichrome stain.

Toxoplasma gondii detected by Giemsa stain.

A concentration procedure will be performed on sputum if appropriate, and at an additional charge.

ADMINISTRATIVE

CPT Codes:
Wet Mount (87210), Coccidia Exam (87206), Microsporidium Stain (87207), Intracellular Parasite Stain (87207)

COMPLETE VIEW

Available Stat:
No

Test Code:
Wet Mount (P412), Coccidia Exam (P407), Microsporidium Stain (P414), Intracellular Parasite Stain (P403)

Test Group:
Parasites

Performing Lab:
Microbiology

Performed:
Monday-Friday, day shift

Methodology:
Wet mount, Acid-fast smear, Modified trichrome smear, Giemsa stain as appropriate

Remarks:
Specify suspected parasite so appropriate method can be performed. For suspected Strongyloides stercoralis infection, submit stool as well.

Collect:
Urine cup

Amount to Collect:
See preferred volume

Sample Type:
Sputum, BAL

Preferred Volume:
5 mL BAL or sputum

Minimum Volume:
2 mL BAL or sputum

Specimen Preparation:
Refrigerate sample

Reference Interval:
Negative

Stability (from collection to initiation):
Refrigerated 2 days

Reported:
1-3 days

Additional Information:

Parasites and methods of detection:

Ascaris lumbricoides larva, Echinococcus, Paragonimus, and Strongyloides stercoralis detected by wet mount.

Cryptosporidium detected by acid fast smear.

Microsporidia detected by modified Trichrome stain.

Toxoplasma gondii detected by Giemsa stain.

A concentration procedure will be performed on sputum if appropriate, and at an additional charge.

CPT Codes:

Wet Mount (87210), Coccidia Exam (87206), Microsporidium Stain (87207), Intracellular Parasite Stain (87207)

Parathormone Related Protein

PTHRP

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
Immunochemiluminometric assay

Reported:
Performed Monday - Thursday, turnaround time 3-7 days.

Synonyms:

- PTH related protein
- Parathyroid hormone related protein

COLLECTION

Sample Type:
EDTA Plasma

Collect:
Lavender top (on ice)

Amount to Collect:
1.5 mL blood

Preferred Volume:
0.7 mL plasma

Minimum Volume:
0.25 mL plasma

Remarks:
Pre-chill lavender top tube prior to collection in ice-water slurry. Deliver sample immediately to lab on ice for processing.

Stability (from collection to initiation):
Frozen 3 months.

Rejection Criteria:
Whole blood or thawed plasma received

PROCESSING

Test Code:
PTHRP

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Centrifuge for at least 15 minutes. Transfer the plasma to a plastic transport tube, freeze sample and ship at frozen to China Basin Sendouts.

Preferred Volume:
0.7 mL plasma

Minimum Volume:
0.25 mL plasma

Rejection Criteria:
Whole blood or thawed plasma received

Stability (from collection to initiation):
Frozen 3 months.

RESULT INTERPRETATION

Units:
pmol/L

Reference Interval:
<= 4.2 pmol/L

ADMINISTRATIVE

CPT Codes:
82397-90

LOINC Codes:
2729-2

COMPLETE VIEW

Available Stat:
No

Test Code:
PTHRP

Performing Lab:
Mayo

Sendout:
Yes

Methodology:
Immunochemiluminometric assay

Remarks:
Pre-chill lavender top tube prior to collection in ice-water slurry. Deliver sample immediately to lab on ice for processing.

Collect:
Lavender top (on ice)

Amount to Collect:
1.5 mL blood

Sample Type:
EDTA Plasma

Preferred Volume:
0.7 mL plasma

Minimum Volume:
0.25 mL plasma

Rejection Criteria:
Whole blood or thawed plasma received

Specimen Preparation:
Centrifuge for at least 15 minutes. Transfer the plasma to a plastic transport tube, freeze sample and ship at frozen to China Basin Sendouts.

Units:
pmol/L

Reference Interval:
<= 4.2 pmol/L

Synonyms:

- PTH related protein
- Parathyroid hormone related protein

Stability (from collection to initiation):
Frozen 3 months.

Reported:
Performed Monday - Thursday, turnaround time 3-7 days.

CPT Codes:
82397-90

LOINC Codes:
2729-2

Parathormone, Body fluid (FNA)

PTHB

ORDERING

Ordering Recommendations:
Not a routinely available test. See 'Additional information'

Available Stat:
No

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Parnassus:
Roche Cobas E411 (4th Floor Lab):
Wednesday 0800-2300, Thursday 0700-2300

Abbott Architect i2000 (5th Floor Lab):
Monday, Tuesday, and Friday 0800-2300

Mission Bay: 0800-2300
Mount Zion: 0730-1900

Methodology:
Parnassus: Roche Cobas E411 Immunoassay or Abbott Architect i2000 Chemiluminescent Microparticle Immunoassay
Mt. Zion: Roche Cobas E411 Immunoassay
Mission Bay: Abbott Architect i2000 Chemiluminescent Microparticle Immunoassay

Reported:
1-3 days

Additional Information:
As normal samples are not available for validating the performance of this assay, the UCSF Clinical laboratory makes no claims with regard to the accuracy of the result.

All results will be appended with a disclaimer: "The reference range and other method performance specifications have not been established by the UCSF Clinical Laboratory for this body fluid. The test result must be integrated into the clinical context for interpretation."

Assay for intact PTH in "neck" or "thyroid" cytology aspirates may be helpful in determining presence of inadvertently sampled parathyroid adenoma tissue. In aspirate samples of parathyroid adenomas, the ratio of PTH in the aspirate samples versus in serum is typically > 3 even without accounting for dilution of the aspirate sample (Owens CL et al. Diagnostic Cytopathology 26:227-231, 2008).

Synonyms:

- PTH FNA
- Parathyroid hormone

COLLECTION

Sample Type:
FNA fluid or tissue aspirate

Collect:
Sterile tube (see collection instructions)

Amount to Collect:
0.5 mL (see collection instructions)

Preferred Volume:
0.5 mL fluid

Minimum Volume:
0.5 mL fluid

Remarks:
Submit each FNA sample suspended in 0.5 mL (10 drops) of saline in a sterile tube. Each sample should be labeled with an identifier and the same information listed below to allow for proper identification of sample(s) on lab reports.

Deliver immediately to laboratory

Stability (from collection to initiation):
Room temperature 2 hours, refrigerated unacceptable, frozen at -20C 1 week.

PROCESSING

Test Code:
PTHB

Test Group:
Parathormone

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Specimen Preparation:
Deliver immediately to laboratory.

Preferred Volume:
0.5 mL fluid

Minimum Volume:
0.5 mL fluid

Stability (from collection to initiation):
Room temperature 2 hours, refrigerated unacceptable, frozen at -20C 1 week.

RESULT INTERPRETATION

Units:
ng/L

Additional Information:
As normal samples are not available for validating the performance of this assay, the UCSF Clinical laboratory makes no claims with regard to the accuracy of the result.

All results will be appended with a disclaimer: "The reference range and other method performance specifications have not been established by the UCSF Clinical Laboratory for this body fluid. The test result must be integrated into the clinical context for interpretation."

Assay for intact PTH in "neck" or "thyroid" cytology aspirates may be helpful in determining presence of inadvertently sampled parathyroid adenoma tissue. In aspirate samples of parathyroid adenomas, the ratio of PTH in the aspirate samples versus in serum is typically > 3 even without accounting for dilution of the aspirate sample (Owens CL et al. Diagnostic Cytopathology 26:227-231, 2008).

Interpretive Data:
1. The reference range and other method performance specifications have not been established by the UCSF Clinical Laboratory for this body fluid. The test result must be integrated into the clinical context for interpretation.

2. The Cobas E411 assay used at Parnassus and Mt Zion is sensitive to the presence of hemolysis. If visual hemolysis present after sample spun, result will be appended with the following comment:

"Hemolysis present. Hemolysis has been shown to decrease IOPTH values up to 55%. Caution should be applied in application of result in clinical care."

ADMINISTRATIVE

CPT Codes:
83970

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Not a routinely available test. See 'Additional information'

Test Code:
PTHB

Test Group:
Parathormone

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:

Parnassus:
Roche Cobas E411 (4th Floor Lab):
Wednesday 0800-2300, Thursday 0700-2300

Abbott Architect i2000 (5th Floor Lab):
Monday, Tuesday, and Friday 0800-2300

Mission Bay: 0800-2300
Mount Zion: 0730-1900

Methodology:

Parnassus: Roche Cobas E411 Immunoassay or Abbott Architect i2000 Chemiluminescent Microparticle Immunoassay
Mt. Zion: Roche Cobas E411 Immunoassay
Mission Bay: Abbott Architect i2000 Chemiluminescent Microparticle Immunoassay

Remarks:

Submit each FNA sample suspended in 0.5 mL (10 drops) of saline in a sterile tube. Each sample should be labeled with an identifier and the same information listed below to allow for proper identification of sample(s) on lab reports.

Deliver immediately to laboratory

Collect:

Sterile tube (see collection instructions)

Amount to Collect:

0.5 mL (see collection instructions)

Sample Type:

FNA fluid or tissue aspirate

Preferred Volume:

0.5 mL fluid

Minimum Volume:

0.5 mL fluid

Specimen Preparation:

Deliver immediately to laboratory.

Units:

ng/L

Interpretive Data:

1. The reference range and other method performance specifications have not been established by the UCSF Clinical Laboratory for this body fluid. The test result must be integrated into the clinical context for interpretation.

2. The Cobas E411 assay used at Parnassus and Mt Zion is sensitive to the presence of hemolysis. If visual hemolysis present after sample spun, result will be appended with the following comment:

"Hemolysis present. Hemolysis has been shown to decrease IOPTH values up to 55%. Caution should be applied in application of result in clinical care."

Synonyms:

- PTH FNA
- Parathyroid hormone

Stability (from collection to initiation):

Room temperature 2 hours, refrigerated unacceptable, frozen at -20C 1 week.

Reported:

1-3 days

Additional Information:

As normal samples are not available for validating the performance of this assay, the UCSF Clinical laboratory makes no claims with regard to the accuracy of the result.

All results will be appended with a disclaimer: "The reference range and other method performance specifications have not been established by the UCSF Clinical Laboratory for this body fluid. The test result must be integrated into the clinical context for interpretation."

Assay for intact PTH in "neck" or "thyroid" cytology aspirates may be helpful in determining presence of inadvertently sampled parathyroid adenoma tissue. In aspirate samples of parathyroid adenomas, the ratio of PTH in the aspirate samples versus in serum is typically > 3 even without accounting for dilution of the aspirate sample (Owens CL et al. Diagnostic Cytopathology 26:227-231, 2008).

CPT Codes:

83970

Parathormone, intact

PTH, PTHI

ORDERING

Available Stat:
No

Performing Lab:
China Basin Chemistry

Performed:
Tuesday, Thursday, Saturday (day shift)

Methodology:
Chemiluminescent Microparticle Immunoassay (Abbott Architect i2000)

Reported:
1-3 days

Reflex Testing:
A serum calcium is automatically ordered and charged on the same specimen or group of specimens.

Synonyms:

- PTH
- Parathyroid hormone

COLLECTION

Sample Type:
Plasma/Serum

Collect:
Parathyroid Hormone with Calcium (PTH)
Preferred: Light Green Top (Lithium Heparin)
Acceptable: Gold Top (SST)

Parathyroid Hormone, Intact (PTHI)
Preferred: Light Green Top (Lithium Heparin)
Acceptable: Gold Top (SST) or Lavender Top (K-EDTA)

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL plasma/serum

Minimum Volume:
0.3 mL plasma/serum

Remarks:
Transport promptly to laboratory.

Stability (from collection to initiation):
Refrigerated (2-8°C): <= 2 days
Frozen (-20°C): 6 months

Testing permitted on primary tube specimen if refrigerated sample is <= 48 hours old.

Avoid more than 5 freeze-thaw cycles.

PROCESSING

Test Code:
PTH (Parathyroid Hormone with Calcium)
PTHI (Parathyroid Hormone, Intact)

Test Group:
Parathormone

Performing Lab:
China Basin Chemistry

Specimen Preparation:
Centrifuge within 6 hours of collection, aliquot, and freeze immediately at -20°C.

Preferred Volume:
0.5 mL plasma/serum

Minimum Volume:
0.3 mL plasma/serum

Stability (from collection to initiation):
Refrigerated (2-8°C): <= 2 days
Frozen (-20°C): 6 months

Testing permitted on primary tube specimen if refrigerated sample is <= 48 hours old.

Avoid more than 5 freeze-thaw cycles.

RESULT INTERPRETATION

Units:
ng/L

Reference Interval:
Adult Reference Range (>= 18 years): 18 to 90 ng/L

Reference range adopted from literature references (see below) and verified in-house using 57 normal volunteers in the UCSF Laboratory.

Am J Clin Pathol. 2010;134:930-8. Performance characteristics of six intact parathyroid hormone assays. La'ulu SL1, Roberts WL.

Clin Chim Acta. 2013;426:41-5 Prevalence of vitamin D deficiency and consequences for PTH reference values. Deckers MM et al.

Pediatric Reference Range:

Age	Result (ng/L)
6 days - < 1 year	6 - 89
1 year - < 9 years	16 - 63
9 years - < 18 years	22 - 88

Pediatric reference ranges adopted from CALIPER Pediatric Reference Interval study performed on random samples using the Abbott Architect i2000 assay.

Interpretive Data:
Method changed from Siemens Immulite 2000 platform to Abbott Architect i2000 platform on 2/20/19.

In normal subjects, the Abbott Architect assay reads approximately 20 ng/L (pg/mL) higher on average than the Siemens Immulite 2000 assay. For patients with elevated PTH values, the Architect assay reads approximately 15-20% higher on average than the Immulite assay. The normal reference range for PTH has been adjusted upwards and is 18-90 in the Architect assay compared with 12-65 in the old Immulite assay.

The value of the ARCHITECT Intact PTH Calibrators are established against a set of Internal Reference Calibrators, which are traceable to the World Health Organization's first international standard for PTH from the NIBSC, code 79/500.

Note: In the Architect assay, PTH levels run approximately 15% higher in serum samples than in plasma samples.

ADMINISTRATIVE

CPT Codes:
83970; 82310

COMPLETE VIEW

Available Stat:
No

Test Code:
PTH (Parathyroid Hormone with Calcium)
PTHI (Parathyroid Hormone, Intact)

Test Group:
Parathormone

Performing Lab:
China Basin Chemistry

Performed:
Tuesday, Thursday, Saturday (day shift)

Methodology:
Chemiluminescent Microparticle Immunoassay (Abbott Architect i2000)

Remarks:
Transport promptly to laboratory.

Collect:
Parathyroid Hormone with Calcium (PTH)
Preferred: Light Green Top (Lithium Heparin)
Acceptable: Gold Top (SST)

Parathyroid Hormone, Intact (PTHI)
Preferred: Light Green Top (Lithium Heparin)
Acceptable: Gold Top (SST) or Lavender Top (K-EDTA)

Amount to Collect:
1 mL blood

Sample Type:
Plasma/Serum

Preferred Volume:
0.5 mL plasma/serum

Minimum Volume:
0.3 mL plasma/serum

Specimen Preparation:
Centrifuge within 6 hours of collection, aliquot, and freeze immediately at -20°C.

Units:
ng/L

Reference Interval:
Adult Reference Range (>= 18 years): 18 to 90 ng/L

Reference range adopted from literature references (see below) and verified in-house using 57 normal volunteers in the UCSF Laboratory.

Am J Clin Pathol. 2010;134:930-8. Performance characteristics of six intact parathyroid hormone assays. La'ulu SL1, Roberts WL.

Clin Chim Acta. 2013;426:41-5 Prevalence of vitamin D deficiency and consequences for PTH reference values. Deckers MM et al.

Pediatric Reference Range:

Age	Result (ng/L)
6 days - < 1 year	6 - 89
1 year - < 9 years	16 - 63
9 years - < 18 years	22 - 88

Pediatric reference ranges adopted from CALIPER Pediatric Reference Interval study performed on random samples using the Abbott Architect i2000 assay.

Interpretive Data:
Method changed from Siemens Immulite 2000 platform to Abbott Architect i2000 platform on 2/20/19.

In normal subjects, the Abbott Architect assay reads approximately 20 ng/L (pg/mL) higher on average than the Siemens Immulite 2000 assay. For patients with elevated PTH values, the Architect assay reads approximately 15-20% higher on average than the Immulite assay. The normal reference range for PTH has been adjusted upwards and is 18-90 in the Architect assay compared with 12-65 in the old Immulite assay.

The value of the ARCHITECT Intact PTH Calibrators are established against a set of Internal Reference Calibrators, which are traceable to the World Health Organization's first international standard for PTH from the NIBSC, code 79/500.

Note: In the Architect assay, PTH levels run approximately 15% higher in serum samples than in plasma samples.

Synonyms:

- PTH
- Parathyroid hormone

Stability (from collection to initiation):
Refrigerated (2-8°C): <= 2 days
Frozen (-20°C): 6 months

Testing permitted on primary tube specimen if refrigerated sample is <= 48 hours old.

Avoid more than 5 freeze-thaw cycles.

Reported:
1-3 days

Reflex Testing:
A serum calcium is automatically ordered and charged on the same specimen or group of specimens.

CPT Codes:
83970; 82310

Parathormone, Intraoperative

PTHPR, PTHPO

ORDERING

Available Stat:
No

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Parnassus:
Roche Cobas E411 (4th Floor Lab):
Wednesday 0800-2300, Thursday 0700-2300

Abbott Architect i2000 (5th Floor Lab):
Monday, Tuesday, and Friday 0800-2300

Mission Bay: 0800-2300
Mount Zion: 0730-1900

Methodology:
Parnassus: Roche Cobas E411 Immunoassay or Abbott Architect i2000 Chemiluminescent Microparticle Immunoassay

Mount Zion: Roche Cobas E411 Immunoassay

Mission Bay: Abbott Architect i2000 Chemiluminescent Microparticle Immunoassay

Reported:
15-30 min (based on test availability, see Performed section for operating hours)

Additional Information:
NOTE: Samples must be accompanied by the appropriate paper requisition:

- For Parnassus click here.
- For Mission Bay click here.
- For Mt. Zion click here.

This test is not applicable for diagnosis and is used solely as an aid in determining the adequacy of parathyroidectomy in patients with hyperparathyroidism. Measures intact PTH molecule.

Samples are taken at baseline (prior to gland manipulation or removal) and again after resection. A > 50% decrease from baseline suggests adequate parathyroid gland tissue has been resected.

Failure to achieve a > 50% decrease after tissue removal suggests additional hyperfunctional parathyroid tissue is still present.

Patient must be on OR schedule and samples must arrive in the laboratory at Mt. Zion before 1900 hours and at Parnassus before 2300 hours in order to be tested. Samples which arrive after 1900 hours at Mount Zion and 2300 hours at Parnassus will be frozen and tested the next run.

Note: Serum levels are approximately 15% higher than plasma samples.

Biotin (also termed vitamin B7 or B8, vitamin H, or coenzyme R) may cause a negative interference in the intraoperative PTH assay used at Parnassus and Mt Zion. The interference threshold for biotin in the assay is a plasma biotin concentration > 50 ng/mL. Patients taking biotin does between 5 mg/day and 100 mg/day should be instructed to stop taking biotin for at least 8 hours before blood collection for this PTH testing. Unless medically contraindicated, patients prescribed biotin doses of 100 mg/day or more should be instructed to stop taking biotin for at least 72 hours before blood collection.

Synonyms:

- PTH
- IOPTH
- Parathyroid hormone

Supplemental Test Request Form Required:
Yes

COLLECTION

Sample Type:
Plasma or Serum

Collect:
Preferred: Lavender Top (K-EDTA)
Acceptable: Gold Top (SST)

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL plasma/serum

Minimum Volume:
0.5 mL plasma/serum

Remarks:
NOTE: Samples must be accompanied by the appropriate paper requisition:

- For Parnassus click here.
- For Mission Bay click here.
- For Mt. Zion click here.

Any manipulation of either normal or abnormal parathyroid glands or surrounding tissue may result in a transient rise in hormone levels; therefore at least ten minutes should elapse between gland resection or manipulation and collection of samples for testing.

Care should be taken to avoid hemolysis during sample collection.

Stability (from collection to initiation):
Refrigerated (2-8°C): <= 2 days
Frozen (-20°C): 6 months

Testing permitted on primary tube specimen if refrigerated sample is <= 48 hours old.

Rejection Criteria:
Sample received with needle attached.

PROCESSING

Test Code:
PTHPR (Pre) & PTHPO (post)

Test Group:
Parathormone

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Specimen Preparation:
For samples received outside the hours when test is performed, centrifuge within 6 hours of collection, aliquot, and freeze immediately at -20°C.

Preferred Volume:
1 mL plasma/serum

Minimum Volume:
0.5 mL plasma/serum

Rejection Criteria:
Sample received with needle attached.

Stability (from collection to initiation):
Refrigerated (2-8°C): <= 2 days
Frozen (-20°C): 6 months

Testing permitted on primary tube specimen if refrigerated sample is <= 48 hours old.

RESULT INTERPRETATION

Units:
ng/L

Reference Interval:
Parnassus and Mount Zion on Roche Cobas E411 Immunoassay:
15 - 65 ng/L

Parnassus and Mission Bay: Abbott Architect i2000 Chemiluminescent Microparticle Immunoassay:
18 - 90 ng/L

Additional Information:

NOTE: Samples must be accompanied by the appropriate paper requisition:

- For Parnassus click here.
- For Mission Bay click here.
- For Mt. Zion click here.

This test is not applicable for diagnosis and is used solely as an aid in determining the adequacy of parathyroidectomy in patients with hyperparathyroidism. Measures intact PTH molecule.

Samples are taken at baseline (prior to gland manipulation or removal) and again after resection. A > 50% decrease from baseline suggests adequate parathyroid gland tissue has been resected.

Failure to achieve a > 50% decrease after tissue removal suggests additional hyperfunctional parathyroid tissue is still present.

Patient must be on OR schedule and samples must arrive in the laboratory at Mt. Zion before 1900 hours and at Parnassus before 2300 hours in order to be tested. Samples which arrive after 1900 hours at Mount Zion and 2300 hours at Parnassus will be frozen and tested the next run.

Note: Serum levels are approximately 15% higher than plasma samples.

Biotin (also termed vitamin B7 or B8, vitamin H, or coenzyme R) may cause a negative interference in the intraoperative PTH assay used at Parnassus and Mt Zion. The interference threshold for biotin in the assay is a plasma biotin concentration > 50 ng/mL. Patients taking biotin does between 5 mg/day and 100 mg/day should be instructed to stop taking biotin for at least 8 hours before blood collection for this PTH testing. Unless medically contraindicated, patients prescribed biotin doses of 100 mg/day or more should be instructed to stop taking biotin for at least 72 hours before blood collection.

Interpretive Data:

The Roche Cobas E411 assay used at Parnassus and Mt Zion is sensitive to the presence of hemolysis.

In the Roche assay, plasma hemoglobin of 100-200 mg/dL may decrease PTH result by ~35 ng/L (range = 7-57 ng/L).

Results with the Roche assay from any post time sample with visible hemolysis will be appended with the following comment:

"Hemolysis present. Hemolysis has been shown to decrease IOPTH values up to 55%. Caution should be applied in application of result in clinical care."

In the Abbott assay, plasma hemoglobin levels of >500 mg/dL are reported by the manufacturer not to interfere with PTH measurement.

The reference intervals represent the reference ranges determined in healthy volunteers with normal calcium levels.

ADMINISTRATIVE

CPT Codes:

83970

COMPLETE VIEW

Available Stat:

No

Test Code:

PTHPR (Pre) & PTHPO (post)

Test Group:

Parathormone

Performing Lab:

Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:

Parnassus:
Roche Cobas E411 (4th Floor Lab):
Wednesday 0800-2300, Thursday 0700-2300

Abbott Architect i2000 (5th Floor Lab):
Monday, Tuesday, and Friday 0800-2300

Mission Bay: 0800-2300
Mount Zion: 0730-1900

Methodology:

Parnassus: Roche Cobas E411 Immunoassay or Abbott Architect i2000 Chemiluminescent Microparticle Immunoassay

Mount Zion: Roche Cobas E411 Immunoassay

Mission Bay: Abbott Architect i2000 Chemiluminescent Microparticle Immunoassay

Remarks:

NOTE: Samples must be accompanied by the appropriate paper requisition:

- For Parnassus click here.
- For Mission Bay click here.
- For Mt. Zion click here.

Any manipulation of either normal or abnormal parathyroid glands or surrounding tissue may result in a transient rise in hormone levels; therefore at least ten minutes should elapse between gland resection or manipulation and collection of samples for testing.

Care should be taken to avoid hemolysis during sample collection.

Collect:

Preferred: Lavender Top (K-EDTA)
Acceptable: Gold Top (SST)

Amount to Collect:

2 mL blood

Sample Type:

Plasma or Serum

Preferred Volume:

1 mL plasma/serum

Minimum Volume:

0.5 mL plasma/serum

Rejection Criteria:

Sample received with needle attached.

Specimen Preparation:

For samples received outside the hours when test is performed, centrifuge within 6 hours of collection, aliquot, and freeze immediately at -20°C.

Units:

ng/L

Reference Interval:

Parnassus and Mount Zion on Roche Cobas E411 Immunoassay:
15 - 65 ng/L

Parnassus and Mission Bay: Abbott Architect i2000 Chemiluminescent Microparticle Immunoassay:
18 - 90 ng/L

Interpretive Data:

The Roche Cobas E411 assay used at Parnassus and Mt Zion is sensitive to the presence of hemolysis.

In the Roche assay, plasma hemoglobin of 100-200 mg/dL may decrease PTH result by ~35 ng/L (range = 7-57 ng/L).

Results with the Roche assay from any post time sample with visible hemolysis will be appended with the following comment:

"Hemolysis present. Hemolysis has been shown to decrease IOPTH values up to 55%. Caution should be applied in application of result in clinical care."

In the Abbott assay, plasma hemoglobin levels of >500 mg/dL are reported by the manufacturer not to interfere with PTH measurement.

The reference intervals represent the reference ranges determined in healthy volunteers with normal calcium levels.

Synonyms:

- PTH
- IOPTH
- Parathyroid hormone

Stability (from collection to initiation):

Refrigerated (2-8°C): <= 2 days
Frozen (-20°C): 6 months

Testing permitted on primary tube specimen if refrigerated sample is <= 48 hours old.

Reported:

15-30 min (based on test availability, see Performed section for operating hours)

Additional Information:

NOTE: Samples must be accompanied by the appropriate paper requisition:

- For Parnassus click here.
- For Mission Bay click here.
- For Mt. Zion click here.

This test is not applicable for diagnosis and is used solely as an aid in determining the adequacy of parathyroidectomy in patients with hyperparathyroidism. Measures intact PTH molecule.

Samples are taken at baseline (prior to gland manipulation or removal) and again after resection. A > 50% decrease from baseline suggests adequate parathyroid gland tissue has been resected.

Failure to achieve a > 50% decrease after tissue removal suggests additional hyperfunctional parathyroid tissue is still present.

Patient must be on OR schedule and samples must arrive in the laboratory at Mt. Zion before 1900 hours and at Parnassus before 2300 hours in order to be tested. Samples which arrive after 1900 hours at Mount Zion and 2300 hours at Parnassus will be frozen and tested the next run.

Note: Serum levels are approximately 15% higher than plasma samples.

Biotin (also termed vitamin B7 or B8, vitamin H, or coenzyme R) may cause a negative interference in the intraoperative PTH assay used at Parnassus and Mt Zion. The interference threshold for biotin in the assay is a plasma biotin concentration > 50 ng/mL. Patients taking biotin does between 5 mg/day and 100 mg/day should be instructed to stop taking biotin for at least 8 hours before blood collection for this PTH testing. Unless medically contraindicated, patients prescribed biotin doses of 100 mg/day or more should be instructed to stop taking biotin for at least 72 hours before blood collection.

CPT Codes:

83970

Supplemental Test Request Form Required:

Yes

Parathormone, Post-Surgical

PTHPS

ORDERING

Available Stat:
No

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Parnassus:
Roche Cobas E411 (4th Floor Lab):
Wednesday 0800-2300, Thursday 0700-2300

Abbott Architect i2000 (5th Floor Lab):
Monday, Tuesday, and Friday 0800-2300

Mission Bay: 0800-2300 Monday - Friday
Mt. Zion: 0730 - 1900 Monday - Friday

Methodology:
Parnassus: Roche Cobas E411 Immunoassay or Abbott Architect i2000 Chemiluminescent Microparticle Immunoassay

Mount Zion: Roche Cobas E411 Immunoassay

Mission Bay: Abbott Architect i2000 Chemiluminescent Microparticle Immunoassay

Reported:
2 hours (based on test availability, see Performed section for operating hours)

Additional Information:
Note: Serum levels are approximately 15% higher than plasma samples

Synonyms:

- PTH
- IOPTH
- Parathyroid hormone

COLLECTION

Sample Type:
Plasma or serum

Collect:
Preferred: Lavender Top (K-EDTA)
Acceptable: Gold Top (SST)

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL plasma/serum

Minimum Volume:
0.5 mL plasma/serum

Stability (from collection to initiation):
Refrigerated (2-8°C): <= 2 days
Frozen (-20°C): 6 months

Testing permitted on primary tube specimen if refrigerated sample is <= 48 hours old.

Avoid more than 5 freeze-thaw cycles.

PROCESSING

Test Code:
PTHPS

Test Group:
Parathormone

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Specimen Preparation:
For samples received outside the hours when test is performed, centrifuge within 6 hours of collection, aliquot, and freeze immediately at -20°C.

Preferred Volume:
1 mL plasma/serum

Minimum Volume:
0.5 mL plasma/serum

Stability (from collection to initiation):
Refrigerated (2-8°C): <= 2 days
Frozen (-20°C): 6 months

Testing permitted on primary tube specimen if refrigerated sample is <= 48 hours old.

Avoid more than 5 freeze-thaw cycles.

RESULT INTERPRETATION

Units:
ng/L

Reference Interval:
Parnassus and Mount Zion on Roche Cobas E411 Immunoassay:
15 - 65 ng/L

Parnassus and Mission Bay: Abbott Architect i2000 Chemiluminescent Microparticle Immunoassay:
18 - 90 ng/L

Additional Information:
Note: Serum levels are approximately 15% higher than plasma samples

Interpretive Data:
The Roche Cobas E411 assay used at Parnassus and Mt Zion is sensitive to the presence of hemolysis.

In the Roche assay, plasma hemoglobin of 100-200 mg/dL may decrease PTH result by ~35 ng/L (range = 7-57 ng/L).

Results with the Roche assay from any post time sample with visible hemolysis will be appended with the following comment:

"Hemolysis present. Hemolysis has been shown to decrease IOPTH values up to 55%. Caution should be applied in application of result in clinical care."

In the Abbott assay, plasma hemoglobin levels of >500 mg/dL are reported by the manufacturer not to interfere with PTH measurement.

ADMINISTRATIVE

CPT Codes:
83970

COMPLETE VIEW

Available Stat:
No

Test Code:
PTHPS

Test Group:
Parathormone

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Parnassus:
Roche Cobas E411 (4th Floor Lab):
Wednesday 0800-2300, Thursday 0700-2300

Abbott Architect i2000 (5th Floor Lab):
Monday, Tuesday, and Friday 0800-2300

Mission Bay: 0800-2300 Monday - Friday
Mt. Zion: 0730 - 1900 Monday - Friday

Methodology:

Parnassus: Roche Cobas E411 Immunoassay or Abbott Architect i2000 Chemiluminescent Microparticle Immunoassay

Mount Zion: Roche Cobas E411 Immunoassay

Mission Bay: Abbott Architect i2000 Chemiluminescent Microparticle Immunoassay

Collect:

Preferred: Lavender Top (K-EDTA)
Acceptable: Gold Top (SST)

Amount to Collect:

2 mL blood

Sample Type:

Plasma or serum

Preferred Volume:

1 mL plasma/serum

Minimum Volume:

0.5 mL plasma/serum

Specimen Preparation:

For samples received outside the hours when test is performed, centrifuge within 6 hours of collection, aliquot, and freeze immediately at -20°C.

Units:

ng/L

Reference Interval:

Parnassus and Mount Zion on Roche Cobas E411 Immunoassay:
15 - 65 ng/L

Parnassus and Mission Bay: Abbott Architect i2000 Chemiluminescent Microparticle Immunoassay:
18 - 90 ng/L

Interpretive Data:

The Roche Cobas E411 assay used at Parnassus and Mt Zion is sensitive to the presence of hemolysis.

In the Roche assay, plasma hemoglobin of 100-200 mg/dL may decrease PTH result by ~35 ng/L (range = 7-57 ng/L).

Results with the Roche assay from any post time sample with visible hemolysis will be appended with the following comment:

"Hemolysis present. Hemolysis has been shown to decrease IOPTH values up to 55%. Caution should be applied in application of result in clinical care."

In the Abbott assay, plasma hemoglobin levels of >500 mg/dL are reported by the manufacturer not to interfere with PTH measurement.

Synonyms:

- PTH
- IOPTH
- Parathyroid hormone

Stability (from collection to initiation):

Refrigerated (2-8°C): <= 2 days
Frozen (-20°C): 6 months

Testing permitted on primary tube specimen if refrigerated sample is <= 48 hours old.

Avoid more than 5 freeze-thaw cycles.

Reported:

2 hours (based on test availability, see Performed section for operating hours)

Additional Information:

Note: Serum levels are approximately 15% higher than plasma samples

CPT Codes:

83970

Parathyroid Hormone-Related Peptide (PTHrP) by LC-MS/MS, Plasma

PTHRP2

ORDERING

Ordering Recommendations:
Aid in the evaluation of unexplained hypercalcemia, particularly in suspected hypercalcemia of malignancy. Amino (N)- and carboxy (C)-terminus PTHrP fragments, such as those produced by some patients with renal insufficiency, do not interfere with this assay.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun, Mon, Wed, Fri

Methodology:
Quantitative High Performance Liquid Chromatography-Tandem Mass Spectrometry

Reported:
2-6 days

Synonyms:

- HHM
- Humoral Hypercalcemia of Malignancy Factor
- Parathyroid Hormone Related Peptide
- Parathyroid Hormone Related Protein
- Parathyroid Related Polypeptide
- Parathyroid Related Protein
- PRP
- PTH Related Peptide
- PTH Related Protein
- PTH-RP
- PTHrP secretion
- PTHRP, Plasma

COLLECTION

Sample Type:
Plasma

Collect:
Protease Inhibitor tube (PPACK; Phe-Pro-Arg-chloromethylketone) (ARUP supply #49662), available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at (800) 522-2787. A winged collection set must be used.

Amount to Collect:
3 mL blood

Preferred Volume:
1.5 mL plasma

Minimum Volume:
0.7 mL of plasma

Stability (from collection to initiation):
After separation from cells: Ambient: Unacceptable; Refrigerated: Unacceptable; Frozen: 3 months

Storage/Transport Temperature:
Frozen. Separate specimens must be submitted when multiple tests are ordered.

Unacceptable Conditions:
Grossly hemolyzed specimens.

PROCESSING

Test Code:
PTHRP2

ARUP Test Code:
2010677

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Mix well. Separate from cells within 1 hour of collection. Transfer 1.5 mL plasma to an ARUP Standard Transport Tube. (Min: 0.7 mL)

Preferred Volume:
1.5 mL plasma

Minimum Volume:
0.7 mL of plasma

Unacceptable Conditions:
Grossly hemolyzed specimens.

Stability (from collection to initiation):
After separation from cells: Ambient: Unacceptable; Refrigerated: Unacceptable; Frozen: 3 months

Storage/Transport Temperature:
Frozen. Separate specimens must be submitted when multiple tests are ordered.

RESULT INTERPRETATION

Reference Interval:
Effective August 17, 2015

Age	Male	Female
Under 18 years	Not established	Not established
18 years and older	0.0-2.3 pmol/L	0.0-3.4 pmol/L

Interpretive Data:
This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:
82542

LOINC:

- 15087-0

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Aid in the evaluation of unexplained hypercalcemia, particularly in suspected hypercalcemia of malignancy. Amino (N)- and carboxy (C)-terminus PTHrP fragments, such as those produced by some patients with renal insufficiency, do not interfere with this assay.

Test Code:
PTHRP2

ARUP Test Code:
2010677

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun, Mon, Wed, Fri

Methodology:
Quantitative High Performance Liquid Chromatography-Tandem Mass Spectrometry

Collect:
Protease Inhibitor tube (PPACK; Phe-Pro-Arg-chloromethylketone) (ARUP supply #49662), available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at (800) 522-2787. A winged collection set must be used.

Amount to Collect:
3 mL blood

Sample Type:
Plasma

Preferred Volume:
1.5 mL plasma

Minimum Volume:
0.7 mL of plasma

Unacceptable Conditions:
Grossly hemolyzed specimens.

Specimen Preparation:
Mix well. Separate from cells within 1 hour of collection. Transfer 1.5 mL plasma to an ARUP Standard Transport Tube. (Min: 0.7 mL)

Reference Interval:
Effective August 17, 2015

Age	Male	Female
Under 18 years	Not established	Not established
18 years and older	0.0-2.3 pmol/L	0.0-3.4 pmol/L

Interpretive Data:
This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Synonyms:

- HHM
- Humoral Hypercalcemia of Malignancy Factor
- Parathyroid Hormone Related Peptide
- Parathyroid Hormone Related Protein
- Parathyroid Related Polypeptide
- Parathyroid Related Protein
- PRP
- PTH Related Peptide
- PTH Related Protein
- PTH-RP
- PTHrP secretion
- PTHRP, Plasma

Storage/Transport Temperature:
Frozen. Separate specimens must be submitted when multiple tests are ordered.

Stability (from collection to initiation):
After separation from cells: Ambient: Unacceptable; Refrigerated: Unacceptable; Frozen: 3 months

Reported:
2-6 days

CPT Codes:
82542

LOINC:

- 15087-0

Notes:
Amino (N)- and carboxy (C)-terminus PTHrP fragments, such as those produced by some patients with renal insufficiency, do not interfere with this assay.

Parechovirus PCR

P319

ORDERING

Available Stat:
No

Performing Lab:
Quest Diagnostics

COLLECTION

Sample Type:
Plasma or serum, CSF, Stool or throat or rectal swab

Collect:
Plasma: EDTA tube (lavender top), yellow top ACD also acceptable
CSF or Stool: Sterile leak proof container
Throat or rectal swab in Universal Transport Medium (UTM) or equivalent

Amount to Collect:
0.5 mL plasma or serum
0.7 mL CSF
1 g stool

Preferred Volume:
0.3 mL plasma, serum, or CSF
0.5 g stool

Minimum Volume:
0.5 mL

Stability (from collection to initiation):
Room temperature: 48 hours. Refrigerated: 7 days. Frozen: 30 days.

Rejection Criteria:
Specimens conatining heparin
Calcium alginate swabs
Swabs not in transport media

PROCESSING

Test Code:
P319

Sendout:
Yes

Performing Lab:
Quest Diagnostics

Specimen Preparation:
Accession as P319: If Enterovirus PCR is also requested, credit order as this test includes Enterovirus.

Centrifuge blood, and aliquot and freeze plasma at -70°C. Freeze swabs and stool at -70C

Send to Quest for test code 70189X Enterovirus/Parechovirus RNA, Qualitative Real-Time PCR

Preferred Volume:
0.3 mL plasma, serum, or CSF
0.5 g stool

Minimum Volume:
0.5 mL

Rejection Criteria:
Specimens conatining heparin
Calcium alginate swabs
Swabs not in transport media

Stability (from collection to initiation):
Room temperature: 48 hours. Refrigerated: 7 days. Frozen: 30 days.

COMPLETE VIEW

Available Stat:
No

Test Code:
P319

Performing Lab:
Quest Diagnostics

Sendout:
Yes

Collect:
Plasma: EDTA tube (lavender top), yellow top ACD also acceptable
CSF or Stool: Sterile leak proof container
Throat or rectal swab in Universal Transport Medium (UTM) or equivalent

Amount to Collect:
0.5 mL plasma or serum
0.7 mL CSF
1 g stool

Sample Type:
Plasma or serum, CSF, Stool or throat or rectal swab

Preferred Volume:
0.3 mL plasma, serum, or CSF
0.5 g stool

Minimum Volume:
0.5 mL

Rejection Criteria:
Specimens conatining heparin
Calcium alginate swabs
Swabs not in transport media

Specimen Preparation:
Accession as P319: If Enterovirus PCR is also requested, credit order as this test includes Enterovirus.

Centrifuge blood, and aliquot and freeze plasma at -70°C. Freeze swabs and stool at -70C

Send to Quest for test code 70189X Enterovirus/Parechovirus RNA, Qualitative Real-Time PCR

Stability (from collection to initiation):
Room temperature: 48 hours. Refrigerated: 7 days. Frozen: 30 days.

Paroxysmal Nocturnal Hemoglobinuria Cell Markers

PNHM

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
Flow cytometry

Reported:
Samples accepted Monday-Friday AM only; test run daily. Turnaround time: 2-5 days.

Additional Information:
Flow cytometric immunophenotyping is used to study the leukocyte and RBC surface markers of glycosylphosphatidylinositol (GPI) linked antigens such as CD14 (monocytes) and CD59 (neutrophils and RBC). Fluorescent aerolysin (FLAER), a protein that selectively binds to GPI anchors, is also used in the test. Patients with Paroxysmal Nocturnal Hemoglobinuria (PNH) will show abnormality in all or some of these markers to various extents

Synonyms:

- PI-linked antigen
- PNH
- CD55
- CD59
- flow cytometry

COLLECTION

Sample Type:
Whole blood

Collect:
Lavender top (EDTA)

Amount to Collect:
7 mL blood

Preferred Volume:
7 mL blood

Minimum Volume:
3 mL blood

Stability (from collection to initiation):
Room temperature, 72 hours.

PROCESSING

Test Code:
PNHM

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Do not transfer sample to another container. Transport at Room temperature to China Basin to Send-outs for pick-up at 1600 hours by Medical Courier.

Order Mayo Medical Labs test code # 81156 (CPT). Send at ambient temperature Monday-Thursday, to China Basin Sendouts to meet MAYO Lab courier (MCI) pickup at 1600 hours.

If pickup is missed, ship via Federal Express overnight priority (if shipped on Friday, must check box for Saturday AM delivery) to: Mayo Medical Laboratories, 200 First Street SW, Rochester, MN 55905, Client Services: 800-533-1710

Preferred Volume:
7 mL blood

Minimum Volume:
3 mL blood

Stability (from collection to initiation):
Room temperature, 72 hours.

RESULT INTERPRETATION

Units:
% negative

Reference Interval:
Normal: <= 3% WBC's & RBC's are CD59-negative

Additional Information:
Flow cytometric immunophenotyping is used to study the leukocyte and RBC surface markers of glycosylphosphatidylinositol (GPI) linked antigens such as CD14 (monocytes) and CD59 (neutrophils and RBC). Fluorescent aerolysin (FLAER), a protein that selectively binds to GPI anchors, is also used in the test. Patients with Paroxysmal Nocturnal Hemoglobinuria (PNH) will show abnormality in all or some of these markers to various extents

ADMINISTRATIVE

CPT Codes:
88180-90 x4

LOINC Codes:
55164-8

COMPLETE VIEW

Available Stat:
No

Test Code:
PNHM

Performing Lab:
Mayo

Sendout:
Yes

Methodology:
Flow cytometry

Collect:
Lavender top (EDTA)

Amount to Collect:
7 mL blood

Sample Type:
Whole blood

Preferred Volume:
7 mL blood

Minimum Volume:
3 mL blood

Specimen Preparation:
Do not transfer sample to another container. Transport at Room temperature to China Basin to Send-outs for pick-up at 1600 hours by Medical Courier.

Order Mayo Medical Labs test code # 81156 (CPT). Send at ambient temperature Monday-Thursday, to China Basin Sendouts to meet MAYO Lab courier (MCI) pickup at 1600 hours.

If pickup is missed, ship via Federal Express overnight priority (if shipped on Friday, must check box for Saturday AM delivery) to: Mayo Medical Laboratories, 200 First Street SW, Rochester, MN 55905, Client Services: 800-533-1710

Units:
% negative

Reference Interval:
Normal: <= 3% WBC's & RBC's are CD59-negative

Synonyms:

- PI-linked antigen
- PNH
- CD55
- CD59
- flow cytometry

Stability (from collection to initiation):
Room temperature, 72 hours.

Reported:

Samples accepted Monday-Friday AM only; test run daily. Turnaround time: 2-5 days.

Additional Information:

Flow cytometric immunophenotyping is used to study the leukocyte and RBC surface markers of glycosylphosphatidylinositol (GPI) linked antigens such as CD14 (monocytes) and CD59 (neutrophils and RBC). Fluorescent aerolysin (FLAER), a protein that selectively binds to GPI anchors, is also used in the test. Patients with Paroxysmal Nocturnal Hemoglobinuria (PNH) will show abnormality in all or some of these markers to various extents

CPT Codes:

88180-90 x4

LOINC Codes:

55164-8

Parvovirus B19 Antibodies, IgM and IgG

PB19

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
EIA

Reported:
Test run Monday-Saturday. Turnaround 2-6 days

Additional Information:
Note: This assay includes both IgM and IgG antibodies.

Clinical use is as an aid in the diagnosis of parvovirus infections. Results from any one IgM assay should not be used as a sole determinant of a current or recent infection. Because IgM tests can yield false positive results and low levels of IgM antibody may persist for months post infection, reliance on a single test result could be misleading. If an acute infection is suspected, obtain a new specimen and submit for both IgG and IgM testing in two or more weeks. IgG persists for years and provides life-long immunity. To diagnose current infection, the laboratory recommends Parvovirus, PCR test.

COLLECTION

Sample Type:
Serum

Collect:
Red top

Amount to Collect:
2 mL blood

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Stability (from collection to initiation):
Room temperature: 4 days
Refrigerated: 1 week
Frozen at -20C: 1 month.

PROCESSING

Test Code:
PB19

Test Group:
Parvovirus

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze at -20C. Order Nichols test number 14050N.

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Stability (from collection to initiation):
Room temperature: 4 days
Refrigerated: 1 week
Frozen at -20C: 1 month.

RESULT INTERPRETATION

Units:
Index

Reference Interval:
Negative: < 0.9 index
Equivocal: 0.9-1.1 index
Positive: > 1.1 index

Additional Information:
Note: This assay includes both IgM and IgG antibodies.

Clinical use is as an aid in the diagnosis of parvovirus infections. Results from any one IgM assay should not be used as a sole determinant of a current or recent infection. Because IgM tests can yield false positive results and low levels of IgM antibody may persist for months post infection, reliance on a single test result could be misleading. If an acute infection is suspected, obtain a new specimen and submit for both IgG and IgM testing in two or more weeks. IgG persists for years and provides life-long immunity. To diagnose current infection, the laboratory recommends Parvovirus, PCR test.

ADMINISTRATIVE

CPT Codes:
86747-90 x 2

LOINC Codes:
5272-0

COMPLETE VIEW

Available Stat:
No

Test Code:
PB19

Test Group:
Parvovirus

Performing Lab:
Quest

Sendout:
Yes

Methodology:
EIA

Collect:
Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Specimen Preparation:
Freeze at -20C. Order Nichols test number 14050N.

Units:
Index

Reference Interval:
Negative: < 0.9 index
Equivocal: 0.9-1.1 index
Positive: > 1.1 index

Stability (from collection to initiation):
Room temperature: 4 days
Refrigerated: 1 week
Frozen at -20C: 1 month.

Reported:
Test run Monday-Saturday. Turnaround 2-6 days

Additional Information:

Note: This assay includes both IgM and IgG antibodies.

Clinical use is as an aid in the diagnosis of parvovirus infections. Results from any one IgM assay should not be used as a sole determinant of a current or recent infection. Because IgM tests can yield false positive results and low levels of IgM antibody may persist for months post infection, reliance on a single test result could be misleading. If an acute infection is suspected, obtain a new specimen and submit for both IgG and IgM testing in two or more weeks. IgG persists for years and provides life-long immunity. To diagnose current infection, the laboratory recommends Parvovirus, PCR test.

CPT Codes:

86747-90 x 2

LOINC Codes:

5272-0

PARVOVIRUS B19 BY PCR, AMNIOTIC FLUID

PAVAF

ORDERING

Ordering Recommendations:
Detect parvovirus B19 in amniotic fluid.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Mon, Wed, Fri

Methodology:
Qualitative Polymerase Chain Reaction

Reported:
1-4 days

Synonyms:

- B19 virus PCR
- Fifth Disease-Parvovirus PCR
- Human Parvovirus B19 PCR

COLLECTION

Sample Type:
Amniotic fluid

Collect:
Sterile container

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Stability (from collection to initiation):
Central Processing, please send/transport ALL amniotic fluid tubes (including tubes with sendout labels) at ROOM TEMPERATURE to China Basin Cytogenetics Lab immediately upon receiving. China Basin Processing will give Cytogenetics lab all tubes and Cytogenetics lab will bring all send out tests back to Sendout lab. Sendout department will then send the tubes out at frozen temperature.

Storage/Transport Temperature:
From Central processing to China Basin Central processing : Room Temperature
(send ALL amniotic fluid tubes (including tubes with sendout labels) at ROOM TEMPERATURE to China Basin Cytogenetics Lab immediately upon receiving)
From China Basin Central Processing to Cytogenetics: Room Temperature
From China Basin Central Processing to Send Out institution: Frozen

Unacceptable Conditions:
Heparinized specimens

PROCESSING

Test Code:
PAVAF

ARUP Test Code:
0060043

Sendout:
Yes

Performing Lab:
ARUP

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Unacceptable Conditions:
Heparinized specimens

Stability (from collection to initiation):
Central Processing, please send/transport ALL amniotic fluid tubes (including tubes with sendout labels) at ROOM TEMPERATURE to China Basin Cytogenetics Lab immediately upon receiving. China Basin Processing will give Cytogenetics lab all tubes and Cytogenetics lab will bring all send out tests back to Sendout lab. Sendout department will then send the tubes out at frozen temperature.

Storage/Transport Temperature:
From Central processing to China Basin Central processing : Room Temperature
(send ALL amniotic fluid tubes (including tubes with sendout labels) at ROOM TEMPERATURE to China Basin Cytogenetics Lab immediately upon receiving)
From China Basin Central Processing to Cytogenetics: Room Temperature
From China Basin Central Processing to Send Out institution: Frozen

RESULT INTERPRETATION

Interpretive Data:
This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:
87798

LOINC:

- 9572-9
- 31208-2

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Detect parvovirus B19 in amniotic fluid.

Test Code:
PAVAF

ARUP Test Code:
0060043

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Mon, Wed, Fri

Methodology:
Qualitative Polymerase Chain Reaction

Collect:
Sterile container

Sample Type:
Amniotic fluid

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Unacceptable Conditions:
Heparinized specimens

Interpretive Data:
This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Synonyms:

- B19 virus PCR
- Fifth Disease-Parvovirus PCR
- Human Parvovirus B19 PCR

Storage/Transport Temperature:

From Central processing to China Basin Central processing : Room Temperature
(send ALL amniotic fluid tubes (including tubes with sendout labels) at ROOM TEMPERATURE to China Basin Cytogenetics Lab immediately upon receiving)
From China Basin Central Processing to Cytogenetics: Room Temperature
From China Basin Central Processing to Send Out institution: Frozen

Stability (from collection to initiation):

Central Processing, please send/transport ALL amniotic fluid tubes (including tubes with sendout labels) at ROOM TEMPERATURE to China Basin Cytogenetics Lab immediately upon receiving. China Basin Processing will give Cytogenetics lab all tubes and Cytogenetics lab will bring all send out tests back to Sendout lab. Sendout department will then send the tubes out at frozen temperature.

Reported:

1-4 days

CPT Codes:

87798

LOINC:

- 9572-9
- 31208-2

Parvovirus B19 DNA

P338

ORDERING

Available Stat:
No

Performing Lab:
Viracor

Methodology:
Quantitative real time PCR

Reported:
1-3 days after receipt by reference laboratory.

Additional Information:
Performed upon blood to determine whether parvovirus infection is the cause of anemia in patients who have an unexplained marked decrease in erythroid precursor cells in bone marrow or a low peripheral reticulocyte count.

The test may also be performed upon amniotic fluid to determine whether parvovirus infection in pregnancy is the cause of hydrops fetalis.

Detects the presence of Parvovirus B19 in cell free plasma by amplifying viral genomic DNA through Real Time PCR technology.

This assay was developed and the performance characteristics were determined at ViraCor. This test is not FDA approved; however, the test is performed in a CLIA certified laboratory and approval from the FDA is not required.

Specimens are processed and results reported by Microbiology.

Synonyms:

- Parvovirus PCR
- Parvovirus B19 PCR

COLLECTION

Sample Type:
EDTA plasma, amniotic fluid, bone marrow (acceptable but plasma preferred)

Collect:
Blood or marrow: Lavender top
Amniotic fluid: Sterile tube

Amount to Collect:
Blood: 3 mL
Bone Marrow: 1 mL
Amniotic fluid: 1 mL

Preferred Volume:
Plasma: 1 mL
?Bone marrow: 1 mL
Amniotic fluid: 1 mL

Minimum Volume:
Plasma: 0.5 mL
?Bone marrow: 0.5 mL
?Amniotic fluid: 0.5 mL

Stability (from collection to initiation):
Room temperature 4 days, plasma or amniotic fluid frozen at -70C 1 month.

PROCESSING

Test Code:
P338

Test Group:
Parvovirus

Sendout:
Yes

Performing Lab:
Viracor

Specimen Preparation:

Blood: Centrifuge blood and transfer plasma to a sterile tube. Freeze at -70C and ship to ViraCor on dry ice.

Amniotic fluid: Freeze at -70C and ship to ViraCor on dry ice.

Bone marrow: Store and ship to ViraCor at room temperature. Do not centrifuge or freeze. Specimen must be received at ViraCor within 96 hrs of collection.

ViraCor test code: 1500

Preferred Volume:

Plasma: 1 mL
?Bone marrow: 1 mL
Amniotic fluid: 1 mL

Minimum Volume:

Plasma: 0.5 mL
?Bone marrow: 0.5 mL
?Amniotic fluid: 0.5 mL

Stability (from collection to initiation):

Room temperature 4 days, plasma or amniotic fluid frozen at -70C 1 month.

RESULT INTERPRETATION

Units:

IU/mL

Note: 1 IU = 0.73 copies/mL

Reference Interval:

Not detected

Additional Information:

Performed upon blood to determine whether parvovirus infection is the cause of anemia in patients who have an unexplained marked decrease in erythroid precursor cells in bone marrow or a low peripheral reticulocyte count.

The test may also be performed upon amniotic fluid to determine whether parvovirus infection in pregnancy is the cause of hydrops fetalis.

Detects the presence of Parvovirus B19 in cell free plasma by amplifying viral genomic DNA through Real Time PCR technology.

This assay was developed and the performance characteristics were determined at ViraCor. This test is not FDA approved; however, the test is performed in a CLIA certified laboratory and approval from the FDA is not required.

Specimens are processed and results reported by Microbiology.

ADMINISTRATIVE

CPT Codes:

87799-90

LOINC Codes:

49432-8

COMPLETE VIEW

Available Stat:

No

Test Code:

P338

Test Group:

Parvovirus

Performing Lab:

Viracor

Sendout:

Yes

Methodology:

Quantitative real time PCR

Collect:

Blood or marrow: Lavender top
Amniotic fluid: Sterile tube

Amount to Collect:
Blood: 3 mL
Bone Marrow: 1 mL
Amniotic fluid: 1 mL

Sample Type:
EDTA plasma, amniotic fluid, bone marrow (acceptable but plasma preferred)

Preferred Volume:
Plasma: 1 mL
?Bone marrow: 1 mL
Amniotic fluid: 1 mL

Minimum Volume:
Plasma: 0.5 mL
?Bone marrow: 0.5 mL
?Amniotic fluid: 0.5 mL

Specimen Preparation:
Blood: Centrifuge blood and transfer plasma to a sterile tube. Freeze at -70C and ship to ViraCor on dry ice.

Amniotic fluid: Freeze at -70C and ship to ViraCor on dry ice.

Bone marrow: Store and ship to ViraCor at room temperature. Do not centrifuge or freeze. Specimen must be received at ViraCor within 96 hrs of collection.

ViraCor test code: 1500

Units:
IU/mL

Note: 1 IU = 0.73 copies/mL

Reference Interval:
Not detected

Synonyms:

- Parvovirus PCR
- Parvovirus B19 PCR

Stability (from collection to initiation):
Room temperature 4 days, plasma or amniotic fluid frozen at -70C 1 month.

Reported:
1-3 days after receipt by reference laboratory.

Additional Information:
Performed upon blood to determine whether parvovirus infection is the cause of anemia in patients who have an unexplained marked decrease in erythroid precursor cells in bone marrow or a low peripheral reticulocyte count.

The test may also be performed upon amniotic fluid to determine whether parvovirus infection in pregnancy is the cause of hydrops fetalis.

Detects the presence of Parvovirus B19 in cell free plasma by amplifying viral genomic DNA through Real Time PCR technology.

This assay was developed and the performance characteristics were determined at ViraCor. This test is not FDA approved; however, the test is performed in a CLIA certified laboratory and approval from the FDA is not required.

Specimens are processed and results reported by Microbiology.

CPT Codes:
87799-90

LOINC Codes:
49432-8

PAX5 Break Apart Rearrangement FISH

BPAX5, PAX5

ORDERING

Available Stat:
No

Performing Lab:
Cytogenetics

Performed:
Mon-Fri 9 am to 5 pm

Methodology:
FISH

Reported:
7-14 days

Synonyms:

- BPAX5
- PAX5
- PAX5 9p13.2 BA FISH

COLLECTION

Sample Type:
Blood, bone marrow aspirate, bone marrow core

Collect:
Blood: Dark Green Top Sodium Heparin tube for Blood
Bone marrow: Dark Green Top Sodium Heparin tube for Bone Marrow, Sterile container with medium for Bone Core

Amount to Collect:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Room Temperature

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

PROCESSING

Test Code:
Blood: BPAX5
Bone marrow: PAX5

Performing Lab:
Cytogenetics

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Room Temperature

ADMINISTRATIVE

CPT Codes:
88271x2, 88275x1

COMPLETE VIEW

Available Stat:
No

Test Code:
Blood: BPAX5
Bone marrow: PAX5

Performing Lab:
Cytogenetics

Performed:
Mon-Fri 9 am to 5 pm

Methodology:
FISH

Collect:
Blood: Dark Green Top Sodium Heparin tube for Blood
Bone marrow: Dark Green Top Sodium Heparin tube for Bone Marrow, Sterile container with medium for Bone Core

Amount to Collect:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Sample Type:
Blood, bone marrow aspirate, bone marrow core

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

Synonyms:

- BPAX5
- PAX5
- PAX5 9p13.2 BA FISH

Storage/Transport Temperature:
Room Temperature

Stability (from collection to initiation):
2 days

Reported:
7-14 days

CPT Codes:
88271x2, 88275x1

Pediatric AML FISH panel

PAML, BPAML

ORDERING

Available Stat:
No

Performing Lab:
Cytogenetics

Performed:
Mon - Fri, 9AM - 5PM

Methodology:
FISH

Reported:
7-14 days

Additional Information:
Fluorescence In situ hybridization (FISH) is performed to detect deletion of 5q or loss of a chromosome 5, deletion of 7q or loss of a chromosome 7, PML/RARA gene fusion, RUNX1/RUNX1T1 gene fusion, CBFB/MYH11 gene fusion, MLL (11q23) rearrangement, NUP98 (11p15) rearrangement, and GLCBF/BGLCBF Translocation GLIS2/ CBFA2T3 16p13.3 and 16q24.3 fusion probe from pediatric samples.

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Synonyms:

- PAML
- BPAML

COLLECTION

Sample Type:
Blood or bone marrow

Collect:
Blood or bone marrow aspirate: Dark green top
Bone marrow core: Sterile container with medium

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Stability (from collection to initiation):
Room temperature: 2 days

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

PROCESSING

Test Code:
Blood: BPAML
Bone marrow: PAML

Performing Lab:
Cytogenetics

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

Stability (from collection to initiation):
Room temperature: 2 days

RESULT INTERPRETATION

Additional Information:
Fluorescence In situ hybridization (FISH) is performed to detect deletion of 5q or loss of a chromosome 5, deletion of 7q or loss of a chromosome 7, PML/RARA gene fusion, RUNX1/RUNX1T1 gene fusion, CBFB/MYH11 gene fusion, MLL (11q23) rearrangement, NUP98 (11p15) rearrangement, and GLCBF/BGLCBF Translocation GLIS2/ CBFA2T3 16p13.3 and 16q24.3 fusion probe from pediatric samples.

ADMINISTRATIVE

CPT Codes:
88271x16, 88275x8

COMPLETE VIEW

Available Stat:
No

Test Code:
Blood: BPAML
Bone marrow: PAML

Performing Lab:
Cytogenetics

Performed:
Mon - Fri, 9AM - 5PM

Methodology:
FISH

Collect:
Blood or bone marrow aspirate: Dark green top
Bone marrow core: Sterile container with medium

Sample Type:
Blood or bone marrow

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

Synonyms:

- PAML
- BPAML

Stability (from collection to initiation):
Room temperature: 2 days

Reported:
7-14 days

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Additional Information:
Fluorescence In situ hybridization (FISH) is performed to detect deletion of 5q or loss of a chromosome 5, deletion of 7q or loss of a chromosome 7, PML/RARA gene fusion, RUNX1/RUNX1T1 gene fusion, CBFB/MYH11 gene fusion, MLL (11q23) rearrangement, NUP98 (11p15) rearrangement, and GLCBF/BGLCBF Translocation GLIS2/ CBFA2T3 16p13.3 and 16q24.3 fusion probe from pediatric samples.

CPT Codes:
88271x16, 88275x8

Pediatric CD3 Stem Cell Quantification

PCD3B

ORDERING

Available Stat:
No

Performing Lab:
PCTL

Performed:
Test performed Monday - Friday at: 0900 & 1400 hours

Methodology:
Flow Cytometry

Reported:
3 hours after receipt of sample by 1400 hour. After 1400 hour result will be available next day before 1200 hour.

Additional Information:
This test was developed and its performance characteristics determined by the UCSF Clinical Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration.

This test was performed by the Pediatric Cellular Therapy Laboratory located at 1975 4th Street Room C4C60, San Francisco, CA 94158.
Phone: 415-476-4860 Fax: 415-514-3372

CLID ID Number: 05D2107946 State Lab ID Number: CLF00349021

Laboratory Director: Christopher Dvorak, MD

COLLECTION

Patient Preparation:
N / A

Sample Type:
MNC APHERESIS

Collect:
Lavender Top

Amount to Collect:
1.0 mL

Preferred Volume:
1.0 mL

Minimum Volume:
0.5 mL

Remarks:
N / A

Stability (from collection to initiation):
72 hours after collection time

PROCESSING

Test Code:
PCD3B

Performing Lab:
PCTL

Specimen Preparation:
Notify PCTL (x64860, x44199 or x44193) when a specimen arrives at the Processing Lab. Specimen must be delivered to PCTL before 1400H.

Preferred Volume:
1.0 mL

Minimum Volume:
0.5 mL

Stability (from collection to initiation):
72 hours after collection time

RESULT INTERPRETATION

Units:
% of WBCs

Reference Interval:
> 10.0 % of WBCs

Additional Information:
This test was developed and its performance characteristics determined by the UCSF Clinical Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration.

This test was performed by the Pediatric Cellular Therapy Laboratory located at 1975 4th Street Room C4C60, San Francisco, CA 94158.
Phone: 415-476-4860 Fax: 415-514-3372

CLID ID Number: 05D2107946 State Lab ID Number: CLF00349021

Laboratory Director: Christopher Dvorak, MD

ADMINISTRATIVE

CPT Codes:
86367

COMPLETE VIEW

Available Stat:
No

Test Code:
PCD3B

Performing Lab:
PCTL

Performed:
Test performed Monday - Friday at: 0900 & 1400 hours

Methodology:
Flow Cytometry

Patient Preparation:
N / A

Remarks:
N / A

Collect:
Lavender Top

Amount to Collect:
1.0 mL

Sample Type:
MNC APHERESIS

Preferred Volume:
1.0 mL

Minimum Volume:
0.5 mL

Specimen Preparation:
Notify PCTL (x64860, x44199 or x44193) when a specimen arrives at the Processing Lab. Specimen must be delivered to PCTL before 1400H.

Units:
% of WBCs

Reference Interval:
> 10.0 % of WBCs

Stability (from collection to initiation):
72 hours after collection time

Reported:
3 hours after receipt of sample by 1400 hour. After 1400 hour result will be available next day before 1200 hour.

Additional Information:

This test was developed and its performance characteristics determined by the UCSF Clinical Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration.

This test was performed by the Pediatric Cellular Therapy Laboratory located at 1975 4th Street Room C4C60, San Francisco, CA 94158.
Phone: 415-476-4860 Fax: 415-514-3372

CLID ID Number: 05D2107946 State Lab ID Number: CLF00349021

Laboratory Director: Christopher Dvorak, MD

CPT Codes:

86367

Pediatric CD34 Stem Cell Quantitation

PCD34B

ORDERING

Available Stat:
No

Performing Lab:
PCTL

Performed:
Monday - Friday 0900 & 1400

Methodology:
Flow Cytometry

Reported:
3 hours if sample received by 1400. Samples received after 1400 will be resulted the following day weekday.

Additional Information:
This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

COLLECTION

Sample Type:
EDTA Whole blood

Collect:
Lavendar top

Amount to Collect:
1 mL blood

Preferred Volume:
1 mL blood

Minimum Volume:
0.5 mL blood

PROCESSING

Test Code:
PCD34B

Performing Lab:
PCTL

Specimen Preparation:
Notify PCTL (476-4860, 5414-4199 or 514-4193) when sample arrives at Specimen Processing. Sample must be delivered to PTCL before 1400.

Preferred Volume:
1 mL blood

Minimum Volume:
0.5 mL blood

RESULT INTERPRETATION

Units:
% WBC

Reference Interval:
< 0.02%

Additional Information:
This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

ADMINISTRATIVE

CPT Codes:
86367

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
PCD34B

Performing Lab:
PCTL

Performed:
Monday - Friday 0900 & 1400

Methodology:
Flow Cytometry

Collect:
Lavendar top

Amount to Collect:
1 mL blood

Sample Type:
EDTA Whole blood

Preferred Volume:
1 mL blood

Minimum Volume:
0.5 mL blood

Specimen Preparation:
Notify PCTL (476-4860, 5414-4199 or 514-4193) when sample arrives at Specimen Processing. Sample must be delivered to PTCL before 1400.

Units:
% WBC

Reference Interval:
< 0.02%

Reported:
3 hours if sample received by 1400. Samples received after 1400 will be resulted the following day weekday.

Additional Information:
This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

CPT Codes:
86367

LDT or Modified FDA:
Yes

Pediatric high-risk ALL FISH panel

PHALL, BPHALL

ORDERING

Available Stat:
No

Performing Lab:
Cytogenetics

Performed:
Mon - Fri, 9AM - 5PM

Methodology:
FISH

Reported:
7-14 days

Additional Information:
Fluorescence In situ hybridization (FISH) is performed to detect ABL1 (9q34) rearrangement, ABL2 (1q25) rearrangement, PDGFRA (4q12) rearrangement, PDGFRB (5q33) rearrangement, JAK2 (9p24) rearrangement, CRLF2 (Xp22.3/Yp11.3) rearrangement, and EPOR (19q13) rearrangement from pediatric samples.

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Synonyms:

- PHALL
- BPHALL

COLLECTION

Sample Type:
Blood or bone marrow

Collect:
Blood or bone marrow aspirate: Dark green top
Bone marrow core: Sterile container with medium

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Storage/Transport Temperature:
Room temperature: 2 days

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

PROCESSING

Test Code:
Blood: BPHALL
Bone marrow: PHALL

Performing Lab:
Cytogenetics

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

Storage/Transport Temperature:
Room temperature: 2 days

RESULT INTERPRETATION

Additional Information:
Fluorescence In situ hybridization (FISH) is performed to detect ABL1 (9q34) rearrangement, ABL2 (1q25) rearrangement, PDGFRA (4q12) rearrangement, PDGFRB (5q33) rearrangement, JAK2 (9p24) rearrangement, CRLF2 (Xp22.3/Yp11.3) rearrangement, and EPOR (19q13) rearrangement from pediatric samples.

ADMINISTRATIVE

CPT Codes:
88271x14, 88275x7

COMPLETE VIEW

Available Stat:
No

Test Code:
Blood: BPHALL
Bone marrow: PHALL

Performing Lab:
Cytogenetics

Performed:
Mon - Fri, 9AM - 5PM

Methodology:
FISH

Collect:
Blood or bone marrow aspirate: Dark green top
Bone marrow core: Sterile container with medium

Sample Type:
Blood or bone marrow

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

Synonyms:

- PHALL
- BPHALL

Storage/Transport Temperature:
Room temperature: 2 days

Reported:
7-14 days

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Additional Information:
Fluorescence In situ hybridization (FISH) is performed to detect ABL1 (9q34) rearrangement, ABL2 (1q25) rearrangement, PDGFRA (4q12) rearrangement, PDGFRB (5q33) rearrangement, JAK2 (9p24) rearrangement, CRLF2 (Xp22.3/Yp11.3) rearrangement, and EPOR (19q13) rearrangement from pediatric samples.

CPT Codes:
88271x14, 88275x7

Pediatric Leukemia Minimal Residual Disease Testing (Flow Cytometry-CHLA)

MRDFCP

ORDERING

Performing Lab:
Children's Hospital, Los Angeles

Methodology:
Flow Cytometry

Reported:
2-3 days

Additional Information:
Please complete and submit Children's Hospital, Los Angeles test requisition form with sample.

Samples are processed and shipped Monday through Friday only. To ensure that samples make the Friday shipment, they must be received in lab by 12 noon.

Supplemental Test Request Form Required:
Yes

COLLECTION

Sample Type:
Whole blood or Bone marrow

Collect:
EDTA Lavender or Sodium Heparin Green top

Preferred Volume:
5 mL blood or bone marrow

Minimum Volume:
2 mL blood or bone marrow

Stability (from collection to initiation):
48 hours

Storage/Transport Temperature:
Ambient

Unacceptable Conditions:
Clots or specimen greater than 48 hours old

PROCESSING

Test Code:
MRDFCP

Sendout:
Yes

Performing Lab:
Children's Hospital, Los Angeles

Specimen Preparation:
Do not spin tube or aliquot. Send entire specimen to CB with forms.

Preferred Volume:
5 mL blood or bone marrow

Minimum Volume:
2 mL blood or bone marrow

Unacceptable Conditions:
Clots or specimen greater than 48 hours old

Stability (from collection to initiation):
48 hours

Storage/Transport Temperature:
Ambient

RESULT INTERPRETATION

Additional Information:
Please complete and submit Children's Hospital, Los Angeles test requisition form with sample.

Samples are processed and shipped Monday through Friday only. To ensure that samples make the Friday shipment, they must be received in lab by 12 noon.

Interpretive Data:
Detection of residual blasts (leukemic cells) following therapy.

ADMINISTRATIVE

CPT Codes:
88184, 88185 x varies, 88188, 88189

COMPLETE VIEW

Test Code:
MRDFCP

Performing Lab:
Children's Hospital, Los Angeles

Sendout:
Yes

Methodology:
Flow Cytometry

Collect:
EDTA Lavender or Sodium Heparin Green top

Sample Type:
Whole blood or Bone marrow

Preferred Volume:
5 mL blood or bone marrow

Minimum Volume:
2 mL blood or bone marrow

Unacceptable Conditions:
Clots or specimen greater than 48 hours old

Specimen Preparation:
Do not spin tube or aliquot. Send entire specimen to CB with forms.

Interpretive Data:
Detection of residual blasts (leukemic cells) following therapy.

Storage/Transport Temperature:
Ambient

Stability (from collection to initiation):
48 hours

Reported:
2-3 days

Additional Information:
Please complete and submit Children's Hospital, Los Angeles test requisition form with sample.

Samples are processed and shipped Monday through Friday only. To ensure that samples make the Friday shipment, they must be received in lab by 12 noon.

CPT Codes:
88184, 88185 x varies, 88188, 88189

Supplemental Test Request Form Required:
Yes

Pediatric MDS FISH panel

PMDS, BPMDS

ORDERING

Available Stat:
No

Performing Lab:
Cytogenetics

Performed:
Mon - Fri, 9AM - 5PM

Methodology:
FISH

Reported:
7-14 days

Additional Information:
Fluorescence In situ hybridization (FISH) is performed to detect deletion of 5q or loss of a chromosome 5, deletion of 7q or loss of a chromosome 7, gain of chromosome 8, MLL (11q23) rearrangement, DEL20Q/BD20Q from pediatric samples.

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Synonyms:

- BPMDS
- PMDS
- DEL20Q/BD20Q

COLLECTION

Sample Type:
Blood or bone marrow

Collect:
Blood or bone marrow aspirate: Dark green top
Bone marrow core: Sterile container with medium

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bome marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bome marrow core: 1 cm

Stability (from collection to initiation):
Room temperature: 2 days

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

PROCESSING

Test Code:
Blood: BPMDS
Bone marrow: PMDS

Performing Lab:
Cytogenetics

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bome marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bome marrow core: 1 cm

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

Stability (from collection to initiation):
Room temperature: 2 days

RESULT INTERPRETATION

Additional Information:
Fluorescence In situ hybridization (FISH) is performed to detect deletion of 5q or loss of a chromosome 5, deletion of 7q or loss of a chromosome 7, gain of chromosome 8, MLL (11q23) rearrangement, DEL20Q/BD20Q from pediatric samples.

ADMINISTRATIVE

CPT Codes:
88271x8, 88275x5

COMPLETE VIEW

Available Stat:
No

Test Code:
Blood: BPMDS
Bone marrow: PMDS

Performing Lab:
Cytogenetics

Performed:
Mon - Fri, 9AM - 5PM

Methodology:
FISH

Collect:
Blood or bone marrow aspirate: Dark green top
Bone marrow core: Sterile container with medium

Sample Type:
Blood or bone marrow

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bome marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bome marrow core: 1 cm

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

Synonyms:

- BPMDS
- PMDS
- DEL20Q/BD20Q

Stability (from collection to initiation):
Room temperature: 2 days

Reported:
7-14 days

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Additional Information:
Fluorescence In situ hybridization (FISH) is performed to detect deletion of 5q or loss of a chromosome 5, deletion of 7q or loss of a chromosome 7, gain of chromosome 8, MLL (11q23) rearrangement, DEL20Q/BD20Q from pediatric samples.

CPT Codes:
88271x8, 88275x5

Pediatric Standard ALL FISH Panel

PSALL, BPSALL

ORDERING

Available Stat:
No

Performing Lab:
Cytogenetics

Performed:
Monday-Friday 9:00am-5:00pm

Methodology:
FISH

Reported:
7-14 days

Additional Information:

Fluorescence In situ hybridization (FISH) is performed to detect trisomies 4 and 10, BCR/ABL1 gene fusion, ETV6/RUNX1 gene fusion, MLL (KMT2A) rearragement from pediatric non-blood samples.

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Synonyms:

- PSALL
- BPSALL

COLLECTION

Sample Type:
Blood, bone marrow aspirate, bone marrow core

Collect:
Blood: Dark green top (sodium heparin)
Bone marrow: Dark green top (sodium heparin)
Bone core: Sterile container with medium

Amount to Collect:
See Preferred Volume

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Stability (from collection to initiation):
2 days at room temperature

Storage/Transport Temperature:
Room temperature

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen

PROCESSING

Test Code:
BPSALL: Blood
PSALL: Non-blood

Performing Lab:
Cytogenetics

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen

Stability (from collection to initiation):
2 days at room temperature

Storage/Transport Temperature:
Room temperature

RESULT INTERPRETATION

Additional Information:

Fluorescence In situ hybridization (FISH) is performed to detect trisomies 4 and 10, BCR/ABL1 gene fusion, ETV6/RUNX1 gene fusion, MLL (KMT2A) rearragement from pediatric non-blood samples.

ADMINISTRATIVE

CPT Codes:
88271x10, 88275x5

COMPLETE VIEW

Available Stat:
No

Test Code:
BPSALL: Blood
PSALL: Non-blood

Performing Lab:
Cytogenetics

Performed:
Monday-Friday 9:00am-5:00pm

Methodology:
FISH

Collect:
Blood: Dark green top (sodium heparin)
Bone marrow: Dark green top (sodium heparin)
Bone core: Sterile container with medium

Amount to Collect:
See Preferred Volume

Sample Type:
Blood, bone marrow aspirate, bone marrow core

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen

Synonyms:

- PSALL
- BPSALL

Storage/Transport Temperature:
Room temperature

Stability (from collection to initiation):
2 days at room temperature

Reported:
7-14 days

Reflex Testing:

An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Additional Information:

Fluorescence In situ hybridization (FISH) is performed to detect trisomies 4 and 10, BCR/ABL1 gene fusion, ETV6/RUNX1 gene fusion, MLL (KMT2A) rearragement from pediatric non-blood samples.

CPT Codes:

88271x10, 88275x5

Peripheral Blood CD34 Enumeration

CD34A

ORDERING

Available Stat:
No

Performing Lab:
BMT lab

Performed:
Yes

Methodology:
Flow Cytometry

Reported:
3 hours

Additional Information:
Peripheral CD34 enumeration is used to determine if stem cell collection can be started and to calculate approximate amount of stem cells to be collected on the day of collection.

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top

Amount to Collect:
2 mL

Preferred Volume:
2 mL

Minimum Volume:
1.0 mL

Remarks:
Only collected Monday-Friday

Stability (from collection to initiation):
Room temperature: 1 Day

Unacceptable Conditions:
Clotted specimen

PROCESSING

Test Code:
CD34A

Performing Lab:
BMT lab

Preferred Volume:
2 mL

Minimum Volume:
1.0 mL

Unacceptable Conditions:
Clotted specimen

Stability (from collection to initiation):
Room temperature: 1 Day

RESULT INTERPRETATION

Units:
Cells/uL

Additional Information:
Peripheral CD34 enumeration is used to determine if stem cell collection can be started and to calculate approximate amount of stem cells to be collected on the day of collection.

ADMINISTRATIVE

CPT Codes:
86367

COMPLETE VIEW

Available Stat:
No

Test Code:
CD34A

Performing Lab:
BMT lab

Performed:
Yes

Methodology:
Flow Cytometry

Remarks:
Only collected Monday-Friday

Collect:
Lavender top

Amount to Collect:
2 mL

Sample Type:
EDTA whole blood

Preferred Volume:
2 mL

Minimum Volume:
1.0 mL

Unacceptable Conditions:
Clotted specimen

Units:
Cells/uL

Stability (from collection to initiation):
Room temperature: 1 Day

Reported:
3 hours

Additional Information:
Peripheral CD34 enumeration is used to determine if stem cell collection can be started and to calculate approximate amount of stem cells to be collected on the day of collection.

CPT Codes:
86367

Peripheral Blood Culture

P060

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Daily, all shifts

Methodology:
Culture

Reported:
Up to 6 days

Additional Information:
Notify Microbiology when Brucella is suspect so that the cultures can be incubated for 14 days.

Reflex Testing:
If bacteria are detected they are identified and susceptibility testing is performed as appropriate.

COLLECTION

Sample Type:
Blood

Collect:
Paired blood culture bottles (BD BACTEC Plus Aerobic & Lytic Anaerobic bottles)

Amount to Collect:
Adults: 20 mL total (10 mL for each bottle)

Pediatrics: Collect blood sample amount according to weight:
< 1 kg = 1 mL for aerobic only (0.5 ml for neonates < 72h old)
1 - 5 kg = 2 mL total (1 mL for each bottle)
5 - 15 kg = 3 mL total (1.5 mL for each bottle)
15 - 40 kg = 6 mL total (3 mL for each bottle)
>40 kg = 10 mL total (5 mL for each bottle)

Preferred Volume:
Adults: 20 mL total (10 mL for each bottle)

Pediatrics: Collect blood sample amount according to weight (see Amount to Collect above)

Minimum Volume:
Adults: 10 mL total (5 mL for each bottle)

Pediatrics: Draw 1.0 mL minimum for culture (0.5 ml for neonates < 72h old) when collecting aerobic only (standard). If both aerobic and anaerobic needed, instill minimum of 1 mL in each bottle when collecting.

Remarks:

1. Adults:
Collect 2 sets of cultures from different sites.
Collect at least one set of cultures from a peripheral site.

2. Pediatrics:
Amount of blood depends on weight of patient (see weight based minimums).

Anaerobic sample should be sent only in the following circumstances: Outpatients, patients with immunodeficiency, malignancy or after bone or human stem cell transplant, patients with gastrointestinal disorder, or at physician's request due to concern for anaerobes. Sending only an aerobic specimen is sufficient for all other patient populations.

3. Cleanse venipuncture site:
For patients with NO contraindication for use of chlorhexidine products: Cleanse the venipuncture site with ChloraPrep Single Swabstick using a back and forth motion for 30 seconds. Allow it to air dry. NOTE: If skin is soiled, clean with 70% isopropyl alcohol before using ChloraPrep.

For patients with a contraindication for use of Chlorhexidine products, DO NOT USE CHLORAPREP & follow this procedure: Clean skin of venipuncture site with 60-second friction scrub of 70% isopropyl alcohol to a 5 cm circular area. Apply 10% PVP Iodine to venipuncture site skin in a circular motion to a 5 cm area starting in the center. Allow it to air dry. Following the venipuncture, remove residual iodine from patient's skin with 70% isopropyl alcohol.

4. Remove plastic cap of each bottle and scrub top of each bottle with 70% alcohol prep pad.

5. Perform venipuncture and obtain sample.
Nursing staff: Refer to Blood Culture Methods (General) procedure in Nursing Procedures Manual.
Clinical Labs Phlebotomy staff: Refer to Clinical Labs Blood Culture Collection procedure.

6. Instill sample into aerobic bottle first and then into anaerobic bottle. Do not aspirate air into the anaerobic bottle. Do not add more than 10 mL into each bottle. Gently invert bottles to mix contents.

7. Label each bottle with patient's name and medical record number and site of draw. Do not place label on neck of bottle or bottom (underneath) of bottle, and do not cover bar code on bottle with the label. Place label vertically on bottle.

Stability (from collection to initiation):
36 hours at room temperature

Unacceptable Conditions:
Samples that are not collected per "Collection Instructions"

PROCESSING

Test Code:
P060

Test Group:
Bacterial culture

Performing Lab:
Microbiology

Specimen Preparation:

1. If bottles are overfilled, enter OVRFIL (Blood culture appears overfilled; do not put >10ml/bottle.) in SREQ.
2. If actual source (Peripheral Blood, Central Blood) does not match order, complete a credit form and indicate reason BMIS (Specimen source on order/requisition and on bottle received do not match. Test performed and results available under separate order.)
3. Accession the specimen with the test code corresponding to the actual source, and enter MISB (Specimen source on order/requisition and on bottle received do not match. Source listed on bottle used for identification.) in SREQ.
4. If the time from collection to loading bottles on the instrument is more than 12 hours, give the bottles to a CLS to subculture before loading.

Preferred Volume:
Adults: 20 mL total (10 mL for each bottle)

Pediatrics: Collect blood sample amount according to weight (see Amount to Collect above)

Minimum Volume:
Adults: 10 mL total (5 mL for each bottle)

Pediatrics: Draw 1.0 mL minimum for culture (0.5 ml for neonates < 72h old) when collecting aerobic only (standard). If both aerobic and anaerobic needed, instill minimum of 1 mL in each bottle when collecting.

Unacceptable Conditions:
Samples that are not collected per "Collection Instructions"

Stability (from collection to initiation):
36 hours at room temperature

RESULT INTERPRETATION

Reference Interval:
No growth

Critical Values:
Inpatient results only. After hours outpatient results will be phoned the following morning. Gram stain results from the first positive blood culture on a patient will be phoned. Additional calls only made if > 7 days have elapsed since first call or a different organism is identified.

Additional Information:
Notify Microbiology when Brucella is suspect so that the cultures can be incubated for 14 days.

ADMINISTRATIVE

CPT Codes:
87040

COMPLETE VIEW

Available Stat:
No

Test Code:
P060

Test Group:
Bacterial culture

Performing Lab:
Microbiology

Performed:
Daily, all shifts

Methodology:
Culture

Remarks:
1. Adults:
Collect 2 sets of cultures from different sites.
Collect at least one set of cultures from a peripheral site.

2. Pediatrics:
Amount of blood depends on weight of patient (see weight based minimums).

Anaerobic sample should be sent only in the following circumstances: Outpatients, patients with immunodeficiency, malignancy or after bone or human stem cell transplant, patients with gastrointestinal disorder, or at physician's request due to concern for anaerobes. Sending only an aerobic specimen is sufficient for all other patient populations.

3. Cleanse venipuncture site:
For patients with NO contraindication for use of chlorhexidine products: Cleanse the venipuncture site with ChloraPrep Single Swabstick using a back and forth motion for 30 seconds. Allow it to air dry. NOTE: If skin is soiled, clean with 70% isopropyl alcohol before using ChloraPrep.

For patients with a contraindication for use of Chlorhexidine products, DO NOT USE CHLORAPREP & follow this procedure: Clean skin of venipuncture site with 60-second friction scrub of 70% isopropyl alcohol to a 5 cm circular area. Apply 10% PVP Iodine to venipuncture site skin in a circular motion to a 5 cm area starting in the center. Allow it to air dry. Following the venipuncture, remove residual iodine from patient's skin with 70% isopropyl alcohol.

4. Remove plastic cap of each bottle and scrub top of each bottle with 70% alcohol prep pad.

5. Perform venipuncture and obtain sample.
Nursing staff: Refer to Blood Culture Methods (General) procedure in Nursing Procedures Manual.
Clinical Labs Phlebotomy staff: Refer to Clinical Labs Blood Culture Collection procedure.

6. Instill sample into aerobic bottle first and then into anaerobic bottle. Do not aspirate air into the anaerobic bottle. Do not add more than 10 mL into each bottle. Gently invert bottles to mix contents.

7. Label each bottle with patient's name and medical record number and site of draw. Do not place label on neck of bottle or bottom (underneath) of bottle, and do not cover bar code on bottle with the label. Place label vertically on bottle.

Collect:
Paired blood culture bottles (BD BACTEC Plus Aerobic & Lytic Anaerobic bottles)

Amount to Collect:

Adults: 20 mL total (10 mL for each bottle)

Pediatrics: Collect blood sample amount according to weight:
< 1 kg = 1 mL for aerobic only (0.5 ml for neonates < 72h old)
1 - 5 kg = 2 mL total (1 mL for each bottle)
5 - 15 kg = 3 mL total (1.5 mL for each bottle)
15 - 40 kg = 6 mL total (3 mL for each bottle)
>40 kg = 10 mL total (5 mL for each bottle)

Sample Type:

Blood

Preferred Volume:

Adults: 20 mL total (10 mL for each bottle)

Pediatrics: Collect blood sample amount according to weight (see Amount to Collect above)

Minimum Volume:

Adults: 10 mL total (5 mL for each bottle)

Pediatrics: Draw 1.0 mL minimum for culture (0.5 ml for neonates < 72h old) when collecting aerobic only (standard). If both aerobic and anaerobic needed, instill minimum of 1 mL in each bottle when collecting.

Unacceptable Conditions:

Samples that are not collected per "Collection Instructions"

Specimen Preparation:

1. If bottles are overfilled, enter OVRFIL (Blood culture appears overfilled; do not put >10ml/bottle.) in SREQ.
2. If actual source (Peripheral Blood, Central Blood) does not match order, complete a credit form and indicate reason BMIS (Specimen source on order/requisition and on bottle received do not match. Test performed and results available under separate order.)
3. Accession the specimen with the test code corresponding to the actual source, and enter MISB (Specimen source on order/requisition and on bottle received do not match. Source listed on bottle used for identification.) in SREQ.
4. If the time from collection to loading bottles on the instrument is more than 12 hours, give the bottles to a CLS to subculture before loading.

Reference Interval:

No growth

Critical Values:

Inpatient results only. After hours outpatient results will be phoned the following morning. Gram stain results from the first positive blood culture on a patient will be phoned. Additional calls only made if > 7 days have elapsed since first call or a different organism is identified.

Stability (from collection to initiation):

36 hours at room temperature

Reported:

Up to 6 days

Reflex Testing:

If bacteria are detected they are identified and susceptibility testing is performed as appropriate.

Additional Information:

Notify Microbiology when Brucella is suspect so that the cultures can be incubated for 14 days.

CPT Codes:

87040

Peripheral blood draw for CCGL

PBCGL

ORDERING

Available Stat:
No

Performing Lab:
Phlebotomy

Synonyms:

- Clinical Cancer Genomics Lab blood draw
- Clinical Cancer Genomics Lab draw

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top

Amount to Collect:
3 mL blood

Preferred Volume:
3 mL blood

PROCESSING

Test Code:
PBCGL

Performing Lab:
Phlebotomy

Specimen Preparation:
Contact CCGL at 415-502-3252 and inform them that a sample is available for pickup and your location.

Preferred Volume:
3 mL blood

COMPLETE VIEW

Available Stat:
No

Test Code:
PBCGL

Performing Lab:
Phlebotomy

Collect:
Lavender top

Amount to Collect:
3 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
3 mL blood

Specimen Preparation:
Contact CCGL at 415-502-3252 and inform them that a sample is available for pickup and your location.

Synonyms:

- Clinical Cancer Genomics Lab blood draw
- Clinical Cancer Genomics Lab draw

pH, Body fluid

PHB

ORDERING

Ordering Recommendations:
Not a routinely available test. See 'Additional information'

Available Stat:
No

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Reported:
Stat 1 hour, Routine 4 hours

Additional Information:
As normal samples are not available for validating the performance of this assay, the UCSF Clinical laboratory makes no claims with regard to the accuracy of the result.

All results will be appended with a disclaimer: The reference range and other method performance specifications have not been established by the UCSF Clinical Laboratory for this body fluid. The test result must be integrated into the clinical context for interpretation."

COLLECTION

Sample Type:
Body Fluid

Collect:
Clean, empty container OR red top (no additives)
Note: Do NOT collect in red top with clot activator (silicone coated).

Amount to Collect:
See preferred volume

Preferred Volume:
5 mL fluid

Remarks:
Deliver promptly to laboratory. Refrigerate if delivery delayed > 60 minutes. Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Stability (from collection to initiation):
Room temperature 2 hours, refrigerated 1 day. pH may change with storage, test should be run asap.

PROCESSING

Test Code:
PHB

Test Group:
pH

Performing Lab:
Parnassus & Mission Bay Chemistry

Specimen Preparation:
Deliver to chemistry immediately for processing. Do not open container

Preferred Volume:
5 mL fluid

Stability (from collection to initiation):
Room temperature 2 hours, refrigerated 1 day. pH may change with storage, test should be run asap.

RESULT INTERPRETATION

Additional Information:
As normal samples are not available for validating the performance of this assay, the UCSF Clinical laboratory makes no claims with regard to the accuracy of the result.

All results will be appended with a disclaimer: The reference range and other method performance specifications have not been established by the UCSF Clinical Laboratory for this body fluid. The test result must be integrated into the clinical context for interpretation."

ADMINISTRATIVE

CPT Codes:
83986

LOINC Codes:
2748-2

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Not a routinely available test. See 'Additional information'

Test Code:
PHB

Test Group:
pH

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Remarks:
Deliver promptly to laboratory. Refrigerate if delivery delayed > 60 minutes. Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Collect:
Clean, empty container OR red top (no additives)
Note: Do NOT collect in red top with clot activator (silicone coated).

Amount to Collect:
See preferred volume

Sample Type:
Body Fluid

Preferred Volume:
5 mL fluid

Specimen Preparation:
Deliver to chemistry immediately for processing. Do not open container

Stability (from collection to initiation):
Room temperature 2 hours, refrigerated 1 day. pH may change with storage, test should be run asap.

Reported:
Stat 1 hour, Routine 4 hours

Additional Information:
As normal samples are not available for validating the performance of this assay, the UCSF Clinical laboratory makes no claims with regard to the accuracy of the result.

All results will be appended with a disclaimer: The reference range and other method performance specifications have not been established by the UCSF Clinical Laboratory for this body fluid. The test result must be integrated into the clinical context for interpretation."

CPT Codes:
83986

LOINC Codes:
2748-2

pH, stool

PHF

ORDERING

Ordering Recommendations:
Not a routinely available test. See 'Additional information'

Available Stat:
No

Performing Lab:
Mission Bay Hematology

Performed:
8:00 AM - 4:00 PM daily

Methodology:
pH strip

Reported:
Same or next day.

Additional Information:
As normal samples are not available for validating the performance of this assay, the UCSF Clinical laboratory makes no claims with regard to the accuracy of the result.

All results will be appended with a disclaimer: The reference range and other method performance specifications have not been established by the UCSF Clinical Laboratory for this body fluid. The test result must be integrated into the clinical context for interpretation."

Disaccharide malabsorption results in acidification of the stool from the production of short-chain fatty acids by colonic flora if antibiotics do not interfere, typically giving a pH < 5.5.

See also Reducing Substances, stool

Synonyms:

- stool analysis
- disaccharide malabsorption

COLLECTION

Sample Type:
Fresh loose or liquid stool

Collect:
Clean container without preservative

Amount to Collect:
See preferred volume

Preferred Volume:
10 g loose or liquid stool

Minimum Volume:
1/2 teaspoon loose or liquid stool

Remarks:
Collect stool in plastic-lined diapers or non-absorbent material

Stability (from collection to initiation):
Frozen at -20C 48 hours

Unacceptable Conditions:
Fully formed stool. Stools collected in cotton balls, absorbent diaper, swab or kits.

PROCESSING

Test Code:
PHF

Test Group:
pH

Performing Lab:
Mission Bay Hematology

Specimen Preparation:
Deliver immediately to Hematology for testing. If testing is delayed freeze sample at -20C.

Preferred Volume:
10 g loose or liquid stool

Minimum Volume:
1/2 teaspoon loose or liquid stool

Unacceptable Conditions:
Fully formed stool. Stools collected in cotton balls, absorbent diaper, swab or kits.

Stability (from collection to initiation):
Frozen at -20C 48 hours

RESULT INTERPRETATION

Units:
pH

Reference Interval:
> 6.5

Additional Information:
As normal samples are not available for validating the performance of this assay, the UCSF Clinical laboratory makes no claims with regard to the accuracy of the result.

All results will be appended with a disclaimer: The reference range and other method performance specifications have not been established by the UCSF Clinical Laboratory for this body fluid. The test result must be integrated into the clinical context for interpretation."

Disaccharide malabsorption results in acidification of the stool from the production of short-chain fatty acids by colonic flora if antibiotics do not interfere, typically giving a pH < 5.5.

See also Reducing Substances, stool

ADMINISTRATIVE

CPT Codes:
83986

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Not a routinely available test. See 'Additional information'

Test Code:
PHF

Test Group:
pH

Performing Lab:
Mission Bay Hematology

Performed:
8:00 AM - 4:00 PM daily

Methodology:
pH strip

Remarks:
Collect stool in plastic-lined diapers or non-absorbent material

Collect:
Clean container without preservative

Amount to Collect:
See preferred volume

Sample Type:
Fresh loose or liquid stool

Preferred Volume:
10 g loose or liquid stool

Minimum Volume:
1/2 teaspoon loose or liquid stool

Unacceptable Conditions:
Fully formed stool. Stools collected in cotton balls, absorbent diaper, swab or kits.

Specimen Preparation:
Deliver immediately to Hematology for testing. If testing is delayed freeze sample at -20C.

Units:
pH

Reference Interval:
> 6.5

Synonyms:

- stool analysis
- disaccharide malabsorption

Stability (from collection to initiation):
Frozen at -20C 48 hours

Reported:
Same or next day.

Additional Information:
As normal samples are not available for validating the performance of this assay, the UCSF Clinical laboratory makes no claims with regard to the accuracy of the result.

All results will be appended with a disclaimer: The reference range and other method performance specifications have not been established by the UCSF Clinical Laboratory for this body fluid. The test result must be integrated into the clinical context for interpretation."

Disaccharide malabsorption results in acidification of the stool from the production of short-chain fatty acids by colonic flora if antibiotics do not interfere, typically giving a pH < 5.5.

See also Reducing Substances, stool

CPT Codes:
83986

pH, urine

PHU

ORDERING

Available Stat:
No

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Reported:
4 hours

Additional Information:
Part of routine urinalysis. Order only if greater accuracy than dipstick testing is required.

Specimens should not be unrefrigerated for more than an hour before they are delivered to the laboratory or pH changes may occur due to bacterial growth.

COLLECTION

Sample Type:
Random urine

Collect:
Red top, black top or urine cup

Amount to Collect:
See preferred volume

Preferred Volume:
5 mL urine

Remarks:
Deliver promptly to laboratory. Refrigerate if delivery delayed > 60 min.

Stability (from collection to initiation):
Room temperature 2 hours, refrigerated 1 day. Note: pH may change with storage, test should be run asap.

Unacceptable Conditions:
Unrefrigerated samples delivered to lab > 2 hours after collection.

PROCESSING

Test Code:
PHU

Test Group:
pH

Performing Lab:
Parnassus & Mission Bay Chemistry

Specimen Preparation:
Deliver immediately to lab for stat processing. Do not open tube.

Preferred Volume:
5 mL urine

Unacceptable Conditions:
Unrefrigerated samples delivered to lab > 2 hours after collection.

Stability (from collection to initiation):
Room temperature 2 hours, refrigerated 1 day. Note: pH may change with storage, test should be run asap.

RESULT INTERPRETATION

Reference Interval:
4.6-8.0

Additional Information:
Part of routine urinalysis. Order only if greater accuracy than dipstick testing is required.

Specimens should not be unrefrigerated for more than an hour before they are delivered to the laboratory or pH changes may occur due to bacterial growth.

ADMINISTRATIVE

CPT Codes:
83986

LOINC Codes:
2756-5

COMPLETE VIEW

Available Stat:
No

Test Code:
PHU

Test Group:
pH

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Remarks:
Deliver promptly to laboratory. Refrigerate if delivery delayed > 60 min.

Collect:
Red top, black top or urine cup

Amount to Collect:
See preferred volume

Sample Type:
Random urine

Preferred Volume:
5 mL urine

Unacceptable Conditions:
Unrefrigerated samples delivered to lab > 2 hours after collection.

Specimen Preparation:
Deliver immediately to lab for stat processing. Do not open tube.

Reference Interval:
4.6-8.0

Stability (from collection to initiation):
Room temperature 2 hours, refrigerated 1 day. Note: pH may change with storage, test should be run asap.

Reported:
4 hours

Additional Information:
Part of routine urinalysis. Order only if greater accuracy than dipstick testing is required.

Specimens should not be unrefrigerated for more than an hour before they are delivered to the laboratory or pH changes may occur due to bacterial growth.

CPT Codes:
83986

LOINC Codes:
2756-5

Pharmacy CSP sterility

P045

ORDERING

Available Stat:
No

COMPLETE VIEW

Available Stat:
No

Phencyclidine

PCPU

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Mass Spectrometry

Reported:
5-7 days

Synonyms:

- PCP

COLLECTION

Sample Type:
Urine

Collect:
Urine container

Amount to Collect:
20 mL

Preferred Volume:
20 mL

Minimum Volume:
5 mL

Stability (from collection to initiation):
Room temperature: 7 days
Refrigerated: 14 days
Frozen: 30 days

Rejection Criteria:
Preserved specimens

PROCESSING

Test Code:
PCPU

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot and freeze specimen. Transport to CB frozen. Order Quest test code 39401.

Preferred Volume:
20 mL

Minimum Volume:
5 mL

Rejection Criteria:
Preserved specimens

Stability (from collection to initiation):
Room temperature: 7 days
Refrigerated: 14 days
Frozen: 30 days

ADMINISTRATIVE

CPT Codes:
83992-90

LOINC Codes:
3937-0

COMPLETE VIEW

Available Stat:
No

Test Code:
PCPU

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Mass Spectrometry

Collect:
Urine container

Amount to Collect:
20 mL

Sample Type:
Urine

Preferred Volume:
20 mL

Minimum Volume:
5 mL

Rejection Criteria:
Preserved specimens

Specimen Preparation:
Aliquot and freeze specimen. Transport to CB frozen. Order Quest test code 39401.

Synonyms:

- PCP

Stability (from collection to initiation):
Room temperature: 7 days
Refrigerated: 14 days
Frozen: 30 days

Reported:
5-7 days

CPT Codes:
83992-90

LOINC Codes:
3937-0

Phenobarbital

PBAR

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Homogeneous particle-enhanced turbidimetric inhibition immunoassay (PETINIA)

Reported:
STAT 1 hour, Routine 4 hours

Synonyms:

- Luminal

COLLECTION

Sample Type:
Serum or plasma

Collect:
Gold top or Light Green top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Remarks:
Time to steady state: 2-4 weeks

Collect sample before next dose.

Indicate time of draw on requisition.

Stability (from collection to initiation):
Room temperature 7 days, refrigerated 6 months, frozen at -20C 6 months

PROCESSING

Test Code:
PBAR

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Stability (from collection to initiation):
Room temperature 7 days, refrigerated 6 months, frozen at -20C 6 months

RESULT INTERPRETATION

Units:
mg/L

Reference Interval:
Therapeutic levels:

0-17 years: 15-40 mg/L
>= 18 years: 10-40 mg/L

Therapeutic ranges adopted or modified from the literature based on recommendations of UCSF Pharmacists

Critical Values:
> 50 mg/L

ADMINISTRATIVE

CPT Codes:
80184

LOINC Codes:
3948-7

COMPLETE VIEW

Available Stat:
Yes

Test Code:
PBAR

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Homogeneous particle-enhanced turbidimetric inhibition immunoassay (PETINIA)

Remarks:
Time to steady state: 2-4 weeks

Collect sample before next dose.

Indicate time of draw on requisition.

Collect:
Gold top or Light Green top

Amount to Collect:
1 mL blood

Sample Type:
Serum or plasma

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Units:
mg/L

Reference Interval:
Therapeutic levels:

0-17 years: 15-40 mg/L
>= 18 years: 10-40 mg/L

Therapeutic ranges adopted or modified from the literature based on recommendations of UCSF Pharmacists

Critical Values:
> 50 mg/L

Synonyms:

- Luminal

Stability (from collection to initiation):
Room temperature 7 days, refrigerated 6 months, frozen at -20C 6 months

Reported:
STAT 1 hour, Routine 4 hours

CPT Codes:
80184

LOINC Codes:
3948-7

Phenylalanine

PALA

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
IEC

Reported:
Set up 5x per week Turnaround time: 2-4 days

Additional Information:
To convert result to mg/dL, multiply result in µmol/L x 0.0165

COLLECTION

Patient Preparation:
Fasting for 4 hours prior to sample collection is recommended.

Sample Type:
Heparinized plasma

Collect:
Dark Green top

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL plasma

Minimum Volume:
0.5 mL plasma

Stability (from collection to initiation):
Room temperature unacceptable, refrigerated 1 week, frozen at -20C 1 month

PROCESSING

Test Code:
PALA

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze plasma at -20C. Order Quest # 37356

Preferred Volume:
2 mL plasma

Minimum Volume:
0.5 mL plasma

Stability (from collection to initiation):
Room temperature unacceptable, refrigerated 1 week, frozen at -20C 1 month

RESULT INTERPRETATION

Units:
µmol/L

Reference Interval:

<= 30 days	30-79 µmol/L
31 days-23 months	31-92 µmol/L
2-18 years	38-86 µmol/L
> 18 years	40-74 µmol/L

Additional Information:
To convert result to mg/dL, multiply result in µmol/L x 0.0165

ADMINISTRATIVE

CPT Codes:
84030-90

LOINC Codes:
14875-9

COMPLETE VIEW

Available Stat:
No

Test Code:
PALA

Performing Lab:
Quest

Sendout:
Yes

Methodology:
IEC

Patient Preparation:
Fasting for 4 hours prior to sample collection is recommended.

Collect:
Dark Green top

Amount to Collect:
4 mL blood

Sample Type:
Heparinized plasma

Preferred Volume:
2 mL plasma

Minimum Volume:
0.5 mL plasma

Specimen Preparation:
Freeze plasma at -20C. Order Quest # 37356

Units:
µmol/L

Reference Interval:

<= 30 days	30-79 µmol/L
31 days-23 months	31-92 µmol/L
2-18 years	38-86 µmol/L
> 18 years	40-74 µmol/L

Stability (from collection to initiation):
Room temperature unacceptable, refrigerated 1 week, frozen at -20C 1 month

Reported:
Set up 5x per week Turnaround time: 2-4 days

Additional Information:
To convert result to mg/dL, multiply result in µmol/L x 0.0165

CPT Codes:
84030-90

LOINC Codes:
14875-9

Phenytoin, Free

PHNYF

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Ultrafiltration-High Pressure Liquid Chromatography

Reported:
Run 5x per week. Turnaround 3-5 days

Additional Information:
Phenytoin binds to albumin, only the free fraction is therapeutically active. In patients with hypoalbuminemia, who are on dialysis, are critically ill or are receiving medications that may displace phenytoin the measurement of total phenytoin levels may result in either under or overdosing. In these situations assessing free phenytoin is suggested.

Synonyms:

- Dilantin
- Fosphenytoin
- Cerebyx

COLLECTION

Sample Type:
Serum

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
5 mL blood

Preferred Volume:
2.5 mL serum

Minimum Volume:
1.5 mL serum

Remarks:
Time to steady state: 3-4 days

Collect samples 30 minutes before AM dose.

Draw at least 4 hours post-IV dose and 6-9 hours post-PO dose

Collect in Red top tube only. Avoid hemolysis.

Order total phenytoin separately if desired. Indicate time of collection on requiisition.

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 1 week, frozen at -20C 1 month

Unacceptable Conditions:
Collected in Gold top. Gross hemolysis

PROCESSING

Test Code:
PHNYF

Test Group:
Phenytoin

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate separated serum. Be sure that total Phenytoin has been separately ordered, if requested. Order Quest # 39693P

For B&T patients order labCorp test #070706 "Phenytoin Free & Total only"

Preferred Volume:
2.5 mL serum

Minimum Volume:
1.5 mL serum

Unacceptable Conditions:
Collected in Gold top. Gross hemolysis

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 1 week, frozen at -20C 1 month

RESULT INTERPRETATION

Units:
µg/mL (mcg/mL)

Reference Interval:
Therapeutic: 1.0-2.0 µg/mL
Potentially toxic: > 3.0 µg/mL

Additional Information:
Phenytoin binds to albumin, only the free fraction is therapeutically active. In patients with hypoalbuminemia, who are on dialysis, are critically ill or are receiving medications that may displace phenytoin the measurement of total phenytoin levels may result in either under or overdosing. In these situations assessing free phenytoin is suggested.

ADMINISTRATIVE

CPT Codes:
80186-90

LOINC Codes:
3969-3

COMPLETE VIEW

Available Stat:
No

Test Code:
PHNYF

Test Group:
Phenytoin

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Ultrafiltration-High Pressure Liquid Chromatography

Remarks:
Time to steady state: 3-4 days

Collect samples 30 minutes before AM dose.

Draw at least 4 hours post-IV dose and 6-9 hours post-PO dose

Collect in Red top tube only. Avoid hemolysis.

Order total phenytoin separately if desired. Indicate time of collection on requiisition.

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
5 mL blood

Sample Type:
Serum

Preferred Volume:
2.5 mL serum

Minimum Volume:
1.5 mL serum

Unacceptable Conditions:
Collected in Gold top. Gross hemolysis

Specimen Preparation:

Refrigerate separated serum. Be sure that total Phenytoin has been separately ordered, if requested. Order Quest # 39693P

For B&T patients order labCorp test #070706 "Phenytoin Free & Total only"

Units:

µg/mL (mcg/mL)

Reference Interval:

Therapeutic: 1.0-2.0 µg/mL
Potentially toxic: > 3.0 µg/mL

Synonyms:

- Dilantin
- Fosphenytoin
- Cerebyx

Stability (from collection to initiation):

Room temperature 4 days, refrigerated 1 week, frozen at -20C 1 month

Reported:

Run 5x per week. Turnaround 3-5 days

Additional Information:

Phenytoin binds to albumin, only the free fraction is therapeutically active. In patients with hypoalbuminemia, who are on dialysis, are critically ill or are receiving medications that may displace phenytoin the measurement of total phenytoin levels may result in either under or overdosing. In these situations assessing free phenytoin is suggested.

CPT Codes:

80186-90

LOINC Codes:

3969-3

Phenytoin, total

PHNY

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Homogeneous competitive enzyme immunoassay

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
The level of phenytoin can be empirically corrected for the effect of hypoalbuminemia with the formula:

Corrected = Measured/[(0.2 x actual albumin) + 0.1]

If renal failure coexists with hypoalbuminemia, the formula is:

Corrected = Measured/[(0.1 x actual albumin) + 0.1]

Obtained from UpToDate (January 2020).

Synonyms:

- Dilantin
- Fosphenytoin
- Cerebyx

COLLECTION

Sample Type:
Plasma

Collect:
Light green or gold top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum/plasma

Minimum Volume:
0.2 mL serum/plasma

Remarks:
Time to steady state: 3-4 days

Collect samples 30 minutes before AM dose.

Draw at least 4 hours post-IV dose and 6-9 hours post-PO dose

Indicate time of draw on requisition.

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 1 month, frozen at -20C 5 months

PROCESSING

Test Code:
PHNY

Test Group:
Phenytoin

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
0.5 mL serum/plasma

Minimum Volume:
0.2 mL serum/plasma

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 1 month, frozen at -20C 5 months

RESULT INTERPRETATION

Units:
mg/L

Reference Interval:
Therapeutic: 10-20 mg/L

Therapeutic range obtained from UpToDate (accessed September 2019).

Critical Values:
> 30 mg/L

Additional Information:
The level of phenytoin can be empirically corrected for the effect of hypoalbuminemia with the formula:

Corrected = Measured/[(0.2 x actual albumin) + 0.1]

If renal failure coexists with hypoalbuminemia, the formula is:

Corrected = Measured/[(0.1 x actual albumin) + 0.1]

Obtained from UpToDate (January 2020).

ADMINISTRATIVE

CPT Codes:
80185

LOINC Codes:
3968-5

COMPLETE VIEW

Available Stat:
Yes

Test Code:
PHNY

Test Group:
Phenytoin

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Homogeneous competitive enzyme immunoassay

Remarks:
Time to steady state: 3-4 days

Collect samples 30 minutes before AM dose.

Draw at least 4 hours post-IV dose and 6-9 hours post-PO dose

Indicate time of draw on requisition.

Collect:
Light green or gold top

Amount to Collect:
1 mL blood

Sample Type:
Plasma

Preferred Volume:
0.5 mL serum/plasma

Minimum Volume:
0.2 mL serum/plasma

Units:
mg/L

Reference Interval:
Therapeutic: 10-20 mg/L

Therapeutic range obtained from UpToDate (accessed September 2019).

Critical Values:
> 30 mg/L

Synonyms:

- Dilantin
- Fosphenytoin
- Cerebyx

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 1 month, frozen at -20C 5 months

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
The level of phenytoin can be empirically corrected for the effect of hypoalbuminemia with the formula:

Corrected = Measured/[(0.2 x actual albumin) + 0.1]

If renal failure coexists with hypoalbuminemia, the formula is:

Corrected = Measured/[(0.1 x actual albumin) + 0.1]

Obtained from UpToDate (January 2020).

CPT Codes:
80185

LOINC Codes:
3968-5

Phosphatidylethanol (PEth), Whole Blood, Quantitative

PETHB

ORDERING

Ordering Recommendations:
Biomarker associated with ethanol consumption; may be helpful in monitoring alcohol abstinence.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Reported:
1-4 days

Synonyms:

- 1,2-dioleoyl-sn-glycero-3-phosphoethanol
- 1-palmitoyl-2-oleoyl-sn-glycero-3-phosphoethanol

COLLECTION

Sample Type:
Whole blood

Collect:
Lavender (K2 or K3EDTA), pink (K2EDTA), dark green (lithium heparin), or gray (potassium oxalate).

Amount to Collect:
1 mL blood

Minimum Volume:
0.5 mL blood

Stability (from collection to initiation):
Ambient: 2 hours; Refrigerated: 2 weeks; Frozen: 1 month (-20°C)

Storage/Transport Temperature:
Refrigerated. Also acceptable: Frozen.

Unacceptable Conditions:
Gel separator tubes, plain red, light blue (citrate), or yellow (SPS or ACD solution).

PROCESSING

Test Code:
PETHB

ARUP Test Code:
3002598

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transport 1 mL whole blood. (Min: 0.5 mL)

Minimum Volume:
0.5 mL blood

Unacceptable Conditions:
Gel separator tubes, plain red, light blue (citrate), or yellow (SPS or ACD solution).

Stability (from collection to initiation):
Ambient: 2 hours; Refrigerated: 2 weeks; Frozen: 1 month (-20°C)

Storage/Transport Temperature:
Refrigerated. Also acceptable: Frozen.

RESULT INTERPRETATION

Reference Interval:
Effective September 8, 2020

By Report

Interpretive Data:
Phosphatidylethanol (PEth) is a group of phospholipids formed in the presence of ethanol, phospholipase D, and phosphatidylcholine. PEth is known to be a direct alcohol biomarker. The predominant PEth homologues are PEth 16:0/18:1 (POPEth) and PEth 16:0/18:2 (PLPEth), which account for 37-46% and 26-28% of the total PEth homologues, respectively. PEth is incorporated into the phospholipid membrane of red blood cells and has a general half-life of 4-10 days and a window of detection of 2-4 weeks. However, the window of detection is longer in individuals who chronically or excessively consume alcohol. Serial monitoring of PEth may be helpful in monitoring alcohol abstinence over time. PEth results should be interpreted in the context of the patient's clinical and behavioral history. Patients with advanced liver disease may have falsely elevated PEth concentrations (Nguyen VL, et al, Alcoholism: Clinical and Experimental Research, 2018).

ADMINISTRATIVE

CPT Codes:
80321 (Alt code: G0480)

LOINC:

- 97607-6
- 11502-2
- 97606-8

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Biomarker associated with ethanol consumption; may be helpful in monitoring alcohol abstinence.

Test Code:
PETHB

ARUP Test Code:
3002598

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Collect:
Lavender (K2 or K3EDTA), pink (K2EDTA), dark green (lithium heparin), or gray (potassium oxalate).

Amount to Collect:
1 mL blood

Sample Type:
Whole blood

Minimum Volume:
0.5 mL blood

Unacceptable Conditions:
Gel separator tubes, plain red, light blue (citrate), or yellow (SPS or ACD solution).

Specimen Preparation:
Transport 1 mL whole blood. (Min: 0.5 mL)

Reference Interval:
Effective September 8, 2020

By Report

Interpretive Data:

Phosphatidylethanol (PEth) is a group of phospholipids formed in the presence of ethanol, phospholipase D, and phosphatidylcholine. PEth is known to be a direct alcohol biomarker. The predominant PEth homologues are PEth 16:0/18:1 (POPEth) and PEth 16:0/18:2 (PLPEth), which account for 37-46% and 26-28% of the total PEth homologues, respectively. PEth is incorporated into the phospholipid membrane of red blood cells and has a general half-life of 4-10 days and a window of detection of 2-4 weeks. However, the window of detection is longer in individuals who chronically or excessively consume alcohol. Serial monitoring of PEth may be helpful in monitoring alcohol abstinence over time. PEth results should be interpreted in the context of the patient's clinical and behavioral history. Patients with advanced liver disease may have falsely elevated PEth concentrations (Nguyen VL, et al, Alcoholism: Clinical and Experimental Research, 2018).

Synonyms:

- 1,2-dioleoyl-sn-glycero-3-phosphoethanol
- 1-palmitoyl-2-oleoyl-sn-glycero-3-phosphoethanol

Storage/Transport Temperature:

Refrigerated. Also acceptable: Frozen.

Stability (from collection to initiation):

Ambient: 2 hours; Refrigerated: 2 weeks; Frozen: 1 month (-20°C)

Reported:

1-4 days

CPT Codes:

80321 (Alt code: G0480)

LOINC:

- 97607-6
- 11502-2
- 97606-8

Phospholipase A2 Receptor (PLA2R) Antibody, IgG with Reflex to Titer

PLA2R

ORDERING

Ordering Recommendations:
Aids in the differential diagnosis of membranous glomerulonephritis (MGN) or nephrotic syndrome of unknown etiology.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Mon, Wed, Fri

Methodology:
Semi-Quantitative Indirect Fluorescent Antibody

Reported:
1-6 days

Synonyms:

- Anti-PLA2R

COLLECTION

Sample Type:
Serum (Red top tube)

Collect:
Serum Separator Tube

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Stability (from collection to initiation):
Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1year

Storage/Transport Temperature:
Refrigerated

Unacceptable Conditions:
Hemolyzed, hyperlipemic,icteric, heat-treated or contaminated

PROCESSING

Test Code:
PLA2R

ARUP Test Code:
2011828

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate serum from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min: 0.2 mL)

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Unacceptable Conditions:
Hemolyzed, hyperlipemic,icteric, heat-treated or contaminated

Stability (from collection to initiation):
Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1year

Storage/Transport Temperature:
Refrigerated

RESULT INTERPRETATION

Reference Interval:
Less than 1:10

Interpretive Data:
A positive result (1:10 or greater) for phospholipase A2 receptor antibody, IgG in conjunction with other laboratory and clinical findings, supports a diagnosis of primary membranous glomerulonephritis (pMGN).

ADMINISTRATIVE

CPT Codes:
86255; if reflexed, add 86256

LOINC:

- 82991-1

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Aids in the differential diagnosis of membranous glomerulonephritis (MGN) or nephrotic syndrome of unknown etiology.

Test Code:
PLA2R

ARUP Test Code:
2011828

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Mon, Wed, Fri

Methodology:
Semi-Quantitative Indirect Fluorescent Antibody

Collect:
Serum Separator Tube

Amount to Collect:
2 mL blood

Sample Type:
Serum (Red top tube)

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Unacceptable Conditions:
Hemolyzed, hyperlipemic,icteric, heat-treated or contaminated

Specimen Preparation:
Separate serum from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min: 0.2 mL)

Reference Interval:
Less than 1:10

Interpretive Data:
A positive result (1:10 or greater) for phospholipase A2 receptor antibody, IgG in conjunction with other laboratory and clinical findings, supports a diagnosis of primary membranous glomerulonephritis (pMGN).

Synonyms:

- Anti-PLA2R

Storage/Transport Temperature:
Refrigerated

Stability (from collection to initiation):
Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1year

Reported:
1-6 days

CPT Codes:
86255; if reflexed, add 86256

LOINC:

- 82991-1

Notes:
If Phospholipase A2 Receptor Antibody, IgG is positive, then a Phospholipase Receptor A2 Antibody, IgG titer will be added. Additional charges apply.

PHOSPHOLIPASE A2 RECEPTOR ANTIBODY, ELISA

PLA2RQ

ORDERING

Available Stat:
No

Performing Lab:
Quest

Performed:
Tues, Thurs, Sat

Methodology:
ELISA

Reported:
3-5 days

COLLECTION

Sample Type:
Serum

Collect:
Gold or Red top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Room temperature: 7 days
Refrigerated: 14 days
Frozen: 21 days

Storage/Transport Temperature:
FROZEN

PROCESSING

Test Code:
PLA2RQ

Sendout:
Yes

Performing Lab:
Quest

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Room temperature: 7 days
Refrigerated: 14 days
Frozen: 21 days

Storage/Transport Temperature:
FROZEN

RESULT INTERPRETATION

Units:
RU/mL

Reference Interval:
< 14

Interpretive Data:
Phospholipase A2 Receptor (PLA2R) Antibody, ELISA - Phospholipase A2 Receptor (PLA2R) Antibody (Ab) testing provides physicians with a non-invasive tool for diagnosing primary membranous nephritis (PMN), an autoimmune disease most commonly mediated by autoantibodies to the podocyte antigen, PLA2R. PLA2R Ab is a highly specific biomarker for PMN and is detected in about 70-80% of patients. Moreover, PLA2R Ab levels frequently rise and fall with the clinical course of PMN and PLA2R Ab levels may have clinical utility in monitoring PMN patients for therapeutic response, remission, and disease relapse.

ADMINISTRATIVE

CPT Codes:
83520

LOINC Codes:
73737-9

COMPLETE VIEW

Available Stat:
No

Test Code:
PLA2RQ

Performing Lab:
Quest

Sendout:
Yes

Performed:
Tues, Thurs, Sat

Methodology:
ELISA

Collect:
Gold or Red top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Units:
RU/mL

Reference Interval:
< 14

Interpretive Data:
Phospholipase A2 Receptor (PLA2R) Antibody, ELISA - Phospholipase A2 Receptor (PLA2R) Antibody (Ab) testing provides physicians with a non-invasive tool for diagnosing primary membranous nephritis (PMN), an autoimmune disease most commonly mediated by autoantibodies to the podocyte antigen, PLA2R. PLA2R Ab is a highly specific biomarker for PMN and is detected in about 70-80% of patients. Moreover, PLA2R Ab levels frequently rise and fall with the clinical course of PMN and PLA2R Ab levels may have clinical utility in monitoring PMN patients for therapeutic response, remission, and disease relapse.

Storage/Transport Temperature:
FROZEN

Stability (from collection to initiation):
Room temperature: 7 days
Refrigerated: 14 days
Frozen: 21 days

Reported:
3-5 days

CPT Codes:
83520

LOINC Codes:
73737-9

Phospholipids

PLIP

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Spectrophotometric

Reported:
Test performed Sunday and Thursday AM and reports on Monday and Friday PM.

Additional Information:
Test is for research use only.

COLLECTION

Patient Preparation:
An 8 hour fast before specimen collection is preferred.

Sample Type:
Serum (plasma is not acceptable)

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

Unacceptable Conditions:
Collected in Gold top. Plasma sample.

PROCESSING

Test Code:
PLIP

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate. Order Quest # 717X

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

Unacceptable Conditions:
Collected in Gold top. Plasma sample.

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:
151-264 mg/dL

Additional Information:
Test is for research use only.

ADMINISTRATIVE

CPT Codes:
84311-90

LOINC Codes:
2568-4

COMPLETE VIEW

Available Stat:
No

Test Code:
PLIP

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Spectrophotometric

Patient Preparation:
An 8 hour fast before specimen collection is preferred.

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
2 mL blood

Sample Type:
Serum (plasma is not acceptable)

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

Unacceptable Conditions:
Collected in Gold top. Plasma sample.

Specimen Preparation:
Refrigerate. Order Quest # 717X

Units:
mg/dL

Reference Interval:
151-264 mg/dL

Reported:
Test performed Sunday and Thursday AM and reports on Monday and Friday PM.

Additional Information:
Test is for research use only.

CPT Codes:
84311-90

LOINC Codes:
2568-4

Phosphorus, 24 hour (or timed) urine

PO4U

ORDERING

Available Stat:
No

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 7 days per week from 8:00 AM to midnight only.

Methodology:
Spectrophotometric Phosphomolybdate

Reported:
4-18 hours

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by 0.323.

Output varies wit diet.

Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

Synonyms:

- PO4

COLLECTION

Sample Type:
24 hr or timed urine collection

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container, 30mL 6N HCL, 10g Boric Acid

Amount to Collect:
Entire urine output for collection period

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Remarks:
Refrigerate container during collection period.

Note that the minimum acceptable time period for a 'timed' collection is 6 hours.

Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

Stability (from collection to initiation):
Room temperature or refrigerated 2 days

PROCESSING

Test Code:
PO4U

Test Group:
Phosphorus

Performing Lab:
Parnassus & Mission Bay Chemistry

Specimen Preparation:
Aliquot 1 mL and add 1 drop of 6N HCl to acidify.

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Stability (from collection to initiation):
Room temperature or refrigerated 2 days

RESULT INTERPRETATION

Units:
mg/D

Reference Interval:
400-1300 mg/D

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by 0.323.

Output varies wit diet.

Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

ADMINISTRATIVE

CPT Codes:
84105

COMPLETE VIEW

Available Stat:
No

Test Code:
PO4U

Test Group:
Phosphorus

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 7 days per week from 8:00 AM to midnight only.

Methodology:
Spectrophotometric Phosphomolybdate

Remarks:
Refrigerate container during collection period.

Note that the minimum acceptable time period for a 'timed' collection is 6 hours.

Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container, 30mL 6N HCL, 10g Boric Acid

Amount to Collect:
Entire urine output for collection period

Sample Type:
24 hr or timed urine collection

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Specimen Preparation:
Aliquot 1 mL and add 1 drop of 6N HCl to acidify.

Units:
mg/D

Reference Interval:
400-1300 mg/D

Synonyms:

- PO4

Stability (from collection to initiation):
Room temperature or refrigerated 2 days

Reported:
4-18 hours

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by 0.323.

Output varies wit diet.

Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

CPT Codes:
84105

Phosphorus, Plasma / Serum

PO4

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Chemistry: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center (Mon-Fri 0800-1630)

Methodology:
Parnassus, Mission Bay & Mt. Zion Chemistry:
Spectrophotometric phosphomolybdate on Abbott Architect
Berkeley Outpatient Center:
Spectrophotometric phosphomolybdate on Roche cobas c311

Reported:
STAT 1 hour, Routine: 4 hour

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by 0.323.

Phosphorus, like potassium, is released by platelets during clotting, and serum levels are approx. 0.2 mg/dL higher than those measured in plasma. Levels can be falsely elevated by thrombocytosis, though not as predictably as those for potassium.

Liposomal amphotericin B has not been reported to cause falsely high serum/plasma phosphorus in the Abbott phosphorus assay used at Parnassus, Mission Bay and Mt Zion.

Phospholipids contained in liposomal drug formulations (eg AmBisome) may be hydrolyzed in the test due to the acidic reaction pH and thus lead to elevated phosphate results on the Roche assay. Ref: Roche PHOS2 package insert.

Synonyms:

- PO4

COLLECTION

Sample Type:
Plasma or serum

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Parnassus, Mission Bay, Mt. Zion, and Berkeley Outpatient Center
Room temperature 1 day, refrigerated 4 days, frozen at -20C 1 year

PROCESSING

Test Code:
PO4

Test Group:
Phosphorus

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Parnassus, Mission Bay, Mt. Zion, and Berkeley Outpatient Center
Room temperature 1 day, refrigerated 4 days, frozen at -20C 1 year

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:
Parnassus, Mission Bay & Mt. Zion Chemistry

Age	Male (mg/dL)	Female (mg/dL)
0 to 14 days	5.6-10.5	5.6-10.5
15 days to <1 year	4.8-8.4	4.8-8.4
1 to 4 years	4.3-6.8	4.3-6.8
5 to 12 years	4.1-5.9	4.1-5.9
13 to 15 years	3.5-6.2	3.2-5.5
16 to 18 years	2.9-5.0	2.9-5.0
>18 years	2.3-4.7	2.3-4.7

Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, https://caliper.research.sickkids.ca/#/

UCSF Clinical Labs verified the adult reference range stated in the Abbott Phosphorus package insert (Jan. 2016) by running 20 male and 20 female lab volunteers.

Berkeley Outpatient Center

Age	Male (mg/dL)	Female (mg/dL)
>= 19 years	2.5-4.5	2.5-4.5

UCSF Clinical Labs at Berkeley Outpatient CenterOPC verified the adult reference range (>= 19 years) stated in the Roche PHOS2 package insert by running 20 male and 20 female lab volunteers.

Critical Values:
< 1.0 mg/dL

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by 0.323.

Phosphorus, like potassium, is released by platelets during clotting, and serum levels are approx. 0.2 mg/dL higher than those measured in plasma. Levels can be falsely elevated by thrombocytosis, though not as predictably as those for potassium.

Liposomal amphotericin B has not been reported to cause falsely high serum/plasma phosphorus in the Abbott phosphorus assay used at Parnassus, Mission Bay and Mt Zion.

Phospholipids contained in liposomal drug formulations (eg AmBisome) may be hydrolyzed in the test due to the acidic reaction pH and thus lead to elevated phosphate results on the Roche assay. Ref: Roche PHOS2 package insert.

ADMINISTRATIVE

CPT Codes:
84100

LOINC Codes:
2777-1

COMPLETE VIEW

Available Stat:
Yes

Test Code:
PO4

Test Group:
Phosphorus

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Chemistry: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center (Mon-Fri 0800-1630)

Methodology:
Parnassus, Mission Bay & Mt. Zion Chemistry:
Spectrophotometric phosphomolybdate on Abbott Architect
Berkeley Outpatient Center:
Spectrophotometric phosphomolybdate on Roche cobas c311

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
1 mL blood

Sample Type:
Plasma or serum

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Units:
mg/dL

Reference Interval:
Parnassus, Mission Bay & Mt. Zion Chemistry

Age	Male (mg/dL)	Female (mg/dL)
0 to 14 days	5.6-10.5	5.6-10.5
15 days to <1 year	4.8-8.4	4.8-8.4
1 to 4 years	4.3-6.8	4.3-6.8
5 to 12 years	4.1-5.9	4.1-5.9
13 to 15 years	3.5-6.2	3.2-5.5
16 to 18 years	2.9-5.0	2.9-5.0
>18 years	2.3-4.7	2.3-4.7

Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, https://caliper.research.sickkids.ca/#/

UCSF Clinical Labs verified the adult reference range stated in the Abbott Phosphorus package insert (Jan. 2016) by running 20 male and 20 female lab volunteers.

Berkeley Outpatient Center

Age	Male (mg/dL)	Female (mg/dL)
>= 19 years	2.5-4.5	2.5-4.5

UCSF Clinical Labs at Berkeley Outpatient CenterOPC verified the adult reference range (>= 19 years) stated in the Roche PHOS2 package insert by running 20 male and 20 female lab volunteers.

Critical Values:
< 1.0 mg/dL

Synonyms:

- PO4

Stability (from collection to initiation):
Parnassus, Mission Bay, Mt. Zion, and Berkeley Outpatient Center
Room temperature 1 day, refrigerated 4 days, frozen at -20C 1 year

Reported:
STAT 1 hour, Routine: 4 hour

Additional Information:

To convert mg/dL to mmol/L (SI units) multiply by 0.323.

Phosphorus, like potassium, is released by platelets during clotting, and serum levels are approx. 0.2 mg/dL higher than those measured in plasma. Levels can be falsely elevated by thrombocytosis, though not as predictably as those for potassium.

Liposomal amphotericin B has not been reported to cause falsely high serum/plasma phosphorus in the Abbott phosphorus assay used at Parnassus, Mission Bay and Mt Zion.

Phospholipids contained in liposomal drug formulations (eg AmBisome) may be hydrolyzed in the test due to the acidic reaction pH and thus lead to elevated phosphate results on the Roche assay. Ref: Roche PHOS2 package insert.

CPT Codes:

84100

LOINC Codes:

2777-1

Phosphorus, random urine

PO4UR

ORDERING

Available Stat:
No

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Spectrophotometric Phosphomolybdate

Reported:
4-18 hours

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by 0.323.

Output varies wit diet.

Synonyms:

- PO4

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
20 mL urine

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Stability (from collection to initiation):
Room temperature or refrigerated 2 days

PROCESSING

Test Code:
PO4UR

Test Group:
Phosphorus

Performing Lab:
Parnassus & Mission Bay Chemistry

Specimen Preparation:
Aliquot 1 mL and add 1 drop of 6N HCl to acidify.

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Stability (from collection to initiation):
Room temperature or refrigerated 2 days

RESULT INTERPRETATION

Units:
mg/dL

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by 0.323.

Output varies wit diet.

ADMINISTRATIVE

CPT Codes:
84105

LOINC Codes:
2778-9

COMPLETE VIEW

Available Stat:
No

Test Code:
PO4UR

Test Group:
Phosphorus

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Spectrophotometric Phosphomolybdate

Collect:
Urine cup

Amount to Collect:
20 mL urine

Sample Type:
Random urine

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Specimen Preparation:
Aliquot 1 mL and add 1 drop of 6N HCl to acidify.

Units:
mg/dL

Synonyms:

- PO4

Stability (from collection to initiation):
Room temperature or refrigerated 2 days

Reported:
4-18 hours

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by 0.323.

Output varies wit diet.

CPT Codes:
84105

LOINC Codes:
2778-9

Pinworm Examination

P405

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Monday-Friday, day shift

Methodology:
Microscopy

Reported:
1-3 days

COLLECTION

Patient Preparation:
Samples should be collected before the patient bathes or defecates in the morning.

Sample Type:
SWUBE® paddle

Collect:
see notes

Preferred Volume:
3 SWUBE® paddles

Remarks:
Special collection paddles (SWUBE) are available from outpatient phlebotomy stations or Microbiology; if the paddles are unavailable, transparent, clear Scotch tape, (NOT "Magic Transparent" tape), can be used, applying it sticky-side down to a clean glass microscope slide.

CAUTION: Pinworm eggs are very infectious. Wear gloves when collecting sample and wash hands immediately after collection.

SWUBE paddle procedure:

1. Pinworm collection kits are sealed in a plastic bag. Each kit consists of 3 SWUBE¨ paddles, 3 blank labels, and an instruction sheet for proper collection of the sample. The SWUBE¨ paddles are individually wrapped. Do not use if the package is not intact.

2. Specimens should be collected on three consecutive days to rule out infection.

3. The specimen is best obtained a few hours after the patient has retired, between the hours of 9:00 p.m. and midnight, or in the morning, immediately upon rising and before bathing or bowel movement.

4. Unwrap the SWUBE¨ paddle from its package prior to use. Hold the paddle by the cap and remove it from the tube. Set aside the tube.

5. To collect the specimen use the "sticky side" of the paddle, which is labeled on the far end of the paddle near the cap. If you are not sure which side is the "sticky side," feel the end of the paddle with the finger tip to feel the stickiness.

6. In obtaining the sample, spread the buttocks and press the tacky surface of the paddle firmly against several areas (the right and left) of the peri-anal region. Do not press into the anus.

7. Return the paddle in the original tube for transport to the laboratory.

8. Identify the tube by writing the patient's name, medical record number, and the collection date on the blank label provided.

9. Place the tube in a sealed plastic bag and store at room temperature.

Stability (from collection to initiation):
Room temperature 1 week

Unacceptable Conditions:
Improperly collected sample

PROCESSING

Test Code:
P405

Performing Lab:
Microbiology

Preferred Volume:
3 SWUBE® paddles

Unacceptable Conditions:
Improperly collected sample

Stability (from collection to initiation):
Room temperature 1 week

RESULT INTERPRETATION

Reference Interval:
Negative

ADMINISTRATIVE

CPT Codes:
87172

LOINC Codes:
675-9

COMPLETE VIEW

Available Stat:
No

Test Code:
P405

Performing Lab:
Microbiology

Performed:
Monday-Friday, day shift

Methodology:
Microscopy

Patient Preparation:
Samples should be collected before the patient bathes or defecates in the morning.

Remarks:

Special collection paddles (SWUBE) are available from outpatient phlebotomy stations or Microbiology; if the paddles are unavailable, transparent, clear Scotch tape, (NOT "Magic Transparent" tape), can be used, applying it sticky-side down to a clean glass microscope slide.

CAUTION: Pinworm eggs are very infectious. Wear gloves when collecting sample and wash hands immediately after collection.

SWUBE paddle procedure:

1. Pinworm collection kits are sealed in a plastic bag. Each kit consists of 3 SWUBE¨ paddles, 3 blank labels, and an instruction sheet for proper collection of the sample. The SWUBE¨ paddles are individually wrapped. Do not use if the package is not intact.

2. Specimens should be collected on three consecutive days to rule out infection.

3. The specimen is best obtained a few hours after the patient has retired, between the hours of 9:00 p.m. and midnight, or in the morning, immediately upon rising and before bathing or bowel movement.

4. Unwrap the SWUBE¨ paddle from its package prior to use. Hold the paddle by the cap and remove it from the tube. Set aside the tube.

5. To collect the specimen use the "sticky side" of the paddle, which is labeled on the far end of the paddle near the cap. If you are not sure which side is the "sticky side," feel the end of the paddle with the finger tip to feel the stickiness.

6. In obtaining the sample, spread the buttocks and press the tacky surface of the paddle firmly against several areas (the right and left) of the peri-anal region. Do not press into the anus.

7. Return the paddle in the original tube for transport to the laboratory.

8. Identify the tube by writing the patient's name, medical record number, and the collection date on the blank label provided.

9. Place the tube in a sealed plastic bag and store at room temperature.

Collect:

see notes

Sample Type:

SWUBE® paddle

Preferred Volume:

3 SWUBE® paddles

Unacceptable Conditions:

Improperly collected sample

Reference Interval:

Negative

Stability (from collection to initiation):

Room temperature 1 week

Reported:

1-3 days

CPT Codes:

87172

LOINC Codes:

675-9

Pipecolic Acid

MOLT

ORDERING

Available Stat:
No

Performing Lab:
KNDY

Reported:
2-3 weeks

Synonyms:

- Peroxisomal disease

COLLECTION

Sample Type:
EDTA plasma, Random urine

Collect:
Lavender top, urine cup

Amount to Collect:
6 mL blood

Preferred Volume:
Plasma: 3 mL
Urine: 10 mL

Minimum Volume:
Plasma: 1 mL
Urine: 10 mL

PROCESSING

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Sendout:
Yes

Performing Lab:
KNDY

Specimen Preparation:
Freeze at -20C until sent at room temperature by Federal Express for next day delivery.

Ship to: Peroxisomal Diseases Laboratory, Kennedy Krieger Institute, 707 N. Broadway, rm 421, Baltimore, MD 21205, (888)554-2080, fax (410)502-8279 mosera@kennedykrieger.org www.genetics.kennedykrieger.org)

Preferred Volume:
Plasma: 3 mL
Urine: 10 mL

Minimum Volume:
Plasma: 1 mL
Urine: 10 mL

RESULT INTERPRETATION

Reference Interval:
Negative

COMPLETE VIEW

Available Stat:
No

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Performing Lab:
KNDY

Sendout:
Yes

Collect:
Lavender top, urine cup

Amount to Collect:
6 mL blood

Sample Type:
EDTA plasma, Random urine

Preferred Volume:
Plasma: 3 mL
Urine: 10 mL

Minimum Volume:
Plasma: 1 mL
Urine: 10 mL

Specimen Preparation:
Freeze at -20C until sent at room temperature by Federal Express for next day delivery.

Ship to: Peroxisomal Diseases Laboratory, Kennedy Krieger Institute, 707 N. Broadway, rm 421, Baltimore, MD 21205, (888)554-2080, fax (410)502-8279 mosera@kennedykrieger.org www.genetics.kennedykrieger.org)

Reference Interval:
Negative

Synonyms:

- Peroxisomal disease

Reported:
2-3 weeks

Plasma Free Hemoglobin

PHGBS

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus Chemistry

Methodology:
Spectrophotometric using the hemolytic index on the Abbott Architect c System

Reported:
STAT 1 hour, Routine 4 hours

Note: Samples from Mission Bay and Mount Zion may take up to 24 hours.

Additional Information:

To convert mg/dL to µmol/L (SI units) multiply by 0.155.

If extreme care is used to avoid hemolysis during phlebotomy and no interfering substances are present, values of <10 mg/dL are expected in normal subjects.

This test is primarily intended to screen for hemolysis during extracorporeal membrane life support (ECLS) . In patients on ECLS, it is recommended that plasma hemoglobin levels > 50 mg/dL be investigated to determine whether it is being caused by a condition of the patient or by components of the ECLS circuit. See ELSO Guidelines for Cardiopulmonary Extracorporeal Life Support. Extracorporeal Life Support Organization, Version 1:1. April 2009, www.elso.med.umich.edu

Warning: Plasma free hemoglobin results may be falsely decreased by propofol infusions and falsely increased by infusions of hydroxocobalamin or methylene blue. Lipid containing infusions may also affect results depending on blood concentrations. If possible, samples should not be drawn during administration of these agents or through their infusion lines.

Synonyms:

- Hemoglobin, free
- Free Hgb
- Free Hb
- Hemoglobin
- Plasma hemoglobin

COLLECTION

Sample Type:
Heparinized plasma

Collect:
Light green top preferred, Dark green top acceptable

Amount to Collect:
2 mL blood

Preferred Volume:
0.5 mL plasma

Minimum Volume:
0.3 mL plasma

Remarks:
Results are highly dependent upon meticulous technique employed in collecting the specimen. To avoid hemolysis use an 18-19 ga. butterfly needle and discard the first 4 mL. Alternatively, apply a tourniquet and perform a venipuncture with an 18-19 gauge needle or draw blood from an indwelling line; collect any other tubes which are needed before releasing the tourniquet with the vacutainer still in the vein and before collecting the sample for the hemoglobin assay. If no other samples are being collected at the same time, draw and discard one tube, release the tourniquet, then draw a second tube and submit the second tube for analysis. Note that the plasma free hemoglobin results may be falsely decreased by propofol infusions and falsely increased by infusions of hydroxocobalamin or methylene blue. Lipid containing infusions may also affect results depending on blood concentrations. If possible, samples should not be drawn during administration of these agents or through their infusion lines.

PROCESSING

Test Code:
PHGBS

Performing Lab:
Parnassus Chemistry

Preferred Volume:
0.5 mL plasma

Minimum Volume:
0.3 mL plasma

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:
<10 mg/dL

Adopted from ARUP laboratories based on comparison studies and verified by running 50 samples from normal volunteers working in the UCSF Clinical Laboratories.

Additional Information:

To convert mg/dL to µmol/L (SI units) multiply by 0.155.

If extreme care is used to avoid hemolysis during phlebotomy and no interfering substances are present, values of <10 mg/dL are expected in normal subjects.

This test is primarily intended to screen for hemolysis during extracorporeal membrane life support (ECLS) . In patients on ECLS, it is recommended that plasma hemoglobin levels > 50 mg/dL be investigated to determine whether it is being caused by a condition of the patient or by components of the ECLS circuit. See ELSO Guidelines for Cardiopulmonary Extracorporeal Life Support. Extracorporeal Life Support Organization, Version 1:1. April 2009, www.elso.med.umich.edu

Warning: Plasma free hemoglobin results may be falsely decreased by propofol infusions and falsely increased by infusions of hydroxocobalamin or methylene blue. Lipid containing infusions may also affect results depending on blood concentrations. If possible, samples should not be drawn during administration of these agents or through their infusion lines.

ADMINISTRATIVE

CPT Codes:
83051

LOINC Codes:
721-1

COMPLETE VIEW

Available Stat:
Yes

Test Code:
PHGBS

Performing Lab:
Parnassus Chemistry

Methodology:
Spectrophotometric using the hemolytic index on the Abbott Architect c System

Remarks:
Results are highly dependent upon meticulous technique employed in collecting the specimen. To avoid hemolysis use an 18-19 ga. butterfly needle and discard the first 4 mL. Alternatively, apply a tourniquet and perform a venipuncture with an 18-19 gauge needle or draw blood from an indwelling line; collect any other tubes which are needed before releasing the tourniquet with the vacutainer still in the vein and before collecting the sample for the hemoglobin assay. If no other samples are being collected at the same time, draw and discard one tube, release the tourniquet, then draw a second tube and submit the second tube for analysis. Note that the plasma free hemoglobin results may be falsely decreased by propofol infusions and falsely increased by infusions of hydroxocobalamin or methylene blue. Lipid containing infusions may also affect results depending on blood concentrations. If possible, samples should not be drawn during administration of these agents or through their infusion lines.

Collect:
Light green top preferred, Dark green top acceptable

Amount to Collect:
2 mL blood

Sample Type:
Heparinized plasma

Preferred Volume:
0.5 mL plasma

Minimum Volume:
0.3 mL plasma

Units:
mg/dL

Reference Interval:
<10 mg/dL

Adopted from ARUP laboratories based on comparison studies and verified by running 50 samples from normal volunteers working in the UCSF Clinical Laboratories.

Synonyms:

- Hemoglobin, free
- Free Hgb
- Free Hb
- Hemoglobin
- Plasma hemoglobin

Reported:
STAT 1 hour, Routine 4 hours

Note: Samples from Mission Bay and Mount Zion may take up to 24 hours.

Additional Information:

To convert mg/dL to µmol/L (SI units) multiply by 0.155.

If extreme care is used to avoid hemolysis during phlebotomy and no interfering substances are present, values of <10 mg/dL are expected in normal subjects.

This test is primarily intended to screen for hemolysis during extracorporeal membrane life support (ECLS) . In patients on ECLS, it is recommended that plasma hemoglobin levels > 50 mg/dL be investigated to determine whether it is being caused by a condition of the patient or by components of the ECLS circuit. See ELSO Guidelines for Cardiopulmonary Extracorporeal Life Support. Extracorporeal Life Support Organization, Version 1:1. April 2009, www.elso.med.umich.edu

Warning: Plasma free hemoglobin results may be falsely decreased by propofol infusions and falsely increased by infusions of hydroxocobalamin or methylene blue. Lipid containing infusions may also affect results depending on blood concentrations. If possible, samples should not be drawn during administration of these agents or through their infusion lines.

CPT Codes:
83051

LOINC Codes:
721-1

Plasma Renin Activity

REN

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
LC/MS/MS

Reported:
Test run Tuesday-Saturday. Turnaround time: 1-3 days.

Additional Information:
Refrigeration causes cryoactivation of prorenin to renin causing falsely high renin activity results.

COLLECTION

Patient Preparation:
Discontinue diuretics, estrogens and oral contraceptives for at least 2 weeks and non-diuretic antihypertensive Rx several days before study. Dietary sodium content should be maintained for at least 3 days prior to testing.

Sample Type:
EDTA Plasma

Collect:
Lavender top

Amount to Collect:
3 mL blood

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Remarks:
Collect blood preferably midmorning, after the patient has been up (sitting, standing, or walking) for at least 2 hours and then seated quietly for 5-15 minutes before blood draw.

Collect in lavender tube and transport to the laboratory at room temp for prompt separation and freezing of plasma. DO NOT place on ice or refrigerate sample.

Stability (from collection to initiation):
Room temperature 24 hours, frozen at -20C 28 days.

Rejection Criteria:
Specimen received thawed, refrigerated samples.

PROCESSING

Test Code:
REN

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
After collection, sample can be stored up to 24 hours at room temperature. DO NOT REFRIGERATE THE SAMPLE. Centrifuge and freeze the plasma in plastic at -20C as soon as possible after receipt.

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Rejection Criteria:
Specimen received thawed, refrigerated samples.

Stability (from collection to initiation):
Room temperature 24 hours, frozen at -20C 28 days.

RESULT INTERPRETATION

Units:
ng/mL/hour

Reference Interval:
0.25-5.82 ng/mL/hour

Pediatric ranges have not been established for this assay. Please see 'Additional Information'

Additional Information:
Refrigeration causes cryoactivation of prorenin to renin causing falsely high renin activity results.

ADMINISTRATIVE

CPT Codes:
84244-90

LOINC Codes:
2915-7

COMPLETE VIEW

Available Stat:
No

Test Code:
REN

Performing Lab:
Quest

Sendout:
Yes

Methodology:
LC/MS/MS

Patient Preparation:
Discontinue diuretics, estrogens and oral contraceptives for at least 2 weeks and non-diuretic antihypertensive Rx several days before study. Dietary sodium content should be maintained for at least 3 days prior to testing.

Remarks:
Collect blood preferably midmorning, after the patient has been up (sitting, standing, or walking) for at least 2 hours and then seated quietly for 5-15 minutes before blood draw.

Collect in lavender tube and transport to the laboratory at room temp for prompt separation and freezing of plasma. DO NOT place on ice or refrigerate sample.

Collect:
Lavender top

Amount to Collect:
3 mL blood

Sample Type:
EDTA Plasma

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Rejection Criteria:
Specimen received thawed, refrigerated samples.

Specimen Preparation:
After collection, sample can be stored up to 24 hours at room temperature. DO NOT REFRIGERATE THE SAMPLE. Centrifuge and freeze the plasma in plastic at -20C as soon as possible after receipt.

Units:
ng/mL/hour

Reference Interval:
0.25-5.82 ng/mL/hour

Pediatric ranges have not been established for this assay. Please see 'Additional Information'

Stability (from collection to initiation):
Room temperature 24 hours, frozen at -20C 28 days.

Reported:
Test run Tuesday-Saturday. Turnaround time: 1-3 days.

Additional Information:
Refrigeration causes cryoactivation of prorenin to renin causing falsely high renin activity results.

CPT Codes:
84244-90

LOINC Codes:
2915-7

Plasminogen Activator Inhibitor - 1 antigen

PAI1AG

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Enzyme immunoassay

Reported:
Set up Wednesday and Friday; Report available: 3 days

Additional Information:
Deep vein thrombosis and coronary artery disease have been variably associated with increased PAI-1 levels. Elevated PAI-1 levels my help predict risk of reinfarction in survivors of myocardial infarction, particularly in young individuals.

Deficiency of PAI-1, a rare condition that is difficult to diagnose, has been associated with a bleeding diathesis.

As an acute phase reactant, the activity is increased after an acute event. Elevated levels may also be seen in diabetes and pregnancy.

Studies suggest PAI-1 may be prognostic marker in early stage breast cancer.

Synonyms:

- PAI-1 antigen

COLLECTION

Sample Type:
Citrated Plasma

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

The venipuncture must be clean, with no trauma. The first 5 mL of blood drawn from a patient should not be used for coagulation testing. If drawn through an indwelling catheter, flush with 5 mL of saline and discard the first 5 mL of blood collected before collecting the specimen for coagulation testing.

Blood should not be collected from heparinized lines.

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 3 days, frozen at -20C 6 months.

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Rejection Criteria:
Sample received thawed.

PROCESSING

Test Code:
PAI1AG

Test Group:
Plasminogen

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Forward blue top to Hematology for processing. Aliquot separated plasma into 1 mL sample and freeze in plastic tubes at -20C. Platelet contamination of a test sample will tend to falsely elevate results. Ship on dry ice to China Basin sendout M-F for processing to Quest or LabCorp Ref. Labs. Order Quest test # 59766P, if B/T patient order BTMOLT, order LabCorp test # 500057.

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Rejection Criteria:
Sample received thawed.

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 3 days, frozen at -20C 6 months.

RESULT INTERPRETATION

Units:
ng/mL

Reference Interval:
4-43 ng/mL

Additional Information:
Deep vein thrombosis and coronary artery disease have been variably associated with increased PAI-1 levels. Elevated PAI-1 levels my help predict risk of reinfarction in survivors of myocardial infarction, particularly in young individuals.

Deficiency of PAI-1, a rare condition that is difficult to diagnose, has been associated with a bleeding diathesis.

As an acute phase reactant, the activity is increased after an acute event. Elevated levels may also be seen in diabetes and pregnancy.

Studies suggest PAI-1 may be prognostic marker in early stage breast cancer.

ADMINISTRATIVE

CPT Codes:
85415

LOINC Codes:
22758-7

COMPLETE VIEW

Available Stat:
No

Test Code:
PAI1AG

Test Group:
Plasminogen

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Enzyme immunoassay

Remarks:

1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

The venipuncture must be clean, with no trauma. The first 5 mL of blood drawn from a patient should not be used for coagulation testing. If drawn through an indwelling catheter, flush with 5 mL of saline and discard the first 5 mL of blood collected before collecting the specimen for coagulation testing.

Blood should not be collected from heparinized lines.

Collect:

Blue top filled to full extent of vacuum

Amount to Collect:

2.7 mL blood

Sample Type:

Citrated Plasma

Preferred Volume:

1 mL plasma

Minimum Volume:

0.5 mL plasma

Rejection Criteria:

Sample received thawed.

Unacceptable Conditions:

Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Specimen Preparation:

Forward blue top to Hematology for processing. Aliquot separated plasma into 1 mL sample and freeze in plastic tubes at -20C. Platelet contamination of a test sample will tend to falsely elevate results. Ship on dry ice to China Basin sendout M-F for processing to Quest or LabCorp Ref. Labs. Order Quest test # 59766P, if B/T patient order BTMOLT, order LabCorp test # 500057.

Units:

ng/mL

Reference Interval:

4-43 ng/mL

Synonyms:

- PAI-1 antigen

Stability (from collection to initiation):

Room temperature 8 hours, refrigerated 3 days, frozen at -20C 6 months.

Reported:

Set up Wednesday and Friday; Report available: 3 days

Additional Information:

Deep vein thrombosis and coronary artery disease have been variably associated with increased PAI-1 levels. Elevated PAI-1 levels my help predict risk of reinfarction in survivors of myocardial infarction, particularly in young individuals.

Deficiency of PAI-1, a rare condition that is difficult to diagnose, has been associated with a bleeding diathesis.

As an acute phase reactant, the activity is increased after an acute event. Elevated levels may also be seen in diabetes and pregnancy.

Studies suggest PAI-1 may be prognostic marker in early stage breast cancer.

CPT Codes:

85415

LOINC Codes:

22758-7

Plasminogen Activity

PLMA

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Spectrophotometric (chromogenic substrate)

Reported:
Test run on Tuesday and Thursday evenings. Turnaround time: 3-7 days.

Additional Information:
The activated form of plasminogen, plasmin, lyses fibrin clots. Plasminogen activity is increased in pregnancy and as an acute phase reactant. Rare hereditary deficiency of plasminogen predisposes to ligneous conjunctivitis. Low activity is associated with DIC, liver disease, and increased risk of thrombosis.

COLLECTION

Sample Type:
Citrated plasma

Collect:
Blue top filled to full extent of vacuum x2

Amount to Collect:
5.4 mL blood

Preferred Volume:
2 mL plasma

Minimum Volume:
1 mL plasma

Remarks:
Note the time of draw on requisition.

1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

Stability (from collection to initiation):
Room temperature unacceptable, refrigerated unacceptable, frozen at -20C 1 month.

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected Hemolyzed sample.

PROCESSING

Test Code:
PLMA

Test Group:
Plasminogen

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Process immediately and transfer to a plastic tube w/ a plastic pipet. Freeze at -20C. Order Quest # 59709P

Preferred Volume:
2 mL plasma

Minimum Volume:
1 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected Hemolyzed sample.

Stability (from collection to initiation):
Room temperature unacceptable, refrigerated unacceptable, frozen at -20C 1 month.

RESULT INTERPRETATION

Units:
% activity

Reference Interval:
65-176%

Additional Information:
The activated form of plasminogen, plasmin, lyses fibrin clots. Plasminogen activity is increased in pregnancy and as an acute phase reactant. Rare hereditary deficiency of plasminogen predisposes to ligneous conjunctivitis. Low activity is associated with DIC, liver disease, and increased risk of thrombosis.

ADMINISTRATIVE

CPT Codes:
85420-90

LOINC Codes:
28660-9

COMPLETE VIEW

Available Stat:
No

Test Code:
PLMA

Test Group:
Plasminogen

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Spectrophotometric (chromogenic substrate)

Remarks:
Note the time of draw on requisition.

1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

Collect:
Blue top filled to full extent of vacuum x2

Amount to Collect:
5.4 mL blood

Sample Type:
Citrated plasma

Preferred Volume:
2 mL plasma

Minimum Volume:
1 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected Hemolyzed sample.

Specimen Preparation:
Process immediately and transfer to a plastic tube w/ a plastic pipet. Freeze at -20C. Order Quest # 59709P

Units:
% activity

Reference Interval:
65-176%

Stability (from collection to initiation):
Room temperature unacceptable, refrigerated unacceptable, frozen at -20C 1 month.

Reported:
Test run on Tuesday and Thursday evenings. Turnaround time: 3-7 days.

Additional Information:

The activated form of plasminogen, plasmin, lyses fibrin clots. Plasminogen activity is increased in pregnancy and as an acute phase reactant. Rare hereditary deficiency of plasminogen predisposes to ligneous conjunctivitis. Low activity is associated with DIC, liver disease, and increased risk of thrombosis.

CPT Codes:

85420-90

LOINC Codes:

28660-9

Plasminogen Antigen

PLMI

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Fixed time nephelometry

Reported:
Test run Tuesday and Friday mornings. Turnaround: 3-7 days.

COLLECTION

Patient Preparation:
An 8 hour fast before specimen collection is required.

Sample Type:
Citrated plasma (EDTA plasma acceptable)

Collect:
Blue top filled to full extent of vacuum, Lavender top

Amount to Collect:
2.7 mL blood

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

PROCESSING

Test Code:
PLMI

Test Group:
Plasminogen

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Centrifuge within one hour of blood draw at 3200 rpm for 15 min. Remove plasma using plastic pipet and freeze immediately at -20C. Order Quest # 59915P

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:
8-14 mg/dL

ADMINISTRATIVE

CPT Codes:
85421-90

LOINC Codes:
4668-0

COMPLETE VIEW

Available Stat:
No

Test Code:
PLMI

Test Group:
Plasminogen

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Fixed time nephelometry

Patient Preparation:
An 8 hour fast before specimen collection is required.

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

Collect:
Blue top filled to full extent of vacuum, Lavender top

Amount to Collect:
2.7 mL blood

Sample Type:
Citrated plasma (EDTA plasma acceptable)

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Specimen Preparation:
Centrifuge within one hour of blood draw at 3200 rpm for 15 min. Remove plasma using plastic pipet and freeze immediately at -20C. Order Quest # 59915P

Units:
mg/dL

Reference Interval:
8-14 mg/dL

Reported:
Test run Tuesday and Friday mornings. Turnaround: 3-7 days.

CPT Codes:
85421-90

LOINC Codes:
4668-0

Platelet Aggregation

AGGR

ORDERING

Approval Required:
No, but only run by appointment, Contact Hematology at x3-1747

Available Stat:
No

Performing Lab:
Parnassus Hematology

Performed:
Run as needed, Monday - Friday day shift only

Reported:
1-3 days

Additional Information:
Measures the release of ATP in the presence of thrombin, collagen and ATP and examines the aggregation response to Thrombin, ADP, arachidonic acid, collagen, and ristocetin at various concentrations:

Agonist	Concentration
Thrombin	1 Unit
ADP	5 µM
ADP	10 µM
Collagen	1 µg/mL
Collagen	5 µg/mL
Arachidonic Acid	0.5 mM
Ristocetin	1.0 mg/mL

A platelet count and pathologist evaluation of platelet morphology on a stained blood smear are required for the performance of this assay and will be ordered and separately charged.

If platelet aggregation is ordered without further specification, a full panel of agonists will be run and interpreted:
- If assessment of clopidogrel response is desired, specify "platelet aggregation for clopidogrel response." A 5 micromolar ADP study will be performed and interpreted.
- If assessment of aspirin response is desired, specify "platelet aggregation for aspirin response." 1 microgram/mL collagen and 5 microgram/mL collagen studies will be performed and interpreted.
- Other combinations of particular agonists can be specifically requested when a full panel of agonists is not needed; conferring with a hematology laboratory physician is requested in this circumstance x3-1747

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Synonyms:

- lumi-aggregation
- platelet aggregation with luminescence
- clopidogrel
- plavix
- aspirin
- ASA

COLLECTION

Patient Preparation:
Patient should be rested, fasting since midnight, and no smoking before blood collection. No caffeine and no alcohol for 48 hours prior to testing. Take only medication as directed by physician before testing.

Sample Type:
Citrated and EDTA anticoagulated whole blood

Collect:
Blue tops (x6) and Lavender top

Amount to Collect:
20 mL blood

Preferred Volume:
20 mL blood

Minimum Volume:
17 mL blood

Remarks:
By appointment only, contact Hematology at x3-1747

Samples are only collected by Hematology techs.

Note: If aggregation testing using less than the full set of agonists is desired, including limited testing for response to aspirin or ADP-receptor antagonists, see Additional Information" and note specific requests on requisition.

Stability (from collection to initiation):
Room temperature 3 hours.

PROCESSING

Test Code:
AGGR

Test Group:
Platelet function

Performing Lab:
Parnassus Hematology

Preferred Volume:
20 mL blood

Minimum Volume:
17 mL blood

Stability (from collection to initiation):
Room temperature 3 hours.

RESULT INTERPRETATION

Additional Information:
Measures the release of ATP in the presence of thrombin, collagen and ATP and examines the aggregation response to Thrombin, ADP, arachidonic acid, collagen, and ristocetin at various concentrations:

Agonist	Concentration
Thrombin	1 Unit
ADP	5 µM
ADP	10 µM
Collagen	1 µg/mL
Collagen	5 µg/mL
Arachidonic Acid	0.5 mM
Ristocetin	1.0 mg/mL

A platelet count and pathologist evaluation of platelet morphology on a stained blood smear are required for the performance of this assay and will be ordered and separately charged.

If platelet aggregation is ordered without further specification, a full panel of agonists will be run and interpreted:
- If assessment of clopidogrel response is desired, specify "platelet aggregation for clopidogrel response." A 5 micromolar ADP study will be performed and interpreted.
- If assessment of aspirin response is desired, specify "platelet aggregation for aspirin response." 1 microgram/mL collagen and 5 microgram/mL collagen studies will be performed and interpreted.
- Other combinations of particular agonists can be specifically requested when a full panel of agonists is not needed; conferring with a hematology laboratory physician is requested in this circumstance x3-1747

ADMINISTRATIVE

CPT Codes:
85576

LOINC Codes:
48805-6

COMPLETE VIEW

Approval Required:
No, but only run by appointment, Contact Hematology at x3-1747

Available Stat:
No

Test Code:
AGGR

Test Group:
Platelet function

Performing Lab:
Parnassus Hematology

Performed:
Run as needed, Monday - Friday day shift only

Patient Preparation:
Patient should be rested, fasting since midnight, and no smoking before blood collection. No caffeine and no alcohol for 48 hours prior to testing. Take only medication as directed by physician before testing.

Remarks:
By appointment only, contact Hematology at x3-1747

Samples are only collected by Hematology techs.

Note: If aggregation testing using less than the full set of agonists is desired, including limited testing for response to aspirin or ADP-receptor antagonists, see Additional Information" and note specific requests on requisition.

Collect:
Blue tops (x6) and Lavender top

Amount to Collect:
20 mL blood

Sample Type:
Citrated and EDTA anticoagulated whole blood

Preferred Volume:
20 mL blood

Minimum Volume:
17 mL blood

Synonyms:

- lumi-aggregation
- platelet aggregation with luminescence
- clopidogrel
- plavix
- aspirin
- ASA

Stability (from collection to initiation):
Room temperature 3 hours.

Reported:
1-3 days

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Additional Information:

Measures the release of ATP in the presence of thrombin, collagen and ATP and examines the aggregation response to Thrombin, ADP, arachidonic acid, collagen, and ristocetin at various concentrations:

Agonist	Concentration
Thrombin	1 Unit
ADP	5 µM
ADP	10 µM
Collagen	1 µg/mL
Collagen	5 µg/mL
Arachidonic Acid	0.5 mM
Ristocetin	1.0 mg/mL

A platelet count and pathologist evaluation of platelet morphology on a stained blood smear are required for the performance of this assay and will be ordered and separately charged.

If platelet aggregation is ordered without further specification, a full panel of agonists will be run and interpreted:
- If assessment of clopidogrel response is desired, specify "platelet aggregation for clopidogrel response." A 5 micromolar ADP study will be performed and interpreted.
- If assessment of aspirin response is desired, specify "platelet aggregation for aspirin response." 1 microgram/mL collagen and 5 microgram/mL collagen studies will be performed and interpreted.
- Other combinations of particular agonists can be specifically requested when a full panel of agonists is not needed; conferring with a hematology laboratory physician is requested in this circumstance x3-1747

CPT Codes:

85576

LOINC Codes:

48805-6

Platelet Antibody Screen (HPA Antibody Screen)

BOLT

ORDERING

Ordering Recommendations:
Place order for “Blood Bank Outside Lab Test" in APeX. Document desired test (“Platelet Antibody Screen (HPA Antibody Screen)") and forward sample to Blood Bank for processing.

Approval Required:
Yes. Please contact Blood Bank

Available Stat:
No

Performing Lab:
American Red Cross National Reference Lab, Pomona, CA

Methodology:
Pak Lx® bead-based assay performed on solid phase microwells using Luminex fluorescence detection technology. Detects antibodies to GPIIb-IIIa (HPA-1, HPA-3, HPA-4), GPIB-IX (HPA-2), GPIa-IIa (HPA-5), and GPIV.

Additional Information:
This test is performed to assess for the presence of antibodies to polymorphic human platelet antigens (HPA) in select platelet refractory patients who continue to demonstrate limited response to platelet transfusions despite receiving HLA-matched platelets. The assay detects antibodies to GPIIb-IIIa (HPA-1, HPA-3, HPA-4), GPIB-IX (HPA-2), GPIa-IIa (HPA-5), and GPIV, which may rarely cause immune-mediated destruction of transfused platelets. Such antibodies are almost always seen only in patients with severe HLA-alloimmunization. Some low titer and low avidity antibodies may not be detected by this assay. This test requires pre-approval by the Blood Bank resident. For more information on evaluating refractoriness to platelet transfusion, please refer to the UCSF Transfusion Guidelines' section on HLA-matched/Cross Matched Platelets for Platelet Refractoriness (https://clinlab.ucsf.edu/transfusion-medicine-guide#Platelets)

Synonyms:

- HPA Antibody Screen

COLLECTION

Sample Type:
Serum

Collect:
Red top

Preferred Volume:
10 ml whole blood

Minimum Volume:
6 ml whole blood

Remarks:
Send samples to Blood Bank for processing

Unacceptable Conditions:
Samples that are unlabeled, unsigned, or do not have a listed collection date and time on the specimen label will be rejected.

PROCESSING

Test Code:
BOLT

Sendout:
Yes

Performing Lab:
American Red Cross National Reference Lab, Pomona, CA

Specimen Preparation:
Send samples to Blood Bank for processing

Preferred Volume:
10 ml whole blood

Minimum Volume:
6 ml whole blood

Unacceptable Conditions:
Samples that are unlabeled, unsigned, or do not have a listed collection date and time on the specimen label will be rejected.

RESULT INTERPRETATION

Additional Information:

This test is performed to assess for the presence of antibodies to polymorphic human platelet antigens (HPA) in select platelet refractory patients who continue to demonstrate limited response to platelet transfusions despite receiving HLA-matched platelets. The assay detects antibodies to GPIIb-IIIa (HPA-1, HPA-3, HPA-4), GPIB-IX (HPA-2), GPIa-IIa (HPA-5), and GPIV, which may rarely cause immune-mediated destruction of transfused platelets. Such antibodies are almost always seen only in patients with severe HLA-alloimmunization. Some low titer and low avidity antibodies may not be detected by this assay. This test requires pre-approval by the Blood Bank resident. For more information on evaluating refractoriness to platelet transfusion, please refer to the UCSF Transfusion Guidelines' section on HLA-matched/Cross Matched Platelets for Platelet Refractoriness (https://clinlab.ucsf.edu/transfusion-medicine-guide#Platelets)

COMPLETE VIEW

Approval Required:

Yes. Please contact Blood Bank

Available Stat:

No

Ordering Recommendations:

Place order for “Blood Bank Outside Lab Test" in APeX. Document desired test (“Platelet Antibody Screen (HPA Antibody Screen)") and forward sample to Blood Bank for processing.

Test Code:

BOLT

Performing Lab:

American Red Cross National Reference Lab, Pomona, CA

Sendout:

Yes

Methodology:

Pak Lx® bead-based assay performed on solid phase microwells using Luminex fluorescence detection technology. Detects antibodies to GPIIb-IIIa (HPA-1, HPA-3, HPA-4), GPIB-IX (HPA-2), GPIa-IIa (HPA-5), and GPIV.

Remarks:

Send samples to Blood Bank for processing

Collect:

Red top

Sample Type:

Serum

Preferred Volume:

10 ml whole blood

Minimum Volume:

6 ml whole blood

Unacceptable Conditions:

Samples that are unlabeled, unsigned, or do not have a listed collection date and time on the specimen label will be rejected.

Specimen Preparation:

Send samples to Blood Bank for processing

Synonyms:

- HPA Antibody Screen

Additional Information:

This test is performed to assess for the presence of antibodies to polymorphic human platelet antigens (HPA) in select platelet refractory patients who continue to demonstrate limited response to platelet transfusions despite receiving HLA-matched platelets. The assay detects antibodies to GPIIb-IIIa (HPA-1, HPA-3, HPA-4), GPIB-IX (HPA-2), GPIa-IIa (HPA-5), and GPIV, which may rarely cause immune-mediated destruction of transfused platelets. Such antibodies are almost always seen only in patients with severe HLA-alloimmunization. Some low titer and low avidity antibodies may not be detected by this assay. This test requires pre-approval by the Blood Bank resident. For more information on evaluating refractoriness to platelet transfusion, please refer to the UCSF Transfusion Guidelines' section on HLA-matched/Cross Matched Platelets for Platelet Refractoriness (https://clinlab.ucsf.edu/transfusion-medicine-guide#Platelets)

Platelet Count

PLT, CBC , CBCD, PLTM

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center
San Mateo Cancer Center

Performed:
Parnassus, Mission Bay & Mt. Zion Hematology: 24-hours per day, 7-days per week
Berkeley Outpatient Center: Test available Mon-Fri (0800-1630)
San Mateo Cancer Center (Infusion patients only)

Methodology:
Flow cytometry and/or Phase microscopy

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
Mean platelet volume (MPV) measures the average size of the circulating platelets. The MPV result should be interpreted with other tests and can help in the differential diagnosis of thrombocytopenia or thrombocythemia. MPV is included when a CBC is ordered and no interfering substance is encountered (e.g., schistocytes, platelet clumps).

In the presence of clumping, only platelet counts > 100 x10^9/L are reported.

Platelet estimates derived from a manual review of a peripheral blood slide are released only in cases in which the presence of white blood cell fragments and high numbers of giant platelets negate the use of both the automated machine and phase platelet analysis for generation of a platelet count. Manual platelet counts at low platelet values are subject to high precision errors because of the low number of platelets counted. Therefore, clinical correlation is advised.

Reflex Testing:
The less precise manual method is usually performed and billed (PLTM) when required by an intrinsic abnormality of the specimen.

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top

Amount to Collect:
1 mL blood

Preferred Volume:
1 mL blood

Minimum Volume:
250 µl in pedi-bullet

Remarks:
Parnassus, Mission Bay & Mt. Zion Hematology:

When platelet counts repeatedly clump in samples collected in a lavender top (EDTA), the physician may order a Citrated Platelet count and have the specimen collected in a blue top (citrate) tube instead.

When platelets clump in both EDTA and citrate tubes, and the count is <100 x 10^9/L, the physician may contact and consult with the hematology resident or attending to establish a lower reportable range or to discuss scheduling a fingerstick collection for a manual platelet count using phase microscopy.

Rejection Criteria:
Clotted specimens

PROCESSING

Test Code:
PLT, CBC , CBCD, PLTM

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center
San Mateo Cancer Center

Preferred Volume:
1 mL blood

Minimum Volume:
250 µl in pedi-bullet

Rejection Criteria:
Clotted specimens

RESULT INTERPRETATION

Units:
Platelet count = $x10^9$/L
MPV = fL

Reference Interval:
Platelet count = 140-450 $x10^9$/L
MPV = 9.1 - 12.6 fL

Critical Values:
<= 10 $x10^9$/L: Always called
<= 25 $x10^9$/L: Called if new finding within previous 24 hours.

Additional Information:
Mean platelet volume (MPV) measures the average size of the circulating platelets. The MPV result should be interpreted with other tests and can help in the differential diagnosis of thrombocytopenia or thrombocythemia. MPV is included when a CBC is ordered and no interfering substance is encountered (e.g., schistocytes, platelet clumps).

In the presence of clumping, only platelet counts > 100 x10^9/L are reported.

Platelet estimates derived from a manual review of a peripheral blood slide are released only in cases in which the presence of white blood cell fragments and high numbers of giant platelets negate the use of both the automated machine and phase platelet analysis for generation of a platelet count. Manual platelet counts at low platelet values are subject to high precision errors because of the low number of platelets counted. Therefore, clinical correlation is advised.

COMPLETE VIEW

Available Stat:
Yes

Test Code:
PLT, CBC , CBCD, PLTM

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center
San Mateo Cancer Center

Performed:
Parnassus, Mission Bay & Mt. Zion Hematology: 24-hours per day, 7-days per week
Berkeley Outpatient Center: Test available Mon-Fri (0800-1630)
San Mateo Cancer Center (Infusion patients only)

Methodology:
Flow cytometry and/or Phase microscopy

Remarks:
Parnassus, Mission Bay & Mt. Zion Hematology:

When platelet counts repeatedly clump in samples collected in a lavender top (EDTA), the physician may order a Citrated Platelet count and have the specimen collected in a blue top (citrate) tube instead.

When platelets clump in both EDTA and citrate tubes, and the count is <100 x 10^9/L, the physician may contact and consult with the hematology resident or attending to establish a lower reportable range or to discuss scheduling a fingerstick collection for a manual platelet count using phase microscopy.

Collect:
Lavender top

Amount to Collect:
1 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
1 mL blood

Minimum Volume:
250 µl in pedi-bullet

Rejection Criteria:

Clotted specimens

Units:

Platelet count = $x10^9$/L
MPV = fL

Reference Interval:

Platelet count = 140-450 $x10^9$/L
MPV = 9.1 - 12.6 fL

Critical Values:

<= 10 $x10^9$/L: Always called
<= 25 $x10^9$/L: Called if new finding within previous 24 hours.

Reported:

STAT 1 hour, Routine 4 hours

Reflex Testing:

The less precise manual method is usually performed and billed (PLTM) when required by an intrinsic abnormality of the specimen.

Additional Information:

Mean platelet volume (MPV) measures the average size of the circulating platelets. The MPV result should be interpreted with other tests and can help in the differential diagnosis of thrombocytopenia or thrombocythemia. MPV is included when a CBC is ordered and no interfering substance is encountered (e.g., schistocytes, platelet clumps).

In the presence of clumping, only platelet counts > 100 x10^9/L are reported.

Platelet estimates derived from a manual review of a peripheral blood slide are released only in cases in which the presence of white blood cell fragments and high numbers of giant platelets negate the use of both the automated machine and phase platelet analysis for generation of a platelet count. Manual platelet counts at low platelet values are subject to high precision errors because of the low number of platelets counted. Therefore, clinical correlation is advised.

Platelet Crossmatch

XMPLAT

ORDERING

Approval Required:
Yes, contact Blood Bank

Available Stat:
No

Performing Lab:
American Red Cross Immunohematology Reference Laboratory

Methodology:
Solid Phase Red cell Adherance (Capture-P® IMMUCOR)

Reported:
Results of crossmatch test are available the same afternoon (Mon-Fri). However, anticipate a 1-2 day delay in platelet availability as products must undergo bacterial and infectious marker testing.

Additional Information:
Test is not available Sat-Sun or on Holidays. Reserved for patients who are refractory to platelet transfusions. Requires pre-approval of Lab Medicine Resident (X3-1313). Please see lab manual's Transfusion Medicine Guide for details.

COLLECTION

Sample Type:
Whole blood

Collect:
Red top (6 mL)

Amount to Collect:
6 mL blood

Preferred Volume:
6 mL blood

Remarks:
Specimens must be collected early on morning of testing (Mon-Fri ONLY) and delivered to the Blood Bank no later than 11 AM

Unacceptable Conditions:
Unsigned samples will be rejected. Samples collected >24 hours before testing will be rejected. Testing is performed at 1PM Mon-Fri.

PROCESSING

Test Code:
XMPLAT

Sendout:
Yes

Performing Lab:
American Red Cross Immunohematology Reference Laboratory

Specimen Preparation:
Samples must be shipped to American Red Cross by no later than noon Mon-Fri.

Preferred Volume:
6 mL blood

Unacceptable Conditions:
Unsigned samples will be rejected. Samples collected >24 hours before testing will be rejected. Testing is performed at 1PM Mon-Fri.

RESULT INTERPRETATION

Reference Interval:
Compatible with ALL donors tested

Additional Information:
Test is not available Sat-Sun or on Holidays. Reserved for patients who are refractory to platelet transfusions. Requires pre-approval of Lab Medicine Resident (X3-1313). Please see lab manual's Transfusion Medicine Guide for details.

ADMINISTRATIVE

CPT Codes:
86022-90

LOINC Codes:
45370-4

COMPLETE VIEW

Approval Required:
Yes, contact Blood Bank

Available Stat:
No

Test Code:
XMPLAT

Performing Lab:
American Red Cross Immunohematology Reference Laboratory

Sendout:
Yes

Methodology:
Solid Phase Red cell Adherance (Capture-P® IMMUCOR)

Remarks:
Specimens must be collected early on morning of testing (Mon-Fri ONLY) and delivered to the Blood Bank no later than 11 AM

Collect:
Red top (6 mL)

Amount to Collect:
6 mL blood

Sample Type:
Whole blood

Preferred Volume:
6 mL blood

Unacceptable Conditions:
Unsigned samples will be rejected. Samples collected >24 hours before testing will be rejected. Testing is performed at 1PM Mon-Fri.

Specimen Preparation:
Samples must be shipped to American Red Cross by no later than noon Mon-Fri.

Reference Interval:
Compatible with ALL donors tested

Reported:
Results of crossmatch test are available the same afternoon (Mon-Fri). However, anticipate a 1-2 day delay in platelet availability as products must undergo bacterial and infectious marker testing.

Additional Information:
Test is not available Sat-Sun or on Holidays. Reserved for patients who are refractory to platelet transfusions. Requires pre-approval of Lab Medicine Resident (X3-1313). Please see lab manual's Transfusion Medicine Guide for details.

CPT Codes:
86022-90

LOINC Codes:
45370-4

Platelet Derived Growth Factor Receptor Alpha 4Q12 Rearrangement FISH

PDGFRA, BPDGA

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Monday - Friday (day shift)

Methodology:
Fluorescence in situ Hybridization (FISH)

Reported:
1-2 weeks

Synonyms:

- PDGFR-Alpha
- PDGFRA
- BPDGA

COLLECTION

Sample Type:
Heparinized whole blood, Bone marrow aspirate, Bone marrow biopsy

Collect:
Dark green top vacutainer

Amount to Collect:
See preferred volume.

Preferred Volume:
Whole blood: 2 ml
Bone marrow: 2 ml
Bone core: 2 cm

Minimum Volume:
Whole blood: 1 ml
Bone marrow: 1 ml
?Bone core: 1 cm

Remarks:
Make sure blood or marrow aspirate is well mixed in the Dark Green top. Keep sample at room temperature

Stability (from collection to initiation):
2 days

Unacceptable Conditions:
Frozen cracked, leaking or unlabeled samples

PROCESSING

Test Code:
BPDGA: Blood
PDGFRA: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Preferred Volume:
Whole blood: 2 ml
Bone marrow: 2 ml
Bone core: 2 cm

Minimum Volume:
Whole blood: 1 ml
Bone marrow: 1 ml
?Bone core: 1 cm

Unacceptable Conditions:
Frozen cracked, leaking or unlabeled samples

Stability (from collection to initiation):
2 days

ADMINISTRATIVE

CPT Codes:
88271 x3, 88275

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BPDGA: Blood
PDGFRA: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Monday - Friday (day shift)

Methodology:
Fluorescence in situ Hybridization (FISH)

Remarks:
Make sure blood or marrow aspirate is well mixed in the Dark Green top. Keep sample at room temperature

Collect:
Dark green top vacutainer

Amount to Collect:
See preferred volume.

Sample Type:
Heparinized whole blood, Bone marrow aspirate, Bone marrow biopsy

Preferred Volume:
Whole blood: 2 ml
Bone marrow: 2 ml
Bone core: 2 cm

Minimum Volume:
Whole blood: 1 ml
Bone marrow: 1 ml
?Bone core: 1 cm

Unacceptable Conditions:
Frozen cracked, leaking or unlabeled samples

Synonyms:

- PDGFR-Alpha
- PDGFRA
- BPDGA

Stability (from collection to initiation):
2 days

Reported:
1-2 weeks

CPT Codes:
88271 x3, 88275

LDT or Modified FDA:
Yes

Platelet Derived Growth Factor Receptor Beta 5Q33.1 Rearrangement FISH

PDGFRB, BPDGB

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Monday - Friday (day shift)

Methodology:
Fluorescence in situ Hybridization (FISH)

Reported:
1-2 weeks

Synonyms:

- PDGFR-Beta
- PDGFRB
- BPDGB

COLLECTION

Sample Type:
Heparinized whole blood, Bone marrow aspirate, Bone marrow biopsy

Collect:
Dark green top vacutainer

Amount to Collect:
See preferred volume

Preferred Volume:
Whole blood: 2 ml
Bone marrow: 2 ml
Bone core: 2 cm

Minimum Volume:
Whole blood: 1 ml
Bone marrow: 1 ml
?Bone core: 1 cm

Remarks:
Make sure blood or marrow aspirate is well mixed in the Dark Green top. Keep sample at room temperature

Stability (from collection to initiation):
2 days

Unacceptable Conditions:
Frozen cracked, leaking or unlabeled samples

PROCESSING

Test Code:
BPDGB: Blood
PDGFRB: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Preferred Volume:
Whole blood: 2 ml
Bone marrow: 2 ml
Bone core: 2 cm

Minimum Volume:
Whole blood: 1 ml
Bone marrow: 1 ml
?Bone core: 1 cm

Unacceptable Conditions:
Frozen cracked, leaking or unlabeled samples

Stability (from collection to initiation):
2 days

ADMINISTRATIVE

CPT Codes:
88271 x2, 88275

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BPDGB: Blood
PDGFRB: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Monday - Friday (day shift)

Methodology:
Fluorescence in situ Hybridization (FISH)

Remarks:
Make sure blood or marrow aspirate is well mixed in the Dark Green top. Keep sample at room temperature

Collect:
Dark green top vacutainer

Amount to Collect:
See preferred volume

Sample Type:
Heparinized whole blood, Bone marrow aspirate, Bone marrow biopsy

Preferred Volume:
Whole blood: 2 ml
Bone marrow: 2 ml
Bone core: 2 cm

Minimum Volume:
Whole blood: 1 ml
Bone marrow: 1 ml
?Bone core: 1 cm

Unacceptable Conditions:
Frozen cracked, leaking or unlabeled samples

Synonyms:

- PDGFR-Beta
- PDGFRB
- BPDGB

Stability (from collection to initiation):
2 days

Reported:
1-2 weeks

CPT Codes:
88271 x2, 88275

LDT or Modified FDA:
Yes

Platelet Mapping

PLTMAP

ORDERING

Ordering Recommendations:
For meaningful use, it is recommended to order a concurrent Platelet Count and Fibrinogen for Platelet Mapping orders.

Approval Required:
By appointment only, contact Mission Bay Hematology at x-60194.

Available Stat:
No

Performing Lab:
Mission Bay Hematology

Performed:
By appointment only, 0800-1530 daily

Reported:
4 hours

COLLECTION

Sample Type:
Whole blood

Collect:
Blue top (citrate) AND Green top (sodium heparin)

Amount to Collect:
Blue top: 2.7 mL
Green top: 3 mL

Minimum Volume:
Blue top: 2.7 mL
Green top: 3 mL

Remarks:
By appointment only, contact Mission Bay Hematology at x-60194.

1. Use a 21G needle to perform the venipuncture.
2. Draw and discard the first 3 mL of blood or fill another tube. Blue top cannot be the first tube drawn .
3. After collection, mix each tube by gently inverting 3 to 4 times.
4. Discard the sample if there is a venous collapse or stoppage of blood flow during collection. Likewise, avoid prolonged placement of the tourniquet or a traumatic phlebotomy.
5. Sample should be hand delivered immediately to the Hematology Laboratory.

Stability (from collection to initiation):
Room Temperature, hand deliver immediately to Hematology Laboratory within 30 minutes of collection.

Unacceptable Conditions:
Unapproved orders, sample past stability time, tubed samples, samples from a traumatic phlebotomy, over or under filled tubes.

PROCESSING

Test Code:
PLTMAP

Performing Lab:
Mission Bay Hematology

Minimum Volume:
Blue top: 2.7 mL
Green top: 3 mL

Unacceptable Conditions:
Unapproved orders, sample past stability time, tubed samples, samples from a traumatic phlebotomy, over or under filled tubes.

Stability (from collection to initiation):
Room Temperature, hand deliver immediately to Hematology Laboratory within 30 minutes of collection.

RESULT INTERPRETATION

Units:
% ADP Inhibition
% AA Inhibition

Reference Interval:
The platelet mapping assay has no established normal range and has not been approved by the FDA for pediatric use. Results should be compared with baseline results and should not be used as the sole basis for patient diagnosis. Platelet mapping results should be considered along with a clinical assessment of the patient's condition and other coagulation laboratory tests.

ADMINISTRATIVE

CPT Codes:
85576-2

LDT or Modified FDA:
Yes

COMPLETE VIEW

Approval Required:
By appointment only, contact Mission Bay Hematology at x-60194.

Available Stat:
No

Ordering Recommendations:
For meaningful use, it is recommended to order a concurrent Platelet Count and Fibrinogen for Platelet Mapping orders.

Test Code:
PLTMAP

Performing Lab:
Mission Bay Hematology

Performed:
By appointment only, 0800-1530 daily

Remarks:
By appointment only, contact Mission Bay Hematology at x-60194.

1. Use a 21G needle to perform the venipuncture.
2. Draw and discard the first 3 mL of blood or fill another tube. Blue top cannot be the first tube drawn .
3. After collection, mix each tube by gently inverting 3 to 4 times.
4. Discard the sample if there is a venous collapse or stoppage of blood flow during collection. Likewise, avoid prolonged placement of the tourniquet or a traumatic phlebotomy.
5. Sample should be hand delivered immediately to the Hematology Laboratory.

Collect:
Blue top (citrate) AND Green top (sodium heparin)

Amount to Collect:
Blue top: 2.7 mL
Green top: 3 mL

Sample Type:
Whole blood

Minimum Volume:
Blue top: 2.7 mL
Green top: 3 mL

Unacceptable Conditions:
Unapproved orders, sample past stability time, tubed samples, samples from a traumatic phlebotomy, over or under filled tubes.

Units:
% ADP Inhibition
% AA Inhibition

Reference Interval:
The platelet mapping assay has no established normal range and has not been approved by the FDA for pediatric use. Results should be compared with baseline results and should not be used as the sole basis for patient diagnosis. Platelet mapping results should be considered along with a clinical assessment of the patient's condition and other coagulation laboratory tests.

Stability (from collection to initiation):
Room Temperature, hand deliver immediately to Hematology Laboratory within 30 minutes of collection.

Reported:
4 hours

CPT Codes:
85576-2

LDT or Modified FDA:
Yes

Platelet Transfusion Refractory Panel

MOLT

ORDERING

Approval Required:

Yes; this test is required only in rare situations. Blood Bank approval required before order is placed and sample is collected.

For routine platelet refractoriness testing, please order PLATELET REFRACTORY TESTING ORDERS' using the order set in APEX; testing is done at UCSF ITL.

Available Stat:

No

Performing Lab:

Versiti

Methodology:

PCR and Fluorescent Hydrolysis Probes; Platelet Antibody Bead Array (PABA); and Flow Cytometry

Reported:

10 days

Supplemental Test Request Form Required:

Yes

COLLECTION

Sample Type:

Blood

Collect:

2 lavender and 2 red tops

Amount to Collect:

See Preferred Volume

Preferred Volume:

5-10 mL EDTA whole blood and 10 mL serum

Minimum Volume:

3 mL EDTA whole blood and 3 mL serum

Remarks:

Provider must fill out the outside lab (BCW) requisition form.

https://media.versiti.org/versiti/versiti/media/downloadables/diagnostic-labs/requisitions/pnil_requisition.pdf?_ga=2.88586079.573452753.1671484325-543083915.1671484325

Submit form, APEX MOLT order requisition and specimens to Central Processing

PROCESSING

Test Code:

MOLT

Sendout:

Yes

Performing Lab:

Versiti

Specimen Preparation:

Provider must fill out the outside lab (BCW) requisition form.

https://media.versiti.org/versiti/versiti/media/downloadables/diagnostic-labs/requisitions/pnil_requisition.pdf?_ga=2.88586079.573452753.1671484325-543083915.1671484325

Submit form, APEX MOLT order requisition and specimens to Central Processing

Store refrigerated. Send sample refrigerated. Sample must be received within 4 days of draw date.

Preferred Volume:

5-10 mL EDTA whole blood and 10 mL serum

Minimum Volume:

3 mL EDTA whole blood and 3 mL serum

ADMINISTRATIVE

CPT Codes:
81105, 81106, 81107, 81108, 81109, 81110, 81111, 81112, 86022

COMPLETE VIEW

Approval Required:
Yes; this test is required only in rare situations. Blood Bank approval required before order is placed and sample is collected.

For routine platelet refractoriness testing, please order PLATELET REFRACTORY TESTING ORDERS' using the order set in APEX; testing is done at UCSF ITL.

Available Stat:
No

Test Code:
MOLT

Performing Lab:
Versiti

Sendout:
Yes

Methodology:
PCR and Fluorescent Hydrolysis Probes; Platelet Antibody Bead Array (PABA); and Flow Cytometry

Remarks:
Provider must fill out the outside lab (BCW) requisition form.

https://media.versiti.org/versiti/versiti/media/downloadables/diagnostic-labs/requisitions/pnil_requisition.pdf?_ga=2.88586079.573452753.1671484325-543083915.1671484325

Submit form, APEX MOLT order requisition and specimens to Central Processing

Collect:
2 lavender and 2 red tops

Amount to Collect:
See Preferred Volume

Sample Type:
Blood

Preferred Volume:
5-10 mL EDTA whole blood and 10 mL serum

Minimum Volume:
3 mL EDTA whole blood and 3 mL serum

Specimen Preparation:
Provider must fill out the outside lab (BCW) requisition form.

https://media.versiti.org/versiti/versiti/media/downloadables/diagnostic-labs/requisitions/pnil_requisition.pdf?_ga=2.88586079.573452753.1671484325-543083915.1671484325

Submit form, APEX MOLT order requisition and specimens to Central Processing

Store refrigerated. Send sample refrigerated. Sample must be received within 4 days of draw date.

Reported:
10 days

CPT Codes:
81105, 81106, 81107, 81108, 81109, 81110, 81111, 81112, 86022

Supplemental Test Request Form Required:
Yes

PML-RARA FISH

TR1517, BT1517

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Fluorescent in-situ hybridization

Reported:
7-14 days

Synonyms:

- Cytogenetic analysis
- Karyotype
- Karyotyping
- TR1517
- BT1517

COLLECTION

Sample Type:
Heparinized whole blood, bone marrow, bone core

Collect:
Blood & bone marrow aspirate: 15 mL centrifuge tube with transport media (RPMI, FBS, L-Glutamine, Sodium Heparin and PenStrep). Available from Cytogenetics, 415-353-4844. Dark Green top also acceptable

Bone marrow core: 15 mL centrifuge tube with transport media (RPMI, FBS, L-Glutamine, Sodium Heparin and PenStrep). Available from Cytogenetics.

Amount to Collect:
Bone marrow: 2 mL
Blood: 2 mL
Bone core: 2 cm

Preferred Volume:
Bone marrow: 2 mL
Blood: 2 mL
Bone core: 2 cm

Minimum Volume:
Bone marrow: 1 mL
Blood: 1 mL
Bone core: 1 cm

Remarks:
Bone marrow is the preferred specimen, but heparinized peripheral blood may be submitted if a large number of malignant cells are present.

Collect bone marrow in a syringe, transfer to Dark Green top vacutainer and gently invert the tube several times for good mixing.

If a dry tap is obtained, consult the Laboratory Medicine resident in Hematology regarding the possible submission of a green top tube of
peripheral blood.

Contact Hematology if the specimen is more than 24 hours old.

Stability (from collection to initiation):
48 hours

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

PROCESSING

Test Code:
BT1517: Blood
TR1517: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Specimen Preparation:
Maintain sample at room temperature. Transport to CB Cytogenetics within 24 hours

Preferred Volume:
Bone marrow: 2 mL
Blood: 2 mL
Bone core: 2 cm

Minimum Volume:
Bone marrow: 1 mL
Blood: 1 mL
Bone core: 1 cm

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

Stability (from collection to initiation):
48 hours

RESULT INTERPRETATION

Reference Interval:
Not detected

ADMINISTRATIVE

CPT Codes:
88275, 88271x2

LDT or Modified FDA:
Yes

LOINC Codes:
21551-7

COMPLETE VIEW

Available Stat:
No

Test Code:
BT1517: Blood
TR1517: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Fluorescent in-situ hybridization

Remarks:
Bone marrow is the preferred specimen, but heparinized peripheral blood may be submitted if a large number of malignant cells are present.

Collect bone marrow in a syringe, transfer to Dark Green top vacutainer and gently invert the tube several times for good mixing.

If a dry tap is obtained, consult the Laboratory Medicine resident in Hematology regarding the possible submission of a green top tube of
peripheral blood.

Contact Hematology if the specimen is more than 24 hours old.

Collect:
Blood & bone marrow aspirate: 15 mL centrifuge tube with transport media (RPMI, FBS, L-Glutamine, Sodium Heparin and PenStrep). Available from Cytogenetics, 415-353-4844. Dark Green top also acceptable

Bone marrow core: 15 mL centrifuge tube with transport media (RPMI, FBS, L-Glutamine, Sodium Heparin and PenStrep). Available from Cytogenetics.

Amount to Collect:
Bone marrow: 2 mL
Blood: 2 mL
Bone core: 2 cm

Sample Type:
Heparinized whole blood, bone marrow, bone core

Preferred Volume:
Bone marrow: 2 mL
Blood: 2 mL
Bone core: 2 cm

Minimum Volume:
Bone marrow: 1 mL
Blood: 1 mL
Bone core: 1 cm

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

Specimen Preparation:
Maintain sample at room temperature. Transport to CB Cytogenetics within 24 hours

Reference Interval:
Not detected

Synonyms:

- Cytogenetic analysis
- Karyotype
- Karyotyping
- TR1517
- BT1517

Stability (from collection to initiation):
48 hours

Reported:
7-14 days

CPT Codes:
88275, 88271x2

LDT or Modified FDA:
Yes

LOINC Codes:
21551-7

PML-RARA Translocation Quantitative

PMLQNT

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Molecular Diagnostics

Performed:
Run 1x per week as needed, Tuesday or Thursday, day shift only.

Methodology:
Real-Time PCR

Reported:
7-10 days

Additional Information:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

More than 98% of acute promyelocytic leukemia (APL) cases are caused by three translocations, termed bcr1 (long form), bcr2 (variable form) and bcr3 (short form), which fuse the promyelocytic leukemia (PML) gene on chromosome 15q22 to the retinoic acid receptor alpha (RARA) gene on chromosome 17q21. This assay will detect all three translocations. Each translocation results in the expression of a chimeric PML-RARA protein that suppresses the maturation of myeloid cells at the promyelocytic stage.

This assay determines relative mRNA levels of PML-RARA fusion transcripts for the purpose of monitoring therapeutic response in minimal residual disease. The quantitative assay has a sensitivity of 1 in 100,000 cells and an analytical detection sensitivity of 10 PML-RARA copies.

Quantitative results are reported with a percent ratio consisting of PML-RARA transcripts normalized to the internal control ABL. Samples that fall outside the standard curve range, but are clearly positive will be reported as weak positive, without a PML-RARA ratio.

NOTE: The quantitative PML-RARA assay is best interpreted by periodic evaluations of PML-RARA transcript levels in the same laboratory. Quantitative values among different laboratories do not necessarily correlate together.

This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

Reflex Testing:
If the PML-RARA Quantitative test (PMLQNT) is ordered and the patient has not had a prior qualitative test (PMLR) performed, the qualitative analysis will be performed first to identify if a translocation is present and what type it is prior to quantitative analysis. The qualitative testing will be performed at an additional charge.

Synonyms:

- Acute Promyelocytic leukemia
- APL
- AML-M3
- t(15
- 17)
- Retinoic acid receptor alpha

COLLECTION

Sample Type:
EDTA Whole blood, bone marrow

Collect:
Lavender top

Amount to Collect:
Blood: 5 mL
Bone marrow: 2 mL

Preferred Volume:
Blood: 5 mL
?Bone marrow: 2 mL

Minimum Volume:
Blood: 2 mL
?Bone marrow: 1 mL

Remarks:

Due to limited stability samples for this test should not be collected the day before a holiday or 3-day weekend.

Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Stability (from collection to initiation):

Refrigerated 3 days.

PROCESSING

Test Code:

PMLQNT

Performing Lab:

Medical Genomics - Molecular Diagnostics

Specimen Preparation:

Refrigerate sample and send the China basin refrigerated.

Preferred Volume:

Blood: 5 mL
?Bone marrow: 2 mL

Minimum Volume:

Blood: 2 mL
?Bone marrow: 1 mL

Stability (from collection to initiation):

Refrigerated 3 days.

RESULT INTERPRETATION

Units:

% PML/RARA transcripts to ABL transcripts

Reference Interval:

No PML-RARA bcr1, bcr2 or bcr3 fusion transcripts

Additional Information:

An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

More than 98% of acute promyelocytic leukemia (APL) cases are caused by three translocations, termed bcr1 (long form), bcr2 (variable form) and bcr3 (short form), which fuse the promyelocytic leukemia (PML) gene on chromosome 15q22 to the retinoic acid receptor alpha (RARA) gene on chromosome 17q21. This assay will detect all three translocations. Each translocation results in the expression of a chimeric PML-RARA protein that suppresses the maturation of myeloid cells at the promyelocytic stage.

This assay determines relative mRNA levels of PML-RARA fusion transcripts for the purpose of monitoring therapeutic response in minimal residual disease. The quantitative assay has a sensitivity of 1 in 100,000 cells and an analytical detection sensitivity of 10 PML-RARA copies.

Quantitative results are reported with a percent ratio consisting of PML-RARA transcripts normalized to the internal control ABL. Samples that fall outside the standard curve range, but are clearly positive will be reported as weak positive, without a PML-RARA ratio.

NOTE: The quantitative PML-RARA assay is best interpreted by periodic evaluations of PML-RARA transcript levels in the same laboratory. Quantitative values among different laboratories do not necessarily correlate together.

This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

ADMINISTRATIVE

CPT Codes:

81316

LDT or Modified FDA:

Yes

COMPLETE VIEW

Available Stat:

No

Test Code:

PMLQNT

Performing Lab:
Medical Genomics - Molecular Diagnostics

Performed:
Run 1x per week as needed, Tuesday or Thursday, day shift only.

Methodology:
Real-Time PCR

Remarks:
Due to limited stability samples for this test should not be collected the day before a holiday or 3-day weekend.

Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Collect:
Lavender top

Amount to Collect:
Blood: 5 mL
Bone marrow: 2 mL

Sample Type:
EDTA Whole blood, bone marrow

Preferred Volume:
Blood: 5 mL
?Bone marrow: 2 mL

Minimum Volume:
Blood: 2 mL
?Bone marrow: 1 mL

Specimen Preparation:
Refrigerate sample and send the China basin refrigerated.

Units:
% PML/RARA transcripts to ABL transcripts

Reference Interval:
No PML-RARA bcr1, bcr2 or bcr3 fusion transcripts

Synonyms:

- Acute Promyelocytic leukemia
- APL
- AML-M3
- t(15
- 17)
- Retinoic acid receptor alpha

Stability (from collection to initiation):
Refrigerated 3 days.

Reported:
7-10 days

Reflex Testing:
If the PML-RARA Quantitative test (PMLQNT) is ordered and the patient has not had a prior qualitative test (PMLR) performed, the qualitative analysis will be performed first to identify if a translocation is present and what type it is prior to quantitative analysis. The qualitative testing will be performed at an additional charge.

Additional Information:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

More than 98% of acute promyelocytic leukemia (APL) cases are caused by three translocations, termed bcr1 (long form), bcr2 (variable form) and bcr3 (short form), which fuse the promyelocytic leukemia (PML) gene on chromosome 15q22 to the retinoic acid receptor alpha (RARA) gene on chromosome 17q21. This assay will detect all three translocations. Each translocation results in the expression of a chimeric PML-RARA protein that suppresses the maturation of myeloid cells at the promyelocytic stage.

This assay determines relative mRNA levels of PML-RARA fusion transcripts for the purpose of monitoring therapeutic response in minimal residual disease. The quantitative assay has a sensitivity of 1 in 100,000 cells and an analytical detection sensitivity of 10 PML-RARA copies.

Quantitative results are reported with a percent ratio consisting of PML-RARA transcripts normalized to the internal control ABL. Samples that fall outside the standard curve range, but are clearly positive will be reported as weak positive, without a PML-RARA ratio.

NOTE: The quantitative PML-RARA assay is best interpreted by periodic evaluations of PML-RARA transcript levels in the same laboratory. Quantitative values among different laboratories do not necessarily correlate together.

This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

CPT Codes:
81316

LDT or Modified FDA:
Yes

PML-RARA, Qualitative

PMLR

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Molecular Diagnostics

Performed:
Run 1x per week as needed, Monday or Wednesday, day shift only.

Methodology:
PCR

Reported:
7-10 days

Additional Information:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

More than 98% of acute promyelocytic leukemia (APL) cases are caused by three translocations, termed bcr1 (long form), bcr2 (variable form) and bcr3 (short form), which fuse the promyelocytic leukemia (PML) gene on chromosome 15q22 to the retinoic acid receptor alpha (RARA) gene on chromosome 17q21. This assay will detect all three translocations. Each translocation results in the expression of a chimeric PML-RARA protein that suppresses the maturation of myeloid cells at the promyelocytic stage.

If this assay is positive, the follow-up quantitative assay (PMLQNT) will be performed to determine relative mRNA levels of PML-RARA fusion transcripts for the purpose of monitoring therapeutic response in minimal residual disease. The qualitative assay has a sensitivity of 1 in 100,000 cells and an analytical detection sensitivity of 10 PML-RARA copies.

Qualitative results are reported either as negative or positive. Quantitative results are reported with a percent ratio consisting of PML-RARA transcripts normalized to the internal control ABL. Samples that fall outside the standard curve range, but are clearly positive will be reported as weak positive, without a PML-RARA ratio.

NOTE: The quantitative PML-RARA assay is best interpreted by periodic evaluations of PML-RARA transcript levels in the same laboratory. Quantitative values among different laboratories do not necessarily correlate together.

This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

Reflex Testing:
If a translocation is detected the quantitative assay (PMLQNT) will be performed at an additional charge.

Note: If the patient has a prior positive qualitative test (PMLR), the order will be changed to the quantitative test (PMLQNT).

Synonyms:

- Acute Promyelocytic leukemia
- APL
- AML-M3
- t(15
- 17)
- Retinoic acid receptor alpha

COLLECTION

Sample Type:
EDTA Whole blood, bone marrow

Collect:
Lavender top

Amount to Collect:
Blood: 5 mL
Bone marrow: 2 mL

Preferred Volume:
Blood: 5 mL
?Bone marrow: 2 mL

Minimum Volume:
Blood: 2 mL
?Bone marrow: 1 mL

Remarks:
Due to limited stability samples for this test should not be collected the day before a holiday or 3-day weekend.

Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Stability (from collection to initiation):
Refrigerated 3 days.

PROCESSING

Test Code:
PMLR

Performing Lab:
Medical Genomics - Molecular Diagnostics

Specimen Preparation:
Refrigerate sample. Send to China Basin refrigerated

Preferred Volume:
Blood: 5 mL
?Bone marrow: 2 mL

Minimum Volume:
Blood: 2 mL
?Bone marrow: 1 mL

Stability (from collection to initiation):
Refrigerated 3 days.

RESULT INTERPRETATION

Reference Interval:
No PML-RARA bcr1, bcr2 or bcr3 fusion transcripts

Additional Information:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

More than 98% of acute promyelocytic leukemia (APL) cases are caused by three translocations, termed bcr1 (long form), bcr2 (variable form) and bcr3 (short form), which fuse the promyelocytic leukemia (PML) gene on chromosome 15q22 to the retinoic acid receptor alpha (RARA) gene on chromosome 17q21. This assay will detect all three translocations. Each translocation results in the expression of a chimeric PML-RARA protein that suppresses the maturation of myeloid cells at the promyelocytic stage.

If this assay is positive, the follow-up quantitative assay (PMLQNT) will be performed to determine relative mRNA levels of PML-RARA fusion transcripts for the purpose of monitoring therapeutic response in minimal residual disease. The qualitative assay has a sensitivity of 1 in 100,000 cells and an analytical detection sensitivity of 10 PML-RARA copies.

Qualitative results are reported either as negative or positive. Quantitative results are reported with a percent ratio consisting of PML-RARA transcripts normalized to the internal control ABL. Samples that fall outside the standard curve range, but are clearly positive will be reported as weak positive, without a PML-RARA ratio.

NOTE: The quantitative PML-RARA assay is best interpreted by periodic evaluations of PML-RARA transcript levels in the same laboratory. Quantitative values among different laboratories do not necessarily correlate together.

This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

ADMINISTRATIVE

CPT Codes:
81315

LDT or Modified FDA:
Yes

LOINC Codes:
21551-7

COMPLETE VIEW

Available Stat:
No

Test Code:
PMLR

Performing Lab:
Medical Genomics - Molecular Diagnostics

Performed:
Run 1x per week as needed, Monday or Wednesday, day shift only.

Methodology:
PCR

Remarks:
Due to limited stability samples for this test should not be collected the day before a holiday or 3-day weekend.

Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Collect:
Lavender top

Amount to Collect:
Blood: 5 mL
Bone marrow: 2 mL

Sample Type:
EDTA Whole blood, bone marrow

Preferred Volume:
Blood: 5 mL
?Bone marrow: 2 mL

Minimum Volume:
Blood: 2 mL
?Bone marrow: 1 mL

Specimen Preparation:
Refrigerate sample. Send to China Basin refrigerated

Reference Interval:
No PML-RARA bcr1, bcr2 or bcr3 fusion transcripts

Synonyms:

- Acute Promyelocytic leukemia
- APL
- AML-M3
- t(15
- 17)
- Retinoic acid receptor alpha

Stability (from collection to initiation):
Refrigerated 3 days.

Reported:
7-10 days

Reflex Testing:
If a translocation is detected the quantitative assay (PMLQNT) will be performed at an additional charge.

Note: If the patient has a prior positive qualitative test (PMLR), the order will be changed to the quantitative test (PMLQNT).

Additional Information:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

More than 98% of acute promyelocytic leukemia (APL) cases are caused by three translocations, termed bcr1 (long form), bcr2 (variable form) and bcr3 (short form), which fuse the promyelocytic leukemia (PML) gene on chromosome 15q22 to the retinoic acid receptor alpha (RARA) gene on chromosome 17q21. This assay will detect all three translocations. Each translocation results in the expression of a chimeric PML-RARA protein that suppresses the maturation of myeloid cells at the promyelocytic stage.

If this assay is positive, the follow-up quantitative assay (PMLQNT) will be performed to determine relative mRNA levels of PML-RARA fusion transcripts for the purpose of monitoring therapeutic response in minimal residual disease. The qualitative assay has a sensitivity of 1 in 100,000 cells and an analytical detection sensitivity of 10 PML-RARA copies.

Qualitative results are reported either as negative or positive. Quantitative results are reported with a percent ratio consisting of PML-RARA transcripts normalized to the internal control ABL. Samples that fall outside the standard curve range, but are clearly positive will be reported as weak positive, without a PML-RARA ratio.

NOTE: The quantitative PML-RARA assay is best interpreted by periodic evaluations of PML-RARA transcript levels in the same laboratory. Quantitative values among different laboratories do not necessarily correlate together.

This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

CPT Codes:
81315

LDT or Modified FDA:
Yes

LOINC Codes:
21551-7

Pm-Scl Antibody

PMSCL

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Immunodiffusion

Reported:
6-7 days

Additional Information:
Scleroderma may be localized or diffuse [Progressive Systemic Sclerosis (PSS)] that may involve skin, gastrointestinal tracts, lungs, vascular and cardiac systems, and kidneys. PM-1 (PM-Scl) Antibody is present in approximately one-fourth of patients with the polymyositis/scleroderma overlap syndrome, 8% of patients with polymyositis alone and 2-5% of patients with scleroderma alone. Patients who have PM-1 Antibody have a better prognosis than patients with scleroderma.

COLLECTION

Sample Type:
Serum

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen 1 month.

Unacceptable Conditions:
Collected in Gold top

PROCESSING

Test Code:
PMSCL

Sendout:
Yes

Performing Lab:
Quest

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Collected in Gold top

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen 1 month.

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
Scleroderma may be localized or diffuse [Progressive Systemic Sclerosis (PSS)] that may involve skin, gastrointestinal tracts, lungs, vascular and cardiac systems, and kidneys. PM-1 (PM-Scl) Antibody is present in approximately one-fourth of patients with the polymyositis/scleroderma overlap syndrome, 8% of patients with polymyositis alone and 2-5% of patients with scleroderma alone. Patients who have PM-1 Antibody have a better prognosis than patients with scleroderma.

ADMINISTRATIVE

CPT Codes:
86235-90

COMPLETE VIEW

Available Stat:
No

Test Code:
PMSCL

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Immunodiffusion

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Collected in Gold top

Reference Interval:
Negative

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen 1 month.

Reported:
6-7 days

Additional Information:
Scleroderma may be localized or diffuse [Progressive Systemic Sclerosis (PSS)] that may involve skin, gastrointestinal tracts, lungs, vascular and cardiac systems, and kidneys. PM-1 (PM-Scl) Antibody is present in approximately one-fourth of patients with the polymyositis/scleroderma overlap syndrome, 8% of patients with polymyositis alone and 2-5% of patients with scleroderma alone. Patients who have PM-1 Antibody have a better prognosis than patients with scleroderma.

CPT Codes:
86235-90

Pneumococcal IgG Antibodies (23 serotypes)

APN23

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Multiple Analyte Immuno Detection (MAID)

Reported:
Performed Monday-Friday. Turnaround 4-7 days.

Additional Information:
Serotypes tested for include: 1,2,3,4,5,8,9 (9N),12(12F),14,17 (17F),19(19F),20,22 (22F),23(23F),26(6B),34(10A),43(11A),51(7F),54 (15B),56(18C),57(19A),68(9V),70 (33F)

Note: Serotype designations are American nomenclature, with Danish nonemclature in parentheses

The MAID procedure measures IgG antibodies recognizing 23 type-specific pneumococcal polysaccharide antigens included in the polyvalent vaccine.

Evaluation of the response to pneumococcal vaccination is best accomplished by comparing pre-vaccination antibody levels and levels obtained 4-6 weeks post-vaccination. A 2- to 4-fold increase in type-specific antibodies measured 4-6 weeks after vaccination is expected in immunocompetent adults. The number of serotypes for which a 2- to 4-fold increase is observed varies greatly among individuals; a consensus panel has suggested that individuals older than 5 years should respond to at least approximately 70% of pneumococcal serotypes. Adults >65 years old may exhibit a smaller (2-fold) increase in type-specific antibody levels.

Synonyms:

- Pneumococcal serology

COLLECTION

Sample Type:
Serum

Collect:
Gold top, Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Remarks:
Pneumococcal vaccine response testing should be performed with paired pre- and post-vaccination sera. Please indicate on request form if the specimen is pre- or post-vaccination collections. Label samples "PRE" or "POST".

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 months, frozen at -20C 1 month.

PROCESSING

Test Code:
APN23

Test Group:
Pneumococcal

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze aliquot at -20C. Order Quest Test #16963

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 months, frozen at -20C 1 month.

RESULT INTERPRETATION

Units:
µg/mL (mcg/mL)

Reference Interval:
See additional information

Additional Information:
Serotypes tested for include: 1,2,3,4,5,8,9 (9N),12(12F),14,17 (17F),19(19F),20,22 (22F),23(23F),26(6B),34(10A),43(11A),51(7F),54 (15B),56(18C),57(19A),68(9V),70 (33F)

Note: Serotype designations are American nomenclature, with Danish nonemclature in parentheses

The MAID procedure measures IgG antibodies recognizing 23 type-specific pneumococcal polysaccharide antigens included in the polyvalent vaccine.

Evaluation of the response to pneumococcal vaccination is best accomplished by comparing pre-vaccination antibody levels and levels obtained 4-6 weeks post-vaccination. A 2- to 4-fold increase in type-specific antibodies measured 4-6 weeks after vaccination is expected in immunocompetent adults. The number of serotypes for which a 2- to 4-fold increase is observed varies greatly among individuals; a consensus panel has suggested that individuals older than 5 years should respond to at least approximately 70% of pneumococcal serotypes. Adults >65 years old may exhibit a smaller (2-fold) increase in type-specific antibody levels.

ADMINISTRATIVE

CPT Codes:
86317-90 x23

COMPLETE VIEW

Available Stat:
No

Test Code:
APN23

Test Group:
Pneumococcal

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Multiple Analyte Immuno Detection (MAID)

Remarks:
Pneumococcal vaccine response testing should be performed with paired pre- and post-vaccination sera. Please indicate on request form if the specimen is pre- or post-vaccination collections. Label samples "PRE" or "POST".

Collect:
Gold top, Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Specimen Preparation:
Freeze aliquot at -20C. Order Quest Test #16963

Units:
µg/mL (mcg/mL)

Reference Interval:
See additional information

Synonyms:

- Pneumococcal serology

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 months, frozen at -20C 1 month.

Reported:
Performed Monday-Friday. Turnaround 4-7 days.

Additional Information:
Serotypes tested for include: 1,2,3,4,5,8,9 (9N),12(12F),14,17 (17F),19(19F),20,22 (22F),23(23F),26(6B),34(10A),43(11A),51(7F),54 (15B),56(18C),57(19A),68(9V),70 (33F)

Note: Serotype designations are American nomenclature, with Danish nonemclature in parentheses

The MAID procedure measures IgG antibodies recognizing 23 type-specific pneumococcal polysaccharide antigens included in the polyvalent vaccine.

Evaluation of the response to pneumococcal vaccination is best accomplished by comparing pre-vaccination antibody levels and levels obtained 4-6 weeks post-vaccination. A 2- to 4-fold increase in type-specific antibodies measured 4-6 weeks after vaccination is expected in immunocompetent adults. The number of serotypes for which a 2- to 4-fold increase is observed varies greatly among individuals; a consensus panel has suggested that individuals older than 5 years should respond to at least approximately 70% of pneumococcal serotypes. Adults >65 years old may exhibit a smaller (2-fold) increase in type-specific antibody levels.

CPT Codes:
86317-90 x23

Pneumocystis carinii stain

ORDERING

Available Stat:
No

Performing Lab:
Cytology (Dept. of Pathology)

Methodology:
PAP and Gomori methenamine silver (GMS) stains

Synonyms:

- PCP
- Pneumocystis carinii pneumonia

Supplemental Test Request Form Required:
Yes

COLLECTION

Sample Type:
Sputum, Bronchalveolar lavage (BAL), Bronchial wash

Collect:
Sputum cup, Lukens trap

Remarks:
Complete a Non-Gyn Cytology Requisition and deliver with sample. From 0800-1630 deliver sample to M-545. After 1630 deliver to clinical laboratory processing, 5th floor Moffitt.

PROCESSING

Performing Lab:
Cytology (Dept. of Pathology)

Specimen Preparation:
If received on a Microbiology requisition forward it and sample to M-545.

COMPLETE VIEW

Available Stat:
No

Performing Lab:
Cytology (Dept. of Pathology)

Methodology:
PAP and Gomori methenamine silver (GMS) stains

Remarks:
Complete a Non-Gyn Cytology Requisition and deliver with sample. From 0800-1630 deliver sample to M-545. After 1630 deliver to clinical laboratory processing, 5th floor Moffitt.

Collect:
Sputum cup, Lukens trap

Sample Type:
Sputum, Bronchalveolar lavage (BAL), Bronchial wash

Specimen Preparation:
If received on a Microbiology requisition forward it and sample to M-545.

Synonyms:

- PCP
- Pneumocystis carinii pneumonia

Supplemental Test Request Form Required:
Yes

POCT Activated Clot Time, Low Range (POC211)

ORDERING

Available Stat:
Yes

Performing Lab:
Authorized Point of Care testing site staff

Performed:
Test is available 24 hours, 7 days a week

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=596&infocardID=Z7AM3ZWVEJBVBOCK43 for the Point of Care Hemochron Signature Elite ACT LR standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

Synonyms:

- ACTLR
- Hemochron ACT

COLLECTION

Sample Type:
Whole blood

Collect:
syringe

PROCESSING

Performing Lab:
Authorized Point of Care testing site staff

RESULT INTERPRETATION

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=596&infocardID=Z7AM3ZWVEJBVBOCK43 for the Point of Care Hemochron Signature Elite ACT LR standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

COMPLETE VIEW

Available Stat:
Yes

Performing Lab:
Authorized Point of Care testing site staff

Performed:
Test is available 24 hours, 7 days a week

Collect:
syringe

Sample Type:
Whole blood

Synonyms:

- ACTLR
- Hemochron ACT

Additional Information:

Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=596&infocardID=Z7AM3ZWVEJBVBOCK43 for the Point of Care Hemochron Signature Elite ACT LR standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

POCT Activated Clot Time, Plus

ORDERING

Available Stat:
Yes

Performing Lab:
Authorized Point of Care testing site staff

Performed:
Test is available 24 hours, 7 days a week

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=492&infocardID=YKJXXPKPN5D23PYDG7 for the Point of Care Hemochron Signature Elite ACT Plus standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

Synonyms:

- Hemochron ACT
- ACTP

COLLECTION

Sample Type:
Whole blood

Collect:
Syringe

PROCESSING

Performing Lab:
Authorized Point of Care testing site staff

RESULT INTERPRETATION

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=492&infocardID=YKJXXPKPN5D23PYDG7 for the Point of Care Hemochron Signature Elite ACT Plus standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

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ADMINISTRATIVE

CPT Codes:
3184-9

COMPLETE VIEW

Available Stat:
Yes

Performing Lab:
Authorized Point of Care testing site staff

Performed:
Test is available 24 hours, 7 days a week

Collect:
Syringe

Sample Type:
Whole blood

Synonyms:

- Hemochron ACT
- ACTP

Additional Information:

Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=492&infocardID=YKJXXPKPN5D23PYDG7 for the Point of Care Hemochron Signature Elite ACT Plus standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

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CPT Codes:

3184-9

POCT Activated Clotting Time

ORDERING

Available Stat:
Yes

Performing Lab:
Authorized Point of Care testing site staff

Methodology:
Hemochron Response: Clotting activation & optical clot detection

Additional Information:
ACT testing is performed in the operating rooms, Interventional radiology and Cardiac catheterization areas and on selected patient floors. It is not performed or offered by the UCSF Clinical Laboratories.

The HEMOCHRON Response ACT test is intended for monitoring patients receiving heparin anticoagulation therapy. Two ranges of therapeutic heparinization may be monitored by using either the low range (LR) or high range (Plus) cartridges respectively:

Cartridge	Heparin level	Reportable range
LR	up to 2.5 U/mL	65-400 sec
Plus(+)	1.0-6.0 U/mL	67-1005 sec

Note: Although the reportable ranges overlap, due to the use of different clotting activators in the LR (celite) and Plus (kaolin) cartridges the ACT values derived from these two cartridges are NOT comparable.

ACT is affected by poor sample collection technique. When the sample is collected by venipuncture, use a two syringe technique to prevent tissue thromboplastin contamination. Care must be taken to adequately flush fluids from indwelling lines or catheters with patient blood before collection. Poor collection technique affects precision and accuracy. The following sample problems may effect results:
1. presence of bubbles or foaming
2. Hemolysis
3. Clotted or partially clotted sample

The following clinical conditions may affect the ACT result: hemodilution, cardioplegic solutions, hypothermia, platelet dysfunction, hypofibrinogenemia and other coagulopathies, and unsuspected heparin or warfarin therapy.

Samples with Hematocrits < 20% or > 55% may have optical densities outside of the operating range of the instrument and may results in 'Sample not seen' error message

Patients with Antiphospholipid Syndrome (APL) may have antibodies that interact with the ACT and cause spurious results. Although not extensively studied with the Hemochron Elite system, patients with this syndrome who require heparin anticoagulation should not be monitored with the ACT and an alternate method should be used.

Synonyms:

- ACT
- Activated coagulation time
- CT

COLLECTION

Sample Type:
Whole blood

Collect:
Special cartridge specific for the level of heparinization used (See Additional information)

Amount to Collect:
200 µL (0.2 mL)

Preferred Volume:
50 µL (0.05 mL)

Minimum Volume:
15 µL (0.015 mL)

Remarks:
Samples should be tested as soon as possible after collection.

PROCESSING

Performing Lab:
Authorized Point of Care testing site staff

Preferred Volume:
50 µL (0.05 mL)

Minimum Volume:
15 µL (0.015 mL)

RESULT INTERPRETATION

Units:
seconds

Reference Interval:
Testing is used to monitor anticoagulation during invasive procedures. ACT levels during anticoagulation are compared to patient baseline values.

Cartridge	Normal range
LR cartridge	99-187 sec
Plus (+) cartridge	98-139 sec

See Additional Information for reportable ranges and heparin ranges appropriate for each cartridge.

Additional Information:
ACT testing is performed in the operating rooms, Interventional radiology and Cardiac catheterization areas and on selected patient floors. It is not performed or offered by the UCSF Clinical Laboratories.

The HEMOCHRON Response ACT test is intended for monitoring patients receiving heparin anticoagulation therapy. Two ranges of therapeutic heparinization may be monitored by using either the low range (LR) or high range (Plus) cartridges respectively:

Cartridge	Heparin level	Reportable range
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Plus(+)	1.0-6.0 U/mL	67-1005 sec

Note: Although the reportable ranges overlap, due to the use of different clotting activators in the LR (celite) and Plus (kaolin) cartridges the ACT values derived from these two cartridges are NOT comparable.

ACT is affected by poor sample collection technique. When the sample is collected by venipuncture, use a two syringe technique to prevent tissue thromboplastin contamination. Care must be taken to adequately flush fluids from indwelling lines or catheters with patient blood before collection. Poor collection technique affects precision and accuracy. The following sample problems may effect results:
1. presence of bubbles or foaming
2. Hemolysis
3. Clotted or partially clotted sample

The following clinical conditions may affect the ACT result: hemodilution, cardioplegic solutions, hypothermia, platelet dysfunction, hypofibrinogenemia and other coagulopathies, and unsuspected heparin or warfarin therapy.

Samples with Hematocrits < 20% or > 55% may have optical densities outside of the operating range of the instrument and may results in 'Sample not seen' error message

Patients with Antiphospholipid Syndrome (APL) may have antibodies that interact with the ACT and cause spurious results. Although not extensively studied with the Hemochron Elite system, patients with this syndrome who require heparin anticoagulation should not be monitored with the ACT and an alternate method should be used.

COMPLETE VIEW

Available Stat:
Yes

Performing Lab:
Authorized Point of Care testing site staff

Methodology:
Hemochron Response: Clotting activation & optical clot detection

Remarks:
Samples should be tested as soon as possible after collection.

Collect:
Special cartridge specific for the level of heparinization used (See Additional information)

Amount to Collect:
200 µL (0.2 mL)

Sample Type:
Whole blood

Preferred Volume:
50 µL (0.05 mL)

Minimum Volume:
15 µL (0.015 mL)

Units:
seconds

Reference Interval:
Testing is used to monitor anticoagulation during invasive procedures. ACT levels during anticoagulation are compared to patient baseline values.

Cartridge	Normal range
LR cartridge	99-187 sec
Plus (+) cartridge	98-139 sec

See Additional Information for reportable ranges and heparin ranges appropriate for each cartridge.

Synonyms:

- ACT
- Activated coagulation time
- CT

Additional Information:
ACT testing is performed in the operating rooms, Interventional radiology and Cardiac catheterization areas and on selected patient floors. It is not performed or offered by the UCSF Clinical Laboratories.

The HEMOCHRON Response ACT test is intended for monitoring patients receiving heparin anticoagulation therapy. Two ranges of therapeutic heparinization may be monitored by using either the low range (LR) or high range (Plus) cartridges respectively:

Cartridge	Heparin level	Reportable range
LR	up to 2.5 U/mL	65-400 sec
Plus(+)	1.0-6.0 U/mL	67-1005 sec

Note: Although the reportable ranges overlap, due to the use of different clotting activators in the LR (celite) and Plus (kaolin) cartridges the ACT values derived from these two cartridges are NOT comparable.

ACT is affected by poor sample collection technique. When the sample is collected by venipuncture, use a two syringe technique to prevent tissue thromboplastin contamination. Care must be taken to adequately flush fluids from indwelling lines or catheters with patient blood before collection. Poor collection technique affects precision and accuracy. The following sample problems may effect results:
1. presence of bubbles or foaming
2. Hemolysis
3. Clotted or partially clotted sample

The following clinical conditions may affect the ACT result: hemodilution, cardioplegic solutions, hypothermia, platelet dysfunction, hypofibrinogenemia and other coagulopathies, and unsuspected heparin or warfarin therapy.

Samples with Hematocrits < 20% or > 55% may have optical densities outside of the operating range of the instrument and may results in 'Sample not seen' error message

Patients with Antiphospholipid Syndrome (APL) may have antibodies that interact with the ACT and cause spurious results. Although not extensively studied with the Hemochron Elite system, patients with this syndrome who require heparin anticoagulation should not be monitored with the ACT and an alternate method should be used.

POCT Coloscreen (POC113)

ORDERING

Available Stat:
Yes

Performing Lab:
Authorized Point of Care testing site staff

Performed:
Test available 24 hours per day 7 days per week

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=188&infocardID=4MZJQOZ3SNDCJH6HEV for the Point of Care Coloscreen standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more. NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

Synonyms:

- Fecal occult blood

COLLECTION

Sample Type:
Stool

Collect:
stool container or ColoScreen slides

PROCESSING

Performing Lab:
Authorized Point of Care testing site staff

RESULT INTERPRETATION

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=188&infocardID=4MZJQOZ3SNDCJH6HEV for the Point of Care Coloscreen standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more. NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

COMPLETE VIEW

Available Stat:
Yes

Performing Lab:
Authorized Point of Care testing site staff

Performed:
Test available 24 hours per day 7 days per week

Collect:
stool container or ColoScreen slides

Sample Type:
Stool

Synonyms:

- Fecal occult blood

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=188&infocardID=4MZJQOZ3SNDCJH6HEV for the Point of Care Coloscreen standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more. NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

POCT COVID-19 ANTIGEN, QUALITATIVE, RAPID (POC6239)

ORDERING

Performing Lab:
Authorized Point of Care testing site staff

Performed:
During clinic hours

Methodology:
Lateral Flow Immunoassay

Additional Information:
• This product has not been FDA cleared or approved but has been authorized by FDA under an Emergency Use Authorization (EUA) for use by authorized laboratories.
• Clinical staff that are unable to discriminate color are not allowed to perform this test.
• Inadequate or inappropriate specimen collection, storage, and transport may yield false negative test results.
• Testing should be performed in an area with adequate ventilation.
• Reading results before or after the specified time frame can produce inaccurate results. Do not read results after 15 minutes, this would be considered inaccurate.

Synonyms:

- Covid Rapid Antigen Test
- Quidel Quickvue Rapid Antigen

COLLECTION

Collect:
Nasal Swab

Remarks:
Use the nasal swab supplied in the kit and follow the sample collection instructions provided.

Stability (from collection to initiation):
120 hours

Storage/Transport Temperature:
Room Temperature or 2-8C in a clean dry transport tube

PROCESSING

Performing Lab:
Authorized Point of Care testing site staff

Stability (from collection to initiation):
120 hours

Storage/Transport Temperature:
Room Temperature or 2-8C in a clean dry transport tube

RESULT INTERPRETATION

Reference Interval:
Not Detected

Additional Information:
• This product has not been FDA cleared or approved but has been authorized by FDA under an Emergency Use Authorization (EUA) for use by authorized laboratories.
• Clinical staff that are unable to discriminate color are not allowed to perform this test.
• Inadequate or inappropriate specimen collection, storage, and transport may yield false negative test results.
• Testing should be performed in an area with adequate ventilation.
• Reading results before or after the specified time frame can produce inaccurate results. Do not read results after 15 minutes, this would be considered inaccurate.

ADMINISTRATIVE

CPT Codes:
87811QW

COMPLETE VIEW

Performing Lab:
Authorized Point of Care testing site staff

Performed:
During clinic hours

Methodology:
Lateral Flow Immunoassay

Remarks:
Use the nasal swab supplied in the kit and follow the sample collection instructions provided.

Collect:
Nasal Swab

Reference Interval:
Not Detected

Synonyms:

- Covid Rapid Antigen Test
- Quidel Quickvue Rapid Antigen

Storage/Transport Temperature:
Room Temperature or 2-8C in a clean dry transport tube

Stability (from collection to initiation):
120 hours

Additional Information:
• This product has not been FDA cleared or approved but has been authorized by FDA under an Emergency Use Authorization (EUA) for use by authorized laboratories.
• Clinical staff that are unable to discriminate color are not allowed to perform this test.
• Inadequate or inappropriate specimen collection, storage, and transport may yield false negative test results.
• Testing should be performed in an area with adequate ventilation.
• Reading results before or after the specified time frame can produce inaccurate results. Do not read results after 15 minutes, this would be considered inaccurate.

CPT Codes:
87811QW

POCT Covid-19 RNA, Qualitative Rapid

ORDERING

Ordering Recommendations:
Hospital Epidemiology and Infection Prevention: https://infectioncontrol.ucsfmedicalcenter.org/ucsf-health-covid-19-resources

Available Stat:
Yes

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=980&infocardID=HJRAWEVK5FGP5DO2XQ for the Point of Care Abbott ID NOW Covid-19 standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

Synonyms:

- POCT COVID
- POCT coronavirus
- POCT SARS-CoV-2
- Abbott ID COVID
- C19POC

COLLECTION

Sample Type:
Nasal or throat direct swab (included in kit), or nasopharyngeal direct swab (not included in kit)

Collect:
Direct swab not in UTM

RESULT INTERPRETATION

Reference Interval:
Not Detected

Critical Values:
Detected

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=980&infocardID=HJRAWEVK5FGP5DO2XQ for the Point of Care Abbott ID NOW Covid-19 standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

ADMINISTRATIVE

CPT Codes:
89635-QW

LOINC Codes:
94534-5

COMPLETE VIEW

Available Stat:
Yes

Ordering Recommendations:
Hospital Epidemiology and Infection Prevention: https://infectioncontrol.ucsfmedicalcenter.org/ucsf-health-covid-19-resources

Collect:
Direct swab not in UTM

Sample Type:
Nasal or throat direct swab (included in kit), or nasopharyngeal direct swab (not included in kit)

Reference Interval:
Not Detected

Critical Values:
Detected

Synonyms:

- POCT COVID
- POCT coronavirus
- POCT SARS-CoV-2
- Abbott ID COVID
- C19POC

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=980&infocardID=HJRAWEVK5FGP5DO2XQ for the Point of Care Abbott ID NOW Covid-19 standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

CPT Codes:
89635-QW

LOINC Codes:
94534-5

POCT Creatinine Whole Blood (POC47)

ORDERING

Available Stat:
Yes

Performing Lab:
Authorized Point of Care testing site staff

Performed:
Test available 24 hours per day, 7 days per week

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=43&infocardID=JNTQGPB6OZAMPHLXV7 for the Point of Care iSTAT Radiology Creatinine standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

Synonyms:

- crea

COLLECTION

Sample Type:
Heparinized whole blood

Collect:
Light green top

PROCESSING

Performing Lab:
Authorized Point of Care testing site staff

RESULT INTERPRETATION

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=43&infocardID=JNTQGPB6OZAMPHLXV7 for the Point of Care iSTAT Radiology Creatinine standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

COMPLETE VIEW

Available Stat:
Yes

Performing Lab:
Authorized Point of Care testing site staff

Performed:
Test available 24 hours per day, 7 days per week

Collect:
Light green top

Sample Type:
Heparinized whole blood

Synonyms:

- crea

Additional Information:

Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=43&infocardID=JNTQGPB6OZAMPHLXV7 for the Point of Care iSTAT Radiology Creatinine standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

POCT Drugs of Abuse Screen

POC220

ORDERING

Available Stat:
Yes

Performing Lab:
Authorized Point of Care Testing Site staff

Performed:
During Clinic hours

Methodology:
Competitive Immunoassay (CLIAwaived IDTC II)

Additional Information:
This is a screening test for medical purposes only. For confirmatory results, send a specimen to UCSF Clinical Laboratory for confirmation as soon as possible due to stability concerns. Confirmation of all positive results and unexpected negative results are recommended. However, follow up testing is at discretion of the clincial provider. ; Screening procedures should be considered presumptive and unconfirmed screening results are
NOT to be used for non-medical use (i.e., employment testing, legal testing). If confirmation of test result(s) is necessary, an order for send out confirmatory testing is required.

Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=284&infocardID=4JVARGC72NGQXOFDIT for the Point of Care urine Drug Screen standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

Synonyms:

- POCT Urine Drug Screen
- POCT UDS

COLLECTION

Patient Preparation:
• Prior to testing, identify the patient using two patient identifiers (e.g., Name, DOB, MRN, etc.).

• Have patient wash his or her hands with soap and warm water at a sink prior to collecting their urine sample. Make sure the soap has been rinsed off and both hands are dry.

• When possible, turn off the water to the bathroom sinks, toilets, and tubs. Bathroom sinks usually have water shut off handles under the sink. This is to prevent adulteration/dilution of the urine sample.

• Limit access to the bathroom cabinets. Vinegar, bleach, and detergents may interfere with obtaining an untampered urine sample.

Sample Type:
Freshly voided untreated urine

Collect:
Allegiance 4 oz. or other 120 ml specimen container

Amount to Collect:
30 ml

Stability (from collection to initiation):
Patient specimens should be tested as soon as possible after collection.

PROCESSING

Performing Lab:
Authorized Point of Care Testing Site staff

Stability (from collection to initiation):
Patient specimens should be tested as soon as possible after collection.

RESULT INTERPRETATION

Reference Interval:
Not Detected

Additional Information:
This is a screening test for medical purposes only. For confirmatory results, send a specimen to UCSF Clinical Laboratory for confirmation as soon as possible due to stability concerns. Confirmation of all positive results and unexpected negative results are recommended. However, follow up testing is at discretion of the clincial provider. ; Screening procedures should be considered presumptive and unconfirmed screening results are
NOT to be used for non-medical use (i.e., employment testing, legal testing). If confirmation of test result(s) is necessary, an order for send out confirmatory testing is required.

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NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

Interpretive Data:
Criteria for Acceptability of Test Results:
If a colored line appears next to the control region (C) on all the test strips, the test is valid.

• Control lines should form next to the “C" or control area on all strips.

• The presence of a line (or any indication of a line) indicates a normal or Negative result.

• The absence of a line indicates an abnormal or Presumptive Positive result.

• Interpret the drug test results at five (5) minutes.

ADMINISTRATIVE

CPT Codes:
80305QW

COMPLETE VIEW

Available Stat:
Yes

Performing Lab:
Authorized Point of Care Testing Site staff

Performed:
During Clinic hours

Methodology:
Competitive Immunoassay (CLIAwaived IDTC II)

Patient Preparation:
• Prior to testing, identify the patient using two patient identifiers (e.g., Name, DOB, MRN, etc.).

• Have patient wash his or her hands with soap and warm water at a sink prior to collecting their urine sample. Make sure the soap has been rinsed off and both hands are dry.

• When possible, turn off the water to the bathroom sinks, toilets, and tubs. Bathroom sinks usually have water shut off handles under the sink. This is to prevent adulteration/dilution of the urine sample.

• Limit access to the bathroom cabinets. Vinegar, bleach, and detergents may interfere with obtaining an untampered urine sample.

Collect:
Allegiance 4 oz. or other 120 ml specimen container

Amount to Collect:
30 ml

Sample Type:
Freshly voided untreated urine

Reference Interval:
Not Detected

Interpretive Data:

Criteria for Acceptability of Test Results:
If a colored line appears next to the control region (C) on all the test strips, the test is valid.

• Control lines should form next to the “C" or control area on all strips.

• The presence of a line (or any indication of a line) indicates a normal or Negative result.

• The absence of a line indicates an abnormal or Presumptive Positive result.

• Interpret the drug test results at five (5) minutes.

Synonyms:

- POCT Urine Drug Screen
- POCT UDS

Stability (from collection to initiation):

Patient specimens should be tested as soon as possible after collection.

Additional Information:

This is a screening test for medical purposes only. For confirmatory results, send a specimen to UCSF Clinical Laboratory for confirmation as soon as possible due to stability concerns. Confirmation of all positive results and unexpected negative results are recommended. However, follow up testing is at discretion of the clincial provider. ; Screening procedures should be considered presumptive and unconfirmed screening results are
NOT to be used for non-medical use (i.e., employment testing, legal testing). If confirmation of test result(s) is necessary, an order for send out confirmatory testing is required.

Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=284&infocardID=4JVARGC72NGQXOFDIT for the Point of Care urine Drug Screen standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

CPT Codes:

80305QW

POCT Gastric Occult Blood

ORDERING

Available Stat:
Yes

Performing Lab:
Authorized Point of Care testing site staff

Performed:
Test available 24 hours per day 7 days per week

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=387&infocardID=CD665TJA25EIXHK3DT for the Point of Care Gastrocult standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

Synonyms:

- Occult blood
- gastric bleeding

COLLECTION

Sample Type:
Gastric aspirate or vomitus

Collect:
NG/OG tube or Gastroccult slides

PROCESSING

Performing Lab:
Authorized Point of Care testing site staff

RESULT INTERPRETATION

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=387&infocardID=CD665TJA25EIXHK3DT for the Point of Care Gastrocult standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

COMPLETE VIEW

Available Stat:
Yes

Performing Lab:
Authorized Point of Care testing site staff

Performed:
Test available 24 hours per day 7 days per week

Collect:
NG/OG tube or Gastroccult slides

Sample Type:
Gastric aspirate or vomitus

Synonyms:

- Occult blood
- gastric bleeding

Additional Information:

Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=387&infocardID=CD665TJA25EIXHK3DT for the Point of Care Gastrocult standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

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POCT Glucose

GLUPCT

ORDERING

Available Stat:
Yes

Performing Lab:
Authorized Point of Care testing site staff

Performed:
Test available 24 hours per day, 7 days per week

Methodology:
Nova StatStrip Glucometer

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=405&infocardID=XKFRZ5CFWBCIXCJPKS for the Point of Care Nova StatStrip Glucose Monitoring System standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection container, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable using Microsoft Edge.

Synonyms:

- Point of care blood glucose
- Glucometer
- Fingerstick glucose

COLLECTION

Sample Type:
Capillary blood (fingerstick)

Amount to Collect:
One drop (1.2 ul)

Remarks:
Wipe off first drop of blood

PROCESSING

Performing Lab:
Authorized Point of Care testing site staff

RESULT INTERPRETATION

Units:
mg/dl

Reference Interval:
Neonate: 55-115 mg/dl
Adult & Pediatric: 70-199 mg/dl

Critical Values:
Neonate: <40 mg/dl or >150 mg/dl
Adult & Pediatric: <60 mg/dl or >400 mg/dl

Note: All Critical results must be repeated on the Nova StatStrip meter within 10 minutes.
If a result is in Critical Range, a comment must be entered to continue meter use.

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=405&infocardID=XKFRZ5CFWBCIXCJPKS for the Point of Care Nova StatStrip Glucose Monitoring System standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection container, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable using Microsoft Edge.

ADMINISTRATIVE

CPT Codes:
82947 QW

COMPLETE VIEW

Available Stat:
Yes

Performing Lab:
Authorized Point of Care testing site staff

Performed:
Test available 24 hours per day, 7 days per week

Methodology:
Nova StatStrip Glucometer

Remarks:
Wipe off first drop of blood

Amount to Collect:
One drop (1.2 ul)

Sample Type:
Capillary blood (fingerstick)

Units:
mg/dl

Reference Interval:
Neonate: 55-115 mg/dl
Adult & Pediatric: 70-199 mg/dl

Critical Values:
Neonate: <40 mg/dl or >150 mg/dl
Adult & Pediatric: <60 mg/dl or >400 mg/dl

Note: All Critical results must be repeated on the Nova StatStrip meter within 10 minutes.
If a result is in Critical Range, a comment must be entered to continue meter use.

Synonyms:

- Point of care blood glucose
- Glucometer
- Fingerstick glucose

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=405&infocardID=XKFRZ5CFWBCIXCJPKS for the Point of Care Nova StatStrip Glucose Monitoring System standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection container, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable using Microsoft Edge.

CPT Codes:
82947 QW

POCT Hemoglobin (POC91)

ORDERING

Available Stat:
Yes

Performing Lab:
Authorized Point of Care testing site staff

Performed:
24 hours per day, 7 days per week

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=708&infocardID=SVRQFRMGENENZKI3JG for the Point of Care Hemocue HB 201 DM standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

Synonyms:

- HEMPC1
- HEMPOC
- Hemocue
- Hgb

COLLECTION

Sample Type:
Fingerstick, EDTA or Heparinized whole blood

Collect:
EDTA or heparinized tube

PROCESSING

Performing Lab:
Authorized Point of Care testing site staff

RESULT INTERPRETATION

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=708&infocardID=SVRQFRMGENENZKI3JG for the Point of Care Hemocue HB 201 DM standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

ADMINISTRATIVE

LOINC Codes:
718-7

COMPLETE VIEW

Available Stat:
Yes

Performing Lab:
Authorized Point of Care testing site staff

Performed:
24 hours per day, 7 days per week

Collect:
EDTA or heparinized tube

Sample Type:

Fingerstick, EDTA or Heparinized whole blood

Synonyms:

- HEMPC1
- HEMPOC
- Hemocue
- Hgb

Additional Information:

Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=708&infocardID=SVRQFRMGENENZKI3JG for the Point of Care Hemocue HB 201 DM standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

LOINC Codes:

718-7

POCT Hemoglobin A1c (POC4)

ORDERING

Available Stat:
Yes

Performing Lab:
Authorized Point of Care testing site staff

Performed:
During clinic hours

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=876&infocardID=M3GFUB7MB5HOFDHMZ3 for the Point of Care DCA Vantage standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

Synonyms:

- Glyco-hgb
- Glycohemoglobin
- Glycosylated hemoglobin

COLLECTION

Sample Type:
Fingerstick or Anticoagulated whole blood

Collect:
Lavender or Green top, or DCA 2000 capillary tube

PROCESSING

Performing Lab:
Authorized Point of Care testing site staff

RESULT INTERPRETATION

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=876&infocardID=M3GFUB7MB5HOFDHMZ3 for the Point of Care DCA Vantage standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

COMPLETE VIEW

Available Stat:
Yes

Performing Lab:
Authorized Point of Care testing site staff

Performed:
During clinic hours

Collect:
Lavender or Green top, or DCA 2000 capillary tube

Sample Type:
Fingerstick or Anticoagulated whole blood

Synonyms:

- Glyco-hgb
- Glycohemoglobin
- Glycosylated hemoglobin

Additional Information:

Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=876&infocardID=M3GFUB7MB5HOFDHMZ3 for the Point of Care DCA Vantage standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

POCT HIV 1/2 Ag/Ab Combo Screening (POC1955)

ORDERING

Available Stat:
Yes

Performing Lab:
Authorized Point of care testing staff.

Performed:
During clinic hours

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=360&infocardID=ZFMRXYITKZEW7E427H for the Point of Care HIV 1/2 Ag/Ab Combo Test standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

Reflex Testing:
If the screening test is positive a serum sample should be submitted and the HIV Ag/Ab combination test (HIVAA) ordered for confirmation.

Synonyms:

- HIV Ab/Ag
- HIV Antibody/Antigen
- Human Immunodeficiency Virus Antibody
- Human Immunodeficiency Virus Ab
- AIDS
- Rapid HIV screen

COLLECTION

Sample Type:
fingerstick whole blood

Collect:
capillary whole blood

PROCESSING

Performing Lab:
Authorized Point of care testing staff.

RESULT INTERPRETATION

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=360&infocardID=ZFMRXYITKZEW7E427H for the Point of Care HIV 1/2 Ag/Ab Combo Test standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

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COMPLETE VIEW

Available Stat:
Yes

Performing Lab:
Authorized Point of care testing staff.

Performed:
During clinic hours

Collect:
capillary whole blood

Sample Type:
fingerstick whole blood

Synonyms:

- HIV Ab/Ag
- HIV Antibody/Antigen
- Human Immunodeficiency Virus Antibody
- Human Immunodeficiency Virus Ab
- AIDS
- Rapid HIV screen

Reflex Testing:
If the screening test is positive a serum sample should be submitted and the HIV Ag/Ab combination test (HIVAA) ordered for confirmation.

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=360&infocardID=ZFMRXYITKZEW7E427H for the Point of Care HIV 1/2 Ag/Ab Combo Test standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

POCT HIV 1/2 Antibody Screening (POC128)

ORDERING

Available Stat:
Yes

Performing Lab:
Authorized Point of Care testing site staff

Performed:
During clinic hours

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=892&infocardID=4LJW4AD5KFEJJOQfCIO or the Point of Care OraQuick Advance HIV 1/2 Antibody Test for Patient >= 12 years of age standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

Reflex Testing:
If the screening test is positive a serum sample should be submitted and the HIV Ag/Ab combination test (HIVAA) ordered for confirmation.

Synonyms:

- HIV Ab
- HIV Antibody
- Human Immunodeficiency Virus Antibody
- Human Immunodeficiency Virus Ab
- AIDS
- Rapid HIV Screen

COLLECTION

Sample Type:
EDTA Whole Blood

Collect:
EDTA

PROCESSING

Performing Lab:
Authorized Point of Care testing site staff

RESULT INTERPRETATION

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=892&infocardID=4LJW4AD5KFEJJOQfCIO or the Point of Care OraQuick Advance HIV 1/2 Antibody Test for Patient >= 12 years of age standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

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COMPLETE VIEW

Available Stat:
Yes

Performing Lab:
Authorized Point of Care testing site staff

Performed:
During clinic hours

Collect:
EDTA

Sample Type:
EDTA Whole Blood

Synonyms:

- HIV Ab
- HIV Antibody
- Human Immunodeficiency Virus Antibody
- Human Immunodeficiency Virus Ab
- AIDS
- Rapid HIV Screen

Reflex Testing:
If the screening test is positive a serum sample should be submitted and the HIV Ag/Ab combination test (HIVAA) ordered for confirmation.

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=892&infocardID=4LJW4AD5KFEJJOQfCIO or the Point of Care OraQuick Advance HIV 1/2 Antibody Test for Patient >= 12 years of age standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

POCT iSTAT Blood Gases and Electrolytes (LAB3787)

ORDERING

Available Stat:
Yes

Performing Lab:
Authorized Point of Care testing site staff

Performed:
Test is available 24 hours, 7 days a week

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=347&infocardID=HJOXZKYXXZC4NCOV5P for the Point of Care Abbott iSTAT EG7 (Blood Gas, Electrolytes, and other analytes)standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

Synonyms:

- EG7PA
- EG7PV

COLLECTION

Sample Type:
Heparinized capillary whole blood, Arterial blood gas sample

Collect:
lithium heparinized

PROCESSING

Performing Lab:
Authorized Point of Care testing site staff

RESULT INTERPRETATION

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=347&infocardID=HJOXZKYXXZC4NCOV5P for the Point of Care Abbott iSTAT EG7 (Blood Gas, Electrolytes, and other analytes)standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

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ADMINISTRATIVE

CPT Codes:
82803, 84295, 84132, 82330

COMPLETE VIEW

Available Stat:
Yes

Performing Lab:
Authorized Point of Care testing site staff

Performed:
Test is available 24 hours, 7 days a week

Collect:
lithium heparinized

Sample Type:
Heparinized capillary whole blood, Arterial blood gas sample

Synonyms:

- EG7PA
- EG7PV

Additional Information:

Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=347&infocardID=HJOXZKYXXZC4NCOV5P for the Point of Care Abbott iSTAT EG7 (Blood Gas, Electrolytes, and other analytes)standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

CPT Codes:

82803, 84295, 84132, 82330

POCT iSTAT Blood Gases, Electrolytes, Glucose (POC120)

ORDERING

Available Stat:
Yes

Performing Lab:
Authorized nursing and physician staff

Performed:
Test is available 24 hours, 7 days per week

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=954&infocardID=KMHTE4N2XFDNBLRHL4 for the Point of Care iSTAT CG8 standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

Synonyms:

- CG8A
- CG8V

COLLECTION

Sample Type:
Heparinized whole blood

Collect:
Light green top

PROCESSING

Performing Lab:
Authorized nursing and physician staff

RESULT INTERPRETATION

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=954&infocardID=KMHTE4N2XFDNBLRHL4 for the Point of Care iSTAT CG8 standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

COMPLETE VIEW

Available Stat:
Yes

Performing Lab:
Authorized nursing and physician staff

Performed:
Test is available 24 hours, 7 days per week

Collect:
Light green top

Sample Type:
Heparinized whole blood

Synonyms:

- CG8A
- CG8V

Additional Information:

Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=954&infocardID=KMHTE4N2XFDNBLRHL4 for the Point of Care iSTAT CG8 standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

POCT iSTAT CHEM8 (POC131)

ORDERING

Available Stat:
Yes

Performing Lab:
Authorized nursing and physician staff

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=235&infocardID=QFHDSE4IEJBEDPM6FL for the Point of Care Abbott iSTAT CHEM8+ standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

COLLECTION

Sample Type:
Heparinized capillary whole blood, Arterial blood gas sample

Collect:
Lithium heparinized tube

PROCESSING

Performing Lab:
Authorized nursing and physician staff

RESULT INTERPRETATION

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=235&infocardID=QFHDSE4IEJBEDPM6FL for the Point of Care Abbott iSTAT CHEM8+ standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

ADMINISTRATIVE

CPT Codes:
80047, 85014

COMPLETE VIEW

Available Stat:
Yes

Performing Lab:
Authorized nursing and physician staff

Collect:
Lithium heparinized tube

Sample Type:
Heparinized capillary whole blood, Arterial blood gas sample

Additional Information:

Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=235&infocardID=QFHDSE4IEJBEDPM6FL for the Point of Care Abbott iSTAT CHEM8+ standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

CPT Codes:

80047, 85014

POCT Lipid Testing (POC117)

ORDERING

Available Stat:
Yes

Performing Lab:
Authorized Point of Care testing site staff

Performed:
During clinic hours

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=411&infocardID=IYED2ANIUBFELNSCCD for the Point of Care Cholestech LDX_LipidGlucose standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

Synonyms:

- total cholesterol
- HDL cholesterol
- triglycerides

COLLECTION

Sample Type:
Heparinized whole blood

Collect:
Light Green top or Cholestech heparinized capillary tube

PROCESSING

Performing Lab:
Authorized Point of Care testing site staff

RESULT INTERPRETATION

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=411&infocardID=IYED2ANIUBFELNSCCD for the Point of Care Cholestech LDX_LipidGlucose standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

COMPLETE VIEW

Available Stat:
Yes

Performing Lab:
Authorized Point of Care testing site staff

Performed:
During clinic hours

Collect:
Light Green top or Cholestech heparinized capillary tube

Sample Type:
Heparinized whole blood

Synonyms:

- total cholesterol
- HDL cholesterol
- triglycerides

Additional Information:

Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=411&infocardID=IYED2ANIUBFELNSCCD for the Point of Care Cholestech LDX_LipidGlucose standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

POCT Microalbumin Urinalysis Dipstick

ORDERING

Available Stat:
Yes

Performing Lab:
In Selected clinics by authorized Point of Care testing site staff

Synonyms:

- UA
- Urine dipstick
- Urine Microalbumin
- Urine Albumin
- Urine Creatinine
- Urine Albumin to Creatinine Ratio

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
20 mL urine

Preferred Volume:
20 mL urine

Minimum Volume:
5 mL urine

Remarks:
First A.M. void preferred

PROCESSING

Performing Lab:
In Selected clinics by authorized Point of Care testing site staff

Preferred Volume:
20 mL urine

Minimum Volume:
5 mL urine

RESULT INTERPRETATION

Reference Interval:
Albumin-to-Creatinine Ratio <30 mg/g creatinine

ADMINISTRATIVE

CPT Codes:
82044

COMPLETE VIEW

Available Stat:
Yes

Performing Lab:
In Selected clinics by authorized Point of Care testing site staff

Remarks:
First A.M. void preferred

Collect:
Urine cup

Amount to Collect:
20 mL urine

Sample Type:
Random urine

Preferred Volume:
20 mL urine

Minimum Volume:
5 mL urine

Reference Interval:
Albumin-to-Creatinine Ratio <30 mg/g creatinine

Synonyms:

- UA
- Urine dipstick
- Urine Microalbumin
- Urine Albumin
- Urine Creatinine
- Urine Albumin to Creatinine Ratio

CPT Codes:
82044

POCT Multistix 10SG Urinalysis Dipstick (POC124)

ORDERING

Available Stat:
Yes

Performing Lab:
In Selected clinics by authorized Point of Care testing site staff

Performed:
During clinic hours

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=883&infocardID=VQJKQKFJMJBS7CUNVF for the Point of Care Multistix 10SG standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

Synonyms:

- UA
- Urine dipstick
- Urine pH
- Specific gravity, urine
- Urine hemoglobin
- Urine protein
- Urine glucose
- Urine nitrate
- Urine Leukocyte esterase
- Urine ketones
- Urine bilirubin
- Urobilinogen

COLLECTION

Sample Type:
Random urine

Collect:
Sterile urine cup

PROCESSING

Performing Lab:
In Selected clinics by authorized Point of Care testing site staff

RESULT INTERPRETATION

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=883&infocardID=VQJKQKFJMJBS7CUNVF for the Point of Care Multistix 10SG standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

COMPLETE VIEW

Available Stat:
Yes

Performing Lab:
In Selected clinics by authorized Point of Care testing site staff

Performed:
During clinic hours

Collect:
Sterile urine cup

Sample Type:
Random urine

Synonyms:

- UA
- Urine dipstick
- Urine pH
- Specific gravity, urine
- Urine hemoglobin
- Urine protein
- Urine glucose
- Urine nitrate
- Urine Leukocyte esterase
- Urine ketones
- Urine bilirubin
- Urobilinogen

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=883&infocardID=VQJKQKFJMJBS7CUNVF for the Point of Care Multistix 10SG standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

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POCT OR Blood Gas, ABL90

ABLOR

ORDERING

Available Stat:
Yes

Performing Lab:
Authorized Point of Care Testing Site (Inpatient Setting)

Performed:
During OR hours

Methodology:
Radiometer ABL90 FLEX Plus

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=114&infocardID=GGQVB6W4HFHVPFWI5C for the Point of Care Radiometer ABL90 Flex Plus SOP for pH, Blood gases, electrolytes, oximtery, and metabolites standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

Synonyms:

- POCT Blood Gas
- LAB5639

COLLECTION

Sample Type:
Heparinized whole blood (arterial or venous)

Amount to Collect:
1 mL

Preferred Volume:
1 mL

Minimum Volume:
0.15 mL of arterial or venous whole blood

Unacceptable Conditions:
Samples not analyzed within 30 minutes from collection. Samples with expected high pO2 values or for special studies like shunt studies should be analyzed immediately or within 5 minutes.

PROCESSING

Test Code:
ABLOR

Performing Lab:
Authorized Point of Care Testing Site (Inpatient Setting)

Preferred Volume:
1 mL

Minimum Volume:
0.15 mL of arterial or venous whole blood

Unacceptable Conditions:
Samples not analyzed within 30 minutes from collection. Samples with expected high pO2 values or for special studies like shunt studies should be analyzed immediately or within 5 minutes.

RESULT INTERPRETATION

Units:
mmHg, mmol/L, %, g/dl, mg/dl

Reference Interval:
Click here for Reference Intervals

Additional Information:

Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=114&infocardID=GGQVB6W4HFHVPFWI5C for the Point of Care Radiometer ABL90 Flex Plus SOP for pH, Blood gases, electrolytes, oximtery, and metabolites standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

COMPLETE VIEW

Available Stat:
Yes

Test Code:
ABLOR

Performing Lab:
Authorized Point of Care Testing Site (Inpatient Setting)

Performed:
During OR hours

Methodology:
Radiometer ABL90 FLEX Plus

Amount to Collect:
1 mL

Sample Type:
Heparinized whole blood (arterial or venous)

Preferred Volume:
1 mL

Minimum Volume:
0.15 mL of arterial or venous whole blood

Unacceptable Conditions:
Samples not analyzed within 30 minutes from collection. Samples with expected high pO2 values or for special studies like shunt studies should be analyzed immediately or within 5 minutes.

Units:
mmHg, mmol/L, %, g/dl, mg/dl

Reference Interval:
Click here for Reference Intervals

Synonyms:

- POCT Blood Gas
- LAB5639

Additional Information:

Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=114&infocardID=GGQVB6W4HFHVPFWI5C for the Point of Care Radiometer ABL90 Flex Plus SOP for pH, Blood gases, electrolytes, oximtery, and metabolites standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

POCT pH, Fluid (POC85)

ORDERING

Available Stat:
Yes

Performing Lab:
Authorized Point of Care testing site staff

Performed:
Test available 24 hours per day 7 days per week

Additional Information:
Please add: Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=517&infocardID=LQWUDTCIGJG4LP3CBB for the Point of Care pH Determination of Gastric, Ocular, and Vaginal Specimens standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

Synonyms:

- ocular pH
- vaginal pH
- Amniotic fluid pH
- gastric pH
- SROM
- Spontaneous rupture of membranes

COLLECTION

Sample Type:
Vaginal fluid, Ocular fluid, Gastric fluid

Collect:
N/A, direct application of patient sample to pH paper

PROCESSING

Performing Lab:
Authorized Point of Care testing site staff

RESULT INTERPRETATION

Additional Information:
Please add: Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=517&infocardID=LQWUDTCIGJG4LP3CBB for the Point of Care pH Determination of Gastric, Ocular, and Vaginal Specimens standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

COMPLETE VIEW

Available Stat:
Yes

Performing Lab:
Authorized Point of Care testing site staff

Performed:
Test available 24 hours per day 7 days per week

Collect:
N/A, direct application of patient sample to pH paper

Sample Type:
Vaginal fluid, Ocular fluid, Gastric fluid

Synonyms:

- ocular pH
- vaginal pH
- Amniotic fluid pH
- gastric pH
- SROM
- Spontaneous rupture of membranes

Additional Information:

Please add: Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=517&infocardID=LQWUDTCIGJG4LP3CBB for the Point of Care pH Determination of Gastric, Ocular, and Vaginal Specimens standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

POCT Prothrombin Time, Fingerstick (POC116)

ORDERING

Available Stat:
Yes

Performing Lab:
Authorized Point of Care testing site staff

Performed:
During clinic hours

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=340&infocardID=6U6PULNQP5ALBDY6K3 for the Point of Care CoaguChek XS Prothrombin Time INR standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

Synonyms:

- PT/INR
- coumadin
- warfarin

COLLECTION

Sample Type:
Capillary (fingerstick) blood (venous whole blood acceptable)

Collect:
Venipuncture samples may be collected using only plastic syringes.

PROCESSING

Performing Lab:
Authorized Point of Care testing site staff

RESULT INTERPRETATION

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=340&infocardID=6U6PULNQP5ALBDY6K3 for the Point of Care CoaguChek XS Prothrombin Time INR standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

COMPLETE VIEW

Available Stat:
Yes

Performing Lab:
Authorized Point of Care testing site staff

Performed:
During clinic hours

Collect:
Venipuncture samples may be collected using only plastic syringes.

Sample Type:
Capillary (fingerstick) blood (venous whole blood acceptable)

Synonyms:

- PT/INR
- coumadin
- warfarin

Additional Information:

Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=340&infocardID=6U6PULNQP5ALBDY6K3 for the Point of Care CoaguChek XS Prothrombin Time INR standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

POCT Respiratory Syncytial Virus Antigen (POC90)

ORDERING

Available Stat:
Yes

Performing Lab:
Authorized Point of Care testing site staff

Performed:
During clinic hours

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=869&infocardID=5AKN64M52NGRTKDW4X for the Point of Care Binax Now RSV Test standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

Synonyms:

- RSV

COLLECTION

Sample Type:
Nasal swab or nasal wash

Collect:
Nasal wash or nasopharyngeal swabs - polyester, rayon, foam, cotton and flocked flexible shaft nasopharyngeal swabs are acceptable

PROCESSING

Performing Lab:
Authorized Point of Care testing site staff

RESULT INTERPRETATION

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=869&infocardID=5AKN64M52NGRTKDW4X for the Point of Care Binax Now RSV Test standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

COMPLETE VIEW

Available Stat:
Yes

Performing Lab:
Authorized Point of Care testing site staff

Performed:
During clinic hours

Collect:
Nasal wash or nasopharyngeal swabs - polyester, rayon, foam, cotton and flocked flexible shaft nasopharyngeal swabs are acceptable

Sample Type:
Nasal swab or nasal wash

Synonyms:

- RSV

Additional Information:

Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=869&infocardID=5AKN64M52NGRTKDW4X for the Point of Care Binax Now RSV Test standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

POCT Streptococcus Group A Antigen (POC114)

ORDERING

Available Stat:
Yes

Performing Lab:
Authorized Point of Care testing site staff

Performed:
During clinic hours

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=588&infocardID=IQP6EOWBHRGMPMCWJR for the Point of Care Signify Strep A standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

Synonyms:

- Beta-hemolytic Strep
- beta-strep

COLLECTION

Sample Type:
Swab of posterior nasopharynx

Collect:
Two Sterile rayon or Dacron swabs

PROCESSING

Performing Lab:
Authorized Point of Care testing site staff

RESULT INTERPRETATION

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=588&infocardID=IQP6EOWBHRGMPMCWJR for the Point of Care Signify Strep A standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

COMPLETE VIEW

Available Stat:
Yes

Performing Lab:
Authorized Point of Care testing site staff

Performed:
During clinic hours

Collect:
Two Sterile rayon or Dacron swabs

Sample Type:
Swab of posterior nasopharynx

Synonyms:

- Beta-hemolytic Strep
- beta-strep

Additional Information:

Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=588&infocardID=IQP6EOWBHRGMPMCWJR for the Point of Care Signify Strep A standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, CRITICAL VALUES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

POCT Urine Pregnancy ≥ 18 years old (POC125)

ORDERING

Available Stat:
Yes

Performing Lab:
Authorized Point of Care testing site staff

Performed:
Test available 24 hours per day 7 days per week

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=987&infocardID=MMPOGYUYNJDZFOL24P for the Point of Care Cardinal Health Urine Pregnancy Test standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

Synonyms:

- HCG
- Beta-HCG
- b-HCG
- gonadotropin tests
- Human chorionic gonadotropin

COLLECTION

Collect:
Urine cup

PROCESSING

Performing Lab:
Authorized Point of Care testing site staff

RESULT INTERPRETATION

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=987&infocardID=MMPOGYUYNJDZFOL24P for the Point of Care Cardinal Health Urine Pregnancy Test standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

COMPLETE VIEW

Available Stat:
Yes

Performing Lab:
Authorized Point of Care testing site staff

Performed:
Test available 24 hours per day 7 days per week

Collect:
Urine cup

Synonyms:

- HCG
- Beta-HCG
- b-HCG
- gonadotropin tests
- Human chorionic gonadotropin

Additional Information:

Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=987&infocardID=MMPOGYUYNJDZFOL24P for the Point of Care Cardinal Health Urine Pregnancy Test standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

POCT Urine Pregnancy, <18 years (POC126)

ORDERING

Available Stat:
Yes

Performing Lab:
Authorized Point of Care testing site staff

Performed:
Test available 24 hours per day 7 days per week

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=987&infocardID=MMPOGYUYNJDZFOL24P for the Point of Care Cardinal Health Urine Pregnancy Test standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

Synonyms:

- HCG
- Beta-HCG
- b-HCG
- gonadotropin tests
- Human chorionic gonadotropin

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

PROCESSING

Performing Lab:
Authorized Point of Care testing site staff

RESULT INTERPRETATION

Additional Information:
Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=987&infocardID=MMPOGYUYNJDZFOL24P for the Point of Care Cardinal Health Urine Pregnancy Test standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

COMPLETE VIEW

Available Stat:
Yes

Performing Lab:
Authorized Point of Care testing site staff

Performed:
Test available 24 hours per day 7 days per week

Collect:
Urine cup

Sample Type:
Random urine

Synonyms:

- HCG
- Beta-HCG
- b-HCG
- gonadotropin tests
- Human chorionic gonadotropin

Additional Information:

Please refer to https://mcmsctwws002.ucsfmedicalcenter.org/mc/Main/MASTERControl/vault/view_pdf.cfm?ui=987&infocardID=MMPOGYUYNJDZFOL24P for the Point of Care Cardinal Health Urine Pregnancy Test standard operating procedure for additional information such as TEST LIMITATIONS (including interfering substances), COLLECTION INFORMATION (including sample type, collection contrainer, and volume required), REFERENCE RANGES, and more.

NOTE: Document access requires VPN if accessing outside of the UCSF network. Document links are viewable on Microsoft Edge.

POCT, Whole Blood Oximetry

AVOXPC

ORDERING

Available Stat:
No

Performing Lab:
Point of Care

Methodology:
AVOX

Additional Information:
The POCT, Whole Blood Oximetry test battery is composed of two components: Oxyhemoglobin Saturation (HBO2AV) and Total Hemoglobin (CAHBAV).

Synonyms:

- AVOX
- %HbO2 Saturation
- Oxyhemoglobin saturation
- Total Hemoglobin

COLLECTION

Sample Type:
Whole Blood

Collect:
Sodium or Lithium Heparin Plastic Syringe

Amount to Collect:
2 mL

Preferred Volume:
2 mL

Minimum Volume:
1 mL

Remarks:
Whole blood samples collected from arterial line, arterial puncture, or venipuncture

Rejection Criteria:
Use of citrate, fluoride oxalate, and excessive volumes of anticoagulant

PROCESSING

Test Code:
AVOXPC (battery components: HBO2AV, CAHBAV)

Performing Lab:
Point of Care

Preferred Volume:
2 mL

Minimum Volume:
1 mL

Rejection Criteria:
Use of citrate, fluoride oxalate, and excessive volumes of anticoagulant

RESULT INTERPRETATION

Units:
Oxyhemoglobin Saturation: %
Total Hemoglobin: g/dL

Reference Interval:

Oxyhemoglobin Saturation: 95-99%

Total Hemoglobin:
0-7 days: 14.5-22.5 g/dL
8-14 days: 13.5-21.5 g/dL
2-4 weeks: 12.5-20.5 g/dL
1-2 mos: 10.0-18.0 g/dL
2-3 mos: 9.0-14.0 g/dL
3-6 mos: 9.5-13.5 g/dL
6-24 mos: 11.0-13.5 g/dL
2-5 years: 11.2-13.5g/dL
5-8 years: 11.4-15.5 g/dL
8-12 years: 11.6-15.5 g/dL

Male 12-15 years: 12.3-16.0 g/dL
Male 15-18 years: 12.6-17.0 g/dL
Male 18+ years: 13.6-17.5 g/dL

Female 12-15 years: 11.8-15.5 g/dL
Female 15+ years: 12.0-15.5 g/dL

Critical Values:

Total Hemoglobin: < 7.0 g/dL

Additional Information:

The POCT, Whole Blood Oximetry test battery is composed of two components: Oxyhemoglobin Saturation (HBO2AV) and Total Hemoglobin (CAHBAV).

ADMINISTRATIVE

LOINC Codes:

HBO2AV: 11559-2
CAHBAV: 55782-7

COMPLETE VIEW

Available Stat:

No

Test Code:

AVOXPC (battery components: HBO2AV, CAHBAV)

Performing Lab:

Point of Care

Methodology:

AVOX

Remarks:

Whole blood samples collected from arterial line, arterial puncture, or venipuncture

Collect:

Sodium or Lithium Heparin Plastic Syringe

Amount to Collect:

2 mL

Sample Type:

Whole Blood

Preferred Volume:

2 mL

Minimum Volume:

1 mL

Rejection Criteria:

Use of citrate, fluoride oxalate, and excessive volumes of anticoagulant

Units:

Oxyhemoglobin Saturation: %
Total Hemoglobin: g/dL

Reference Interval:

Oxyhemoglobin Saturation: 95-99%

Total Hemoglobin:
0-7 days: 14.5-22.5 g/dL
8-14 days: 13.5-21.5 g/dL
2-4 weeks: 12.5-20.5 g/dL
1-2 mos: 10.0-18.0 g/dL
2-3 mos: 9.0-14.0 g/dL
3-6 mos: 9.5-13.5 g/dL
6-24 mos: 11.0-13.5 g/dL
2-5 years: 11.2-13.5g/dL
5-8 years: 11.4-15.5 g/dL
8-12 years: 11.6-15.5 g/dL

Male 12-15 years: 12.3-16.0 g/dL
Male 15-18 years: 12.6-17.0 g/dL
Male 18+ years: 13.6-17.5 g/dL

Female 12-15 years: 11.8-15.5 g/dL
Female 15+ years: 12.0-15.5 g/dL

Critical Values:

Total Hemoglobin: < 7.0 g/dL

Synonyms:

- AVOX
- %HbO2 Saturation
- Oxyhemoglobin saturation
- Total Hemoglobin

Additional Information:

The POCT, Whole Blood Oximetry test battery is composed of two components: Oxyhemoglobin Saturation (HBO2AV) and Total Hemoglobin (CAHBAV).

LOINC Codes:

HBO2AV: 11559-2
CAHBAV: 55782-7

Poliovirus Antibodies

POLIO

ORDERING

Available Stat:
No

Performing Lab:
Focus via Quest

Methodology:
CF

Reported:
Run Monday and Thursday, Turnaround 2-4 days.

Additional Information:
Used for assessing response to immunization only. Types 1-3 are tested.

COLLECTION

Sample Type:
Serum

Collect:
Gold top, Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

PROCESSING

Test Code:
POLIO

Test Group:
Poliovirus Antibodies

Sendout:
Yes

Performing Lab:
Focus via Quest

Specimen Preparation:
Refrigerate separated serum. Order Quest # 988X.

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

RESULT INTERPRETATION

Reference Interval:
Negative titer < 8

Additional Information:
Used for assessing response to immunization only. Types 1-3 are tested.

ADMINISTRATIVE

CPT Codes:
86382-90

LOINC Codes:
27261-7

COMPLETE VIEW

Available Stat:
No

Test Code:
POLIO

Test Group:
Poliovirus Antibodies

Performing Lab:
Focus via Quest

Sendout:
Yes

Methodology:
CF

Collect:
Gold top, Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Specimen Preparation:
Refrigerate separated serum. Order Quest # 988X.

Reference Interval:
Negative titer < 8

Reported:
Run Monday and Thursday, Turnaround 2-4 days.

Additional Information:
Used for assessing response to immunization only. Types 1-3 are tested.

CPT Codes:
86382-90

LOINC Codes:
27261-7

Porphobilinogen deaminase, RBC

UPGS

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
Enzymatic endpoint/Spectroflurometric

Reported:
5-7 days

Synonyms:

- PBG deaminase
- PBG-D
- Erythrocyte Porphobilinogen deaminase

COLLECTION

Patient Preparation:
Have patient fast for 12-14 hours. Water may be taken as needed. No other liquids are allowed. Patient should abstain from alcohol for 24 hours prior to collection.

Note: The patient should be off medications for 1 week. If clinically inappropriate to discontinue medications, forward a list of medications with the specimen.

Sample Type:
Heparinized whole blood

Collect:
Dark Green top on ice

Amount to Collect:
5 mL blood

Preferred Volume:
5 mL blood

Minimum Volume:
5 mL blood

Remarks:
Draw a full, Dark green-top (Sodium Heparin) tube, and send specimen on wet ice to lab immediately.

Draw specimen Monday-Thursday by noon only.

Rejection Criteria:
Sample not received by Mayo within 48 hours of collection. Frozen sample.

PROCESSING

Test Code:
UPGS

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Whole Blood to be washed at Mayo Medical Laboratories. Specimen must arrive within 48 hours of draw.

Place green top on wet ice and forward whole blood to China Basin for MCI courier pickup at 1600 hours. **DO NOT** freeze sample.

Notify sendout at 3-1349 that specimen is en-route. Mark sample REFRIGERATED to Mayo Labs.

Order Mayo test #88925.

Preferred Volume:
5 mL blood

Minimum Volume:
5 mL blood

Rejection Criteria:
Sample not received by Mayo within 48 hours of collection. Frozen sample.

RESULT INTERPRETATION

Units:
nmol/L/sec

Reference Interval:
Normal: > 6.9 nmol/L/sec
Indeterminate: 6.0-6.9 nmol/L/sec
Decreased: < 6.0 nmol/L/sec

ADMINISTRATIVE

CPT Codes:
82657-90

LOINC Codes:
2812-6

COMPLETE VIEW

Available Stat:
No

Test Code:
UPGS

Performing Lab:
Mayo

Sendout:
Yes

Methodology:
Enzymatic endpoint/Spectroflurometric

Patient Preparation:
Have patient fast for 12-14 hours. Water may be taken as needed. No other liquids are allowed. Patient should abstain from alcohol for 24 hours prior to collection.

Note: The patient should be off medications for 1 week. If clinically inappropriate to discontinue medications, forward a list of medications with the specimen.

Remarks:
Draw a full, Dark green-top (Sodium Heparin) tube, and send specimen on wet ice to lab immediately.

Draw specimen Monday-Thursday by noon only.

Collect:
Dark Green top on ice

Amount to Collect:
5 mL blood

Sample Type:
Heparinized whole blood

Preferred Volume:
5 mL blood

Minimum Volume:
5 mL blood

Rejection Criteria:
Sample not received by Mayo within 48 hours of collection. Frozen sample.

Specimen Preparation:
Whole Blood to be washed at Mayo Medical Laboratories. Specimen must arrive within 48 hours of draw.

Place green top on wet ice and forward whole blood to China Basin for MCI courier pickup at 1600 hours. **DO NOT** freeze sample.

Notify sendout at 3-1349 that specimen is en-route. Mark sample REFRIGERATED to Mayo Labs.

Order Mayo test #88925.

Units:
nmol/L/sec

Reference Interval:

Normal: > 6.9 nmol/L/sec
Indeterminate: 6.0-6.9 nmol/L/sec
Decreased: < 6.0 nmol/L/sec

Synonyms:

- PBG deaminase
- PBG-D
- Erythrocyte Porphobilinogen deaminase

Reported:

5-7 days

CPT Codes:

82657-90

LOINC Codes:

2812-6

Porphobilinogen, Quantitative, 24 hour urine

PBQT24

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Colorimetric

Reported:
Test performed Monday-Friday. Turnaround time: 2-3 days.

Additional Information:
To convert mg/d to µmol/d (SI units) multiply by 4.420.

This test should almost always be ordered in conjunction with Aminolevulinic Acid (ALA) analysis on same specimen when the diagnosis of Acute Intermittent Porphyria is being considered.

Synonyms:

- PBG
- Porphyrin precursors
- Porphyria

COLLECTION

Sample Type:
24 hour urine collection

Collect:
Amber Container Required

Amount to Collect:
Entire 24 hour urine output

Preferred Volume:
10 mL urine

Minimum Volume:
2 mL urine

Remarks:
IMPORTANT: Refrigerate container and protect from light (place in brown paper bag or wrap with aluminum foil) during and after collection.

Stability (from collection to initiation):
Refrigerated 1 week, frozen at -20C 1 month

Unacceptable Conditions:
Container not refrigerated or protected from light during collection. Urine pH < 4.0

PROCESSING

Test Code:
PBQT24

Test Group:
Porphobilinogen

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze aliquot in dark pour-off container [or wrap container in aluminum foil at -20C. Record total urine volume on the request slip and on the urine container. Order Quest #726.

Preferred Volume:
10 mL urine

Minimum Volume:
2 mL urine

Unacceptable Conditions:
Container not refrigerated or protected from light during collection. Urine pH < 4.0

Stability (from collection to initiation):
Refrigerated 1 week, frozen at -20C 1 month

RESULT INTERPRETATION

Units:
mg/24 h

Reference Interval:
< 2.8 mg/d

Additional Information:
To convert mg/d to µmol/d (SI units) multiply by 4.420.

This test should almost always be ordered in conjunction with Aminolevulinic Acid (ALA) analysis on same specimen when the diagnosis of Acute Intermittent Porphyria is being considered.

ADMINISTRATIVE

CPT Codes:
84110-90

COMPLETE VIEW

Available Stat:
No

Test Code:
PBQT24

Test Group:
Porphobilinogen

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Colorimetric

Remarks:
IMPORTANT: Refrigerate container and protect from light (place in brown paper bag or wrap with aluminum foil) during and after collection.

Collect:
Amber Container Required

Amount to Collect:
Entire 24 hour urine output

Sample Type:
24 hour urine collection

Preferred Volume:
10 mL urine

Minimum Volume:
2 mL urine

Unacceptable Conditions:
Container not refrigerated or protected from light during collection. Urine pH < 4.0

Specimen Preparation:
Freeze aliquot in dark pour-off container [or wrap container in aluminum foil at -20C. Record total urine volume on the request slip and on the urine container. Order Quest #726.

Units:
mg/24 h

Reference Interval:
< 2.8 mg/d

Synonyms:

- PBG
- Porphyrin precursors
- Porphyria

Stability (from collection to initiation):
Refrigerated 1 week, frozen at -20C 1 month

Reported:

Test performed Monday-Friday. Turnaround time: 2-3 days.

Additional Information:

To convert mg/d to µmol/d (SI units) multiply by 4.420.

This test should almost always be ordered in conjunction with Aminolevulinic Acid (ALA) analysis on same specimen when the diagnosis of Acute Intermittent Porphyria is being considered.

CPT Codes:

84110-90

Porphobilinogen, Quantitative, random urine

PBQTRU

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Colorimetric

Reported:
Set up 5x per week. Turnaround 3-5 days

Additional Information:

Disorder	Porphobilinogen Increased?**
Acute intermittent porphyria	+
ALA dehydratase deficiency porphyria	+
Congenital erythropoietic coproporphyia	-
Erythropoietic protoporphyria	-
Hepatoerythropoietic porphyria	-
Hereditary coproporphyria	+/-
Porphyria cutanea tarda	-
Variegate porphyria	+/-

** Patients with hereditary forms of porphyria usually will present with profound elevations of this analyte (> 5-fold) during acute episodes. Moderate elevations (< 3-fold) are more often due to medications or environmental factors.

Synonyms:

- PBG
- Porphyrin precursors
- Porphyria

COLLECTION

Sample Type:
Random urine

Collect:
Plain container, wrap with foil to protect from light.

Amount to Collect:
10 mL

Preferred Volume:
10 mL urine

Minimum Volume:
2 mL urine

Remarks:
Collect random urine, wrap collection cup in aluminum foil to protect sample from light. Transport asap to laboratory for processing. If transport delayed the sample should be refrigerated.

Stability (from collection to initiation):
Room temperature not acceptable, refrigerated 1 week, frozen at -20C 1 month.

Unacceptable Conditions:
Sample was not protected from light.

PROCESSING

Test Code:
PBQTRU

Test Group:
Porphobilinogen

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Do not use preservatives. Aliquot to dark pour off tube or wrap with aluminum foil to protect from light. Freeze at -20C and ship frozen on dry ice.

Preferred Volume:
10 mL urine

Minimum Volume:
2 mL urine

Unacceptable Conditions:
Sample was not protected from light.

Stability (from collection to initiation):
Room temperature not acceptable, refrigerated 1 week, frozen at -20C 1 month.

RESULT INTERPRETATION

Units:
mg/g creatinine

Reference Interval:
1-8 years: 0.9-2.8 mg/g creatinine
9-17 years: 0.5-2.0 mg/g creatinine
>= 18 years: <= 1.5 mg/g creatinine

Additional Information:

Disorder	Porphobilinogen Increased?**
Acute intermittent porphyria	+
ALA dehydratase deficiency porphyria	+
Congenital erythropoietic coproporphyia	-
Erythropoietic protoporphyria	-
Hepatoerythropoietic porphyria	-
Hereditary coproporphyria	+/-
Porphyria cutanea tarda	-
Variegate porphyria	+/-

** Patients with hereditary forms of porphyria usually will present with profound elevations of this analyte (> 5-fold) during acute episodes. Moderate elevations (< 3-fold) are more often due to medications or environmental factors.

ADMINISTRATIVE

CPT Codes:
84110-90

LOINC Codes:
13797-6

COMPLETE VIEW

Available Stat:
No

Test Code:
PBQTRU

Test Group:
Porphobilinogen

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Colorimetric

Remarks:
Collect random urine, wrap collection cup in aluminum foil to protect sample from light. Transport asap to laboratory for processing. If transport delayed the sample should be refrigerated.

Collect:
Plain container, wrap with foil to protect from light.

Amount to Collect:
10 mL

Sample Type:
Random urine

Preferred Volume:
10 mL urine

Minimum Volume:
2 mL urine

Unacceptable Conditions:
Sample was not protected from light.

Specimen Preparation:
Do not use preservatives. Aliquot to dark pour off tube or wrap with aluminum foil to protect from light. Freeze at -20C and ship frozen on dry ice.

Units:
mg/g creatinine

Reference Interval:
1-8 years: 0.9-2.8 mg/g creatinine
9-17 years: 0.5-2.0 mg/g creatinine
>= 18 years: <= 1.5 mg/g creatinine

Synonyms:

- PBG
- Porphyrin precursors
- Porphyria

Stability (from collection to initiation):
Room temperature not acceptable, refrigerated 1 week, frozen at -20C 1 month.

Reported:
Set up 5x per week. Turnaround 3-5 days

Additional Information:

Disorder	Porphobilinogen Increased?**
Acute intermittent porphyria	+
ALA dehydratase deficiency porphyria	+
Congenital erythropoietic coproporphyia	-
Erythropoietic protoporphyria	-
Hepatoerythropoietic porphyria	-
Hereditary coproporphyria	+/-
Porphyria cutanea tarda	-
Variegate porphyria	+/-

** Patients with hereditary forms of porphyria usually will present with profound elevations of this analyte (> 5-fold) during acute episodes. Moderate elevations (< 3-fold) are more often due to medications or environmental factors.

CPT Codes:
84110-90

LOINC Codes:
13797-6

Porphyrins Evaluation, RBC

EPQTS

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
Spectrofluorometric, HPLC

Reported:
Test run Monday-Friday. Turnaround time: 3-6 days.

Reflex Testing:
For samples with porphyrin >= 80p µg/dL fractionation is automatically performed at an additional charge.

Synonyms:

- Porphyrin fractionation
- RBC porphyrins

COLLECTION

Patient Preparation:
Have patient fast for 12-14 hours. Water may be taken as needed. No other liquids are allowed. Patient should abstain from alcohol for 24 hours prior to sample collection. The patient should be off medications for at least 1 week prior to sample collection. If clinically inappropriate to discontinue medications, forward a list of medications with the specimen.

Sample Type:
Heparinized whole blood

Collect:
Dark Green top on ice

Amount to Collect:
5 mL blood

Preferred Volume:
5 mL blood

Minimum Volume:
3 mL blood

Remarks:
Draw a full, Dk. green top (heparin) tube, and send entire heparinized whole blood specimen on wet ice to lab immediately.

Draw specimen Monday-Thursday by noon only.

Unacceptable Conditions:
Hemolyzed or collected outside of stated time frames.

Rejection Criteria:
Sample not received by Mayo within 48 hours of collection. Frozen sample.

PROCESSING

Test Code:
EPQTS

Test Group:
Porphyrins

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Whole Blood to be washed at Mayo Medical Laboratories. Specimen must arrive within 48 hours of draw.

Place green top on wet ice and forward whole blood to China Basin for MCI courier pickup at 1600 hours. **DO NOT** freeze sample.

Notify sendout at 3-1349 that specimen is en-route. Mark sample REFRIGERATED to Mayo Labs.

Order MAYO #88886. Call MCS for pickup.

Preferred Volume:
5 mL blood

Minimum Volume:
3 mL blood

Unacceptable Conditions:
Hemolyzed or collected outside of stated time frames.

Rejection Criteria:
Sample not received by Mayo within 48 hours of collection. Frozen sample.

RESULT INTERPRETATION

Units:
µg/dL

Reference Interval:
< 80 µg/dL

ADMINISTRATIVE

CPT Codes:
82542-90

LOINC Codes:
2814-2

COMPLETE VIEW

Available Stat:
No

Test Code:
EPQTS

Test Group:
Porphyrins

Performing Lab:
Mayo

Sendout:
Yes

Methodology:
Spectrofluorometric, HPLC

Patient Preparation:
Have patient fast for 12-14 hours. Water may be taken as needed. No other liquids are allowed. Patient should abstain from alcohol for 24 hours prior to sample collection. The patient should be off medications for at least 1 week prior to sample collection. If clinically inappropriate to discontinue medications, forward a list of medications with the specimen.

Remarks:
Draw a full, Dk. green top (heparin) tube, and send entire heparinized whole blood specimen on wet ice to lab immediately.

Draw specimen Monday-Thursday by noon only.

Collect:
Dark Green top on ice

Amount to Collect:
5 mL blood

Sample Type:
Heparinized whole blood

Preferred Volume:
5 mL blood

Minimum Volume:
3 mL blood

Rejection Criteria:
Sample not received by Mayo within 48 hours of collection. Frozen sample.

Unacceptable Conditions:
Hemolyzed or collected outside of stated time frames.

Specimen Preparation:

Whole Blood to be washed at Mayo Medical Laboratories. Specimen must arrive within 48 hours of draw.

Place green top on wet ice and forward whole blood to China Basin for MCI courier pickup at 1600 hours. **DO NOT** freeze sample.

Notify sendout at 3-1349 that specimen is en-route. Mark sample REFRIGERATED to Mayo Labs.

Order MAYO #88886. Call MCS for pickup.

Units:

µg/dL

Reference Interval:

< 80 µg/dL

Synonyms:

- Porphyrin fractionation
- RBC porphyrins

Reported:

Test run Monday-Friday. Turnaround time: 3-6 days.

Reflex Testing:

For samples with porphyrin >= 80p µg/dL fractionation is automatically performed at an additional charge.

CPT Codes:

82542-90

LOINC Codes:

2814-2

Porphyrins, Fecal

MOLT

ORDERING

Ordering Recommendations:
Distinguish among acute intermittent porphyria (AIP), variegate porphyria (VP), and hereditary coproporphyria (HCP).

Available Stat:
No

Performed:
Mon

Methodology:
Quantitative High Performance Liquid Chromatography (HPLC)

Reported:
2-7 days

Synonyms:

- Coproporphyrinl
- Coproporphyrins
- Isocoproporphyrins
- Protoporphyrin

COLLECTION

Collect:
Random stool.

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: Unacceptable; Frozen: 3 weeks

Storage/Transport Temperature:
CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

Unacceptable Conditions:
Complete timed collections (24-72 hour). Specimens stored in one gallon cans or other large containers. Liquid stool.

PROCESSING

Test Code:
MOLT

ARUP Test Code:
0099824

Specimen Preparation:
Protect from light during collection, storage, and shipment. Freeze specimen and wrap in foil immediately after collection. Transport 5 g stool. (Min: 1 g)

Unacceptable Conditions:
Complete timed collections (24-72 hour). Specimens stored in one gallon cans or other large containers. Liquid stool.

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: Unacceptable; Frozen: 3 weeks

Storage/Transport Temperature:
CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

RESULT INTERPRETATION

Reference Interval:

Components	Reference Interval
Coproporphyrin, Feces	0-45 nmol/g dry weight
Protoporphyrin, Feces	0-100 nmol/g dry weight

Interpretive Data:

This test is useful for differentiation of acute porphyrias following a positive porphobilinogen (PBG), or diagnosis or strong suspicion of acute porphyria. Fecal porphyrin excretion usually is not elevated in acute intermittent porphyria (AIP), but massive increases of fecal coproporphyrin are seen in hereditary coproporphyria (HCP). Fecal protoporphyrin and coproporphyrin excretion is increased in variegate porphyria (VP).
This fecal porphyrins assay is not a screening test. Total porphyrins are not measured.
For additional information, access the Porphyrias topic in ARUP Consult (arupconsult.com).

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:

84126

LOINC:

- 29266-4
- 14884-1
- 29267-2

COMPLETE VIEW

Available Stat:

No

Ordering Recommendations:

Distinguish among acute intermittent porphyria (AIP), variegate porphyria (VP), and hereditary coproporphyria (HCP).

Test Code:

MOLT

ARUP Test Code:

0099824

Performed:

Mon

Methodology:

Quantitative High Performance Liquid Chromatography (HPLC)

Collect:

Random stool.

Unacceptable Conditions:

Complete timed collections (24-72 hour). Specimens stored in one gallon cans or other large containers. Liquid stool.

Specimen Preparation:

Protect from light during collection, storage, and shipment. Freeze specimen and wrap in foil immediately after collection. Transport 5 g stool. (Min: 1 g)

Reference Interval:

Components	Reference Interval
Coproporphyrin, Feces	0-45 nmol/g dry weight
Protoporphyrin, Feces	0-100 nmol/g dry weight

Interpretive Data:

This test is useful for differentiation of acute porphyrias following a positive porphobilinogen (PBG), or diagnosis or strong suspicion of acute porphyria. Fecal porphyrin excretion usually is not elevated in acute intermittent porphyria (AIP), but massive increases of fecal coproporphyrin are seen in hereditary coproporphyria (HCP). Fecal protoporphyrin and coproporphyrin excretion is increased in variegate porphyria (VP).
This fecal porphyrins assay is not a screening test. Total porphyrins are not measured.
For additional information, access the Porphyrias topic in ARUP Consult (arupconsult.com).

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Synonyms:

- Coproporphyrinl
- Coproporphyrins
- Isocoproporphyrins
- Protoporphyrin

Storage/Transport Temperature:
CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: Unacceptable; Frozen: 3 weeks

Reported:
2-7 days

CPT Codes:
84126

LOINC:

- 29266-4
- 14884-1
- 29267-2

Notes:
Bacterial modification of fecal porphyrins is extensive. The recommended specimen for uroporphyrin and coproporphyrin is urine (random or 24-hour). Refer to Porphyrins, Fractionation & Quantitation, Urine (ARUP test code 2002058). The recommended specimen for protoporphyrin is serum. Refer to Porphyrins, Serum Total (ARUP test code 0080429).

Porphyrins, fractionated, random urine

PORFUR

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
HPLC

Reported:
Test set up 5x per week, Turnaround 5-7 days

Synonyms:

- Porphyria

COLLECTION

Sample Type:
Random urine

Collect:
Plain container wrapped with foil to protect from light

Amount to Collect:
20 mL urine

Preferred Volume:
2 mL urine

Minimum Volume:
1 mL urine

Remarks:
Collect urine in plastic cup, **wrap with aluminum foil to protect from light**.

Transport sample asap to laboratory, if transport is delayed refrigerate the sample.

Stability (from collection to initiation):
Refrigerated 1 week, frozen 1 month

Note samples must be protected from light

Unacceptable Conditions:
Received at room temperature, not protected from light.

Rejection Criteria:
Received at room temperature, not protected from light, pH < 4.0 when rec'd at Quest.

PROCESSING

Test Code:
PORFUR

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Protect specimen from light, aliquot urine into dark brown specimen vial or wrap in foil . Freeze aliquot and submit to China Basin sendout , order Quest test #36592X.

Preferred Volume:
2 mL urine

Minimum Volume:
1 mL urine

Unacceptable Conditions:
Received at room temperature, not protected from light.

Rejection Criteria:
Received at room temperature, not protected from light, pH < 4.0 when rec'd at Quest.

Stability (from collection to initiation):
Refrigerated 1 week, frozen 1 month

Note samples must be protected from light

RESULT INTERPRETATION

Units:
µg/g creatinine (mcg/g creatinine)

Reference Interval:
Uroporphyrin:

1-10 years	4.3-16.2 mcg/g creatinine
11-17 years	4.6-18.9 mcg/g creatinine
>= 18 years	22.0 or less mcg/g creatinine

Heptacarboxyporphyrin:

>= 1 year	4.6 or less mcg/g creatinine

Hexacarboxyporphyrin:

>= 1 year	NOT DETECTED

Pentacarboxyporphyrin:

1-10 years	3.2 or less mcg/g creatinine
11-17 years	3.0 or less mcg/g creatinine
>= 18 years	1.7 or less mcg/g creatinine

Coproporphyrin:

1-10 years	10.1-254.7 mcg/g creatinine
11-17 years	11.8-107.2 mcg/g creatinine
>= 18 years	23.0-130.0 mcg/g creatinine

Total Porphyrins:

1-10 years	17.0-269.7 mcg/g creatinine
11-17 years	16.4-121.5 mcg/g creatinine
>= 18 years	31.0-139.0 mcg/g creatinine

ADMINISTRATIVE

CPT Codes:
84120-90

COMPLETE VIEW

Available Stat:
No

Test Code:
PORFUR

Performing Lab:
Quest

Sendout:
Yes

Methodology:
HPLC

Remarks:
Collect urine in plastic cup, **wrap with aluminum foil to protect from light**.

Transport sample asap to laboratory, if transport is delayed refrigerate the sample.

Collect:
Plain container wrapped with foil to protect from light

Amount to Collect:
20 mL urine

Sample Type:
Random urine

Preferred Volume:
2 mL urine

Minimum Volume:
1 mL urine

Rejection Criteria:
Received at room temperature, not protected from light, pH < 4.0 when rec'd at Quest.

Unacceptable Conditions:
Received at room temperature, not protected from light.

Specimen Preparation:
Protect specimen from light, aliquot urine into dark brown specimen vial or wrap in foil . Freeze aliquot and submit to China Basin sendout , order Quest test #36592X.

Units:
µg/g creatinine (mcg/g creatinine)

Reference Interval:
Uroporphyrin:

1-10 years	4.3-16.2 mcg/g creatinine
11-17 years	4.6-18.9 mcg/g creatinine
>= 18 years	22.0 or less mcg/g creatinine

Heptacarboxyporphyrin:

>= 1 year	4.6 or less mcg/g creatinine

Hexacarboxyporphyrin:

>= 1 year	NOT DETECTED

Pentacarboxyporphyrin:

1-10 years	3.2 or less mcg/g creatinine
11-17 years	3.0 or less mcg/g creatinine
>= 18 years	1.7 or less mcg/g creatinine

Coproporphyrin:

1-10 years	10.1-254.7 mcg/g creatinine
11-17 years	11.8-107.2 mcg/g creatinine
>= 18 years	23.0-130.0 mcg/g creatinine

Total Porphyrins:

1-10 years	17.0-269.7 mcg/g creatinine
11-17 years	16.4-121.5 mcg/g creatinine
>= 18 years	31.0-139.0 mcg/g creatinine

Synonyms:

- Porphyria

Stability (from collection to initiation):
Refrigerated 1 week, frozen 1 month

Note samples must be protected from light

Reported:
Test set up 5x per week, Turnaround 5-7 days

CPT Codes:
84120-90

Porphyrins, Fractionated, Urine

PORFU

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
HPLC

Reported:
Test run Monday-Friday. Turnaround time: 3-6 days.

Additional Information:
To convert µg/d to nmol/d (SI units) multiply TetraCP by 1.53, PentaCP by 1.44, HexaCP by 1.36, HeptaCP by 1.28, OctaCP by 1.20. To convert mg/d of Porphobilinogen to µmol/d (SI units) multiply by 4.42.

Synonyms:

- Porphyria

COLLECTION

Sample Type:
24 hour urine collection

Collect:
Amber Container Required

Amount to Collect:
Entire 24 hour urine output

Preferred Volume:
2 mL urine

Minimum Volume:
1 mL urine

Remarks:
IMPORTANT: Refrigerate container and protect from light (place in brown paper bag or wrap with aluminum foil) during and after collection.

Note: This assay does not include urinary porphobilinogen which, if desired, must be ordered separately.

Unacceptable Conditions:
Container not refrigerated or protected from light during collection.

PROCESSING

Test Code:
PORFU

Test Group:
Porphyrins

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate aliquot in a foil-wrapped vial and record the total volume of the collection on the request slip and the transport vial. Order Quest #729

Preferred Volume:
2 mL urine

Minimum Volume:
1 mL urine

Unacceptable Conditions:
Container not refrigerated or protected from light during collection.

RESULT INTERPRETATION

Units:
µg/24 hours (mcg/24 hours)

Reference Interval:

Tetracarboxylporphyrins (Coproporphyrins)	<= 155 µg/d
Pentacarboxylporphyrins	<= 4.7 µg/d
Hexacarboxylporphyrins	<= 0.9 µg/d
Heptacarboxylporphyrins	<= 6.8 µg/d
Octacarboxylporphyrins (Uroporphyrins)	3.3-29.5 µg/d
Total porphyrins	12-190 µg/d

Additional Information:
To convert µg/d to nmol/d (SI units) multiply TetraCP by 1.53, PentaCP by 1.44, HexaCP by 1.36, HeptaCP by 1.28, OctaCP by 1.20. To convert mg/d of Porphobilinogen to µmol/d (SI units) multiply by 4.42.

ADMINISTRATIVE

CPT Codes:
84120-90

LOINC Codes:
43116-3

COMPLETE VIEW

Available Stat:
No

Test Code:
PORFU

Test Group:
Porphyrins

Performing Lab:
Quest

Sendout:
Yes

Methodology:
HPLC

Remarks:
IMPORTANT: Refrigerate container and protect from light (place in brown paper bag or wrap with aluminum foil) during and after collection.

Note: This assay does not include urinary porphobilinogen which, if desired, must be ordered separately.

Collect:
Amber Container Required

Amount to Collect:
Entire 24 hour urine output

Sample Type:
24 hour urine collection

Preferred Volume:
2 mL urine

Minimum Volume:
1 mL urine

Unacceptable Conditions:
Container not refrigerated or protected from light during collection.

Specimen Preparation:
Refrigerate aliquot in a foil-wrapped vial and record the total volume of the collection on the request slip and the transport vial. Order Quest #729

Units:
µg/24 hours (mcg/24 hours)

Reference Interval:

Tetracarboxylporphyrins (Coproporphyrins)	<= 155 µg/d
Pentacarboxylporphyrins	<= 4.7 µg/d
Hexacarboxylporphyrins	<= 0.9 µg/d
Heptacarboxylporphyrins	<= 6.8 µg/d
Octacarboxylporphyrins (Uroporphyrins)	3.3-29.5 µg/d
Total porphyrins	12-190 µg/d

Synonyms:

- Porphyria

Reported:

Test run Monday-Friday. Turnaround time: 3-6 days.

Additional Information:

To convert µg/d to nmol/d (SI units) multiply TetraCP by 1.53, PentaCP by 1.44, HexaCP by 1.36, HeptaCP by 1.28, OctaCP by 1.20. To convert mg/d of Porphobilinogen to µmol/d (SI units) multiply by 4.42.

CPT Codes:

84120-90

LOINC Codes:

43116-3

Posaconazole
PSCA

ORDERING

Available Stat:
No

Performing Lab:
China Basin Chemistry

Performed:
Monday, Wednesday and Friday (excluding holidays)

In order to be run on Monday, Wednesday or Friday, samples have to be received by the lab by 5am that day.

Methodology:
LC-MS/MS

Reported:
2-3 days.

Additional Information:
Background
Posaconazole is a triazole antifungal agent with potent activity against yeasts and molds. It is proven to be effective in the prophylaxis of invasive fungal infections in immunocompromised patients, and is considered an alternative treatment for zygomyces, invasive Aspergillus infections, Candida and other infections caused by pathogenic yeasts.
Posaconazole was originally available only as an oral suspension with limited bioavailability. A delayed-release tablet formulation with improved absorption and an intravenous formulation are now available. The oral suspension and delayed-release tablet are not directly interchangeable - consultation with ID pharmacy is strongly recommended if switching between formulations. Posaconazole is an inhibitor of cytochrome P450 3A4 and a substrate of the p-glycoprotein drug transporter.

Indications for Posaconazole TDM

1) Any use of the oral suspension for prolonged (>7 days) use for prophylaxis or treatment.

2) Use of the delayed-release tablet formulation in patients receiving the drug for prophylaxis and with one or more of the following:
- known or suspected gastrointestinal absorption abnormalities
- altered pharmacokinetics
-receipt of other drugs likely to have a significant interaction with posaconazole (e.g. phenytoin, rifabutin, carbamezapine) which cannot be discontinued without an adverse effect on patient care
- experiencing substantial hepatic toxicity (AST/ALT > 5 times upper limit of normal or total bilirubin > 3 mg/dl) while on posaconazole, with other potential causes ruled out.
- If develops concern for breakthrough infection while on prophylaxis

3) Use of the delayed-release tablet formulation or the intravenous formulation when used to treat invasive fungal infections

When trough levels are indicated, samples should be obtained 5-7 days after:
-start of therapy
-change in dose
-change in route of administration
-change in potentially interacting drugs

Posaconazole start/change date:	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Posaconazole (assumes dose is given before noon):	Thursday	Sunday	Sunday	Sunday	Tuesday	Tuesday	Thursday

Synonyms:

- Posanol, Noxafil

COLLECTION

Sample Type:
Serum

Collect:
Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Remarks:
In most cases, a single trough level of posaconazole should be adequate. This level should be drawn after at least seven days of posaconazole (steady state is 7-10 days) have been administered.

Posaconazole should be administered with food or nutritional supplement. The level should be drawn from 11-12 hours after the previous dose and less than one hour prior to the next dose. Peak levels should only be drawn in special circumstances.

Stability (from collection to initiation):
Refrigerated: 1 week
Frozen: 6 months

PROCESSING

Test Code:
PSCA

Performing Lab:
China Basin Chemistry

Specimen Preparation:
Refrigerate serum.

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Refrigerated: 1 week
Frozen: 6 months

RESULT INTERPRETATION

Units:
µg/mL (mcg/mL)

Reference Interval:
Target Range:
Adults (>= 18 years old):
Prophylaxis: steady-state trough >0.7 µg/mL
Treatment: steady-state trough >1.25 µg/mL

Pediatrics (< 18 years old):
Prophylaxis: steady-state trough >0.7 µg/mL
Treatment: steady-state trough >1.0 µg/mL

Insufficient data exists to provide an upper therapeutic range, but patients with trough levels above 5 µg/mL should be reviewed for presence of toxicity

Levels should be re-checked until a result in the therapeutic range is obtained, and after changes in doses/route/interacting drugs. For patients on long-term posaconazole on stable doses, consider checking surveillance levels every 3 months.

References:
Ashbee HR et al. Therapeutic drug monitoring of antifungal agents: guidelines from the British Society for Medical Mycology. J Antimicrob Chemother 2014;69:1162-1176

Chau MM et al. Consensus guidelines for optimizing antifungal drug delivery and monitoring to avoid toxicity and improve outcomes in patients with haemotological malignancy, 2014. Inten Med Journal 2014;44:1364-1388

Lewis et al. Triazole antifungal therapeutic drug monitoring. European Conference on Infections in Leukemia. 2015.

Hamada et al. Practice Guidelines for therapeutic drug monitoring of voriconazole: a consensus review of the Japanese Society of Chemotherapy and the Japanese Society of Therapeutic Drug Monitoring. Journal of Infection and Chemotherapy. 2013; 19(3): 381-392.

Additional Information:

Background
Posaconazole is a triazole antifungal agent with potent activity against yeasts and molds. It is proven to be effective in the prophylaxis of invasive fungal infections in immunocompromised patients, and is considered an alternative treatment for zygomyces, invasive Aspergillus infections, Candida and other infections caused by pathogenic yeasts.
Posaconazole was originally available only as an oral suspension with limited bioavailability. A delayed-release tablet formulation with improved absorption and an intravenous formulation are now available. The oral suspension and delayed-release tablet are not directly interchangeable - consultation with ID pharmacy is strongly recommended if switching between formulations. Posaconazole is an inhibitor of cytochrome P450 3A4 and a substrate of the p-glycoprotein drug transporter.

Indications for Posaconazole TDM

1) Any use of the oral suspension for prolonged (>7 days) use for prophylaxis or treatment.

2) Use of the delayed-release tablet formulation in patients receiving the drug for prophylaxis and with one or more of the following:
- known or suspected gastrointestinal absorption abnormalities
- altered pharmacokinetics
-receipt of other drugs likely to have a significant interaction with posaconazole (e.g. phenytoin, rifabutin, carbamezapine) which cannot be discontinued without an adverse effect on patient care
- experiencing substantial hepatic toxicity (AST/ALT > 5 times upper limit of normal or total bilirubin > 3 mg/dl) while on posaconazole, with other potential causes ruled out.
- If develops concern for breakthrough infection while on prophylaxis

3) Use of the delayed-release tablet formulation or the intravenous formulation when used to treat invasive fungal infections

When trough levels are indicated, samples should be obtained 5-7 days after:
-start of therapy
-change in dose
-change in route of administration
-change in potentially interacting drugs

Posaconazole start/change date:	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Posaconazole (assumes dose is given before noon):	Thursday	Sunday	Sunday	Sunday	Tuesday	Tuesday	Thursday

ADMINISTRATIVE

CPT Codes:
80187

LDT or Modified FDA:
Yes

LOINC Codes:
53731-6

COMPLETE VIEW

Available Stat:
No

Test Code:
PSCA

Performing Lab:
China Basin Chemistry

Performed:
Monday, Wednesday and Friday (excluding holidays)

In order to be run on Monday, Wednesday or Friday, samples have to be received by the lab by 5am that day.

Methodology:
LC-MS/MS

Remarks:
In most cases, a single trough level of posaconazole should be adequate. This level should be drawn after at least seven days of posaconazole (steady state is 7-10 days) have been administered.

Posaconazole should be administered with food or nutritional supplement. The level should be drawn from 11-12 hours after the previous dose and less than one hour prior to the next dose. Peak levels should only be drawn in special circumstances.

Collect:
Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Specimen Preparation:
Refrigerate serum.

Units:
µg/mL (mcg/mL)

Reference Interval:
Target Range:
Adults (>= 18 years old):
Prophylaxis: steady-state trough >0.7 µg/mL
Treatment: steady-state trough >1.25 µg/mL

Pediatrics (< 18 years old):
Prophylaxis: steady-state trough >0.7 µg/mL
Treatment: steady-state trough >1.0 µg/mL

Insufficient data exists to provide an upper therapeutic range, but patients with trough levels above 5 µg/mL should be reviewed for presence of toxicity

Levels should be re-checked until a result in the therapeutic range is obtained, and after changes in doses/route/interacting drugs. For patients on long-term posaconazole on stable doses, consider checking surveillance levels every 3 months.

References:
Ashbee HR et al. Therapeutic drug monitoring of antifungal agents: guidelines from the British Society for Medical Mycology. J Antimicrob Chemother 2014;69:1162-1176

Chau MM et al. Consensus guidelines for optimizing antifungal drug delivery and monitoring to avoid toxicity and improve outcomes in patients with haemotological malignancy, 2014. Inten Med Journal 2014;44:1364-1388

Lewis et al. Triazole antifungal therapeutic drug monitoring. European Conference on Infections in Leukemia. 2015.

Hamada et al. Practice Guidelines for therapeutic drug monitoring of voriconazole: a consensus review of the Japanese Society of Chemotherapy and the Japanese Society of Therapeutic Drug Monitoring. Journal of Infection and Chemotherapy. 2013; 19(3): 381-392.

Synonyms:

- Posanol, Noxafil

Stability (from collection to initiation):
Refrigerated: 1 week
Frozen: 6 months

Reported:
2-3 days.

Additional Information:

Background

Posaconazole is a triazole antifungal agent with potent activity against yeasts and molds. It is proven to be effective in the prophylaxis of invasive fungal infections in immunocompromised patients, and is considered an alternative treatment for zygomyces, invasive Aspergillus infections, Candida and other infections caused by pathogenic yeasts.

Posaconazole was originally available only as an oral suspension with limited bioavailability. A delayed-release tablet formulation with improved absorption and an intravenous formulation are now available. The oral suspension and delayed-release tablet are not directly interchangeable - consultation with ID pharmacy is strongly recommended if switching between formulations. Posaconazole is an inhibitor of cytochrome P450 3A4 and a substrate of the p-glycoprotein drug transporter.

Indications for Posaconazole TDM

1) Any use of the oral suspension for prolonged (>7 days) use for prophylaxis or treatment.

2) Use of the delayed-release tablet formulation in patients receiving the drug for prophylaxis and with one or more of the following:
- known or suspected gastrointestinal absorption abnormalities
- altered pharmacokinetics
-receipt of other drugs likely to have a significant interaction with posaconazole (e.g. phenytoin, rifabutin, carbamezapine) which cannot be discontinued without an adverse effect on patient care
- experiencing substantial hepatic toxicity (AST/ALT > 5 times upper limit of normal or total bilirubin > 3 mg/dl) while on posaconazole, with other potential causes ruled out.
- If develops concern for breakthrough infection while on prophylaxis

3) Use of the delayed-release tablet formulation or the intravenous formulation when used to treat invasive fungal infections

When trough levels are indicated, samples should be obtained 5-7 days after:
-start of therapy
-change in dose
-change in route of administration
-change in potentially interacting drugs

Posaconazole start/change date:	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Posaconazole (assumes dose is given before noon):	Thursday	Sunday	Sunday	Sunday	Tuesday	Tuesday	Thursday

CPT Codes:

80187

LDT or Modified FDA:

Yes

LOINC Codes:

53731-6

Post Dialysis Urea Nitrogen (BUN), Plasma / Serum

BUNPST

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Urease, Spectrophotometric

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by 0.357.

Synonyms:

- Post BUN, BUNPST

COLLECTION

Sample Type:
Plasma or serum

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Room temperature 7 days, refrigerated 7 days, frozen at -20C 1 year

PROCESSING

Test Code:
BUNPST

Test Group:
Urea

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Room temperature 7 days, refrigerated 7 days, frozen at -20C 1 year

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:

Age	mg/dL
0 to 14 days	3-23
15 days to <1 year	3-17
1 to <10 years	9-22
10 to <18 years	7-21
>=18 years	7-25

Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, https://caliper.research.sickkids.ca/#/

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by 0.357.

ADMINISTRATIVE

CPT Codes:
84520

LOINC Codes:
11064-3

COMPLETE VIEW

Available Stat:
Yes

Test Code:
BUNPST

Test Group:
Urea

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Urease, Spectrophotometric

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
1 mL blood

Sample Type:
Plasma or serum

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Units:
mg/dL

Reference Interval:

Age	mg/dL
0 to 14 days	3-23
15 days to <1 year	3-17
1 to <10 years	9-22
10 to <18 years	7-21
>=18 years	7-25

Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, https://caliper.research.sickkids.ca/#/

Synonyms:

- Post BUN, BUNPST

Stability (from collection to initiation):
Room temperature 7 days, refrigerated 7 days, frozen at -20C 1 year

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by 0.357.

CPT Codes:
84520

LOINC Codes:
11064-3

Post-Transfusion Purpura

MOLT

ORDERING

Approval Required:
Must be approved by Clinical Hematology Consult Service/Blood Bank.

Available Stat:
No

Performing Lab:
Versiti via Blood Center of Wisconsin

Methodology:
Flow cytometry, ELISA and PCR

Reported:
1-2 weeks

Additional Information:
Post-transfusion purpura may arise from the cross-reaction of antibodies to transfused platelets with the patient's own platelets in the 2% of the general population whose platelets lack the common PlA1 antigen or other less common antigens such as PlA2, Bak and Pen or, more rarely, following the administration of blood products collected from previously sensitized donors. It is most common in multiparous women and in previously transfused patients.

Synonyms:

- P1A1
- P1A2
- Bak
- Pen
- PTP

Supplemental Test Request Form Required:
Yes

COLLECTION

Sample Type:
EDTA whole blood **AND** serum

Collect:
EDTA Lavender 6 (x2) and Red top (x2)

Amount to Collect:
See Preferred Volume

Preferred Volume:
5-10 ml EDTA Whole Blood (Lavender top) and 10 ml Serum (Red top)

Remarks:
See Information under Approval Req'd before submitting samples

Provider must fill out the outside lab (BCW) requisition form.

https://media.versiti.org/versiti/versiti/media/downloadables/diagnostic-labs/requisitions/pnil_requisition.pdf?_ga=2.88586079.573452753.1671484325-543083915.1671484325

Submit form, APEX MOLT order requisition and specimens to Central Processing

Specimens only accepted 8am-5pm Monday-Thursday, and up to noon on Fridays.

Note: Samples must be received at the Blood Center of Wisconsin within 4 days of draw.

Stability (from collection to initiation):
Samples must be received within 4 days of draw date at the Blood Center of Wisconsin.

Unacceptable Conditions:
Samples collected outside of acceptable time frames.

Rejection Criteria:
Samples > 4 days old when received. Whole blood sample received frozen.

PROCESSING

Test Code:
MOLT

Sendout:
Yes

Performing Lab:
Versiti via Blood Center of Wisconsin

Specimen Preparation:
Provider must fill out the outside lab (BCW) requisition form.

https://media.versiti.org/versiti/versiti/media/downloadables/diagnostic-labs/requisitions/pnil_requisition.pdf?_ga=2.88586079.573452753.1671484325-543083915.1671484325

Submit form, APEX MOLT order requisition and specimens to Central Processing

Store refrigerated. Send sample refrigerated. Sample must be received within 4 days of draw date.

Preferred Volume:
5-10 ml EDTA Whole Blood (Lavender top) and 10 ml Serum (Red top)

Unacceptable Conditions:
Samples collected outside of acceptable time frames.

Rejection Criteria:
Samples > 4 days old when received. Whole blood sample received frozen.

Stability (from collection to initiation):
Samples must be received within 4 days of draw date at the Blood Center of Wisconsin.

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
Post-transfusion purpura may arise from the cross-reaction of antibodies to transfused platelets with the patient's own platelets in the 2% of the general population whose platelets lack the common PlA1 antigen or other less common antigens such as PlA2, Bak and Pen or, more rarely, following the administration of blood products collected from previously sensitized donors. It is most common in multiparous women and in previously transfused patients.

ADMINISTRATIVE

CPT Codes:
83891-90,83896-90 x18,83900-90,83901-90 x5, 83912-90,86022-90 x11

COMPLETE VIEW

Approval Required:
Must be approved by Clinical Hematology Consult Service/Blood Bank.

Available Stat:
No

Test Code:
MOLT

Performing Lab:
Versiti via Blood Center of Wisconsin

Sendout:
Yes

Methodology:
Flow cytometry, ELISA and PCR

Remarks:
See Information under Approval Req'd before submitting samples

Provider must fill out the outside lab (BCW) requisition form.

https://media.versiti.org/versiti/versiti/media/downloadables/diagnostic-labs/requisitions/pnil_requisition.pdf?_ga=2.88586079.573452753.1671484325-543083915.1671484325

Submit form, APEX MOLT order requisition and specimens to Central Processing

Specimens only accepted 8am-5pm Monday-Thursday, and up to noon on Fridays.

Note: Samples must be received at the Blood Center of Wisconsin within 4 days of draw.

Collect:
EDTA Lavender 6 (x2) and Red top (x2)

Amount to Collect:
See Preferred Volume

Sample Type:
EDTA whole blood **AND** serum

Preferred Volume:
5-10 ml EDTA Whole Blood (Lavender top) and 10 ml Serum (Red top)

Rejection Criteria:
Samples > 4 days old when received. Whole blood sample received frozen.

Unacceptable Conditions:
Samples collected outside of acceptable time frames.

Specimen Preparation:
Provider must fill out the outside lab (BCW) requisition form.

https://media.versiti.org/versiti/versiti/media/downloadables/diagnostic-labs/requisitions/pnil_requisition.pdf?_ga=2.88586079.573452753.1671484325-543083915.1671484325

Submit form, APEX MOLT order requisition and specimens to Central Processing

Store refrigerated. Send sample refrigerated. Sample must be received within 4 days of draw date.

Reference Interval:
Negative

Synonyms:

- P1A1
- P1A2
- Bak
- Pen
- PTP

Stability (from collection to initiation):
Samples must be received within 4 days of draw date at the Blood Center of Wisconsin.

Reported:
1-2 weeks

Additional Information:
Post-transfusion purpura may arise from the cross-reaction of antibodies to transfused platelets with the patient's own platelets in the 2% of the general population whose platelets lack the common PlA1 antigen or other less common antigens such as PlA2, Bak and Pen or, more rarely, following the administration of blood products collected from previously sensitized donors. It is most common in multiparous women and in previously transfused patients.

CPT Codes:
83891-90,83896-90 x18,83900-90,83901-90 x5, 83912-90,86022-90 x11

Supplemental Test Request Form Required:
Yes

Post-Transfusion Study

TRXN

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Blood Banks

Performed:
Test available 24 hours per day 7 days per week

Reported:
1 hour

Synonyms:

- Transfusion reaction

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top (6 mL)

Amount to Collect:
6 mL blood

Preferred Volume:
6 mL blood

Remarks:
Fill out Transfusion Reaction Report form and send to Blood Bank IMMEDIATELY, together with post-transfusion blood specimens Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Unacceptable Conditions:
Unsigned, mislabeled or unlabeled sample

PROCESSING

Test Code:
TRXN

Performing Lab:
Parnassus & Mission Bay Blood Banks

Preferred Volume:
6 mL blood

Unacceptable Conditions:
Unsigned, mislabeled or unlabeled sample

ADMINISTRATIVE

CPT Codes:
86900, 86901, 86880

COMPLETE VIEW

Available Stat:
Yes

Test Code:
TRXN

Performing Lab:
Parnassus & Mission Bay Blood Banks

Performed:
Test available 24 hours per day 7 days per week

Remarks:
Fill out Transfusion Reaction Report form and send to Blood Bank IMMEDIATELY, together with post-transfusion blood specimens Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Collect:
Lavender top (6 mL)

Amount to Collect:
6 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
6 mL blood

Unacceptable Conditions:
Unsigned, mislabeled or unlabeled sample

Synonyms:

- Transfusion reaction

Reported:
1 hour

CPT Codes:
86900, 86901, 86880

Potassium, 24 hour (or timed) urine

KUR

ORDERING

Available Stat:
No

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 7 days per week from 8:00 AM to midnight only.

Methodology:
Indirect, solid state electrode

Reported:
4-18 hours

Additional Information:
Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

Synonyms:

- K
- K+
- Urine electrolytes

COLLECTION

Sample Type:
Timed urine collection

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container, 10g Boric Acid

Amount to Collect:
Entire urine output for collection period

Preferred Volume:
1 mL urine

Minimum Volume:
0.2 mL urine

Remarks:
Refrigerate the container during the period of the collection.

Note that the minimum acceptable time period for a 'timed' collection is 6 hours.

Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

Stability (from collection to initiation):
Room temperature 45 days, refrigerated 2 months, frozen at -20C 1 year

PROCESSING

Test Code:
KUR

Test Group:
Potassium

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
1 mL urine

Minimum Volume:
0.2 mL urine

Stability (from collection to initiation):
Room temperature 45 days, refrigerated 2 months, frozen at -20C 1 year

RESULT INTERPRETATION

Units:
mmol/D

Reference Interval:
25-125 mmol/D

Additional Information:
Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

ADMINISTRATIVE

CPT Codes:
84133

COMPLETE VIEW

Available Stat:
No

Test Code:
KUR

Test Group:
Potassium

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 7 days per week from 8:00 AM to midnight only.

Methodology:
Indirect, solid state electrode

Remarks:
Refrigerate the container during the period of the collection.

Note that the minimum acceptable time period for a 'timed' collection is 6 hours.

Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container, 10g Boric Acid

Amount to Collect:
Entire urine output for collection period

Sample Type:
Timed urine collection

Preferred Volume:
1 mL urine

Minimum Volume:
0.2 mL urine

Units:
mmol/D

Reference Interval:
25-125 mmol/D

Synonyms:

- K
- K+
- Urine electrolytes

Stability (from collection to initiation):
Room temperature 45 days, refrigerated 2 months, frozen at -20C 1 year

Reported:
4-18 hours

Additional Information:

Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

CPT Codes:

84133

Potassium, Body Fluid

KBF

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Indirect, solid state electrode

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context.

Interpretive information on this testing can be found at https://aruplab.com/bodyfluids

Turbid samples, including watery stools, will be centrifuged and the test run on the supernatant

Synonyms:

- K
- K+
- Body fluid electrolytes

COLLECTION

Sample Type:
Body Fluid

Collect:
Clean, empty container OR red top (no additives)
Note: Do NOT collect in red top with clot activator (silicone coated).

Amount to Collect:
5 mL fluid

Preferred Volume:
1 mL fluid

Minimum Volume:
0.2 mL fluid

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 2 days, frozen at -20C 1 week

PROCESSING

Test Code:
KBF

Test Group:
Potassium

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
1 mL fluid

Minimum Volume:
0.2 mL fluid

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 2 days, frozen at -20C 1 week

RESULT INTERPRETATION

Units:
mmol/L

Additional Information:
Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context.

Interpretive information on this testing can be found at https://aruplab.com/bodyfluids

Turbid samples, including watery stools, will be centrifuged and the test run on the supernatant

ADMINISTRATIVE

CPT Codes:
84132

LOINC Codes:
2821-7

COMPLETE VIEW

Available Stat:
Yes

Test Code:
KBF

Test Group:
Potassium

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Indirect, solid state electrode

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Collect:
Clean, empty container OR red top (no additives)
Note: Do NOT collect in red top with clot activator (silicone coated).

Amount to Collect:
5 mL fluid

Sample Type:
Body Fluid

Preferred Volume:
1 mL fluid

Minimum Volume:
0.2 mL fluid

Units:
mmol/L

Synonyms:

- K
- K+
- Body fluid electrolytes

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 2 days, frozen at -20C 1 week

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context.

Interpretive information on this testing can be found at https://aruplab.com/bodyfluids

Turbid samples, including watery stools, will be centrifuged and the test run on the supernatant

CPT Codes:
84132

LOINC Codes:
2821-7

Potassium, Fecal

POTF

ORDERING

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative Ion-Selective Electrode

Reported:
1-2 days

Synonyms:

- Electrolytes, Feces

COLLECTION

Collect:
24-hour or random stool.

Stability (from collection to initiation):
Ambient: 1 hour; Refrigerated: 2 weeks; Frozen: 6 months

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Formed or viscous stool.

PROCESSING

Test Code:
POTF

ARUP Test Code:
0020380

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transfer a 5 g stool to an unpreserved stool transport vial (ARUP Supply #40910). Available online through eSupply using ARUP Connect(TM) or contact Client Services at (800) 522-2787. (Min: 1 g) Mix 24-hour collection well. Do not add saline or water to liquefy specimen.

Unacceptable Conditions:
Formed or viscous stool.

Stability (from collection to initiation):
Ambient: 1 hour; Refrigerated: 2 weeks; Frozen: 6 months

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:
A reference interval has not been established for fecal specimens.

Interpretive Data:
This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:
84999

LOINC:

- 15202-5

COMPLETE VIEW

Available Stat:
No

Test Code:
POTF

ARUP Test Code:
0020380

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative Ion-Selective Electrode

Collect:
24-hour or random stool.

Unacceptable Conditions:
Formed or viscous stool.

Specimen Preparation:
Transfer a 5 g stool to an unpreserved stool transport vial (ARUP Supply #40910). Available online through eSupply using ARUP Connect(TM) or contact Client Services at (800) 522-2787. (Min: 1 g) Mix 24-hour collection well. Do not add saline or water to liquefy specimen.

Reference Interval:
A reference interval has not been established for fecal specimens.

Interpretive Data:
This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Synonyms:

- Electrolytes, Feces

Storage/Transport Temperature:
Refrigerated.

Stability (from collection to initiation):
Ambient: 1 hour; Refrigerated: 2 weeks; Frozen: 6 months

Reported:
1-2 days

CPT Codes:
84999

LOINC:

- 15202-5

Potassium, Plasma / Serum

K

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Chemistry: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center (Mon-Fri 0800-1630)

Methodology:
Parnassus, Mission Bay & Mt. Zion Chemistry: Indirect, solid state electrode on Abbott Architect
Berkeley Outpatient Center: Indirect ISE on Roche cobas c311

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
Hemolysis may artifactually increase the result. Levels in serum are normally 0.3 mmol/L higher than plasma levels due to liberation of potassium by platelets during clotting (c. 0.07 mmol/L per 100K platelets). Thus not only hemolysis but thrombocytosis and leukocytosis can falsely elevate potassium levels, which can be circumvented by measuring plasma rather than serum potassium.

Synonyms:

- K
- K+
- Electrolytes

COLLECTION

Sample Type:
Plasma or serum

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Room temperature 7 days, refrigerated 7 days, frozen at -20C 1 year

PROCESSING

Test Code:
K

Test Group:
Potassium

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Room temperature 7 days, refrigerated 7 days, frozen at -20C 1 year

RESULT INTERPRETATION

Units:
mmol/L

Reference Interval:

Parnassus, Mission Bay & Mt. Zion Chemistry

Age	mmol/L
< 1 year	3.2-6.0
> 1 year	3.5-5.0

1. Normal range for infants 0 to <1 year adopted from Soldin, Steven J., "Pediatric Reference Intervals", 7th edition, AACC Press, 2011, test 1.
2. Adult range used for children >1 year old.
3. UCSF Clinical Labs verified the adult reference range stated in the Abbott ICT package insert (May 2016) by running 20 male and 20 female lab volunteers.

Berkeley outpatient Center

Age	mmol/L
>= 19 years	3.5-5.0

UCSF Clinical Labs at Berkeley Outpatient Center verified the adult reference range (>= 19 years) stated in the Abbott c system package insert by running 20 male and 20 female lab volunteers.

Critical Values:

< 3.0 mmol/L or > 6.0 mmol/L

Additional Information:

Hemolysis may artifactually increase the result. Levels in serum are normally 0.3 mmol/L higher than plasma levels due to liberation of potassium by platelets during clotting (c. 0.07 mmol/L per 100K platelets). Thus not only hemolysis but thrombocytosis and leukocytosis can falsely elevate potassium levels, which can be circumvented by measuring plasma rather than serum potassium.

ADMINISTRATIVE

CPT Codes:

84132

LOINC Codes:

2823-3

COMPLETE VIEW

Available Stat:

Yes

Test Code:

K

Test Group:

Potassium

Performing Lab:

Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:

Parnassus, Mission Bay & Mt. Zion Chemistry: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center (Mon-Fri 0800-1630)

Methodology:

Parnassus, Mission Bay & Mt. Zion Chemistry: Indirect, solid state electrode on Abbott Architect
Berkeley Outpatient Center: Indirect ISE on Roche cobas c311

Collect:

Light green top preferred, Gold top acceptable

Amount to Collect:

1 mL blood

Sample Type:

Plasma or serum

Preferred Volume:

0.5 mL plasma or serum

Minimum Volume:

0.2 mL plasma or serum

Units:

mmol/L

Reference Interval:

Parnassus, Mission Bay & Mt. Zion Chemistry

Age	mmol/L
< 1 year	3.2-6.0
> 1 year	3.5-5.0

1. Normal range for infants 0 to <1 year adopted from Soldin, Steven J., "Pediatric Reference Intervals", 7th edition, AACC Press, 2011, test 1.
2. Adult range used for children >1 year old.
3. UCSF Clinical Labs verified the adult reference range stated in the Abbott ICT package insert (May 2016) by running 20 male and 20 female lab volunteers.

Berkeley outpatient Center

Age	mmol/L
>= 19 years	3.5-5.0

UCSF Clinical Labs at Berkeley Outpatient Center verified the adult reference range (>= 19 years) stated in the Abbott c system package insert by running 20 male and 20 female lab volunteers.

Critical Values:

< 3.0 mmol/L or > 6.0 mmol/L

Synonyms:

- K
- K+
- Electrolytes

Stability (from collection to initiation):

Room temperature 7 days, refrigerated 7 days, frozen at -20C 1 year

Reported:

STAT 1 hour, Routine 4 hours

Additional Information:

Hemolysis may artifactually increase the result. Levels in serum are normally 0.3 mmol/L higher than plasma levels due to liberation of potassium by platelets during clotting (c. 0.07 mmol/L per 100K platelets). Thus not only hemolysis but thrombocytosis and leukocytosis can falsely elevate potassium levels, which can be circumvented by measuring plasma rather than serum potassium.

CPT Codes:

84132

LOINC Codes:

2823-3

Potassium, random urine

KU

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Indirect, solid state electrode

Reported:
4-18 hours

Synonyms:

- K
- K+
- Urine electrolytes

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
20 mL urine

Preferred Volume:
1 mL urine

Minimum Volume:
0.2 mL urine

Stability (from collection to initiation):
Room temperature 45 days, refrigerated 2 months, frozen at -20C 1 year

PROCESSING

Test Code:
KU

Test Group:
Potassium

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
1 mL urine

Minimum Volume:
0.2 mL urine

Stability (from collection to initiation):
Room temperature 45 days, refrigerated 2 months, frozen at -20C 1 year

RESULT INTERPRETATION

Units:
mmol/L

Reference Interval:
Varies with diet, typically > 20 mmol/d

ADMINISTRATIVE

CPT Codes:
84133

LOINC Codes:
2828-2

COMPLETE VIEW

Available Stat:
Yes

Test Code:
KU

Test Group:
Potassium

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Indirect, solid state electrode

Collect:
Urine cup

Amount to Collect:
20 mL urine

Sample Type:
Random urine

Preferred Volume:
1 mL urine

Minimum Volume:
0.2 mL urine

Units:
mmol/L

Reference Interval:
Varies with diet, typically > 20 mmol/d

Synonyms:

- K
- K+
- Urine electrolytes

Stability (from collection to initiation):
Room temperature 45 days, refrigerated 2 months, frozen at -20C 1 year

Reported:
4-18 hours

CPT Codes:
84133

LOINC Codes:
2828-2

Potassium, Whole Blood

KSB

ORDERING

Ordering Recommendations:
Follow the link for information about Blood Gas Panels that contain this test.

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay and Mt. Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Potentiometry, Radiometer ABL 90 FLEX Plus

Reported:
Stat 15 min, Routine 30 min

Additional Information:

Hemolysis may artifactually increase the result.

All reported values are corrected to 37C unless otherwise specified. Results beyond the linear range of the instrument will be reported as < or > the extreme of the linear range. Samples containing small bubbles may be run at the laboratory's discretion. If analyzed, a comment will be added to the result regarding the presence of bubbles in the sample.

Synonyms:

- K
- K+
- Electrolytes
- ARTBGL
- VENBGL
- CVBGL
- MVBGL
- CAPBG
- MVBGCX
- CIRBGA
- CIRBGV
- NLYTE
- Blood gas
- ABG

COLLECTION

Sample Type:
Heparinized whole blood (Blood gas syringe only)

Collect:
Plastic syringe containing 100U of dry heparin

Amount to Collect:
3 mL blood

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood

Remarks:

Arterial puncture:
Due to the risk of arterial damage and subsequent distal ischemia, prior to puncturing an artery the RN assesses the collateral circulation. If the radial artery is to be punctured, then the pulse of the ulnar artery is assessed. If the dorsalis pedis artery is to be accessed then the posterial tibial pulse is assessed and likewise if the posterial tibial approach is used the dorsalis pedis pulse is assessed. The modified Allens's test may be used to assess collateral circulation of the ulnar artery before a radial artery puncture, but it does not always ensure adequate flow. A Doppler ultrasound flow indicator may be used to verify collateral circulation. If the collateral circulation is poor and the RN cannot palpate a pulse then the physician should be notified before proceeding. If for any reason the circulation is compromised to the extremity being assessed for arterial puncture then the physician should be notified prior to proceeding.

1. Palpate the radial artery and identify the site where the pulse is the strongest. Avoid areas with overlying veins to prevent venous admixture.
2. Prepare the patient's skin with an alcohol or 2% chlorhexidine wipe/swab.
3. Place two or three fingers along the course of the artery both to locate its position and direction, and to stabilize it.
4. Penetrate the skin smoothly holding the needle at 30-60 degree angle with the needle bevel up and pointed proximally. The angle of the “butterfly" IV catheter should not exceed 45° for pediatric patients.
5. Re-establish the position and direction of the artery by palpation.
6. Gently and slowly advance the needle or “butterfly", aiming directly for the area of maximum pulsation.
7. When the arterial lumen has been entered, less resistance is felt and blood appears in the syringe above the needle hub.
8. Obtain required amount of arterial blood for test(s).
9. If blood is not obtained on first attempt, withdraw the needle to just below the skin surface and advance needle at same angle but at 1 mm to either side of previous attempt.
10. Place the 2x2 gauze over the site of the puncture then withdraw the needle from the artery. Press firmly at the site for at least five minutes, or until the bleeding stops. Apply bandage or pressure dressing.
11. Expel any air bubble in the syringe with air filter cap placed on specimen syringe.
12. Label sample with patient's name, ID number and DOB.

Venous samples:
1. Avoid excessive venous stasis from prolonged tourniquet application or clenching of the fist prior to sample collection.
2. For central line draws make sure to waste a full red top tube then draw via the blood gas syringe as noted above.
3. Fill syringe completely, remove needle (in peripheral draws), cap sample, expel all bubbles (while holding syringe upright) until blood hits the top of cap.
4. Label sample with patient's name, ID number and DOB.

Capillary Samples:
1. The following are recommended sampling sites: earlobe, fingertip, big toe, heel. The heel and big toe are more suitable for use on neonates and infants.
2. Warm the area or puncture site for 5 to 10 minutes prior to actual sampling. This accelerates flow for blood to be representative of general status of patient.
3. Make a puncture using a lancet or similar device. Do not squeeze the area to avoid tissue juice from mixing into blood sample.
4. Wipe off the first drop of blood. Take the sample from the center of the second drop of blood and hold the capillary at a slightly downward angle for an uninterrupted blood flow. Avoid getting air bubbles in the specimen.
5. Refrain from squeezing or milking the puncture site as this may result in faulty measurements or cause hemolysis of blood sample and cause elevated K+ readings.
6. Apply accompanying caps to both ends of the capillary tube and mix the sample with the heparin immediately after collection to prevent blood from clotting. The manufacturer recommends the use of a mixing wire and magnet for capillary samples.
7. Label sample with patient's name, ID and DOB.

Deliver samples immediately to lab for testing. Samples delivered to the lab >30 minutes after collection may yield erroneous results.

Unacceptable Conditions:
Samples submitted > 60 min. after collection. Samples with needle attached, containing large bubbles, unlabeled, mislabeled, clotted or of insufficient volume for testing.

PROCESSING

Test Code:
KSB

Test Group:
Potassium

Performing Lab:
Parnassus, Mission Bay and Mt. Zion Chemistry

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood

Unacceptable Conditions:
Samples submitted > 60 min. after collection. Samples with needle attached, containing large bubbles, unlabeled, mislabeled, clotted or of insufficient volume for testing.

RESULT INTERPRETATION

Units:
mmol/L

Reference Interval:

Arterial:
<= 1 year: 3.0-5.4 mmol/L
> 1 year: 3.4-4.5 mmol/L

Arterial reference ranges adopted from the UCSF reference ranges previously used with the ABL 835 blood gas analyzers.

Venous:
3.7-4.7 mmol/L

Venous reference range adopted from Ress KL et al, Pathology 2018, volume 50, supplement page S94 and verified by running 25 male and 25 female normal volunteers from UCSF Clinical Laboratories

Critical Values:
< 3.0 mmol/L or > 6.0 mmol/L

Additional Information:

Hemolysis may artifactually increase the result.

All reported values are corrected to 37C unless otherwise specified. Results beyond the linear range of the instrument will be reported as < or > the extreme of the linear range. Samples containing small bubbles may be run at the laboratory's discretion. If analyzed, a comment will be added to the result regarding the presence of bubbles in the sample.

ADMINISTRATIVE

CPT Codes:
84132

LOINC Codes:
6298-4

COMPLETE VIEW

Available Stat:
Yes

Ordering Recommendations:
Follow the link for information about Blood Gas Panels that contain this test.

Test Code:
KSB

Test Group:
Potassium

Performing Lab:
Parnassus, Mission Bay and Mt. Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Potentiometry, Radiometer ABL 90 FLEX Plus

Remarks:

Arterial puncture:
Due to the risk of arterial damage and subsequent distal ischemia, prior to puncturing an artery the RN assesses the collateral circulation. If the radial artery is to be punctured, then the pulse of the ulnar artery is assessed. If the dorsalis pedis artery is to be accessed then the posterial tibial pulse is assessed and likewise if the posterial tibial approach is used the dorsalis pedis pulse is assessed. The modified Allens's test may be used to assess collateral circulation of the ulnar artery before a radial artery puncture, but it does not always ensure adequate flow. A Doppler ultrasound flow indicator may be used to verify collateral circulation. If the collateral circulation is poor and the RN cannot palpate a pulse then the physician should be notified before proceeding. If for any reason the circulation is compromised to the extremity being assessed for arterial puncture then the physician should be notified prior to proceeding.

1. Palpate the radial artery and identify the site where the pulse is the strongest. Avoid areas with overlying veins to prevent venous admixture.
2. Prepare the patient's skin with an alcohol or 2% chlorhexidine wipe/swab.
3. Place two or three fingers along the course of the artery both to locate its position and direction, and to stabilize it.
4. Penetrate the skin smoothly holding the needle at 30-60 degree angle with the needle bevel up and pointed proximally. The angle of the “butterfly" IV catheter should not exceed 45° for pediatric patients.
5. Re-establish the position and direction of the artery by palpation.
6. Gently and slowly advance the needle or “butterfly", aiming directly for the area of maximum pulsation.
7. When the arterial lumen has been entered, less resistance is felt and blood appears in the syringe above the needle hub.
8. Obtain required amount of arterial blood for test(s).
9. If blood is not obtained on first attempt, withdraw the needle to just below the skin surface and advance needle at same angle but at 1 mm to either side of previous attempt.
10. Place the 2x2 gauze over the site of the puncture then withdraw the needle from the artery. Press firmly at the site for at least five minutes, or until the bleeding stops. Apply bandage or pressure dressing.
11. Expel any air bubble in the syringe with air filter cap placed on specimen syringe.
12. Label sample with patient's name, ID number and DOB.

Venous samples:
1. Avoid excessive venous stasis from prolonged tourniquet application or clenching of the fist prior to sample collection.
2. For central line draws make sure to waste a full red top tube then draw via the blood gas syringe as noted above.
3. Fill syringe completely, remove needle (in peripheral draws), cap sample, expel all bubbles (while holding syringe upright) until blood hits the top of cap.
4. Label sample with patient's name, ID number and DOB.

Capillary Samples:
1. The following are recommended sampling sites: earlobe, fingertip, big toe, heel. The heel and big toe are more suitable for use on neonates and infants.
2. Warm the area or puncture site for 5 to 10 minutes prior to actual sampling. This accelerates flow for blood to be representative of general status of patient.
3. Make a puncture using a lancet or similar device. Do not squeeze the area to avoid tissue juice from mixing into blood sample.
4. Wipe off the first drop of blood. Take the sample from the center of the second drop of blood and hold the capillary at a slightly downward angle for an uninterrupted blood flow. Avoid getting air bubbles in the specimen.
5. Refrain from squeezing or milking the puncture site as this may result in faulty measurements or cause hemolysis of blood sample and cause elevated K+ readings.
6. Apply accompanying caps to both ends of the capillary tube and mix the sample with the heparin immediately after collection to prevent blood from clotting. The manufacturer recommends the use of a mixing wire and magnet for capillary samples.
7. Label sample with patient's name, ID and DOB.

Deliver samples immediately to lab for testing. Samples delivered to the lab >30 minutes after collection may yield erroneous results.

Collect:
Plastic syringe containing 100U of dry heparin

Amount to Collect:
3 mL blood

Sample Type:
Heparinized whole blood (Blood gas syringe only)

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood

Unacceptable Conditions:
Samples submitted > 60 min. after collection. Samples with needle attached, containing large bubbles, unlabeled, mislabeled, clotted or of insufficient volume for testing.

Units:
mmol/L

Reference Interval:

Arterial:
<= 1 year: 3.0-5.4 mmol/L
> 1 year: 3.4-4.5 mmol/L

Arterial reference ranges adopted from the UCSF reference ranges previously used with the ABL 835 blood gas analyzers.

Venous:
3.7-4.7 mmol/L

Venous reference range adopted from Ress KL et al, Pathology 2018, volume 50, supplement page S94 and verified by running 25 male and 25 female normal volunteers from UCSF Clinical Laboratories

Critical Values:
< 3.0 mmol/L or > 6.0 mmol/L

Synonyms:

- K
- K+
- Electrolytes
- ARTBGL
- VENBGL
- CVBGL
- MVBGL
- CAPBG
- MVBGCX
- CIRBGA
- CIRBGV
- NLYTE
- Blood gas
- ABG

Reported:
Stat 15 min, Routine 30 min

Additional Information:

Hemolysis may artifactually increase the result.

All reported values are corrected to 37C unless otherwise specified. Results beyond the linear range of the instrument will be reported as < or > the extreme of the linear range. Samples containing small bubbles may be run at the laboratory's discretion. If analyzed, a comment will be added to the result regarding the presence of bubbles in the sample.

CPT Codes:
84132

LOINC Codes:
6298-4

Prealbumin, Serum / Plasma

PAB

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift)

Methodology:
Rate nephlometry

Reported:
1-3 days

Additional Information:
Lipemia interferes with the assay. Newborn infants may have levels as low as 2 mg/dL.

COLLECTION

Sample Type:
Serum or plasma

Collect:
Gold top preferred, Light green top acceptable

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

Unacceptable Conditions:
Lipemic samples

PROCESSING

Test Code:
PAB

Performing Lab:
Immunology

Specimen Preparation:
Refrigerate

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

Unacceptable Conditions:
Lipemic samples

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:
20-37 mg/dL

Additional Information:
Lipemia interferes with the assay. Newborn infants may have levels as low as 2 mg/dL.

ADMINISTRATIVE

CPT Codes:
84134

LOINC Codes:
46130-1

COMPLETE VIEW

Available Stat:
No

Test Code:
PAB

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift)

Methodology:
Rate nephlometry

Collect:
Gold top preferred, Light green top acceptable

Amount to Collect:
1 mL blood

Sample Type:
Serum or plasma

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

Unacceptable Conditions:
Lipemic samples

Specimen Preparation:
Refrigerate

Units:
mg/dL

Reference Interval:
20-37 mg/dL

Reported:
1-3 days

Additional Information:
Lipemia interferes with the assay. Newborn infants may have levels as low as 2 mg/dL.

CPT Codes:
84134

LOINC Codes:
46130-1

Pregnenolone

PREGN

ORDERING

Available Stat:
No

Performing Lab:
Quest

Performed:
Sun-Fri

Methodology:
LC/MS/MS

Reported:
1-4 days

COLLECTION

Sample Type:
Serum

Collect:
Red top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Stability (from collection to initiation):
Room temperature: Unacceptable
Refrigerated: 72 hours
Frozen -20° C: 14 days
Frozen -70° C: 30 days

Storage/Transport Temperature:
Frozen

Unacceptable Conditions:
Moderate to gross hemolysis • Received room temperature • Serum separator tube (SST®)

PROCESSING

Test Code:
PREGN

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot and freeze serum. Transport to CB frozen. Order Quest test code 28373P.

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Unacceptable Conditions:
Moderate to gross hemolysis • Received room temperature • Serum separator tube (SST®)

Stability (from collection to initiation):
Room temperature: Unacceptable
Refrigerated: 72 hours
Frozen -20° C: 14 days
Frozen -70° C: 30 days

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Units:
ng/dL

Reference Interval:
Adult: 22-237 ng/dL

Pediatric:

Age	ng/dL
1 - 59 Days	68 - 1303
60 Days - 1 Year	<= 219
2 - 6 Years	<= 140
7 - 9 Years	156
10 - 12 Years	15 - 220
13 - 17 Years	12 - 196

ADMINISTRATIVE

CPT Codes:
84140

LOINC Codes:
2837-3

COMPLETE VIEW

Available Stat:
No

Test Code:
PREGN

Performing Lab:
Quest

Sendout:
Yes

Performed:
Sun-Fri

Methodology:
LC/MS/MS

Collect:
Red top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Unacceptable Conditions:
Moderate to gross hemolysis • Received room temperature • Serum separator tube (SST®)

Specimen Preparation:
Aliquot and freeze serum. Transport to CB frozen. Order Quest test code 28373P.

Units:
ng/dL

Reference Interval:

Adult: 22-237 ng/dL

Pediatric:

Age	ng/dL
1 - 59 Days	68 - 1303
60 Days - 1 Year	<= 219
2 - 6 Years	<= 140
7 - 9 Years	156
10 - 12 Years	15 - 220
13 - 17 Years	12 - 196

Storage/Transport Temperature:

Frozen

Stability (from collection to initiation):

Room temperature: Unacceptable
Refrigerated: 72 hours
Frozen -20° C: 14 days
Frozen -70° C: 30 days

Reported:

1-4 days

CPT Codes:

84140

LOINC Codes:

2837-3

Prenatal Screen, Cell-free DNA

CFFD

ORDERING

Available Stat:
No

Performing Lab:
Counsyl

Methodology:
Massively parallel sequencing

Reported:
7 days

Additional Information:
Determination in women at high risk for fetal trisomies 13, 18, and 21 who are pregnant with twins or a single fetus of at least 10 weeks' gestation. Test results that suggest high risk for fetal trisomy should prompt consideration for genetic counseling and/or additional genetic testing. Test results that suggest low risk for fetal trisomy should be reviewed with the patient by the health care provider. Results should be considered in the context of other clinical criteria.

Synonyms:

- Counsyl Prelude Prenatal Screen
- NIPT
- Non-invasive prenatal test

Supplemental Test Request Form Required:
Yes

COLLECTION

Sample Type:
Whole blood

Collect:
Cell-Free DNA (cfDNA) BCT Tube

Amount to Collect:
10 mL blood

Preferred Volume:
10 mL blood

Minimum Volume:
10 mL blood

Remarks:
Draw two BCT black/tan tubes per patient. Fully completed Counsyl requisition/kit required before draw.

Stability (from collection to initiation):
5 days

Rejection Criteria:
Gestational age <10 weeks; incorrect or expired blood tube; quantity not sufficient for analysis; specimen received more than five days from collection; excessive hemolysis; frozen specimens

PROCESSING

Test Code:
CFFD

Sendout:
Yes

Performing Lab:
Counsyl

Specimen Preparation:
Do not aliquot. Maintain at ambient temperature.

Preferred Volume:
10 mL blood

Minimum Volume:
10 mL blood

Rejection Criteria:
Gestational age <10 weeks; incorrect or expired blood tube; quantity not sufficient for analysis; specimen received more than five days from collection; excessive hemolysis; frozen specimens

Stability (from collection to initiation):
5 days

RESULT INTERPRETATION

Additional Information:
Determination in women at high risk for fetal trisomies 13, 18, and 21 who are pregnant with twins or a single fetus of at least 10 weeks' gestation. Test results that suggest high risk for fetal trisomy should prompt consideration for genetic counseling and/or additional genetic testing. Test results that suggest low risk for fetal trisomy should be reviewed with the patient by the health care provider. Results should be considered in the context of other clinical criteria.

ADMINISTRATIVE

CPT Codes:
81599-90

COMPLETE VIEW

Available Stat:
No

Test Code:
CFFD

Performing Lab:
Counsyl

Sendout:
Yes

Methodology:
Massively parallel sequencing

Remarks:
Draw two BCT black/tan tubes per patient. Fully completed Counsyl requisition/kit required before draw.

Collect:
Cell-Free DNA (cfDNA) BCT Tube

Amount to Collect:
10 mL blood

Sample Type:
Whole blood

Preferred Volume:
10 mL blood

Minimum Volume:
10 mL blood

Rejection Criteria:
Gestational age <10 weeks; incorrect or expired blood tube; quantity not sufficient for analysis; specimen received more than five days from collection; excessive hemolysis; frozen specimens

Specimen Preparation:
Do not aliquot. Maintain at ambient temperature.

Synonyms:

- Counsyl Prelude Prenatal Screen
- NIPT
- Non-invasive prenatal test

Stability (from collection to initiation):
5 days

Reported:
7 days

Additional Information:
Determination in women at high risk for fetal trisomies 13, 18, and 21 who are pregnant with twins or a single fetus of at least 10 weeks' gestation. Test results that suggest high risk for fetal trisomy should prompt consideration for genetic counseling and/or additional genetic testing. Test results that suggest low risk for fetal trisomy should be reviewed with the patient by the health care provider. Results should be considered in the context of other clinical criteria.

CPT Codes:
81599-90

Supplemental Test Request Form Required:
Yes

Pre-Surgical Type & Screen

BB28

ORDERING

Available Stat:
No

Performing Lab:
Parnassus Mt. Zion & Mission Bay Blood Banks

Performed:
Test available 24-hours a day 7-days a week at Parnassus and Mission Bay Blood Banks only.

Testing available at Mt. Zion 0700 Monday to 2300 Friday.

Reported:
Routine 4 hours

Additional Information:
Samples for this test should **NOT** be collected > 28 days prior to the patient's planned procedure.

If the patient has been transfused or pregnant in the preceding 3 months sample should **NOT be collected > 3 days prior to procedure. The concern is that such patients could be developing red cell allo-antibodies that could be missed if the samples are collected too far in advance.**

Synonyms:

- Specimen In BB-28 Days

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top (6 mL)

Amount to Collect:
See preferred volume.

Preferred Volume:

Patient Age	Amount to Collect
< 4 mo	2x Full Microtainer (1.6 mL)
4 mo - 1 year	3 mL
1 -18 years	3 - 6 mL (3 mL OK for small children)
> 18 years	6 mL x 2

Minimum Volume:

Patient Age	Amount to Collect
< 4 mo	Full Microtainer (0.8 mL)
4 mo - 1 year	1 mL
1 -18 years	3 mL (3 mL OK for small children)
> 18 years	5 mL

Remarks:
Specimen label must contain the date the sample was collected and the legible name or ID of the person who collected the sample

Unacceptable Conditions:
Unsigned, mislabeled, unlabeled or hemolyzed sample.

PROCESSING

Test Code:
BB28

Performing Lab:
Parnassus Mt. Zion & Mission Bay Blood Banks

Preferred Volume:

Patient Age	Amount to Collect
< 4 mo	2x Full Microtainer (1.6 mL)
4 mo - 1 year	3 mL
1 -18 years	3 - 6 mL (3 mL OK for small children)
> 18 years	6 mL x 2

Minimum Volume:

Patient Age	Amount to Collect
< 4 mo	Full Microtainer (0.8 mL)
4 mo - 1 year	1 mL
1 -18 years	3 mL (3 mL OK for small children)
> 18 years	5 mL

Unacceptable Conditions:
Unsigned, mislabeled, unlabeled or hemolyzed sample.

RESULT INTERPRETATION

Additional Information:
Samples for this test should **NOT** be collected > 28 days prior to the patient's planned procedure.

If the patient has been transfused or pregnant in the preceding 3 months sample should **NOT be collected > 3 days prior to procedure. The concern is that such patients could be developing red cell allo-antibodies that could be missed if the samples are collected too far in advance.**

ADMINISTRATIVE

LOINC Codes:
34532-2

COMPLETE VIEW

Available Stat:
No

Test Code:
BB28

Performing Lab:
Parnassus Mt. Zion & Mission Bay Blood Banks

Performed:
Test available 24-hours a day 7-days a week at Parnassus and Mission Bay Blood Banks only.

Testing available at Mt. Zion 0700 Monday to 2300 Friday.

Remarks:
Specimen label must contain the date the sample was collected and the legible name or ID of the person who collected the sample

Collect:
Lavender top (6 mL)

Amount to Collect:
See preferred volume.

Sample Type:
EDTA whole blood

Preferred Volume:

Patient Age	Amount to Collect
< 4 mo	2x Full Microtainer (1.6 mL)
4 mo - 1 year	3 mL
1 -18 years	3 - 6 mL (3 mL OK for small children)
> 18 years	6 mL x 2

Minimum Volume:

Patient Age	Amount to Collect
< 4 mo	Full Microtainer (0.8 mL)
4 mo - 1 year	1 mL
1 -18 years	3 mL (3 mL OK for small children)
> 18 years	5 mL

Unacceptable Conditions:

Unsigned, mislabeled, unlabeled or hemolyzed sample.

Synonyms:

- Specimen In BB-28 Days

Reported:

Routine 4 hours

Additional Information:

Samples for this test should **NOT** be collected > 28 days prior to the patient's planned procedure.

If the patient has been transfused or pregnant in the preceding 3 months sample should **NOT be collected > 3 days prior to procedure. The concern is that such patients could be developing red cell allo-antibodies that could be missed if the samples are collected too far in advance.**

LOINC Codes:

34532-2

Primidone

PRIM

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Immunoassay

Reported:
Test performed Monday-Saturday. Turnaround time: 1-4 days.

Additional Information:
Assay of Primidone levels is accompanied by the measurement of Primidone's major metabolite Phenobarbital, for which Quest considers the adult therapeutic level to be 10-40 mg/L, the pediatric therapeutic level to be 10-30, and the potentially toxic level to be > 40. See the lab manual's "A Guide on Drug Level Monitoring" (in the Chemistry Guide) for additional information.

Synonyms:

- Mysoline

COLLECTION

Sample Type:
Serum (EDTA plasma acceptable)

Collect:
Red top (Gold top **NOT** acceptable), Lavender OK

Amount to Collect:
4 mL blood

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.5 mL serum or plasma

Remarks:
Time to steady state: 2-3 days.

A trough levels is ideally drawn < 1 hour before the next dose.

Indicate the time of draw on the requisition.

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 2 weeks, frozen at -20C 1 month

Unacceptable Conditions:
Collected in Gold top (SST). Severely icteric, lipemic or hemolyzed samples

Rejection Criteria:
Severely icteric, lipemic or hemolyzed samples

PROCESSING

Test Code:
PRIM

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Centrifuge and immediately separate serum or plasma specimens from the cells into clean, plastic screw-capped vials. Refrigerate. Order Quest test # 751X . If B/T, order LabCorp #007856

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.5 mL serum or plasma

Unacceptable Conditions:
Collected in Gold top (SST). Severely icteric, lipemic or hemolyzed samples

Rejection Criteria:
Severely icteric, lipemic or hemolyzed samples

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 2 weeks, frozen at -20C 1 month

RESULT INTERPRETATION

Units:
mg/L

Reference Interval:
Primidone:
Therapeutic: 5-15 mg/L
Potentially toxic: > 15 mg/L

Phenobarbital: 15.0-40.0 mg/L

Critical Values:
Quest Priority-1: > 15 mg/L

Additional Information:
Assay of Primidone levels is accompanied by the measurement of Primidone's major metabolite Phenobarbital, for which Quest considers the adult therapeutic level to be 10-40 mg/L, the pediatric therapeutic level to be 10-30, and the potentially toxic level to be > 40. See the lab manual's "A Guide on Drug Level Monitoring" (in the Chemistry Guide) for additional information.

ADMINISTRATIVE

CPT Codes:
80188-90, 80184-90

LOINC Codes:
3978-4

COMPLETE VIEW

Available Stat:
No

Test Code:
PRIM

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Immunoassay

Remarks:
Time to steady state: 2-3 days.

A trough levels is ideally drawn < 1 hour before the next dose.

Indicate the time of draw on the requisition.

Collect:
Red top (Gold top **NOT** acceptable), Lavender OK

Amount to Collect:
4 mL blood

Sample Type:
Serum (EDTA plasma acceptable)

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.5 mL serum or plasma

Rejection Criteria:
Severely icteric, lipemic or hemolyzed samples

Unacceptable Conditions:
Collected in Gold top (SST). Severely icteric, lipemic or hemolyzed samples

Specimen Preparation:
Centrifuge and immediately separate serum or plasma specimens from the cells into clean, plastic screw-capped vials. Refrigerate. Order Quest test # 751X . If B/T, order LabCorp #007856

Units:
mg/L

Reference Interval:
Primidone:
Therapeutic: 5-15 mg/L
Potentially toxic: > 15 mg/L

Phenobarbital: 15.0-40.0 mg/L

Critical Values:
Quest Priority-1: > 15 mg/L

Synonyms:

- Mysoline

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 2 weeks, frozen at -20C 1 month

Reported:
Test performed Monday-Saturday. Turnaround time: 1-4 days.

Additional Information:
Assay of Primidone levels is accompanied by the measurement of Primidone's major metabolite Phenobarbital, for which Quest considers the adult therapeutic level to be 10-40 mg/L, the pediatric therapeutic level to be 10-30, and the potentially toxic level to be > 40. See the lab manual's "A Guide on Drug Level Monitoring" (in the Chemistry Guide) for additional information.

CPT Codes:
80188-90, 80184-90

LOINC Codes:
3978-4

Pro-B-Type Natriuretic Peptide, N-terminal

NPBNP

ORDERING

Available Stat:
No

Performing Lab:
Mt. Zion Chemistry

Performed:
M-F except holidays 0800 - 1700

Methodology:
Electrochemiluminescence immunoassay (ECLIA) - Roche cobas e411 instrument

Reported:
1-4 days

Additional Information:
BNP, is the active form of this protein hormone, has a short biological half-life of 20 minutes. NT-ProBNP, inactive fragment, has a half-life of 1-2 hours. Both are increased in CHF and both levels correlate to the severity of condition. In the future these two hormones may be used as prognostic indicators in ACS also; studies have shown that levels predict cardiac mortality and adverse cardiac events in patients with ACS.

Because of its longer half-life, there are advantages to measuring NT-ProBNP over BNP. In CHF patients receiving exogenous and synthetic BNP for treatment, BNP levels may be affected while NT-ProBNP will not be affected. NT-ProBNP is thought to be primarily cleared by kidneys and therefore falsely elevated in severe renal disease.

Unlike BNP, NTProBNP is not increased by therapy with sacubitril (present in Entresto™).

Under 50 years of age: N-terminal pro brain natriuretic peptide (NT-proBNP) values below 300 pg/mL have a 99% negative predictive value for excluding acute congestive heart failure (CHF). A cutoff of 1,200 pg/mL for patients with an estimated glomerular filtration rate (eGFR) below 60 yields a diagnostic sensitivity and specificity of 89% and 72% for acute CHF. NT-proBNP values greater than 450 pg/mL are consistent with CHF in adults under 50 years of age

50-75 years of age: NT-proBNP values below 300 pg/mL have a 99% negative predictive value for excluding acute CHF. A cutoff of 1,200 pg/mL, for patients with an eGFR below 60 yields a diagnostic sensitivity and specificity of 89% and 72% for acute CHF. A diagnostic NT-proBNP cutoff of 900 pg/mL has been suggested in adults 50 to 75 years of age in the absence of renal failure.

Over 75 years of age: NT-proBNP values below 300 pg/mL have a 99% negative predictive value for excluding acute CHF. A cutoff of 1,200 pg/mL for patients with an eGFR below 60 yields a diagnostic sensitivity and specificity of 89% and 72% for acute CHF. A diagnostic NT-proBNP cutoff of 1,800 pg/mL has been suggested in adults over 75 years of age in the absence of renal failure.

From: DeFilippi C, van Kimmenade R, Pinto YM: Amino-terminal pro-B-type natriuretic peptide testing in renal disease. Am J Cardiol 2008;101[suppl]:82A- 88A

Note that BNP is available stat while NT-Pro BNP is not.

According to the assay manufacturer, there is no interference in this assay from biotin levels up to 3500 ng/mL. Because high dose biotin treatment does not raise biotin levels above 3500 ng/mL, it should not be necessary to stop biotin therapy before blood collection for measurement of NT-proBNP

Synonyms:

- BNP
- brain type
- ANF
- ANH
- Atrial natriuretic factor
- Atrial natriuretic hormone
- Pro-BNP
- NT-Pro BNP

COLLECTION

Sample Type:
Blood

Collect:
Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Room temperature: 3 days
Refrigerated: 6 days
Frozen: 2 years

Storage/Transport Temperature:
Refrigerated

Unacceptable Conditions:
Gross hemolysis

PROCESSING

Test Code:
NPBNP

Performing Lab:
Mt. Zion Chemistry

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Gross hemolysis

Stability (from collection to initiation):
Room temperature: 3 days
Refrigerated: 6 days
Frozen: 2 years

Storage/Transport Temperature:
Refrigerated

RESULT INTERPRETATION

Units:
pg/mL

Reference Interval:
Congestive heart failure risk-based reference ranges (the cut-off of > 300 pg/mL is used to flag results as abnormal)

18-49 years	<=300 pg/mL >=450 pg/mL	Normal, heart failure unlikely High probability of heart failure
50-75 years	<=300 pg/mL >=900 pg/mL	Normal, heart failure unlikely High probability of heart failure
>75 years	<=300 pg/mL >=1800 pg/mL	Normal, heart failure unlikely High probability of heart failure

Reference ranges adopted from Quest Diagnostics based on method comparisons between Quest and UCSF using 45 patient samples. Reference ranges are based on the following publications: Shah et al., Clin Biochem 2010; 43:1405 and Januzzi et al., Eur Heart J 2006; 27:330.

Reference ranges from Manufacturer (95th percentile)

Age (years)	Male (pg/mL)	Female (pg/mL)
< 45	< 92.6	< 178
45-54	< 138	< 192
55-64	< 177	< 226
65-74	< 229	< 353
>= 75	< 852	< 624

Please note, a verification study of the Manufacturer's reference ranges was not performed by UCSF Clinical Laboratories.

Additional Information:

BNP, is the active form of this protein hormone, has a short biological half-life of 20 minutes. NT-ProBNP, inactive fragment, has a half-life of 1-2 hours. Both are increased in CHF and both levels correlate to the severity of condition. In the future these two hormones may be used as prognostic indicators in ACS also; studies have shown that levels predict cardiac mortality and adverse cardiac events in patients with ACS.

Because of its longer half-life, there are advantages to measuring NT-ProBNP over BNP. In CHF patients receiving exogenous and synthetic BNP for treatment, BNP levels may be affected while NT-ProBNP will not be affected. NT-ProBNP is thought to be primarily cleared by kidneys and therefore falsely elevated in severe renal disease.

Unlike BNP, NTProBNP is not increased by therapy with sacubitril (present in Entresto™).

Under 50 years of age: N-terminal pro brain natriuretic peptide (NT-proBNP) values below 300 pg/mL have a 99% negative predictive value for excluding acute congestive heart failure (CHF). A cutoff of 1,200 pg/mL for patients with an estimated glomerular filtration rate (eGFR) below 60 yields a diagnostic sensitivity and specificity of 89% and 72% for acute CHF. NT-proBNP values greater than 450 pg/mL are consistent with CHF in adults under 50 years of age

50-75 years of age: NT-proBNP values below 300 pg/mL have a 99% negative predictive value for excluding acute CHF. A cutoff of 1,200 pg/mL, for patients with an eGFR below 60 yields a diagnostic sensitivity and specificity of 89% and 72% for acute CHF. A diagnostic NT-proBNP cutoff of 900 pg/mL has been suggested in adults 50 to 75 years of age in the absence of renal failure.

Over 75 years of age: NT-proBNP values below 300 pg/mL have a 99% negative predictive value for excluding acute CHF. A cutoff of 1,200 pg/mL for patients with an eGFR below 60 yields a diagnostic sensitivity and specificity of 89% and 72% for acute CHF. A diagnostic NT-proBNP cutoff of 1,800 pg/mL has been suggested in adults over 75 years of age in the absence of renal failure.

From: DeFilippi C, van Kimmenade R, Pinto YM: Amino-terminal pro-B-type natriuretic peptide testing in renal disease. Am J Cardiol 2008;101[suppl]:82A- 88A

Note that BNP is available stat while NT-Pro BNP is not.

According to the assay manufacturer, there is no interference in this assay from biotin levels up to 3500 ng/mL. Because high dose biotin treatment does not raise biotin levels above 3500 ng/mL, it should not be necessary to stop biotin therapy before blood collection for measurement of NT-proBNP

ADMINISTRATIVE

CPT Codes:
83880

LOINC Codes:
33762-6

COMPLETE VIEW

Available Stat:
No

Test Code:
NPBNP

Performing Lab:
Mt. Zion Chemistry

Performed:
M-F except holidays 0800 - 1700

Methodology:
Electrochemiluminescence immunoassay (ECLIA) - Roche cobas e411 instrument

Collect:
Gold top

Amount to Collect:
2 mL blood

Sample Type:
Blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Gross hemolysis

Units:
pg/mL

Reference Interval:
Congestive heart failure risk-based reference ranges (the cut-off of > 300 pg/mL is used to flag results as abnormal)

18-49 years	<=300 pg/mL >=450 pg/mL	Normal, heart failure unlikely High probability of heart failure
50-75 years	<=300 pg/mL >=900 pg/mL	Normal, heart failure unlikely High probability of heart failure
>75 years	<=300 pg/mL >=1800 pg/mL	Normal, heart failure unlikely High probability of heart failure

Reference ranges adopted from Quest Diagnostics based on method comparisons between Quest and UCSF using 45 patient samples. Reference ranges are based on the following publications: Shah et al., Clin Biochem 2010; 43:1405 and Januzzi et al., Eur Heart J 2006; 27:330.

Reference ranges from Manufacturer (95th percentile)

Age (years)	Male (pg/mL)	Female (pg/mL)
< 45	< 92.6	< 178
45-54	< 138	< 192
55-64	< 177	< 226
65-74	< 229	< 353
>= 75	< 852	< 624

Please note, a verification study of the Manufacturer's reference ranges was not performed by UCSF Clinical Laboratories.

Synonyms:

- BNP
- brain type
- ANF
- ANH
- Atrial natriuretic factor
- Atrial natriuretic hormone
- Pro-BNP
- NT-Pro BNP

Storage/Transport Temperature:
Refrigerated

Stability (from collection to initiation):
Room temperature: 3 days
Refrigerated: 6 days
Frozen: 2 years

Reported:
1-4 days

Additional Information:

BNP, is the active form of this protein hormone, has a short biological half-life of 20 minutes. NT-ProBNP, inactive fragment, has a half-life of 1-2 hours. Both are increased in CHF and both levels correlate to the severity of condition. In the future these two hormones may be used as prognostic indicators in ACS also; studies have shown that levels predict cardiac mortality and adverse cardiac events in patients with ACS.

Because of its longer half-life, there are advantages to measuring NT-ProBNP over BNP. In CHF patients receiving exogenous and synthetic BNP for treatment, BNP levels may be affected while NT-ProBNP will not be affected. NT-ProBNP is thought to be primarily cleared by kidneys and therefore falsely elevated in severe renal disease.

Unlike BNP, NTProBNP is not increased by therapy with sacubitril (present in Entresto™).

Under 50 years of age: N-terminal pro brain natriuretic peptide (NT-proBNP) values below 300 pg/mL have a 99% negative predictive value for excluding acute congestive heart failure (CHF). A cutoff of 1,200 pg/mL for patients with an estimated glomerular filtration rate (eGFR) below 60 yields a diagnostic sensitivity and specificity of 89% and 72% for acute CHF. NT-proBNP values greater than 450 pg/mL are consistent with CHF in adults under 50 years of age

50-75 years of age: NT-proBNP values below 300 pg/mL have a 99% negative predictive value for excluding acute CHF. A cutoff of 1,200 pg/mL, for patients with an eGFR below 60 yields a diagnostic sensitivity and specificity of 89% and 72% for acute CHF. A diagnostic NT-proBNP cutoff of 900 pg/mL has been suggested in adults 50 to 75 years of age in the absence of renal failure.

Over 75 years of age: NT-proBNP values below 300 pg/mL have a 99% negative predictive value for excluding acute CHF. A cutoff of 1,200 pg/mL for patients with an eGFR below 60 yields a diagnostic sensitivity and specificity of 89% and 72% for acute CHF. A diagnostic NT-proBNP cutoff of 1,800 pg/mL has been suggested in adults over 75 years of age in the absence of renal failure.

From: DeFilippi C, van Kimmenade R, Pinto YM: Amino-terminal pro-B-type natriuretic peptide testing in renal disease. Am J Cardiol 2008;101[suppl]:82A- 88A

Note that BNP is available stat while NT-Pro BNP is not.

According to the assay manufacturer, there is no interference in this assay from biotin levels up to 3500 ng/mL. Because high dose biotin treatment does not raise biotin levels above 3500 ng/mL, it should not be necessary to stop biotin therapy before blood collection for measurement of NT-proBNP

CPT Codes:

83880

LOINC Codes:

33762-6

Procainamide and N-Acetylprcainamide (NAPA)

PNAPA

ORDERING

Available Stat:
No

Performing Lab:
Stanford Healthcare Lab

Methodology:
Competitive homogeneous enzyme immunoassays (Roche Cobas c503)

Reported:
Samples received in the Mission Bay lab by 12pm will be reported the same day. Samples received after this time will be reported the following day.

Samples received in the Parnassus lab by 10am will be reported the same day. Samples received after this time will be reported the following day.

Additional Information:
Includes measurement of procainamide and the metabolite NAPA. See the lab manual's "A Guide on Drug Level Monitoring" (in the Chemistry Guide) for additional information.

Synonyms:

- Pronestyl
- Procan
- N-Acetylprocainamide
- NAPA

COLLECTION

Sample Type:
Plasma or serum

Collect:
Light green top preferred, gold top acceptable

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL plasma or serum

Minimum Volume:
0.2 mL plasma and serum

Remarks:
Time to steady state: 12-24 hours.

Collect samples 6-12 hours after start of infusion.

Indicate date and time of draw on requisition.

Trough should be collected just before next dose.

Stability (from collection to initiation):
Refrigerated 24 weeks, frozen 6 months.

PROCESSING

Test Code:
PNAPA (battery code)
PROCAN and NACPR (test codes)

Sendout:
Yes

Performing Lab:
Stanford Healthcare Lab

Specimen Preparation:

Centrifuge within 2 hours of collection.
Samples should be aliquoted and refrigerated and shipped to China Basin (Monday through Friday) or Mission Bay (holidays and weekends) if received at another location.

Mission Bay Processing:
Complete Stanford Hospital Laboratory paper requisition form with the patient information.
Check box for LABANAPL (Procainamide and NAPA).
Monday through Friday: send samples to China Basin.
Holidays and weekends: If there are procainamide/NAPA samples, at 3pm every day, call an AmTran courier to take the samples to Stanford.

Courier: AmTran
Courier phone number: 877-243-8733

Stanford lab address:
ATTN: Chemistry Lab
Stanford Healthcare Lab, 300 Pasteur Drive, Clinical Lab, F17, Room H1537, Palo Alto, CA 94305

China Basin Processing:
Place procainamide/NAPA samples and requisitions with the other samples that are sent to Stanford and ensure the Stanford courier picks them up.

Preferred Volume:

1 mL plasma or serum

Minimum Volume:

0.2 mL plasma and serum

Stability (from collection to initiation):

Refrigerated 24 weeks, frozen 6 months.

RESULT INTERPRETATION

Units:

µg/mL

Reference Interval:

Procainamide: Therapeutic: 4.0-10.0 µg/mL
NAPA: 12-18 µg/mL

Critical Values:

Procainamide: > 10 µg/mL
NAPA: >= 40 µg/mL

Additional Information:

Includes measurement of procainamide and the metabolite NAPA. See the lab manual's "A Guide on Drug Level Monitoring" (in the Chemistry Guide) for additional information.

ADMINISTRATIVE

CPT Codes:

80192

LOINC Codes:

3982-6, 3834-9, 3983-4

COMPLETE VIEW

Available Stat:

No

Test Code:

PNAPA (battery code)
PROCAN and NACPR (test codes)

Performing Lab:

Stanford Healthcare Lab

Sendout:

Yes

Methodology:

Competitive homogeneous enzyme immunoassays (Roche Cobas c503)

Remarks:

Time to steady state: 12-24 hours.

Collect samples 6-12 hours after start of infusion.

Indicate date and time of draw on requisition.

Trough should be collected just before next dose.

Collect:

Light green top preferred, gold top acceptable

Amount to Collect:

2 mL blood

Sample Type:

Plasma or serum

Preferred Volume:

1 mL plasma or serum

Minimum Volume:

0.2 mL plasma and serum

Specimen Preparation:

Centrifuge within 2 hours of collection.
Samples should be aliquoted and refrigerated and shipped to China Basin (Monday through Friday) or Mission Bay (holidays and weekends) if received at another location.

Mission Bay Processing:
Complete Stanford Hospital Laboratory paper requisition form with the patient information.
Check box for LABANAPL (Procainamide and NAPA).
Monday through Friday: send samples to China Basin.
Holidays and weekends: If there are procainamide/NAPA samples, at 3pm every day, call an AmTran courier to take the samples to Stanford.

Courier: AmTran
Courier phone number: 877-243-8733

Stanford lab address:
ATTN: Chemistry Lab
Stanford Healthcare Lab, 300 Pasteur Drive, Clinical Lab, F17, Room H1537, Palo Alto, CA 94305

China Basin Processing:
Place procainamide/NAPA samples and requisitions with the other samples that are sent to Stanford and ensure the Stanford courier picks them up.

Units:

µg/mL

Reference Interval:

Procainamide: Therapeutic: 4.0-10.0 µg/mL
NAPA: 12-18 µg/mL

Critical Values:

Procainamide: > 10 µg/mL
NAPA: >= 40 µg/mL

Synonyms:

- Pronestyl
- Procan
- N-Acetylprocainamide
- NAPA

Stability (from collection to initiation):

Refrigerated 24 weeks, frozen 6 months.

Reported:

Samples received in the Mission Bay lab by 12pm will be reported the same day. Samples received after this time will be reported the following day.

Samples received in the Parnassus lab by 10am will be reported the same day. Samples received after this time will be reported the following day.

Additional Information:

Includes measurement of procainamide and the metabolite NAPA. See the lab manual's "A Guide on Drug Level Monitoring" (in the Chemistry Guide) for additional information.

CPT Codes:

80192

LOINC Codes:

3982-6, 3834-9, 3983-4

Procalcitonin

PCTN

ORDERING

Ordering Recommendations:
Click here for the Procalcitonin (PCT) Clinical Decision Support Tool.

Available Stat:
Yes

Performing Lab:
Parnassus and Mission Bay Chemistry

Performed:
Test run 24 hours per day, 7 days per week

Methodology:
Chemiluminescent Microparticle Immunoassay (Abbott Architect i2000)

Reported:
Results will be available within 1-4 hours of receipt in the laboratory.

Synonyms:

- PCT
- Sepsis

COLLECTION

Sample Type:
Plasma or serum

Collect:
Preferred: Lt Green (Li-Heparin) top
Acceptable: Gold top

Amount to Collect:
1 mL blood

Preferred Volume:
0.3 mL plasma/serum

Minimum Volume:
0.15 mL plasma/serum

Remarks:
When monitoring patients, use the same specimen collection tube type throughout the evaluation.

Stability (from collection to initiation):
Room Temperature:
<= 8 hours on the clot, red blood cell, or separator gel
<= 24 hours off the clot, red blood cell, or separator gel

Refrigerated (2-8°C): <= 48 hours
Frozen (-10°C or colder): <= 15 days

Avoid more than 3 freeze-thaw cycles.

Storage/Transport Temperature:
Refrigerated (2-8°C)

PROCESSING

Test Code:
PCTN

Performing Lab:
Parnassus and Mission Bay Chemistry

Specimen Preparation:
Aliquot and store refrigerated (2-8°C)

Preferred Volume:
0.3 mL plasma/serum

Minimum Volume:
0.15 mL plasma/serum

Stability (from collection to initiation):

Room Temperature:
<= 8 hours on the clot, red blood cell, or separator gel
<= 24 hours off the clot, red blood cell, or separator gel

Refrigerated (2-8°C): <= 48 hours
Frozen (-10°C or colder): <= 15 days

Avoid more than 3 freeze-thaw cycles.

Storage/Transport Temperature:

Refrigerated (2-8°C)

RESULT INTERPRETATION

Units:

µg/L

Reference Interval:

< 0.26 µg/L

The following cutoffs for guiding interpretation of procalcitonin results were established with the UCSF Infectious Disease service and verified in-house with 30 normal volunteers. These guidelines are also consistent with www.UpToDate.com.

Interpretive Data:

The purpose of procalcitonin (PCT) testing at UCSF is mainly for assisting in decision making about de-escalation of antibiotics in the setting of sepsis and/or lower respiratory tract infection. Importantly, PCT should be used adjunctively with clinical judgment in the de-escalation of antibiotics.

The following cutoffs for guiding interpretation of PCT results were established based on published literature and in consultation with the UCSF Infectious Disease service.

<0.1 microgram/L = very low likelihood of bacterial infection *
0.1-0.25 microgram/L = low likelihood of bacterial infection *
> 0.25 microgram/L = elevated likelihood of bacterial infection *

* Note, these cutoffs for guiding interpretation of PCT results do not apply in all clinical circumstances. Guidelines have not been established for interpretation of procalcitonin results in pediatric patients.
Procalcitonin levels are not elevated in all bacterial infections and may be elevated in other conditions besides bacterial infections.

Examples where false negative results may occur - (low PCT values in presence of bacterial infection):
• Contained infections (mediastinitis, empyema, or abscess)
• Intracellular bacteria (listeria, legionella, mycoplasma)
• Procalcitonin sample drawn in the first 6-12 hours of infection

Examples where false positive results may occur - (elevated PCT values in the absence of bacterial infection):
• Severe trauma
• Surgery
• Cardiac shock
• Burns
• Malaria
• Systemic vasculitis
• Severe pancreatitis
• Receipt of certain immunomodulatory agents: granulocyte transfusions, antilymphocyte globulin, anti-CD3 antibodies
• Systemic fungal and parasitic infections
• Medullary thyroid tumors
• End-stage renal disease (if not yet on hemodialysis)
• Elderly (age >80)

Procalcitonin should not be sent in immunocompromised patients or pregnant patients.

For detailed guidance on interpretation of procalcitonin levels, see www.uptodate.com

ADMINISTRATIVE

CPT Codes:

84145

LOINC Codes:

33959-8

COMPLETE VIEW

Available Stat:
Yes

Ordering Recommendations:
Click here for the Procalcitonin (PCT) Clinical Decision Support Tool.

Test Code:
PCTN

Performing Lab:
Parnassus and Mission Bay Chemistry

Performed:
Test run 24 hours per day, 7 days per week

Methodology:
Chemiluminescent Microparticle Immunoassay (Abbott Architect i2000)

Remarks:
When monitoring patients, use the same specimen collection tube type throughout the evaluation.

Collect:
Preferred: Lt Green (Li-Heparin) top
Acceptable: Gold top

Amount to Collect:
1 mL blood

Sample Type:
Plasma or serum

Preferred Volume:
0.3 mL plasma/serum

Minimum Volume:
0.15 mL plasma/serum

Specimen Preparation:
Aliquot and store refrigerated (2-8°C)

Units:
µg/L

Reference Interval:
< 0.26 µg/L

The following cutoffs for guiding interpretation of procalcitonin results were established with the UCSF Infectious Disease service and verified in-house with 30 normal volunteers. These guidelines are also consistent with www.UpToDate.com.

Interpretive Data:

The purpose of procalcitonin (PCT) testing at UCSF is mainly for assisting in decision making about de-escalation of antibiotics in the setting of sepsis and/or lower respiratory tract infection. Importantly, PCT should be used adjunctively with clinical judgment in the de-escalation of antibiotics.

The following cutoffs for guiding interpretation of PCT results were established based on published literature and in consultation with the UCSF Infectious Disease service.

<0.1 microgram/L = very low likelihood of bacterial infection *
0.1-0.25 microgram/L = low likelihood of bacterial infection *
> 0.25 microgram/L = elevated likelihood of bacterial infection *

* Note, these cutoffs for guiding interpretation of PCT results do not apply in all clinical circumstances. Guidelines have not been established for interpretation of procalcitonin results in pediatric patients.
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• Contained infections (mediastinitis, empyema, or abscess)
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• Procalcitonin sample drawn in the first 6-12 hours of infection

Examples where false positive results may occur - (elevated PCT values in the absence of bacterial infection):
• Severe trauma
• Surgery
• Cardiac shock
• Burns
• Malaria
• Systemic vasculitis
• Severe pancreatitis
• Receipt of certain immunomodulatory agents: granulocyte transfusions, antilymphocyte globulin, anti-CD3 antibodies
• Systemic fungal and parasitic infections
• Medullary thyroid tumors
• End-stage renal disease (if not yet on hemodialysis)
• Elderly (age >80)

Procalcitonin should not be sent in immunocompromised patients or pregnant patients.

For detailed guidance on interpretation of procalcitonin levels, see www.uptodate.com

Synonyms:

- PCT
- Sepsis

Storage/Transport Temperature:

Refrigerated (2-8°C)

Stability (from collection to initiation):

Room Temperature:
<= 8 hours on the clot, red blood cell, or separator gel
<= 24 hours off the clot, red blood cell, or separator gel

Refrigerated (2-8°C): <= 48 hours
Frozen (-10°C or colder): <= 15 days

Avoid more than 3 freeze-thaw cycles.

Reported:

Results will be available within 1-4 hours of receipt in the laboratory.

CPT Codes:

84145

LOINC Codes:

33959-8

Procollagen I Propeptide

P1NP

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Immunoassay

Reported:
5 - 7 days

Synonyms:

- P1NP

COLLECTION

Sample Type:
Serum

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Room temperature unacceptable,refrigerated 27 days, frozen 2 months

Unacceptable Conditions:
Gossly hemolyzed or lipemic samples

Rejection Criteria:
Gossly hemolyzed or lipemic samples

PROCESSING

Test Code:
P1NP

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot and freeze. Transport to CB frozen. Order Quest test code 16609.

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Gossly hemolyzed or lipemic samples

Rejection Criteria:
Gossly hemolyzed or lipemic samples

Stability (from collection to initiation):
Room temperature unacceptable,refrigerated 27 days, frozen 2 months

RESULT INTERPRETATION

Units:
µg/L (mcg/L)

ADMINISTRATIVE

CPT Codes:
83519-90

LOINC Codes:
47255-5

COMPLETE VIEW

Available Stat:
No

Test Code:
P1NP

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Immunoassay

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Rejection Criteria:
Gossly hemolyzed or lipemic samples

Unacceptable Conditions:
Gossly hemolyzed or lipemic samples

Specimen Preparation:
Aliquot and freeze. Transport to CB frozen. Order Quest test code 16609.

Units:
µg/L (mcg/L)

Synonyms:

- P1NP

Stability (from collection to initiation):
Room temperature unacceptable,refrigerated 27 days, frozen 2 months

Reported:
5 - 7 days

CPT Codes:
83519-90

LOINC Codes:
47255-5

Progesterone Quantitative by HPLC-MS/MS, Serum or Plasma

PGSN

ORDERING

Ordering Recommendations:
Aids in the workup of suspected infertility, detection of ovulation, and assessment of the luteal phase.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative High Performance Liquid Chromatography-Tandem Mass Spectrometry

Reported:
1-5 days

Synonyms:

- P4

COLLECTION

Sample Type:
Serum

Collect:
Serum separator tube (SST). Also acceptable: Plain red, pink (K_2EDTA), plasma separator tube (PST), green (sodium heparin), or green (lithium heparin).

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
After separation from cells: Ambient: 3 Days; Refrigerated: 1 week; Frozen: 6 months.

Storage/Transport Temperature:
Refrigerated. Also acceptable: Frozen.

Unacceptable Conditions:
Grossly hemolyzed specimens.

PROCESSING

Test Code:
PGSN

ARUP Test Code:
2008509

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transfer 1 mL serum or plasma to an ARUP standard transport tube. (Min: 0.3 mL)

Additional Processing Instructions:
Aliquot and freeze sample. Transport to CB frozen. Order ARUP test code 2008509.

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Grossly hemolyzed specimens.

Stability (from collection to initiation):
After separation from cells: Ambient: 3 Days; Refrigerated: 1 week; Frozen: 6 months.

Storage/Transport Temperature:
Refrigerated. Also acceptable: Frozen.

RESULT INTERPRETATION

Reference Interval:
Effective May 16, 2016

Age	Males
Less than 1 year	Not Established
1-16 years	Less than or equal to 0.15 ng/mL
17 years and older	Less than or equal to 0.11 ng/mL

Age	Females
Less than 1 year	Not Established
1-10 years	Less than or equal to 0.26 ng/mL
11 years	Less than or equal to 2.55 ng/mL
12 years	Less than or equal to 8.56 ng/mL
13 years	Less than or equal to 6.93 ng/mL
14 years	Less than or equal to 12.04 ng/mL
15 years	Less than or equal to 10.76 ng/mL
16 years	Less than or equal to 12.94 ng/mL
17 years and older	Based on Cycle Days
1-6 days	Less than or equal to 0.17 ng/mL
7-12 days	Less than or equal to 1.35 ng/mL
13-15 days	Less than or equal to 15.63 ng/mL
16-28 days	Less than or equal to 25.55 ng/mL
Post-Menopausal	Less than or equal to 0.10 ng/mL
Pregnancy, First Trimester	6.25 - 45.46 ng/mL
Pregnancy, Second Trimester	15.40 - 52.10 ng/mL
Pregnancy, Third Trimester	24.99 - 99.92 ng/mL

ADMINISTRATIVE

CPT Codes:
84144

LOINC:

- 2839-9

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Aids in the workup of suspected infertility, detection of ovulation, and assessment of the luteal phase.

Test Code:
PGSN

ARUP Test Code:
2008509

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative High Performance Liquid Chromatography-Tandem Mass Spectrometry

Collect:
Serum separator tube (SST). Also acceptable: Plain red, pink (K_2EDTA), plasma separator tube (PST), green (sodium heparin), or green (lithium heparin).

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Grossly hemolyzed specimens.

Specimen Preparation:
Transfer 1 mL serum or plasma to an ARUP standard transport tube. (Min: 0.3 mL)

Additional Processing Instructions:
Aliquot and freeze sample. Transport to CB frozen. Order ARUP test code 2008509.

Reference Interval:
Effective May 16, 2016

Age	Males
Less than 1 year	Not Established
1-16 years	Less than or equal to 0.15 ng/mL
17 years and older	Less than or equal to 0.11 ng/mL

Age	Females
Less than 1 year	Not Established
1-10 years	Less than or equal to 0.26 ng/mL
11 years	Less than or equal to 2.55 ng/mL
12 years	Less than or equal to 8.56 ng/mL
13 years	Less than or equal to 6.93 ng/mL
14 years	Less than or equal to 12.04 ng/mL
15 years	Less than or equal to 10.76 ng/mL
16 years	Less than or equal to 12.94 ng/mL
17 years and older	Based on Cycle Days
1-6 days	Less than or equal to 0.17 ng/mL
7-12 days	Less than or equal to 1.35 ng/mL
13-15 days	Less than or equal to 15.63 ng/mL
16-28 days	Less than or equal to 25.55 ng/mL
Post-Menopausal	Less than or equal to 0.10 ng/mL
Pregnancy, First Trimester	6.25 - 45.46 ng/mL
Pregnancy, Second Trimester	15.40 - 52.10 ng/mL
Pregnancy, Third Trimester	24.99 - 99.92 ng/mL

Synonyms:

- P4

Storage/Transport Temperature:
Refrigerated. Also acceptable: Frozen.

Stability (from collection to initiation):
After separation from cells: Ambient: 3 Days; Refrigerated: 1 week; Frozen: 6 months.

Reported:
1-5 days

CPT Codes:
84144

LOINC:

- 2839-9

Progesterone, Pediatric

NPROG

ORDERING

Approval Required:
Yes, contact Chemistry/Immunology Resident at x3-1438. for patients > 20 years old.

Available Stat:
No

Performing Lab:
Quest

Methodology:
LC/MS/MS

Reported:
Test run 5x per week. Turnaround time: 6-8 days.

Additional Information:
This send-out assay is primarily reserved for testing in pediatric patients with suspected or complex endocrine abnormalities. For adult patients see "Progesterone" (test code PROG). It requires approval if ordered in patients over the age of 20.

This test (1) establishes the presence of a functioning corpus luteum or luteal cell function, (2) confirms basal body temperature measurements of the occurrence of ovulation, (3) affords an indication of the day of ovulation, (4) assesses placental function during pregnancy.

Synonyms:

- Progesterone ultrasensitive

COLLECTION

Sample Type:
Serum

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Room temperature 2 weeks, refrigerated 4 weeks, frozen 2 years.

Unacceptable Conditions:
Collected in Gold top

PROCESSING

Test Code:
NPROG

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate serum. Specify age, sex and menstrual phase and menopausal and pregnancy status on the request form. Order Quest # 17183

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Collected in Gold top

Stability (from collection to initiation):
Room temperature 2 weeks, refrigerated 4 weeks, frozen 2 years.

RESULT INTERPRETATION

Reference Interval:

Males:

5-9 years	<= 0.7 ng/mL
10-13 years	<= 1.2 ng/mL
14-17 years	<= 0.8 ng/mL
18-29 years	<= 0.3 ng/mL
30-39 years	<= 0.2 ng/mL
40-49 years	<= 0.2 ng/mL
50-59 years	<= 0.2 ng/mL

Females:

5-9 years	0.6 ng/mL
10-13 years	10.2 ng/mL
14-17 years	11.9 ng/mL
Early Follicular Phase	<= 0.6 ng/mL
Late Follicular Phase	<= 2.7 ng/mL
Mid-Cycle Phase	<= 16.1 ng/mL
Luteal Phase	<= 3.0-31.4 ng/mL
Postmenopausal Women	<= 0.2 ng/mL

Additional Information:

This send-out assay is primarily reserved for testing in pediatric patients with suspected or complex endocrine abnormalities. For adult patients see "Progesterone" (test code PROG). It requires approval if ordered in patients over the age of 20.

This test (1) establishes the presence of a functioning corpus luteum or luteal cell function, (2) confirms basal body temperature measurements of the occurrence of ovulation, (3) affords an indication of the day of ovulation, (4) assesses placental function during pregnancy.

ADMINISTRATIVE

CPT Codes:
84144-90

LOINC Codes:
2839-9

COMPLETE VIEW

Approval Required:
Yes, contact Chemistry/Immunology Resident at x3-1438. for patients > 20 years old.

Available Stat:
No

Test Code:
NPROG

Performing Lab:
Quest

Sendout:
Yes

Methodology:
LC/MS/MS

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Collected in Gold top

Specimen Preparation:
Refrigerate serum. Specify age, sex and menstrual phase and menopausal and pregnancy status on the request form.
Order Quest # 17183

Reference Interval:
Males:

5-9 years	<= 0.7 ng/mL
10-13 years	<= 1.2 ng/mL
14-17 years	<= 0.8 ng/mL
18-29 years	<= 0.3 ng/mL
30-39 years	<= 0.2 ng/mL
40-49 years	<= 0.2 ng/mL
50-59 years	<= 0.2 ng/mL

Females:

5-9 years	0.6 ng/mL
10-13 years	10.2 ng/mL
14-17 years	11.9 ng/mL
Early Follicular Phase	<= 0.6 ng/mL
Late Follicular Phase	<= 2.7 ng/mL
Mid-Cycle Phase	<= 16.1 ng/mL
Luteal Phase	<= 3.0-31.4 ng/mL
Postmenopausal Women	<= 0.2 ng/mL

Synonyms:

- Progesterone ultrasensitive

Stability (from collection to initiation):
Room temperature 2 weeks, refrigerated 4 weeks, frozen 2 years.

Reported:
Test run 5x per week. Turnaround time: 6-8 days.

Additional Information:
This send-out assay is primarily reserved for testing in pediatric patients with suspected or complex endocrine abnormalities. For adult patients see "Progesterone" (test code PROG). It requires approval if ordered in patients over the age of 20.

This test (1) establishes the presence of a functioning corpus luteum or luteal cell function, (2) confirms basal body temperature measurements of the occurrence of ovulation, (3) affords an indication of the day of ovulation, (4) assesses placental function during pregnancy.

CPT Codes:
84144-90

LOINC Codes:
2839-9

Proinsulin

PROINS

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
Immunochemiluminescent assay

Reported:
4-7 days

Additional Information:
Normal individuals will have proinsulin concentrations below the upper limit of the normal fasting reference range (20 pmol/L) when hypoglycemic (blood glucose <45-60 mg/dL). Conversely, most (>80%) insulinoma patients will have proinsulin concentrations above the upper limit of the reference range. The sensitivity and specificity for a diagnosis of insulinoma during hypoglycemia are approximately 75% and near 100%, respectively, at the 20 pmol/L cutoff. A higher sensitivity (>95%) can be achieved using a 5 pmol/L cutoff, and this is the cutoff recommended by the Mayo Clinic's highly experienced hypoglycemia team to avoid missing cases. However, the lower cutoff results in a reduced specificity (approximately 40%), emphasizing the need for a combination of different tests to assure accurate biochemical diagnosis.

Patients with PC1/3 deficiency have low, or sometimes undetectable, insulin levels and substantially elevated proinsulin levels, exceeding the upper limit of the reference range substantially in the fasting state and rising even higher after food intake. Many other hormonal abnormalities are also present, including cortisol deficiency (because of lack of processing of pro-opiomelanocortin to adrenocorticotropic hormone and other peptides), infertility and, often, morbid obesity.

This assay demonstrates no cross-reactivity with insulin or C-peptide.

A polyclonal capture antibody-conjugated bead recognizing human insulin is incubated with standards, controls and patient samples, capturing insulin and proinsulin, but not free C-peptide. Following washing, a polyclonal acridinium ester-labeled antiserum that recognizes C-peptide is added, binding to captured proinsulin, but not to captured insulin. After overnight incubation, the bead is washed, and flash-chemiluminescence is triggered and measured. The chemiluminescence signal is proportional to the concentration of proinsulin in the sample. (Kao PC, Taylor RT, Service FG: Proinsulin by novel ICMA-diagnostic implication for insulinoma. 75th Annual Meeting, Endocrine Society, #740, p 235, 1993; Kao PC, Taylor RT, Service FG: Proinsulin by immunochemiluminometric assay for the diagnosis of insulinoma. J Clin Endocrinol Metab 1994;78:1048-1051)

COLLECTION

Patient Preparation:
Overnight fasting before specimen collection is required.

Sample Type:
EDTA Plasma

Collect:
Lavender top (on ice)

Amount to Collect:
3 mL blood

Preferred Volume:
1.5 mL plasma

Minimum Volume:
1.0 mL plasma

Remarks:
Pre-chill lavender top in ice prior to ,collection. Transport sample to lab on ice immediately after collection.,

Stability (from collection to initiation):
Refrigerated 1 week, frozen at -20C 2 weeks.

Unacceptable Conditions:
Grossly hemolyzed or lipemic samples.

Rejection Criteria:
Sample received at room temperature, gross hemolysis or lipenmia

PROCESSING

Test Code:
PROINS

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Use refrigerated centrifge to spin sample down. Aliquot 1,5 mL plasma into plastic vial and freeze at -20C. Transport frozen on dry ice.

Preferred Volume:
1.5 mL plasma

Minimum Volume:
1.0 mL plasma

Unacceptable Conditions:
Grossly hemolyzed or lipemic samples.

Rejection Criteria:
Sample received at room temperature, gross hemolysis or lipenmia

Stability (from collection to initiation):
Refrigerated 1 week, frozen at -20C 2 weeks.

RESULT INTERPRETATION

Units:
pmol/L

Reference Interval:
3 - 20 pmol/L

Additional Information:
Normal individuals will have proinsulin concentrations below the upper limit of the normal fasting reference range (20 pmol/L) when hypoglycemic (blood glucose <45-60 mg/dL). Conversely, most (>80%) insulinoma patients will have proinsulin concentrations above the upper limit of the reference range. The sensitivity and specificity for a diagnosis of insulinoma during hypoglycemia are approximately 75% and near 100%, respectively, at the 20 pmol/L cutoff. A higher sensitivity (>95%) can be achieved using a 5 pmol/L cutoff, and this is the cutoff recommended by the Mayo Clinic's highly experienced hypoglycemia team to avoid missing cases. However, the lower cutoff results in a reduced specificity (approximately 40%), emphasizing the need for a combination of different tests to assure accurate biochemical diagnosis.

Patients with PC1/3 deficiency have low, or sometimes undetectable, insulin levels and substantially elevated proinsulin levels, exceeding the upper limit of the reference range substantially in the fasting state and rising even higher after food intake. Many other hormonal abnormalities are also present, including cortisol deficiency (because of lack of processing of pro-opiomelanocortin to adrenocorticotropic hormone and other peptides), infertility and, often, morbid obesity.

This assay demonstrates no cross-reactivity with insulin or C-peptide.

A polyclonal capture antibody-conjugated bead recognizing human insulin is incubated with standards, controls and patient samples, capturing insulin and proinsulin, but not free C-peptide. Following washing, a polyclonal acridinium ester-labeled antiserum that recognizes C-peptide is added, binding to captured proinsulin, but not to captured insulin. After overnight incubation, the bead is washed, and flash-chemiluminescence is triggered and measured. The chemiluminescence signal is proportional to the concentration of proinsulin in the sample. (Kao PC, Taylor RT, Service FG: Proinsulin by novel ICMA-diagnostic implication for insulinoma. 75th Annual Meeting, Endocrine Society, #740, p 235, 1993; Kao PC, Taylor RT, Service FG: Proinsulin by immunochemiluminometric assay for the diagnosis of insulinoma. J Clin Endocrinol Metab 1994;78:1048-1051)

ADMINISTRATIVE

CPT Codes:
84206-90

LOINC Codes:
27882-0

COMPLETE VIEW

Available Stat:
No

Test Code:
PROINS

Performing Lab:
Mayo

Sendout:
Yes

Methodology:
Immunochemiluminescent assay

Patient Preparation:
Overnight fasting before specimen collection is required.

Remarks:
Pre-chill lavender top in ice prior to ,collection. Transport sample to lab on ice immediately after collection.,

Collect:
Lavender top (on ice)

Amount to Collect:
3 mL blood

Sample Type:
EDTA Plasma

Preferred Volume:
1.5 mL plasma

Minimum Volume:
1.0 mL plasma

Rejection Criteria:
Sample received at room temperature, gross hemolysis or lipenmia

Unacceptable Conditions:
Grossly hemolyzed or lipemic samples.

Specimen Preparation:
Use refrigerated centrifge to spin sample down. Aliquot 1,5 mL plasma into plastic vial and freeze at -20C. Transport frozen on dry ice.

Units:
pmol/L

Reference Interval:
3 - 20 pmol/L

Stability (from collection to initiation):
Refrigerated 1 week, frozen at -20C 2 weeks.

Reported:
4-7 days

Additional Information:
Normal individuals will have proinsulin concentrations below the upper limit of the normal fasting reference range (20 pmol/L) when hypoglycemic (blood glucose <45-60 mg/dL). Conversely, most (>80%) insulinoma patients will have proinsulin concentrations above the upper limit of the reference range. The sensitivity and specificity for a diagnosis of insulinoma during hypoglycemia are approximately 75% and near 100%, respectively, at the 20 pmol/L cutoff. A higher sensitivity (>95%) can be achieved using a 5 pmol/L cutoff, and this is the cutoff recommended by the Mayo Clinic's highly experienced hypoglycemia team to avoid missing cases. However, the lower cutoff results in a reduced specificity (approximately 40%), emphasizing the need for a combination of different tests to assure accurate biochemical diagnosis.

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This assay demonstrates no cross-reactivity with insulin or C-peptide.

A polyclonal capture antibody-conjugated bead recognizing human insulin is incubated with standards, controls and patient samples, capturing insulin and proinsulin, but not free C-peptide. Following washing, a polyclonal acridinium ester-labeled antiserum that recognizes C-peptide is added, binding to captured proinsulin, but not to captured insulin. After overnight incubation, the bead is washed, and flash-chemiluminescence is triggered and measured. The chemiluminescence signal is proportional to the concentration of proinsulin in the sample. (Kao PC, Taylor RT, Service FG: Proinsulin by novel ICMA-diagnostic implication for insulinoma. 75th Annual Meeting, Endocrine Society, #740, p 235, 1993; Kao PC, Taylor RT, Service FG: Proinsulin by immunochemiluminometric assay for the diagnosis of insulinoma. J Clin Endocrinol Metab 1994;78:1048-1051)

CPT Codes:
84206-90

LOINC Codes:
27882-0

Prolactin

PROL

ORDERING

Available Stat:
No

Performing Lab:
China Basin Chemistry

Performed:
Daily (day shift)

Methodology:
Chemiluminescent Microparticle Immunoassay (Abbott Architect i2000)

Reported:
1 day

Additional Information:
Method changed from Siemens Centaur XP platform to Abbott Architect i2000 platform on 1/8/18. The Abbott Architect method reads approximately 23% higher than the Centaur method. Please note that the reference ranges have changed.

The Abbott assay standardization is traceable to the World Health Organization (WHO) Prolactin 3rd International Standard, (84/500).

Levels in newborns are > 10x those in adults. Levels in menstruating or post-menopausal women do not differ greatly from random levels in females.

Note-Prolactin immunoassays vary in sensitivity to the presence of macroprolactin (Reference 1). Macroprolactin, a high molecular weight aggregate of monomeric prolactin and immunoglobulin, is estimated to be present in 5-25% of hyperprolactinemic patients (Reference 1, 2). Although the precise biologic role of macroprolactin remains unclear, patients with hyperprolactinemia due to macroprolactin often respond to treatment with dopamine agonists (Reference 2). Clinicians should be aware that there may be inter-laboratory variation in reported values of prolactin due to the different sensitivities of commercial immunoassays to the presence of macroprolactin.

Assay for macroprolactin using the PEG precipitation procedure is available by sendout of 0.4 ml of serum to Quest (Test code: MACPRO)

References

1. Smith TP, Suliman AM, Fahie-Wilson MN, McKenna TJ. Gross variability in the detection of prolactin in sera containing big big prolactin
(macroprolactin) by commercial immunoassays. J Clin Endocrinol Metab. 2002 Dec;87(12):5410-5.

2. Olukoga AO, Kane JW. Macroprolactinaemia: validation and application of the polyethylene glycol precipitation test and clinical characterization of the condition. Clin Endocrinol (Oxf). 1999 Jul;51(1):119-26.

COLLECTION

Sample Type:
Serum

Collect:
Gold or red top prefered.
Dark green or light green acceptable.

Amount to Collect:
1 mL blood

Preferred Volume:
0.3 mL serum

Minimum Volume:
0.15 mL serum

Remarks:
Because of circadian changes in prolactin secretion, with peaks at night and in the afternoon, specimens should be drawn at the same time of day for comparability, preferably after fasting overnight.

Stability (from collection to initiation):
Refrigerated (2-8°C): 7 days
Frozen (-10°C or colder): 12 months

If testing will be delayed more than 24 hours, remove serum from clot, red blood cells, or serum separator gel.

Avoid multiple freeze-thaw cycles.

PROCESSING

Test Code:
PROL

Test Group:
Prolactin

Performing Lab:
China Basin Chemistry

Specimen Preparation:
Aliquot and refrigerate serum.

Preferred Volume:
0.3 mL serum

Minimum Volume:
0.15 mL serum

Stability (from collection to initiation):
Refrigerated (2-8°C): 7 days
Frozen (-10°C or colder): 12 months

If testing will be delayed more than 24 hours, remove serum from clot, red blood cells, or serum separator gel.

Avoid multiple freeze-thaw cycles.

RESULT INTERPRETATION

Units:
µg/L

Reference Interval:
Adult Reference Range (>= 18 years):

Female	4.3 - 30.0 ug/L
Male	3.6 - 18.0 ug/L

Adult reference range adopted from Abbott (vendor) based on in-house verification studies of 23 male and 22 female (18 years old) normal volunteers in the UCSF Laboratory.

Pediatric Reference Range:

Age	ug/L
4 days - 29 days	12.6 - 212.8
30 days - <1 year	6.3 - 113.7
1 year - <18 years	4.2 - 23.0

Pediatric reference ranges adopted from CALIPER Pediatric Reference Interval study performed on random samples using the Abbott Architect i2000 assay.

Additional Information:

Method changed from Siemens Centaur XP platform to Abbott Architect i2000 platform on 1/8/18. The Abbott Architect method reads approximately 23% higher than the Centaur method. Please note that the reference ranges have changed.

The Abbott assay standardization is traceable to the World Health Organization (WHO) Prolactin 3rd International Standard, (84/500).

Levels in newborns are > 10x those in adults. Levels in menstruating or post-menopausal women do not differ greatly from random levels in females.

Note-Prolactin immunoassays vary in sensitivity to the presence of macroprolactin (Reference 1). Macroprolactin, a high molecular weight aggregate of monomeric prolactin and immunoglobulin, is estimated to be present in 5-25% of hyperprolactinemic patients (Reference 1, 2). Although the precise biologic role of macroprolactin remains unclear, patients with hyperprolactinemia due to macroprolactin often respond to treatment with dopamine agonists (Reference 2). Clinicians should be aware that there may be inter-laboratory variation in reported values of prolactin due to the different sensitivities of commercial immunoassays to the presence of macroprolactin.

Assay for macroprolactin using the PEG precipitation procedure is available by sendout of 0.4 ml of serum to Quest (Test code: MACPRO)

References

1. Smith TP, Suliman AM, Fahie-Wilson MN, McKenna TJ. Gross variability in the detection of prolactin in sera containing big big prolactin
(macroprolactin) by commercial immunoassays. J Clin Endocrinol Metab. 2002 Dec;87(12):5410-5.

2. Olukoga AO, Kane JW. Macroprolactinaemia: validation and application of the polyethylene glycol precipitation test and clinical characterization of the condition. Clin Endocrinol (Oxf). 1999 Jul;51(1):119-26.

ADMINISTRATIVE

CPT Codes:
84146

LOINC Codes:
2842-3

COMPLETE VIEW

Available Stat:
No

Test Code:
PROL

Test Group:
Prolactin

Performing Lab:
China Basin Chemistry

Performed:
Daily (day shift)

Methodology:
Chemiluminescent Microparticle Immunoassay (Abbott Architect i2000)

Remarks:
Because of circadian changes in prolactin secretion, with peaks at night and in the afternoon, specimens should be drawn at the same time of day for comparability, preferably after fasting overnight.

Collect:
Gold or red top prefered.
Dark green or light green acceptable.

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.3 mL serum

Minimum Volume:
0.15 mL serum

Specimen Preparation:
Aliquot and refrigerate serum.

Units:
µg/L

Reference Interval:
Adult Reference Range (>= 18 years):

Female	4.3 - 30.0 ug/L
Male	3.6 - 18.0 ug/L

Adult reference range adopted from Abbott (vendor) based on in-house verification studies of 23 male and 22 female (18 years old) normal volunteers in the UCSF Laboratory.

Pediatric Reference Range:

Age	ug/L
4 days - 29 days	12.6 - 212.8
30 days - <1 year	6.3 - 113.7
1 year - <18 years	4.2 - 23.0

Pediatric reference ranges adopted from CALIPER Pediatric Reference Interval study performed on random samples using the Abbott Architect i2000 assay.

Stability (from collection to initiation):
Refrigerated (2-8°C): 7 days
Frozen (-10°C or colder): 12 months

If testing will be delayed more than 24 hours, remove serum from clot, red blood cells, or serum separator gel.

Avoid multiple freeze-thaw cycles.

Reported:
1 day

Additional Information:
Method changed from Siemens Centaur XP platform to Abbott Architect i2000 platform on 1/8/18. The Abbott Architect method reads approximately 23% higher than the Centaur method. Please note that the reference ranges have changed.

The Abbott assay standardization is traceable to the World Health Organization (WHO) Prolactin 3rd International Standard, (84/500).

Levels in newborns are > 10x those in adults. Levels in menstruating or post-menopausal women do not differ greatly from random levels in females.

Note-Prolactin immunoassays vary in sensitivity to the presence of macroprolactin (Reference 1). Macroprolactin, a high molecular weight aggregate of monomeric prolactin and immunoglobulin, is estimated to be present in 5-25% of hyperprolactinemic patients (Reference 1, 2). Although the precise biologic role of macroprolactin remains unclear, patients with hyperprolactinemia due to macroprolactin often respond to treatment with dopamine agonists (Reference 2). Clinicians should be aware that there may be inter-laboratory variation in reported values of prolactin due to the different sensitivities of commercial immunoassays to the presence of macroprolactin.

Assay for macroprolactin using the PEG precipitation procedure is available by sendout of 0.4 ml of serum to Quest (Test code: MACPRO)

References

1. Smith TP, Suliman AM, Fahie-Wilson MN, McKenna TJ. Gross variability in the detection of prolactin in sera containing big big prolactin
(macroprolactin) by commercial immunoassays. J Clin Endocrinol Metab. 2002 Dec;87(12):5410-5.

2. Olukoga AO, Kane JW. Macroprolactinaemia: validation and application of the polyethylene glycol precipitation test and clinical characterization of the condition. Clin Endocrinol (Oxf). 1999 Jul;51(1):119-26.

CPT Codes:
84146

LOINC Codes:
2842-3

Prostate Specific Antigen, Free

FPSA

ORDERING

Ordering Recommendations:
Although generally recommended for patients with Total PSA values between 4.0-10.0 µg/L the laboratory will accept requests for patients with Total PSA as low as 2.5 µg/L without approval.

Available Stat:
No

Performing Lab:
China Basin Chemistry

Performed:
Thursday (day shift)

Methodology:
Chemiluminescent Immunoassay (Abbott Architect i2000)

Reported:
1-8 days

Additional Information:
Includes PSA, Total.

Results for this test are generated by immunoassay using the Abbott Architect i2000 platform. Results for this test determined by assay methods from other manufacturers may not be comparable.

Medicare Local Medical Review Policy 9718, published in CA Medicare Bulletin 98-2 (February, 1998), applies.

Use of the test is based upon the claim of Catalona et al (JAMA 1995;274:1214) that when PSA levels are in the range of 4.1-10.0 µg/L, a higher proportion of free PSA identifies the patient with a relatively lower likelihood that a biopsy will show cancer.

In patients with Total PSA of 4-10 µg/L:

Free PSA	Probability of Cancer
0-10%	56%
10-15%	28%
15-20%	20%
20-25%	16%
> 25%	8%

Synonyms:

- Free PSA

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

PROCESSING

Test Code:
FPSA

Test Group:
PSA

Performing Lab:
China Basin Chemistry

Specimen Preparation:
Freeze serum at -20C

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

RESULT INTERPRETATION

Units:
%

Reference Interval:
See Additional Information

Additional Information:
Includes PSA, Total.

Results for this test are generated by immunoassay using the Abbott Architect i2000 platform. Results for this test determined by assay methods from other manufacturers may not be comparable.

Medicare Local Medical Review Policy 9718, published in CA Medicare Bulletin 98-2 (February, 1998), applies.

Use of the test is based upon the claim of Catalona et al (JAMA 1995;274:1214) that when PSA levels are in the range of 4.1-10.0 µg/L, a higher proportion of free PSA identifies the patient with a relatively lower likelihood that a biopsy will show cancer.

In patients with Total PSA of 4-10 µg/L:

Free PSA	Probability of Cancer
0-10%	56%
10-15%	28%
15-20%	20%
20-25%	16%
> 25%	8%

ADMINISTRATIVE

CPT Codes:
84153

LOINC Codes:
12841-3

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Although generally recommended for patients with Total PSA values between 4.0-10.0 µg/L the laboratory will accept requests for patients with Total PSA as low as 2.5 µg/L without approval.

Test Code:
FPSA

Test Group:
PSA

Performing Lab:
China Basin Chemistry

Performed:
Thursday (day shift)

Methodology:
Chemiluminescent Immunoassay (Abbott Architect i2000)

Collect:
Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Specimen Preparation:
Freeze serum at -20C

Units:
%

Reference Interval:
See Additional Information

Synonyms:

- Free PSA

Reported:
1-8 days

Additional Information:
Includes PSA, Total.

Results for this test are generated by immunoassay using the Abbott Architect i2000 platform. Results for this test determined by assay methods from other manufacturers may not be comparable.

Medicare Local Medical Review Policy 9718, published in CA Medicare Bulletin 98-2 (February, 1998), applies.

Use of the test is based upon the claim of Catalona et al (JAMA 1995;274:1214) that when PSA levels are in the range of 4.1-10.0 µg/L, a higher proportion of free PSA identifies the patient with a relatively lower likelihood that a biopsy will show cancer.

In patients with Total PSA of 4-10 µg/L:

Free PSA	Probability of Cancer
0-10%	56%
10-15%	28%
15-20%	20%
20-25%	16%
> 25%	8%

CPT Codes:
84153

LOINC Codes:
12841-3

Prostate Specific Antigen, Total

PSAS, PRSA

ORDERING

Available Stat:
No

Performing Lab:
China Basin Chemistry

Performed:
Monday-Friday (day shift)

Methodology:
Chemiluminescent Immunoassay-Abbott Architect i2000

Reported:
1-3 days

Additional Information:
Results for this test are generated by immunoassay using the Abbott Architect i2000 platform. Results for this test determined by assay methods from other manufacturers may not be comparable.

The test can detect levels as low as 0.015 µg/L as an index of early recurrence of carcinoma after radical prostatectomy. Lower levels are reported as "< 0.015 µg/L".

PSAS: For annual screening in Medicare patients over age 49. At least 11 months must have elapsed following the month in which the most recent Medicare-covered test was performed. Because the laboratory cannot know with certainty when the most recent test was performed, including testing at other laboratories, the patient will be asked to sign an Advanced Beneficiary Notice or a Hospital Notice of Non-Coverage agreeing to financial liability if payment is refused by Medicare.

PRSA: For screening Non-Medicare patients and monitoring patients after prostatectomy.

The most recent estimates of Prostate cancer probability (JAMA 1997;277:1214 and 1998;279:1542) are:

Total PSA	Probability of Cancer
0-2 µg/L	1%
2-4 µg/L	15%
4-10 µg/L	25%
> 10 µg/L	> 50%

Percent (%) of apparently healthy patients with PSA valuies at the following levels:

Healthy Subjects (# tested)	< 4.0 µg/L	4-10 µg/L	10-30 µg/L	30-60 µg/L	> 60 µg/L
Females (296)	100.0	0.0	0.0	0.0	0.0
Males Ages 40 - 49 (99)	100.0	0.0	0.0	0.0	0.0
Males Ages 50 - 59 (120)	97.5	2.5	0.0	0.0	0.0
Males Ages 60 - 69(123)	93.5	6.5	0.0	0.0	0.0
Males Ages 70 - 79 (124)	91.9	7.3	0.8	0.0	0.0

In this study, 95.5% of the specimens from apparently healthy male subjects (n=466) had values of 4.0 ng/mL or less.

* from Abbott reagent insert; Values developed for the ARCHITECT i2000 analyzer.

Synonyms:

- PSA

COLLECTION

Sample Type:
Serum

Collect:
Gold top or Red top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

PROCESSING

Test Code:
PSAS, PRSA

Test Group:
PSA

Performing Lab:
China Basin Chemistry

Specimen Preparation:
Refrigerate

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

RESULT INTERPRETATION

Units:
µg/L

Reference Interval:
Males 40 years of age and above: <4.00 ug/L.

Vendor reference range verified in-house by running 75 random male samples 40 years of age and older collected from outpatient settings.

See also 'Additional Information'

Additional Information:
Results for this test are generated by immunoassay using the Abbott Architect i2000 platform. Results for this test determined by assay methods from other manufacturers may not be comparable.

The test can detect levels as low as 0.015 µg/L as an index of early recurrence of carcinoma after radical prostatectomy. Lower levels are reported as "< 0.015 µg/L".

PSAS: For annual screening in Medicare patients over age 49. At least 11 months must have elapsed following the month in which the most recent Medicare-covered test was performed. Because the laboratory cannot know with certainty when the most recent test was performed, including testing at other laboratories, the patient will be asked to sign an Advanced Beneficiary Notice or a Hospital Notice of Non-Coverage agreeing to financial liability if payment is refused by Medicare.

PRSA: For screening Non-Medicare patients and monitoring patients after prostatectomy.

The most recent estimates of Prostate cancer probability (JAMA 1997;277:1214 and 1998;279:1542) are:

Total PSA	Probability of Cancer
0-2 µg/L	1%
2-4 µg/L	15%
4-10 µg/L	25%
> 10 µg/L	> 50%

Percent (%) of apparently healthy patients with PSA valuies at the following levels:

Healthy Subjects (# tested)	< 4.0 µg/L	4-10 µg/L	10-30 µg/L	30-60 µg/L	> 60 µg/L
Females (296)	100.0	0.0	0.0	0.0	0.0
Males Ages 40 - 49 (99)	100.0	0.0	0.0	0.0	0.0
Males Ages 50 - 59 (120)	97.5	2.5	0.0	0.0	0.0
Males Ages 60 - 69(123)	93.5	6.5	0.0	0.0	0.0
Males Ages 70 - 79 (124)	91.9	7.3	0.8	0.0	0.0

In this study, 95.5% of the specimens from apparently healthy male subjects (n=466) had values of 4.0 ng/mL or less.

* from Abbott reagent insert; Values developed for the ARCHITECT i2000 analyzer.

ADMINISTRATIVE

CPT Codes:
84153

COMPLETE VIEW

Available Stat:
No

Test Code:
PSAS, PRSA

Test Group:
PSA

Performing Lab:
China Basin Chemistry

Performed:
Monday-Friday (day shift)

Methodology:
Chemiluminescent Immunoassay-Abbott Architect i2000

Collect:
Gold top or Red top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Specimen Preparation:
Refrigerate

Units:
µg/L

Reference Interval:
Males 40 years of age and above: <4.00 ug/L.

Vendor reference range verified in-house by running 75 random male samples 40 years of age and older collected from outpatient settings.

See also 'Additional Information'

Synonyms:

- PSA

Reported:
1-3 days

Additional Information:

Results for this test are generated by immunoassay using the Abbott Architect i2000 platform. Results for this test determined by assay methods from other manufacturers may not be comparable.

The test can detect levels as low as 0.015 µg/L as an index of early recurrence of carcinoma after radical prostatectomy. Lower levels are reported as "< 0.015 µg/L".

PSAS: For annual screening in Medicare patients over age 49. At least 11 months must have elapsed following the month in which the most recent Medicare-covered test was performed. Because the laboratory cannot know with certainty when the most recent test was performed, including testing at other laboratories, the patient will be asked to sign an Advanced Beneficiary Notice or a Hospital Notice of Non-Coverage agreeing to financial liability if payment is refused by Medicare.

PRSA: For screening Non-Medicare patients and monitoring patients after prostatectomy.

The most recent estimates of Prostate cancer probability (JAMA 1997;277:1214 and 1998;279:1542) are:

Total PSA	Probability of Cancer
0-2 µg/L	1%
2-4 µg/L	15%
4-10 µg/L	25%
> 10 µg/L	> 50%

Percent (%) of apparently healthy patients with PSA valuies at the following levels:

Healthy Subjects (# tested)	< 4.0 µg/L	4-10 µg/L	10-30 µg/L	30-60 µg/L	> 60 µg/L
Females (296)	100.0	0.0	0.0	0.0	0.0
Males Ages 40 - 49 (99)	100.0	0.0	0.0	0.0	0.0
Males Ages 50 - 59 (120)	97.5	2.5	0.0	0.0	0.0
Males Ages 60 - 69(123)	93.5	6.5	0.0	0.0	0.0
Males Ages 70 - 79 (124)	91.9	7.3	0.8	0.0	0.0

In this study, 95.5% of the specimens from apparently healthy male subjects (n=466) had values of 4.0 ng/mL or less.

* from Abbott reagent insert; Values developed for the ARCHITECT i2000 analyzer.

CPT Codes:

84153

Prostatic Acid Phosphatase

ACPP

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
DPC Chemiluminescence

Reported:
Test performed Monday, Wednesday, Friday. AM. Turnaround time: 3-4 days.

Additional Information:
Having largely been made obsolete by the advent of the assay for Prostate Specific Antigen (PSA).

Metastatic bone disease usually increases alkaline phosphatase, rather than acid phosphatase levels.

Samples should be collected prior to rectal examination or biopsy, which may induce false-positive elevations.

PAP levels determined by different messages are not comparable

Synonyms:

- PAP
- Acid phosphatase,Prostatic
- Acid Ptase
- Prostatic fraction

COLLECTION

Sample Type:
Serum

Collect:
Gold top, Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Refrigerated 5 days, frozen -20C 1 year.

Rejection Criteria:
Room Temp sample

PROCESSING

Test Code:
ACPP

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze serum at -20C Order Quest # 17145P

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Rejection Criteria:
Room Temp sample

Stability (from collection to initiation):
Refrigerated 5 days, frozen -20C 1 year.

RESULT INTERPRETATION

Units:
ng/mL

Reference Interval:
< 2.8 ng/mL

Additional Information:
Having largely been made obsolete by the advent of the assay for Prostate Specific Antigen (PSA).

Metastatic bone disease usually increases alkaline phosphatase, rather than acid phosphatase levels.

Samples should be collected prior to rectal examination or biopsy, which may induce false-positive elevations.

PAP levels determined by different messages are not comparable

ADMINISTRATIVE

CPT Codes:
84066-90

LOINC Codes:
20420-6

COMPLETE VIEW

Available Stat:
No

Test Code:
ACPP

Performing Lab:
Quest

Sendout:
Yes

Methodology:
DPC Chemiluminescence

Collect:
Gold top, Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Rejection Criteria:
Room Temp sample

Specimen Preparation:
Freeze serum at -20C Order Quest # 17145P

Units:
ng/mL

Reference Interval:
< 2.8 ng/mL

Synonyms:

- PAP
- Acid phosphatase,Prostatic
- Acid Ptase
- Prostatic fraction

Stability (from collection to initiation):
Refrigerated 5 days, frozen -20C 1 year.

Reported:
Test performed Monday, Wednesday, Friday. AM. Turnaround time: 3-4 days.

Additional Information:

Having largely been made obsolete by the advent of the assay for Prostate Specific Antigen (PSA).

Metastatic bone disease usually increases alkaline phosphatase, rather than acid phosphatase levels.

Samples should be collected prior to rectal examination or biopsy, which may induce false-positive elevations.

PAP levels determined by different messages are not comparable

CPT Codes:

84066-90

LOINC Codes:

20420-6

Protein C, Activity

PRC

ORDERING

Available Stat:
No

Performing Lab:
Parnassus Hematology

Reported:
2-4 weeks

Additional Information:
Results may be altered by coumadin like Rx and presence of Aprotinin.

A low level of protein C may be associated with an inherited deficiency or with secondary causes such as warfarin therapy, acute venous thrombosis, recent surgery, liver disease, vitamin K deficiency, disseminated intravascular coagulation, and L-asparaginase therapy.

Aprotinin in the sample can result in under-estimation of the protein C level.

Reflex Testing:
If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

COLLECTION

Sample Type:
Citrated plasma

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

Patient should not be receiving aprotinin which will result in underestimation of Protein C.

If "Protein C" is requested without further specification a protein C activity will be performed.

For patients with Hct's >= 55% please contact Hematology (x3-1747) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

PROCESSING

Test Code:
PRC

Test Group:
Protein C

Performing Lab:
Parnassus Hematology

Specimen Preparation:
Deliver sample asap to Hematology for processing.

Test specimens within four hours of collection or freeze plasma in a plastic tube at -20C.

If Protein C Antigen is ordered on the same specimen, 4.5 mL suffices for both tests.

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

RESULT INTERPRETATION

Units:
%

Reference Interval:

> 16 years	76-146%

Normal range	> 16 years	76-146%

There is no published pediatric reference range for Protein C activity, which generally parallels the level of Protein C Antigen. We have included normal ranges below for pediatrics based on antigen levels which should roughly correlate with activity.

Full term infant:

Day 1	Day 5	Day 30	Day 90	Day 180
17-53%	20-64%	21-65%	28-80%	37-81%

Reference: Andrew M. Et al. Development of the Human Coagulation System in the Full Term Infant. Blood July 1987, 70(1):165-172

Healthy Premature infant:

Day 1	Day 5	Day 30	Day 90	Day 180
12-44%	11-51%	15-59%	23-67%	31-83%

Reference: Andrew M, et al. Development of the Human Coagulation System in the Healthy Premature Infant. Blood November 1988, 72(5): 1651-1657.

Child:

1-5 years	6-10 years	11-16 years
40-92%	45-93%	55-111%

Reference: Andrew M. Et al. Maturation of the Hemostatic System During Childhood. Blood October 1992, 80 (8): 1998-2005.

Additional Information:
Results may be altered by coumadin like Rx and presence of Aprotinin.

A low level of protein C may be associated with an inherited deficiency or with secondary causes such as warfarin therapy, acute venous thrombosis, recent surgery, liver disease, vitamin K deficiency, disseminated intravascular coagulation, and L-asparaginase therapy.

Aprotinin in the sample can result in under-estimation of the protein C level.

ADMINISTRATIVE

CPT Codes:
85303

LOINC Codes:
27819-2

COMPLETE VIEW

Available Stat:
No

Test Code:
PRC

Test Group:
Protein C

Performing Lab:
Parnassus Hematology

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

Patient should not be receiving aprotinin which will result in underestimation of Protein C.

If "Protein C" is requested without further specification a protein C activity will be performed.

For patients with Hct's >= 55% please contact Hematology (x3-1747) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Sample Type:
Citrated plasma

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Specimen Preparation:
Deliver sample asap to Hematology for processing.

Test specimens within four hours of collection or freeze plasma in a plastic tube at -20C.

If Protein C Antigen is ordered on the same specimen, 4.5 mL suffices for both tests.

Units:
%

Reference Interval:

> 16 years	76-146%

Normal range	> 16 years	76-146%

There is no published pediatric reference range for Protein C activity, which generally parallels the level of Protein C Antigen. We have included normal ranges below for pediatrics based on antigen levels which should roughly correlate with activity.

Full term infant:

Day 1	Day 5	Day 30	Day 90	Day 180
17-53%	20-64%	21-65%	28-80%	37-81%

Reference: Andrew M. Et al. Development of the Human Coagulation System in the Full Term Infant. Blood July 1987, 70(1):165-172

Healthy Premature infant:

Day 1	Day 5	Day 30	Day 90	Day 180
12-44%	11-51%	15-59%	23-67%	31-83%

Reference: Andrew M, et al. Development of the Human Coagulation System in the Healthy Premature Infant. Blood November 1988, 72(5): 1651-1657.

Child:

1-5 years	6-10 years	11-16 years
40-92%	45-93%	55-111%

Reference: Andrew M. Et al. Maturation of the Hemostatic System During Childhood. Blood October 1992, 80 (8): 1998-2005.

Reported:

2-4 weeks

Reflex Testing:

If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

Additional Information:

Results may be altered by coumadin like Rx and presence of Aprotinin.

A low level of protein C may be associated with an inherited deficiency or with secondary causes such as warfarin therapy, acute venous thrombosis, recent surgery, liver disease, vitamin K deficiency, disseminated intravascular coagulation, and L-asparaginase therapy.

Aprotinin in the sample can result in under-estimation of the protein C level.

CPT Codes:

85303

LOINC Codes:

27819-2

Protein C, Antigen

PRCI

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Enzyme Immunoassay

Reported:
4-8 days

Additional Information:
The pediatric reference ranges are from Andrew M et al. Blood. 1987, 70:165. Adult ranges from Quest lab manual.

COLLECTION

Sample Type:
Citrated plasma

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

If "Protein C" is requested without further specification a protein C activity will be performed.

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

PROCESSING

Test Code:
PRCI

Test Group:
Protein C

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Deliver sample to Hematology ASAP for processing.

Freeze plasma in 1 mL aliquots at -20C.

Ship on dry ice Monday-Friday to Quest, test code 4948.

For B &T patients ship on dry ice to LabCorp, test # 080465.

If "Protein C" is requested without further specification, a Protein C activity (PRC) should be ordered.

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

RESULT INTERPRETATION

Units:
%

Reference Interval:

0-1 day	17-53%
2-5 days	20-64%
6-30 days	21-65%
31-90 days	28-80%
91-180 days	37-81%

>= 18 year olds	70-140%

Additional Information:
The pediatric reference ranges are from Andrew M et al. Blood. 1987, 70:165. Adult ranges from Quest lab manual.

ADMINISTRATIVE

CPT Codes:
85302-90

LOINC Codes:
27820-0

COMPLETE VIEW

Available Stat:
No

Test Code:
PRCI

Test Group:
Protein C

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Enzyme Immunoassay

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

If "Protein C" is requested without further specification a protein C activity will be performed.

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Sample Type:
Citrated plasma

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Specimen Preparation:

Deliver sample to Hematology ASAP for processing.

Freeze plasma in 1 mL aliquots at -20C.

Ship on dry ice Monday-Friday to Quest, test code 4948.

For B &T patients ship on dry ice to LabCorp, test # 080465.

If "Protein C" is requested without further specification, a Protein C activity (PRC) should be ordered.

Units:

%

Reference Interval:

0-1 day	17-53%
2-5 days	20-64%
6-30 days	21-65%
31-90 days	28-80%
91-180 days	37-81%

>= 18 year olds	70-140%

Reported:

4-8 days

Additional Information:

The pediatric reference ranges are from Andrew M et al. Blood. 1987, 70:165. Adult ranges from Quest lab manual.

CPT Codes:

85302-90

LOINC Codes:

27820-0

Protein Electrophoresis, 24 hour (or timed) urine

PEUTM

ORDERING

Available Stat:
No

Performing Lab:
China Basin Chemistry

Performed:
Monday-Friday (day shift) as needed

Methodology:
Gel Electrophoresis by Helena SPIFE4000

Reported:
1-3 days

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

A Total Protein concentration is performed on the same sample and will be reported and billed separately.

Synonyms:

- PEP
- UPEP
- Albumin
- Paraprotein
- Bence Jones

COLLECTION

Sample Type:
24 hour (or timed) urine collection

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container

Amount to Collect:
Entire 24 hour (or timed) urine output

Preferred Volume:
Submit entire volume collected to processing. The processing section will preferably aliquot 5 mL for the assay.

Minimum Volume:
1 mL is the minimum volume for processing to aliquot for the assay

Remarks:
Refrigerate 24 hour (or timed) collection container during collection

Stability (from collection to initiation):
Refrigerated (2-8°C): 1 week
Frozen (-20°C): 1 month

Unacceptable Conditions:
Container not refrigerated during collection.

PROCESSING

Test Code:
PEUTM

Test Group:
PEU

Performing Lab:
China Basin Chemistry

Specimen Preparation:
Order PEUTM, TPU and AAUV for timed urines.

Preferred Volume:
Submit entire volume collected to processing. The processing section will preferably aliquot 5 mL for the assay.

Minimum Volume:
1 mL is the minimum volume for processing to aliquot for the assay

Unacceptable Conditions:
Container not refrigerated during collection.

Stability (from collection to initiation):
Refrigerated (2-8°C): 1 week
Frozen (-20°C): 1 month

RESULT INTERPRETATION

Reference Interval:
Negative for paraprotein

ADMINISTRATIVE

CPT Codes:
84166

LOINC Codes:
13438-7

COMPLETE VIEW

Available Stat:
No

Test Code:
PEUTM

Test Group:
PEU

Performing Lab:
China Basin Chemistry

Performed:
Monday-Friday (day shift) as needed

Methodology:
Gel Electrophoresis by Helena SPIFE4000

Remarks:
Refrigerate 24 hour (or timed) collection container during collection

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container

Amount to Collect:
Entire 24 hour (or timed) urine output

Sample Type:
24 hour (or timed) urine collection

Preferred Volume:
Submit entire volume collected to processing. The processing section will preferably aliquot 5 mL for the assay.

Minimum Volume:
1 mL is the minimum volume for processing to aliquot for the assay

Unacceptable Conditions:
Container not refrigerated during collection.

Specimen Preparation:
Order PEUTM, TPU and AAUV for timed urines.

Reference Interval:
Negative for paraprotein

Synonyms:

- PEP
- UPEP
- Albumin
- Paraprotein
- Bence Jones

Stability (from collection to initiation):
Refrigerated (2-8°C): 1 week
Frozen (-20°C): 1 month

Reported:
1-3 days

Reflex Testing:

An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

A Total Protein concentration is performed on the same sample and will be reported and billed separately.

CPT Codes:

84166

LOINC Codes:

13438-7

Protein Electrophoresis, Random urine

PEU

ORDERING

Available Stat:
No

Performing Lab:
China Basin Chemistry

Performed:
Monday-Friday (day shift) as needed

Methodology:
Gel Electrophoresis by Helena SPIFE 4000

Reported:
1-3 days

Reflex Testing:
A Total Protein concentration is performed on the same sample and will be reported and billed separately.

An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Synonyms:

- PEP
- UPEP
- Albumin
- paraprotein
- Bence Jones

COLLECTION

Sample Type:
Random urine

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container

Amount to Collect:
Entire random urine

Preferred Volume:
5 mL urine

Minimum Volume:
1 mL urine

Stability (from collection to initiation):
Refrigerated (2-8°C): 1 week
Frozen (-20°C): 1 month

PROCESSING

Test Code:
PEU

Test Group:
PEU

Performing Lab:
China Basin Chemistry

Specimen Preparation:
Order PEU and TPUR/TPCUR for spot urines.

Preferred Volume:
5 mL urine

Minimum Volume:
1 mL urine

Stability (from collection to initiation):
Refrigerated (2-8°C): 1 week
Frozen (-20°C): 1 month

RESULT INTERPRETATION

Reference Interval:
Negative Interpretation: no evidence of a paraprotein spike in urine

ADMINISTRATIVE

CPT Codes:
84166

LOINC Codes:
13438-7

COMPLETE VIEW

Available Stat:
No

Test Code:
PEU

Test Group:
PEU

Performing Lab:
China Basin Chemistry

Performed:
Monday-Friday (day shift) as needed

Methodology:
Gel Electrophoresis by Helena SPIFE 4000

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container

Amount to Collect:
Entire random urine

Sample Type:
Random urine

Preferred Volume:
5 mL urine

Minimum Volume:
1 mL urine

Specimen Preparation:
Order PEU and TPUR/TPCUR for spot urines.

Reference Interval:
Negative Interpretation: no evidence of a paraprotein spike in urine

Synonyms:

- PEP
- UPEP
- Albumin
- paraprotein
- Bence Jones

Stability (from collection to initiation):
Refrigerated (2-8°C): 1 week
Frozen (-20°C): 1 month

Reported:
1-3 days

Reflex Testing:
A Total Protein concentration is performed on the same sample and will be reported and billed separately.

An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

CPT Codes:
84166

LOINC Codes:
13438-7

Protein Electrophoresis, serum

PE

ORDERING

Available Stat:
No

Performing Lab:
China Basin Chemistry

Performed:
Monday-Friday (day shift) as needed

Methodology:
Electrophoresis by Helena SPIFE4000

Reported:
1-3 days

Additional Information:
Method changed from Sebia Capillarys to SPIFE 4000 for samples collected after June 24, 2018. In samples with monoclonal (M) protein spikes with concentrations between 0.1 g/dL to 2.5 g/dL, there is no significant difference in M spike results between the two instruments. For M spikes greater than 2.5 g/dL, the new SPIFE 4000 instrument produces values about 10 - 15% lower than the old Sebia Capillarys instrument. Reference ranges for the different protein fractions have been updated with introduction of the new instrument.

Most monoclonal cryoglobulins are detected by serum electrophoresis, but if cryoglobulins are suspected and the PEP is normal, order Cryoglobulin, Quantitative. Most monoclonal proteins are also detected by electrophoresis, but if negative in a patient with a high suspicion of a monoclonal gammopathy it may be detectable by immunofixation electrophoresis or by free light chain immunoassay.

A total protein is performed as part of this testing.

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Synonyms:

- SPEP
- PEP
- paraprotein

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Room Temp (15-30°C): 4 days
Refrigerated (2-8°C): 2 weeks
Frozen (-20°C or colder): 6 months

Unacceptable Conditions:
Plasma sample received

PROCESSING

Test Code:
PE

Performing Lab:
China Basin Chemistry

Specimen Preparation:
Refrigerate serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Plasma sample received

Stability (from collection to initiation):
Room Temp (15-30°C): 4 days
Refrigerated (2-8°C): 2 weeks
Frozen (-20°C or colder): 6 months

RESULT INTERPRETATION

Units:
g/dL

Reference Interval:
For Patients >= 1 year old:

Component	Reference Interval (g/dL)
Albumin	3.4 - 4.7
Alpha-1 Globulins	0.1 - 0.3
Alpha-2 Gobulins	0.6 - 1.0
Beta Globulins	0.7 - 1.4
Gamma Globulins	0.6 - 1.6

Note: Reference intervals are not available for patients < 1 year old. Results should read lower due to a lower total protein in patients who are < 1 year old.

Reference ranges are adopted from MAYO Medical Laboratories reference ranges with minor modifications for the beta fraction with verification by testing in 22 normal volunteers.

Additional Information:
Method changed from Sebia Capillarys to SPIFE 4000 for samples collected after June 24, 2018. In samples with monoclonal (M) protein spikes with concentrations between 0.1 g/dL to 2.5 g/dL, there is no significant difference in M spike results between the two instruments. For M spikes greater than 2.5 g/dL, the new SPIFE 4000 instrument produces values about 10 - 15% lower than the old Sebia Capillarys instrument. Reference ranges for the different protein fractions have been updated with introduction of the new instrument.

Most monoclonal cryoglobulins are detected by serum electrophoresis, but if cryoglobulins are suspected and the PEP is normal, order Cryoglobulin, Quantitative. Most monoclonal proteins are also detected by electrophoresis, but if negative in a patient with a high suspicion of a monoclonal gammopathy it may be detectable by immunofixation electrophoresis or by free light chain immunoassay.

A total protein is performed as part of this testing.

ADMINISTRATIVE

CPT Codes:
84165

LOINC Codes:
12851-2

COMPLETE VIEW

Available Stat:
No

Test Code:
PE

Performing Lab:
China Basin Chemistry

Performed:
Monday-Friday (day shift) as needed

Methodology:
Electrophoresis by Helena SPIFE4000

Collect:
Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Plasma sample received

Specimen Preparation:
Refrigerate serum

Units:
g/dL

Reference Interval:
For Patients >= 1 year old:

Component	Reference Interval (g/dL)
Albumin	3.4 - 4.7
Alpha-1 Globulins	0.1 - 0.3
Alpha-2 Gobulins	0.6 - 1.0
Beta Globulins	0.7 - 1.4
Gamma Globulins	0.6 - 1.6

Note: Reference intervals are not available for patients < 1 year old. Results should read lower due to a lower total protein in patients who are < 1 year old.

Reference ranges are adopted from MAYO Medical Laboratories reference ranges with minor modifications for the beta fraction with verification by testing in 22 normal
volunteers.

Synonyms:

- SPEP
- PEP
- paraprotein

Stability (from collection to initiation):
Room Temp (15-30°C): 4 days
Refrigerated (2-8°C): 2 weeks
Frozen (-20°C or colder): 6 months

Reported:
1-3 days

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Additional Information:
Method changed from Sebia Capillarys to SPIFE 4000 for samples collected after June 24, 2018. In samples with monoclonal (M) protein spikes with concentrations between 0.1 g/dL to 2.5 g/dL, there is no significant difference in M spike results between the two instruments. For M spikes greater than 2.5 g/dL, the new SPIFE 4000 instrument produces values about 10 - 15% lower than the old Sebia Capillarys instrument. Reference ranges for the different protein fractions have been updated with introduction of the new instrument.

Most monoclonal cryoglobulins are detected by serum electrophoresis, but if cryoglobulins are suspected and the PEP is normal, order Cryoglobulin, Quantitative. Most monoclonal proteins are also detected by electrophoresis, but if negative in a patient with a high suspicion of a monoclonal gammopathy it may be detectable by immunofixation electrophoresis or by free light chain immunoassay.

A total protein is performed as part of this testing.

CPT Codes:
84165

LOINC Codes:
12851-2

Protein S Activity

PSACT

ORDERING

Ordering Recommendations:
Should be ordered concurrently with Protein S, free (PRSI). See additional information section below.

Available Stat:
No

Performing Lab:
UC Davis

Methodology:
Clot detection

Reported:
Run once per week. Turnaround 6-10 days

Additional Information:
Test may be useful when there is a normal Free Protein S Antigen level but persistent clinical suspicion for Hereditary Protein S deficiency. Ordering both a Protein S Activity in addition to Free Protein S Antigen may help exclude the possibility of an immunologically intact but dysfunctional protein.

Reflex Testing:
In the adult population, if Protein S Activity is ordered without a Free Protein S Antigen, ONLY the Protein S Activity will be performed. After pathologist review, a Free Protein S Antigen level may be ordered and performed if the Protein S Activity is low.

In the pediatric population, it is appropriate to perform BOTH the Protein S Activity and the Free Protein S Antigen tests. For this reason, both will be performed whenever either is ordered. In the uncommon circumstance that a provider wishes to perform only one of these tests, the hematology laboratory should be contacted at 353-1747 to request that only the single test be performed.

COLLECTION

Sample Type:
Citrated plasma

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Preferred Volume:
1.5 mL plasma

Minimum Volume:
0.5 mL plasma

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

Avoid hemolysis

For patients with Hct's >= 55% please contact Hematology (415-353-1747) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Stability (from collection to initiation):
Room temperature unacceptable, refrigerated unacceptable, frozen at -20C 2 weeks

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected Hemolyzed.

Rejection Criteria:
Received thawed.

PROCESSING

Test Code:
PSACT

Test Group:
Protein S

Sendout:
Yes

Performing Lab:
UC Davis

Specimen Preparation:
Deliver sample to Hematology ASAP for processing. Separate and freeze plasma at -20C. Order Quest # 58891P

Preferred Volume:
1.5 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected Hemolyzed.

Rejection Criteria:
Received thawed.

Stability (from collection to initiation):
Room temperature unacceptable, refrigerated unacceptable, frozen at -20C 2 weeks

RESULT INTERPRETATION

Units:
% activity

Reference Interval:
Age

Newborn - Day 4	12-60%
Day 5 - 1 Month	22-78%
1 Month - 3 Months	33-93%
3 Months - 6 Months	54-118%
> 6 Months	70-119%

Additional Information:
Test may be useful when there is a normal Free Protein S Antigen level but persistent clinical suspicion for Hereditary Protein S deficiency. Ordering both a Protein S Activity in addition to Free Protein S Antigen may help exclude the possibility of an immunologically intact but dysfunctional protein.

ADMINISTRATIVE

CPT Codes:
85306-90

LOINC Codes:
27822-6

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Should be ordered concurrently with Protein S, free (PRSI). See additional information section below.

Test Code:
PSACT

Test Group:
Protein S

Performing Lab:
UC Davis

Sendout:
Yes

Methodology:
Clot detection

Remarks:

1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

Avoid hemolysis

For patients with Hct's >= 55% please contact Hematology (415-353-1747) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Sample Type:
Citrated plasma

Preferred Volume:
1.5 mL plasma

Minimum Volume:
0.5 mL plasma

Rejection Criteria:
Received thawed.

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected Hemolyzed.

Specimen Preparation:
Deliver sample to Hematology ASAP for processing. Separate and freeze plasma at -20C. Order Quest # 58891P

Units:
% activity

Reference Interval:
Age

Newborn - Day 4	12-60%
Day 5 - 1 Month	22-78%
1 Month - 3 Months	33-93%
3 Months - 6 Months	54-118%
> 6 Months	70-119%

Stability (from collection to initiation):
Room temperature unacceptable, refrigerated unacceptable, frozen at -20C 2 weeks

Reported:
Run once per week. Turnaround 6-10 days

Reflex Testing:
In the adult population, if Protein S Activity is ordered without a Free Protein S Antigen, ONLY the Protein S Activity will be performed. After pathologist review, a Free Protein S Antigen level may be ordered and performed if the Protein S Activity is low.

In the pediatric population, it is appropriate to perform BOTH the Protein S Activity and the Free Protein S Antigen tests. For this reason, both will be performed whenever either is ordered. In the uncommon circumstance that a provider wishes to perform only one of these tests, the hematology laboratory should be contacted at 353-1747 to request that only the single test be performed.

Additional Information:
Test may be useful when there is a normal Free Protein S Antigen level but persistent clinical suspicion for Hereditary Protein S deficiency. Ordering both a Protein S Activity in addition to Free Protein S Antigen may help exclude the possibility of an immunologically intact but dysfunctional protein.

CPT Codes:
85306-90

LOINC Codes:
27822-6

Protein S, free

PRSI

ORDERING

Ordering Recommendations:
Should be ordered concurrently with Protein S Activity (PSACT). See additional information section below.

Available Stat:
No

Performing Lab:
Parnassus Hematology

Methodology:
Immunoturbidimetric

Reported:
2-4 weeks

Additional Information:
A normal level does not exclude the possibility of an immunologically intact but dysfunctional protein. Therefore, ordering a Protein S Activity in addition to Free Protein S Antigen may help exclude this possibility.

A low level of free protein S antigen may be associated with an inherited deficiency or with secondary causes such as warfarin therapy, acute venous thrombosis, recent surgery, lever disease, vitamin K deficiency, disseminated intravascular coagulation, L-asparaginase therapy, pregnancy, oral contraceptives, estrogen therapy, states of actue inflammation, lupus anticoagulants, and proteinuria.

Reflex Testing:
In the adult population, if Free Protein S Antigen is ordered without a Protein S Activity, ONLY the Free Protein S Antigen will be performed. If Protein S Activity is ordered without a Free Protein S Antigen, ONLY the Protein S Activity will be performed. However if the Protein S Activity is low, the lab might add on and perform the Free Protein S level after pathologist review.

In the pediatric population, it is appropriate to perform BOTH the Protein S Activity and the Free Protein S Antigen tests. For this reason, both will be performed whenever either is ordered. In the uncommon circumstance that a provider wishes to perform only one of these tests, the hematology laboratory should be contacted at 353-1747 to request that only the single test be performed.

If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for

Synonyms:

- Free Protein S antigen

COLLECTION

Sample Type:
Citrated plasma

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

Draw only before institution of oral anticoagulant therapy or after a stable therapeutic regimen has been established.

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

PROCESSING

Test Code:
PRSI

Test Group:
Protein S

Performing Lab:
Parnassus Hematology

Specimen Preparation:
Deliver samples to Hematology asap for processing. Freeze plasma in 1 mL aliquots at -20C.

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

RESULT INTERPRETATION

Units:
% activity

Reference Interval:

> 6 mo	53-137%

There is no published pediatric reference range for Free Protein S antigen, which generally parallels the level of Total Protein S antigen, and from which the pediatric (< 6 months old) reference ranges given below are derived.

Full Term Infant

Day 1	Day 5	Day 30	Day 90	Day 180
12-60%	22-78%	33-93%	54-118%	55-119%

From: Andrew M et al. Development of the Human Coagulation System in the Full Term Infant. Blood. 1987, 70: 165- 172

Healthy Premature Infant

Day 1	Day 5	Day 30	Day 90	Day 180
14-38%	13-61%	22-90%	40-112%	44-120%

From: Andrew M, et al. Development of the Human Coagulation System in the Healthy Premature Infant. Blood November 1988, 72(5): 1651-1657.

Additional Information:
A normal level does not exclude the possibility of an immunologically intact but dysfunctional protein. Therefore, ordering a Protein S Activity in addition to Free Protein S Antigen may help exclude this possibility.

A low level of free protein S antigen may be associated with an inherited deficiency or with secondary causes such as warfarin therapy, acute venous thrombosis, recent surgery, lever disease, vitamin K deficiency, disseminated intravascular coagulation, L-asparaginase therapy, pregnancy, oral contraceptives, estrogen therapy, states of actue inflammation, lupus anticoagulants, and proteinuria.

ADMINISTRATIVE

CPT Codes:
85306

LOINC Codes:
4677-1

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Should be ordered concurrently with Protein S Activity (PSACT). See additional information section below.

Test Code:
PRSI

Test Group:
Protein S

Performing Lab:
Parnassus Hematology

Methodology:
Immunoturbidimetric

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

Draw only before institution of oral anticoagulant therapy or after a stable therapeutic regimen has been established.

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Sample Type:
Citrated plasma

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Specimen Preparation:
Deliver samples to Hematology asap for processing. Freeze plasma in 1 mL aliquots at -20C.

Units:
% activity

Reference Interval:

> 6 mo	53-137%

There is no published pediatric reference range for Free Protein S antigen, which generally parallels the level of Total Protein S antigen, and from which the pediatric (< 6 months old) reference ranges given below are derived.

Full Term Infant

Day 1	Day 5	Day 30	Day 90	Day 180
12-60%	22-78%	33-93%	54-118%	55-119%

From: Andrew M et al. Development of the Human Coagulation System in the Full Term Infant. Blood. 1987, 70: 165- 172

Healthy Premature Infant

Day 1	Day 5	Day 30	Day 90	Day 180
14-38%	13-61%	22-90%	40-112%	44-120%

From: Andrew M, et al. Development of the Human Coagulation System in the Healthy Premature Infant. Blood November 1988, 72(5): 1651-1657.

Synonyms:

- Free Protein S antigen

Reported:
2-4 weeks

Reflex Testing:

In the adult population, if Free Protein S Antigen is ordered without a Protein S Activity, ONLY the Free Protein S Antigen will be performed. If Protein S Activity is ordered without a Free Protein S Antigen, ONLY the Protein S Activity will be performed. However if the Protein S Activity is low, the lab might add on and perform the Free Protein S level after pathologist review.

In the pediatric population, it is appropriate to perform BOTH the Protein S Activity and the Free Protein S Antigen tests. For this reason, both will be performed whenever either is ordered. In the uncommon circumstance that a provider wishes to perform only one of these tests, the hematology laboratory should be contacted at 353-1747 to request that only the single test be performed.

If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for

Additional Information:

A normal level does not exclude the possibility of an immunologically intact but dysfunctional protein. Therefore, ordering a Protein S Activity in addition to Free Protein S Antigen may help exclude this possibility.

A low level of free protein S antigen may be associated with an inherited deficiency or with secondary causes such as warfarin therapy, acute venous thrombosis, recent surgery, lever disease, vitamin K deficiency, disseminated intravascular coagulation, L-asparaginase therapy, pregnancy, oral contraceptives, estrogen therapy, states of actue inflammation, lupus anticoagulants, and proteinuria.

CPT Codes:

85306

LOINC Codes:

4677-1

Protein, random urine

TPCUR

ORDERING

Available Stat:
No

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Turbidimetric Benzethonium Chloride

Reported:
4-14 hours

Additional Information:
This assay is a turbidimetric procedure in which benzethonium chloride is used as the protein denaturing agent. Proteins present in the urine or CSF are denatured by benzethonium chloride, resulting in the formation of a fine suspension which is quantitated turbidimetrically at 404 nm. 24 hour urine protein excretion may be increased in a variety of conditions including renal disease, Bence Jones proteinuria, amyloidosis, hemorrhage, systemic infections, heart failure, dehydration, starvation, strenuous exercise, pregnancy, sickle cell disease, exposure to extreme cold and psychological stress.

Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

Reflex Testing:
A creatinine is performed on the same sample to calculate the protein/creatinine ratio and will be reported and billed.

Synonyms:

- TP
- Albumin

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
20 mL urine

Preferred Volume:
2 mL urine

Minimum Volume:
1 mL urine

Stability (from collection to initiation):
Room temperature 1 day, refrigerated 7 days, frozen at -20C 1 month

PROCESSING

Test Code:
TPCUR

Test Group:
Total protein

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Specimen Preparation:
Order both TPCUR and CRUR on the sample.

Preferred Volume:
2 mL urine

Minimum Volume:
1 mL urine

Stability (from collection to initiation):
Room temperature 1 day, refrigerated 7 days, frozen at -20C 1 month

RESULT INTERPRETATION

Units:
mg/g creatinine

Reference Interval:

Age	mg/g Creatinine
<= 2 years of age	< 500
> 2 to < 18 years of age	< 200
>= 18 years of age	< 150

According to the KDIGO Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease, the normal protein/creatinine ratio in adults is < 150 mg protein/gram creatinine. According to UpToDate, a normal value for children greater than two years of age may be < 200 mg protein/gram creatinine and in infants and toddlers from 6 to 24 months of age, < 500 mg protein/gram creatinine. However, other references indicate that results can vary greatly according to sex and body size and that a single cutoff may not be appropriate for pediatric age groups (Mori Y et al., Pediatr Nephrol 2006; 21: 683-687).

Additional Information:
This assay is a turbidimetric procedure in which benzethonium chloride is used as the protein denaturing agent. Proteins present in the urine or CSF are denatured by benzethonium chloride, resulting in the formation of a fine suspension which is quantitated turbidimetrically at 404 nm. 24 hour urine protein excretion may be increased in a variety of conditions including renal disease, Bence Jones proteinuria, amyloidosis, hemorrhage, systemic infections, heart failure, dehydration, starvation, strenuous exercise, pregnancy, sickle cell disease, exposure to extreme cold and psychological stress.

Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

ADMINISTRATIVE

CPT Codes:
84156

LOINC Codes:
2888-6

COMPLETE VIEW

Available Stat:
No

Test Code:
TPCUR

Test Group:
Total protein

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Turbidimetric Benzethonium Chloride

Collect:
Urine cup

Amount to Collect:
20 mL urine

Sample Type:
Random urine

Preferred Volume:
2 mL urine

Minimum Volume:
1 mL urine

Specimen Preparation:
Order both TPCUR and CRUR on the sample.

Units:
mg/g creatinine

Reference Interval:

Age	mg/g Creatinine
<= 2 years of age	< 500
> 2 to < 18 years of age	< 200
>= 18 years of age	< 150

According to the KDIGO Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease, the normal protein/creatinine ratio in adults is < 150 mg protein/gram creatinine. According to UpToDate, a normal value for children greater than two years of age may be < 200 mg protein/gram creatinine and in infants and toddlers from 6 to 24 months of age, < 500 mg protein/gram creatinine. However, other references indicate that results can vary greatly according to sex and body size and that a single cutoff may not be appropriate for pediatric age groups (Mori Y et al., Pediatr Nephrol 2006; 21: 683-687).

Synonyms:

- TP
- Albumin

Stability (from collection to initiation):

Room temperature 1 day, refrigerated 7 days, frozen at -20C 1 month

Reported:

4-14 hours

Reflex Testing:

A creatinine is performed on the same sample to calculate the protein/creatinine ratio and will be reported and billed.

Additional Information:

This assay is a turbidimetric procedure in which benzethonium chloride is used as the protein denaturing agent. Proteins present in the urine or CSF are denatured by benzethonium chloride, resulting in the formation of a fine suspension which is quantitated turbidimetrically at 404 nm. 24 hour urine protein excretion may be increased in a variety of conditions including renal disease, Bence Jones proteinuria, amyloidosis, hemorrhage, systemic infections, heart failure, dehydration, starvation, strenuous exercise, pregnancy, sickle cell disease, exposure to extreme cold and psychological stress.

Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

CPT Codes:

84156

LOINC Codes:

2888-6

Protein, Total, 24 hour (or timed) urine

TPU

ORDERING

Available Stat:
No

Performing Lab:
Parnassus, Mission Bay and Mt. Zion Chemistry

Performed:
Test available 7 days per week from 8:00 AM to midnight only.

Methodology:
Turbidimetric Benzethonium Chloride

Reported:
4-14 hours

Additional Information:
This assay is a turbidimetric procedure in which benzethonium chloride is used as the protein denaturing agent. Proteins present in the urine or CSF are denatured by benzethonium chloride, resulting in the formation of a fine suspension which is quantitated turbidimetrically at 404 nm. 24 hour urine protein excretion may be increased in a variety of conditions including renal disease, Bence Jones proteinuria, amyloidosis, hemorrhage, systemic infections, heart failure, dehydration, starvation, strenuous exercise, pregnancy, sickle cell disease, exposure to extreme cold and psychological stress.

Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

Synonyms:

- TP
- Albumin

COLLECTION

Sample Type:
Timed urine collection

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container

Amount to Collect:
Entire urine output for collection period

Remarks:
Refrigerate the container during the period of the collection.

Note that the minimum acceptable time period for a 'timed' collection is 6 hours.

Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

Stability (from collection to initiation):
Room temperature 1 day, refrigerated 7 days, frozen at -20C 1 month

PROCESSING

Test Code:
TPU

Test Group:
Total protein

Performing Lab:
Parnassus, Mission Bay and Mt. Zion Chemistry

Specimen Preparation:
Mix 24-hour urine sample well and aliquot 1 mL

Stability (from collection to initiation):
Room temperature 1 day, refrigerated 7 days, frozen at -20C 1 month

RESULT INTERPRETATION

Units:
mg/D

Reference Interval:
Adults:
< 150 mg/day

Adopted from KDIGO 2012 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease.

Pediatrics:
< 6 months of age: <240 mg/m^2 body surface area/day
6 months of age and above: <150 mg/m^2 body surface area/day

Adopted from KDIGO 2012 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease.

Additional Information:
This assay is a turbidimetric procedure in which benzethonium chloride is used as the protein denaturing agent. Proteins present in the urine or CSF are denatured by benzethonium chloride, resulting in the formation of a fine suspension which is quantitated turbidimetrically at 404 nm. 24 hour urine protein excretion may be increased in a variety of conditions including renal disease, Bence Jones proteinuria, amyloidosis, hemorrhage, systemic infections, heart failure, dehydration, starvation, strenuous exercise, pregnancy, sickle cell disease, exposure to extreme cold and psychological stress.

Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

ADMINISTRATIVE

CPT Codes:
84156

COMPLETE VIEW

Available Stat:
No

Test Code:
TPU

Test Group:
Total protein

Performing Lab:
Parnassus, Mission Bay and Mt. Zion Chemistry

Performed:
Test available 7 days per week from 8:00 AM to midnight only.

Methodology:
Turbidimetric Benzethonium Chloride

Remarks:
Refrigerate the container during the period of the collection.

Note that the minimum acceptable time period for a 'timed' collection is 6 hours.

Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container

Amount to Collect:
Entire urine output for collection period

Sample Type:
Timed urine collection

Specimen Preparation:
Mix 24-hour urine sample well and aliquot 1 mL

Units:
mg/D

Reference Interval:

Adults:
< 150 mg/day

Adopted from KDIGO 2012 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease.

Pediatrics:
< 6 months of age: <240 mg/m^2 body surface area/day
6 months of age and above: <150 mg/m^2 body surface area/day

Adopted from KDIGO 2012 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease.

Synonyms:

- TP
- Albumin

Stability (from collection to initiation):

Room temperature 1 day, refrigerated 7 days, frozen at -20C 1 month

Reported:

4-14 hours

Additional Information:

This assay is a turbidimetric procedure in which benzethonium chloride is used as the protein denaturing agent. Proteins present in the urine or CSF are denatured by benzethonium chloride, resulting in the formation of a fine suspension which is quantitated turbidimetrically at 404 nm. 24 hour urine protein excretion may be increased in a variety of conditions including renal disease, Bence Jones proteinuria, amyloidosis, hemorrhage, systemic infections, heart failure, dehydration, starvation, strenuous exercise, pregnancy, sickle cell disease, exposure to extreme cold and psychological stress.

Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

CPT Codes:

84156

Protein, Total, Body Fluid

TPBF

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Spectrophotometric (biuret)

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context.

Interpretive information on this testing can be found at https://aruplab.com/bodyfluids

Synonyms:

- TP
- Specific gravity, body fluid

COLLECTION

Sample Type:
Body Fluid

Collect:
Clean, empty container OR red top (no additives)
Note: Do NOT collect in red top with clot activator (silicone coated).

Amount to Collect:
5 mL fluid

Preferred Volume:
0.5 mL fluid

Minimum Volume:
0.2 mL fluid

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 2 days, frozen at -20C 1 week

PROCESSING

Test Code:
TPBF

Test Group:
Total protein

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
0.5 mL fluid

Minimum Volume:
0.2 mL fluid

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 2 days, frozen at -20C 1 week

RESULT INTERPRETATION

Units:
g/dL

Additional Information:
Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context.

Interpretive information on this testing can be found at https://aruplab.com/bodyfluids

ADMINISTRATIVE

CPT Codes:
84157

LOINC Codes:
2881-1

COMPLETE VIEW

Available Stat:
Yes

Test Code:
TPBF

Test Group:
Total protein

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Spectrophotometric (biuret)

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Collect:
Clean, empty container OR red top (no additives)
Note: Do NOT collect in red top with clot activator (silicone coated).

Amount to Collect:
5 mL fluid

Sample Type:
Body Fluid

Preferred Volume:
0.5 mL fluid

Minimum Volume:
0.2 mL fluid

Units:
g/dL

Synonyms:

- TP
- Specific gravity, body fluid

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 2 days, frozen at -20C 1 week

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context.

Interpretive information on this testing can be found at https://aruplab.com/bodyfluids

CPT Codes:
84157

LOINC Codes:
2881-1

Protein, Total, CSF

TPCF

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Turbidimetric Benzethonium Chloride

Reported:
STAT 1 hour, Routine 4 hours

Synonyms:

- TP

COLLECTION

Sample Type:
CSF

Collect:
CSF tube or sterile collection tube

Amount to Collect:
See preferred volume

Preferred Volume:
0.5 mL CSF

Minimum Volume:
0.35 mL CSF

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Stability (from collection to initiation):
Room temperature 1 day, refrigerated 6 days, frozen at -20C 1 year

PROCESSING

Test Code:
TPCF

Test Group:
Total protein

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
0.5 mL CSF

Minimum Volume:
0.35 mL CSF

Stability (from collection to initiation):
Room temperature 1 day, refrigerated 6 days, frozen at -20C 1 year

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:

Age	mg/dL
0 to 1 month	40-115
>1 month to 2 months	25-90
>2 months to 3 months	20-60
>3 months to 18 years	10-40
>18 years to 35 years	15-50
>35 years to 70 years	20-60
>70 years	20-70

Reference ranges adopted from Shah SS et al, J Hospital Medicine 6:22-27, 2011; Thomson J et al, Pediatrics vol 141, March 2018; Biou D et al, Clinical Chemistry 46:399-403, 2000; McCudden CR et al, Clinical Chemistry, 63: 1856-1865, 2017.

ADMINISTRATIVE

CPT Codes:
84157

LOINC Codes:
2880-3

COMPLETE VIEW

Available Stat:
Yes

Test Code:
TPCF

Test Group:
Total protein

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Turbidimetric Benzethonium Chloride

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Collect:
CSF tube or sterile collection tube

Amount to Collect:
See preferred volume

Sample Type:
CSF

Preferred Volume:
0.5 mL CSF

Minimum Volume:
0.35 mL CSF

Units:
mg/dL

Reference Interval:

Age	mg/dL
0 to 1 month	40-115
>1 month to 2 months	25-90
>2 months to 3 months	20-60
>3 months to 18 years	10-40
>18 years to 35 years	15-50
>35 years to 70 years	20-60
>70 years	20-70

Reference ranges adopted from Shah SS et al, J Hospital Medicine 6:22-27, 2011; Thomson J et al, Pediatrics vol 141, March 2018; Biou D et al, Clinical Chemistry 46:399-403, 2000; McCudden CR et al, Clinical Chemistry, 63: 1856-1865, 2017.

Synonyms:

- TP

Stability (from collection to initiation):
Room temperature 1 day, refrigerated 6 days, frozen at -20C 1 year

Reported:
STAT 1 hour, Routine 4 hours

CPT Codes:
84157

LOINC Codes:
2880-3

Protein, Total, Plasma / Serum

TP

ORDERING

Available Stat:
No

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Chemistry: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center (Mon-Fri 0800-1630)

Methodology:
Parnassus, Mission Bay & Mt. Zion Chemistry: Spectrophotometric (biuret) on Abbott Architect
Berkeley Outpatient Center: Spectrophotometric (biuret) on Roche cobas c311

Reported:
4 hours

Synonyms:

- TP

COLLECTION

Sample Type:
Plasma or serum

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Parnassus, Mission Bay & Mt. Zion Chemistry
Room temperature 1 week, refrigerated 34 days, frozen at -20C 2 months
Berkeley Outpatient Center
Room temperature 6 days, Refrigerated 4 weeks, frozen at -20C 1 year

PROCESSING

Test Code:
TP

Test Group:
Total protein

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Parnassus, Mission Bay & Mt. Zion Chemistry
Room temperature 1 week, refrigerated 34 days, frozen at -20C 2 months
Berkeley Outpatient Center
Room temperature 6 days, Refrigerated 4 weeks, frozen at -20C 1 year

RESULT INTERPRETATION

Units:
g/dL

Reference Interval:

Parnassus, Mission Bay & Mt. Zion Chemistry

Age	g/dL
0 to <15 days	5.3-8.3
15 days to <1 year	4.4-7.1
1 to <6 years	6.1-7.5
6 to <9 years	6.4-7.7
9 to 18 years	6.5-8.1
>18 years	6.3-8.6

Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study in serum samples, Clinical Chemistry September 2012 vol. 58 no. 5 854-868.

Adult reference ranges adopted from reference ranges proposed by the assay manufacturer (Abbott) for seated or recumbent subjects including adjustment for testing in either plasma or serum specimens. Reference range verified in a population of 20 male and 20 female normal volunteers in the UCSF Clinical Laboratory.

Plasma values are generally 0.3 to 0.5 g/dL (3 to 5 g/L) higher than serum values due to the presence of fibrinogen. Values in recumbent subjects are approximately 6% lower than values in ambulatory subjects.

Berkeley Outpatient Center

Age	g/dL
>= 19 years	6.4-8.3

UCSF Clinical Labs at Berkeley Outpatient Center verified the adult reference range (>= 19 years) stated in the Roche TP2 package insert by running 20 male and 20 female lab volunteers.

ADMINISTRATIVE

CPT Codes:
84115

LOINC Codes:
2885-2

COMPLETE VIEW

Available Stat:
No

Test Code:
TP

Test Group:
Total protein

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Chemistry: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center (Mon-Fri 0800-1630)

Methodology:
Parnassus, Mission Bay & Mt. Zion Chemistry: Spectrophotometric (biuret) on Abbott Architect
Berkeley Outpatient Center: Spectrophotometric (biuret) on Roche cobas c311

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
1 mL blood

Sample Type:
Plasma or serum

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Units:
g/dL

Reference Interval:

Parnassus, Mission Bay & Mt. Zion Chemistry

Age	g/dL
0 to <15 days	5.3-8.3
15 days to <1 year	4.4-7.1
1 to <6 years	6.1-7.5
6 to <9 years	6.4-7.7
9 to 18 years	6.5-8.1
>18 years	6.3-8.6

Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study in serum samples, Clinical Chemistry September 2012 vol. 58 no. 5 854-868.

Adult reference ranges adopted from reference ranges proposed by the assay manufacturer (Abbott) for seated or recumbent subjects including adjustment for testing in either plasma or serum specimens. Reference range verified in a population of 20 male and 20 female normal volunteers in the UCSF Clinical Laboratory.

Plasma values are generally 0.3 to 0.5 g/dL (3 to 5 g/L) higher than serum values due to the presence of fibrinogen. Values in recumbent subjects are approximately 6% lower than values in ambulatory subjects.

Berkeley Outpatient Center

Age	g/dL
>= 19 years	6.4-8.3

UCSF Clinical Labs at Berkeley Outpatient Center verified the adult reference range (>= 19 years) stated in the Roche TP2 package insert by running 20 male and 20 female lab volunteers.

Synonyms:

- TP

Stability (from collection to initiation):

Parnassus, Mission Bay & Mt. Zion Chemistry
Room temperature 1 week, refrigerated 34 days, frozen at -20C 2 months
Berkeley Outpatient Center
Room temperature 6 days, Refrigerated 4 weeks, frozen at -20C 1 year

Reported:

4 hours

CPT Codes:

84115

LOINC Codes:

2885-2

Prothrombin (20210) mutation

PTTR

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Molecular Diagnostics

Performed:
Run once per week, or as needed, day shift only

Methodology:
PCR and allele-specific probes

Reported:
7-10 days

Additional Information:
Mutation and Incidence
The Prothrombin 20210G>A mutation (NM_000506.4(F2):c.*97G>A) is located in the 3' untranslated region of this gene. It has an estimated prevalence of 2% in Caucasians and is rare among Asians or Africans.

Pathogenicity
The Prothrombin 20210G>A mutation results in increased levels of plasma prothrombin and a concurrent increased risk of thrombosis. The mutation alters the polyadenylation site of the gene and results in increased mRNA synthesis and a subsequent increase in protein expression.

Thrombosis Risk
Heterozygosity for the Prothrombin 20210G>A carries a 3-4 fold increased risk of venous thromboembolism (VTE). Women heterozygous for this mutation and taking oral contraceptive pills have an approximately 16-fold increased risk of VTE.

Homozygosity for F2 20210G>A is expected to significantly elevate the risk of thrombosis, however, its precise risk has not been determined.

If a mutation is detected it is recommended that the patient seek genetic counseling.

This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Synonyms:

- Thrombosis risk mutations
- Prothrombin 20210A
- Hypercoagulability

COLLECTION

Sample Type:
Whole blood

Collect:
Lavender top preferred, Blue top and Yellow (ACD) tops acceptable

Amount to Collect:
3 mL blood (Note this volume is sufficient to perform all thrombosis risk factor mutations)

Preferred Volume:
3 mL blood (Note this volume is sufficient to perform all thrombosis risk factor mutations)

Minimum Volume:
1.5 mL blood

Remarks:
Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Unacceptable Conditions:
Inadequate sample. Samples collected in heparin.

PROCESSING

Test Code:
PTTR

Test Group:
Thrombosis risk

Performing Lab:
Medical Genomics - Molecular Diagnostics

Specimen Preparation:
Do not centrifuge the specimen. Store at room temperature. Refrigerated samples are acceptable.

Preferred Volume:
3 mL blood (Note this volume is sufficient to perform all thrombosis risk factor mutations)

Minimum Volume:
1.5 mL blood

Unacceptable Conditions:
Inadequate sample. Samples collected in heparin.

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
Mutation and Incidence
The Prothrombin 20210G>A mutation (NM_000506.4(F2):c.*97G>A) is located in the 3' untranslated region of this gene. It has an estimated prevalence of 2% in Caucasians and is rare among Asians or Africans.

Pathogenicity
The Prothrombin 20210G>A mutation results in increased levels of plasma prothrombin and a concurrent increased risk of thrombosis. The mutation alters the polyadenylation site of the gene and results in increased mRNA synthesis and a subsequent increase in protein expression.

Thrombosis Risk
Heterozygosity for the Prothrombin 20210G>A carries a 3-4 fold increased risk of venous thromboembolism (VTE). Women heterozygous for this mutation and taking oral contraceptive pills have an approximately 16-fold increased risk of VTE.

Homozygosity for F2 20210G>A is expected to significantly elevate the risk of thrombosis, however, its precise risk has not been determined.

If a mutation is detected it is recommended that the patient seek genetic counseling.

This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

ADMINISTRATIVE

CPT Codes:
81240

LDT or Modified FDA:
Yes

LOINC Codes:
24477-2

COMPLETE VIEW

Available Stat:
No

Test Code:
PTTR

Test Group:
Thrombosis risk

Performing Lab:
Medical Genomics - Molecular Diagnostics

Performed:
Run once per week, or as needed, day shift only

Methodology:
PCR and allele-specific probes

Remarks:
Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Collect:
Lavender top preferred, Blue top and Yellow (ACD) tops acceptable

Amount to Collect:
3 mL blood (Note this volume is sufficient to perform all thrombosis risk factor mutations)

Sample Type:
Whole blood

Preferred Volume:
3 mL blood (Note this volume is sufficient to perform all thrombosis risk factor mutations)

Minimum Volume:
1.5 mL blood

Unacceptable Conditions:
Inadequate sample. Samples collected in heparin.

Specimen Preparation:
Do not centrifuge the specimen. Store at room temperature. Refrigerated samples are acceptable.

Reference Interval:
Negative

Synonyms:

- Thrombosis risk mutations
- Prothrombin 20210A
- Hypercoagulability

Reported:
7-10 days

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Additional Information:
Mutation and Incidence
The Prothrombin 20210G>A mutation (NM_000506.4(F2):c.*97G>A) is located in the 3' untranslated region of this gene. It has an estimated prevalence of 2% in Caucasians and is rare among Asians or Africans.

Pathogenicity
The Prothrombin 20210G>A mutation results in increased levels of plasma prothrombin and a concurrent increased risk of thrombosis. The mutation alters the polyadenylation site of the gene and results in increased mRNA synthesis and a subsequent increase in protein expression.

Thrombosis Risk
Heterozygosity for the Prothrombin 20210G>A carries a 3-4 fold increased risk of venous thromboembolism (VTE). Women heterozygous for this mutation and taking oral contraceptive pills have an approximately 16-fold increased risk of VTE.

Homozygosity for F2 20210G>A is expected to significantly elevate the risk of thrombosis, however, its precise risk has not been determined.

If a mutation is detected it is recommended that the patient seek genetic counseling.

This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

CPT Codes:
81240

LDT or Modified FDA:
Yes

LOINC Codes:
24477-2

Prothrombin Time

PT

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Hematology: 24-hours per day, 7-days per week
Berkeley Outpatient Center: Test available Mon-Fri (0800-1630)

Methodology:
Mechanical clot detection

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:

Current reagents permit the reporting of results up to 100 seconds; if no clot is detected by that time the result will be reported as > 100 seconds.

The International Normalized Ratio (INR) will be routinely reported in addition to the Prothrombin Time in seconds. The reagents, and therefore the reference range in seconds, differ among the various UC affiliated hospitals. However, the INR adjusts for the inherent variability of tissue thromboplastins employed in the assay.

Note: when the prothrombin time is just above the upper limit of the normal range, calculation of the INR can result in a normal INR. This reflects the rounding of decimals utilized in the INR calculation.

The INR is the parameter of choice in monitoring the adequacy of warfarin anti-coagulation, and should in theory remain stable. The appropriate therapeutic range will vary with the disease and treatment intensity desired. The UCSF Hematology Consultation service generally recommends as therapeutic range for warfarin: (a) INR of 2.5-3.5 for most mechanical valves or recurrent systemic embolism, (b) INR of 2.0-3.0 for most other indications.

Direct oral anticoagulant medications (non-vitamin K) should not be monitored with PT/INR or aPTT because the effect of these tests is not predictable. Recommendations for monitoring anticoagulant medications are available through the UCSF Hematology consultation services: for adults, pager 443-4276, for pediatrics pager 443-6966.

The Prothrombin Time contains a reagent that neutralizes heparin up to 2 U/mL.

In regard to samples drawn through heparinized lines: (i) the PT reagent neutralizes low levels of heparin and (ii) additional heparin neutralization can cause a reduction in coagulation factor levels. For these reasons, heparin neutralization is not recommended for PT measurements.

Synonyms:

- PT
- coumadin
- warfarin
- INR
- Monitoring anticoagulation

COLLECTION

Sample Type:
Citrated plasma

Collect:
Blue (2.7 mL) or Lt. Blue (1.8 mL) top filled to full extent of vacuum

Amount to Collect:
Blue top: 2.7 mL blood
Lt. Blue top: 1.8 mL blood

Preferred Volume:
1.5 mL plasma

Minimum Volume:
1 mL plasma

Remarks:

1. Check the expiration date on the label of the blue top vacutainer before drawing the patient
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

For patients with Hct's >= 55% please contact Hematology (For Parnassus patients call 3-1747, for Mission Bay patients call 6-0194) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Stability (from collection to initiation):

Unopened, uncentrifuged specimens are stable for 24 hours at room temperature.

Unacceptable Conditions:

Samples collected in outdated blue top vacutainer.
Over-filled or under-filled samples may be rejected.

PROCESSING

Test Code:

PT

Test Group:

Prothrombin time

Performing Lab:

Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center

Preferred Volume:

1.5 mL plasma

Minimum Volume:

1 mL plasma

Unacceptable Conditions:

Samples collected in outdated blue top vacutainer.
Over-filled or under-filled samples may be rejected.

Stability (from collection to initiation):

Unopened, uncentrifuged specimens are stable for 24 hours at room temperature.

RESULT INTERPRETATION

Units:

seconds

Reference Interval:

PT: 11.6 - 14.8 seconds
INR: 0.9 - 1.2

The PT of full-term normal infants does not appear to differ significantly from adults, although factor levels are somewhat lower in the first six months of life (Andrew, M et al. Development of the human coagulation system in the full-term infant. Blood. 70:165-172).

Critical Values:

INR >= 5.0

Additional Information:

Current reagents permit the reporting of results up to 100 seconds; if no clot is detected by that time the result will be reported as > 100 seconds.

The International Normalized Ratio (INR) will be routinely reported in addition to the Prothrombin Time in seconds. The reagents, and therefore the reference range in seconds, differ among the various UC affiliated hospitals. However, the INR adjusts for the inherent variability of tissue thromboplastins employed in the assay.

Note: when the prothrombin time is just above the upper limit of the normal range, calculation of the INR can result in a normal INR. This reflects the rounding of decimals utilized in the INR calculation.

The INR is the parameter of choice in monitoring the adequacy of warfarin anti-coagulation, and should in theory remain stable. The appropriate therapeutic range will vary with the disease and treatment intensity desired. The UCSF Hematology Consultation service generally recommends as therapeutic range for warfarin: (a) INR of 2.5-3.5 for most mechanical valves or recurrent systemic embolism, (b) INR of 2.0-3.0 for most other indications.

Direct oral anticoagulant medications (non-vitamin K) should not be monitored with PT/INR or aPTT because the effect of these tests is not predictable. Recommendations for monitoring anticoagulant medications are available through the UCSF Hematology consultation services: for adults, pager 443-4276, for pediatrics pager 443-6966.

The Prothrombin Time contains a reagent that neutralizes heparin up to 2 U/mL.

In regard to samples drawn through heparinized lines: (i) the PT reagent neutralizes low levels of heparin and (ii) additional heparin neutralization can cause a reduction in coagulation factor levels. For these reasons, heparin neutralization is not recommended for PT measurements.

ADMINISTRATIVE

CPT Codes:
85610

LOINC Codes:
5902-2

COMPLETE VIEW

Available Stat:
Yes

Test Code:
PT

Test Group:
Prothrombin time

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Hematology: 24-hours per day, 7-days per week
Berkeley Outpatient Center: Test available Mon-Fri (0800-1630)

Methodology:
Mechanical clot detection

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

For patients with Hct's >= 55% please contact Hematology (For Parnassus patients call 3-1747, for Mission Bay patients call 6-0194) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Collect:
Blue (2.7 mL) or Lt. Blue (1.8 mL) top filled to full extent of vacuum

Amount to Collect:
Blue top: 2.7 mL blood
Lt. Blue top: 1.8 mL blood

Sample Type:
Citrated plasma

Preferred Volume:
1.5 mL plasma

Minimum Volume:
1 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer.
Over-filled or under-filled samples may be rejected.

Units:
seconds

Reference Interval:

PT: 11.6 - 14.8 seconds
INR: 0.9 - 1.2

The PT of full-term normal infants does not appear to differ significantly from adults, although factor levels are somewhat lower in the first six months of life (Andrew, M et al. Development of the human coagulation system in the full-term infant. Blood. 70:165-172).

Critical Values:
INR >= 5.0

Synonyms:

- PT
- coumadin
- warfarin
- INR
- Monitoring anticoagulation

Stability (from collection to initiation):
Unopened, uncentrifuged specimens are stable for 24 hours at room temperature.

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:

Current reagents permit the reporting of results up to 100 seconds; if no clot is detected by that time the result will be reported as > 100 seconds.

The International Normalized Ratio (INR) will be routinely reported in addition to the Prothrombin Time in seconds. The reagents, and therefore the reference range in seconds, differ among the various UC affiliated hospitals. However, the INR adjusts for the inherent variability of tissue thromboplastins employed in the assay.

Note: when the prothrombin time is just above the upper limit of the normal range, calculation of the INR can result in a normal INR. This reflects the rounding of decimals utilized in the INR calculation.

The INR is the parameter of choice in monitoring the adequacy of warfarin anti-coagulation, and should in theory remain stable. The appropriate therapeutic range will vary with the disease and treatment intensity desired. The UCSF Hematology Consultation service generally recommends as therapeutic range for warfarin: (a) INR of 2.5-3.5 for most mechanical valves or recurrent systemic embolism, (b) INR of 2.0-3.0 for most other indications.

Direct oral anticoagulant medications (non-vitamin K) should not be monitored with PT/INR or aPTT because the effect of these tests is not predictable. Recommendations for monitoring anticoagulant medications are available through the UCSF Hematology consultation services: for adults, pager 443-4276, for pediatrics pager 443-6966.

The Prothrombin Time contains a reagent that neutralizes heparin up to 2 U/mL.

In regard to samples drawn through heparinized lines: (i) the PT reagent neutralizes low levels of heparin and (ii) additional heparin neutralization can cause a reduction in coagulation factor levels. For these reasons, heparin neutralization is not recommended for PT measurements.

CPT Codes:
85610

LOINC Codes:
5902-2

PRU Test P2Y12 Reaction

CLOP

ORDERING

Approval Required:
No, but must be collected at Parnassus location. Contact Hematology Lab at 415-353-1747 to receive special collection kit. For Neurointerventional radiology only.

Available Stat:
No

Performing Lab:
Hematology, Parnassus

Performed:
Monday - Friday 0800 - 1600
Saturday - Sunday 0800 - 1545

Reported:
4 hours

Additional Information:
The VerifyNow PRUTest is designed to measure platelet P2Y12 receptor blockade.

Patients with inherited platelet disorders such as von Willebrand Factor Deficiency, Glanzmann Thrombasthenia and Bernard-Soulier Syndrome have not been studied with the VerifyNow PRUTest. The VerifyNow PRUTest is not intended for use with these types of platelet disorders.

Patients who have been treated with Glycoprotein IIb/IIIa inhibitor drugs should not be tested until platelet function has recovered. This time period is approximately 14 days after discontinuation of drug administration for abciximab (ReoPro) and up to 48 hours for eptifibatide (Integrilin) and tirofiban (Aggrastat). The platelet function recovery time varies among individuals and is longer for patients with renal dysfunction.

Test performance was not affected by hematocrit values between 33-52%, or platelet count values between 119,000 - 502,000/µL. Based on an in-house study performed on 3/29/16, correlation showed that as hematocrit increased, PRU results decreased.

Synonyms:

- P2Y12, Plavix Reaction

COLLECTION

Sample Type:
Citrated and EDTA anticoagulated whole blood

Collect:
1. Greiner partial fill discard
2. Greiner partial fill 3.2% Sodium citrate blue top
3. Lavender EDTA tube

Amount to Collect:
8 mL

Preferred Volume:
8 mL

Minimum Volume:
6 mL

Remarks:
Contact Hematology at 415-353-1747 for collection kits. DO NOT collect any specimens before 0800 or after 1500 from Monday to Friday; before 0800 or after 1500 on Saturday and Sunday.
1. Whole blood samples must be collected in or immediately transferred to Greiner 2.0 mL partial fill blue top tubes containing 3.2% Sodium Citrate. The tube must be filled to its intended whole blood capacity (indicated by small black line).
2. Whole blood may be collected from venous sites using a 21 gauge or larger needle in an appropriate blood collection tube.
3. Blood samples should be obtained from an extremity free of peripheral venous infusions.
4. Collect a discard tube first (approximately 2 mL), Greiner partial fill blue tops 2nd, and a lavender for CBC last.
5. Gently invert the sample tube at least 5 times to ensure complete mixing of the contents.
6. Blood must set a minimum of 10 minutes after collection before testing but no longer than 4 hours.
Samples cannot be pneumatic tubed.

Stability (from collection to initiation):
4 hours

Unacceptable Conditions:
Clotted samples or if stability period exceeded.

Incorrect tube type and/or no discard tube received.

Patients with Hct's < 33% and/or Plt's < 119 x 109/L

PROCESSING

Test Code:
CLOP

Performing Lab:
Hematology, Parnassus

Specimen Preparation:
Deliver immediately to Hematology

Additional Processing Instructions:
A PRU will be ordered in computer. If no CBC or CBCD is requested, Central Processing will order a hematocrit (HCT) and platelet count (PLT).

Preferred Volume:
8 mL

Minimum Volume:
6 mL

Unacceptable Conditions:
Clotted samples or if stability period exceeded.

Incorrect tube type and/or no discard tube received.

Patients with Hct's < 33% and/or Plt's < 119 x 109/L

Stability (from collection to initiation):
4 hours

RESULT INTERPRETATION

Units:
PRU

Reference Interval:
182-335

Additional Information:
The VerifyNow PRUTest is designed to measure platelet P2Y12 receptor blockade.

Patients with inherited platelet disorders such as von Willebrand Factor Deficiency, Glanzmann Thrombasthenia and Bernard-Soulier Syndrome have not been studied with the VerifyNow PRUTest. The VerifyNow PRUTest is not intended for use with these types of platelet disorders.

Patients who have been treated with Glycoprotein IIb/IIIa inhibitor drugs should not be tested until platelet function has recovered. This time period is approximately 14 days after discontinuation of drug administration for abciximab (ReoPro) and up to 48 hours for eptifibatide (Integrilin) and tirofiban (Aggrastat). The platelet function recovery time varies among individuals and is longer for patients with renal dysfunction.

Test performance was not affected by hematocrit values between 33-52%, or platelet count values between 119,000 - 502,000/µL. Based on an in-house study performed on 3/29/16, correlation showed that as hematocrit increased, PRU results decreased.

ADMINISTRATIVE

CPT Codes:
85576

LOINC Codes:
49010-2

COMPLETE VIEW

Approval Required:
No, but must be collected at Parnassus location. Contact Hematology Lab at 415-353-1747 to receive special collection kit. For Neurointerventional radiology only.

Available Stat:
No

Test Code:
CLOP

Performing Lab:
Hematology, Parnassus

Performed:
Monday - Friday 0800 - 1600
Saturday - Sunday 0800 - 1545

Remarks:
Contact Hematology at 415-353-1747 for collection kits. DO NOT collect any specimens before 0800 or after 1500 from Monday to Friday; before 0800 or after 1500 on Saturday and Sunday.
1. Whole blood samples must be collected in or immediately transferred to Greiner 2.0 mL partial fill blue top tubes containing 3.2% Sodium Citrate. The tube must be filled to its intended whole blood capacity (indicated by small black line).
2. Whole blood may be collected from venous sites using a 21 gauge or larger needle in an appropriate blood collection tube.
3. Blood samples should be obtained from an extremity free of peripheral venous infusions.
4. Collect a discard tube first (approximately 2 mL), Greiner partial fill blue tops 2nd, and a lavender for CBC last.
5. Gently invert the sample tube at least 5 times to ensure complete mixing of the contents.
6. Blood must set a minimum of 10 minutes after collection before testing but no longer than 4 hours.
Samples cannot be pneumatic tubed.

Collect:
1. Greiner partial fill discard
2. Greiner partial fill 3.2% Sodium citrate blue top
3. Lavender EDTA tube

Amount to Collect:
8 mL

Sample Type:
Citrated and EDTA anticoagulated whole blood

Preferred Volume:
8 mL

Minimum Volume:
6 mL

Unacceptable Conditions:
Clotted samples or if stability period exceeded.

Incorrect tube type and/or no discard tube received.

Patients with Hct's < 33% and/or Plt's < 119 x 109/L

Specimen Preparation:
Deliver immediately to Hematology

Additional Processing Instructions:
A PRU will be ordered in computer. If no CBC or CBCD is requested, Central Processing will order a hematocrit (HCT) and platelet count (PLT).

Units:
PRU

Reference Interval:
182-335

Synonyms:

- P2Y12, Plavix Reaction

Stability (from collection to initiation):
4 hours

Reported:
4 hours

Additional Information:

The VerifyNow PRUTest is designed to measure platelet P2Y12 receptor blockade.

Patients with inherited platelet disorders such as von Willebrand Factor Deficiency, Glanzmann Thrombasthenia and Bernard-Soulier Syndrome have not been studied with the VerifyNow PRUTest. The VerifyNow PRUTest is not intended for use with these types of platelet disorders.

Patients who have been treated with Glycoprotein IIb/IIIa inhibitor drugs should not be tested until platelet function has recovered. This time period is approximately 14 days after discontinuation of drug administration for abciximab (ReoPro) and up to 48 hours for eptifibatide (Integrilin) and tirofiban (Aggrastat). The platelet function recovery time varies among individuals and is longer for patients with renal dysfunction.

Test performance was not affected by hematocrit values between 33-52%, or platelet count values between 119,000 - 502,000/µL. Based on an in-house study performed on 3/29/16, correlation showed that as hematocrit increased, PRU results decreased.

CPT Codes:

85576

LOINC Codes:

49010-2

Pseudocholinesterase, Dibucaine Inhibition

CGV

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Colorimetric

Reported:
Test performed Monday. Turnaround time: 48 hours

Additional Information:
Assay includes Dibucaine #.Used to assess for genetic hypersusceptibility to muscle relaxants.

Synonyms:

- Pseudocholinesterase
- dibucaine number

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Remarks:
Avoid hemolysis

Stability (from collection to initiation):
Room temperature 3 weeks, refrigerated 3 weeks, frozen at -20C 1 month.

Unacceptable Conditions:
Hemolyzed samples

PROCESSING

Test Code:
CGV

Test Group:
Cholinesterase

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate. Order Quest # 7961

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Hemolyzed samples

Stability (from collection to initiation):
Room temperature 3 weeks, refrigerated 3 weeks, frozen at -20C 1 month.

RESULT INTERPRETATION

Units:
IU/L

Reference Interval:
Cholinesterase, serum:
Male: 3342-7586 IU/L
Female: 2673-6592 IU/L

Dibucaine number: 81.6-88.3% Inhibition

Additional Information:
Assay includes Dibucaine #.Used to assess for genetic hypersusceptibility to muscle relaxants.

ADMINISTRATIVE

CPT Codes:
82480-90, 82638-90

LOINC Codes:
2099-0

COMPLETE VIEW

Available Stat:
No

Test Code:
CGV

Test Group:
Cholinesterase

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Colorimetric

Remarks:
Avoid hemolysis

Collect:
Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Hemolyzed samples

Specimen Preparation:
Refrigerate. Order Quest # 7961

Units:
IU/L

Reference Interval:
Cholinesterase, serum:
Male: 3342-7586 IU/L
Female: 2673-6592 IU/L

Dibucaine number: 81.6-88.3% Inhibition

Synonyms:

- Pseudocholinesterase
- dibucaine number

Stability (from collection to initiation):
Room temperature 3 weeks, refrigerated 3 weeks, frozen at -20C 1 month.

Reported:
Test performed Monday. Turnaround time: 48 hours

Additional Information:

Assay includes Dibucaine #.Used to assess for genetic hypersusceptibility to muscle relaxants.

CPT Codes:

82480-90, 82638-90

LOINC Codes:

2099-0

Pyridoxine-Dependent Epilepsy Panel, Serum or Plasma

PDESP

ORDERING

Ordering Recommendations:
Primarily used for diagnosis and monitoring of patients with pyridoxine-dependent epilepsy. Can also aid in differential diagnosis of peroxisomal disorders, hyperlysinemia type 1, and sulfite oxidase/molybdenum cofactor deficiencies.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Fri

Methodology:
Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Reported:
4-12 days

Synonyms:

- Alpha-aminoadipic semialdehyde, serum
- Delta1-piperideine-6-carboxylate, Serum
- Pipecolic Acid, Serum/Plasma

COLLECTION

Patient Preparation:
Adults: Fasting specimen preferred.
Infants and Children: Draw specimen prior to feeding or 2-3 hours after a meal preferred.

Sample Type:
Serum of plasma

Collect:
Green (sodium or lithium heparin), lavender (EDTA), plain red, or serum separator tube (SST).

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL plasma/serum

Minimum Volume:
0.3 mL plasma/serum

Remarks:
Clinical information is needed for appropriate interpretation. Submit age, gender, diet (e.g., TPN therapy), drug therapy, and family history on a Biochemical Genetics Patient History Form available at www.aruplab.com/patienthistory or by contacting ARUP Client Services at 800-522-2787.

Stability (from collection to initiation):
After separation from cells: Ambient: Unacceptable; Refrigerated: 24 hours; Frozen at -20°C: 1 week; Frozen at -70°C: 1 year

Storage/Transport Temperature:
CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

Unacceptable Conditions:
N/A

PROCESSING

Test Code:
PDESP

ARUP Test Code:
2013352

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate from cells ASAP or within 2 hours of collection. Transfer 0.5 mL serum or plasma to an ARUP standard transport tube and freeze immediately . (Min: 0.2 mL)

Preferred Volume:
0.5 mL plasma/serum

Minimum Volume:
0.3 mL plasma/serum

Unacceptable Conditions:
N/A

Stability (from collection to initiation):
After separation from cells: Ambient: Unacceptable; Refrigerated: 24 hours; Frozen at -20°C: 1 week; Frozen at -70°C: 1 year

Storage/Transport Temperature:
CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

RESULT INTERPRETATION

Reference Interval:

Age	Pipecolic Acid	Total AASA-P6C
0-12 months	Less than or equal to 5.2 umol/L	Less than or equal to 1.6 umol/L
Greater than 1 year	Less than or equal to 6.3 umol/L	Less than or equal to 3.1 umol/L

Interpretive Data:
Refer to report

ADMINISTRATIVE

CPT Codes:
82542

LOINC:

- 92766-5
- 48767-8
- 32334-5

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Primarily used for diagnosis and monitoring of patients with pyridoxine-dependent epilepsy. Can also aid in differential diagnosis of peroxisomal disorders, hyperlysinemia type 1, and sulfite oxidase/molybdenum cofactor deficiencies.

Test Code:
PDESP

ARUP Test Code:
2013352

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Fri

Methodology:
Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Patient Preparation:
Adults: Fasting specimen preferred.
Infants and Children: Draw specimen prior to feeding or 2-3 hours after a meal preferred.

Remarks:
Clinical information is needed for appropriate interpretation. Submit age, gender, diet (e.g., TPN therapy), drug therapy, and family history on a Biochemical Genetics Patient History Form available at www.aruplab.com/patienthistory or by contacting ARUP Client Services at 800-522-2787.

Collect:
Green (sodium or lithium heparin), lavender (EDTA), plain red, or serum separator tube (SST).

Amount to Collect:
1 mL blood

Sample Type:
Serum of plasma

Preferred Volume:
0.5 mL plasma/serum

Minimum Volume:
0.3 mL plasma/serum

Unacceptable Conditions:
N/A

Specimen Preparation:
Separate from cells ASAP or within 2 hours of collection. Transfer 0.5 mL serum or plasma to an ARUP standard transport tube and freeze immediately . (Min: 0.2 mL)

Reference Interval:

Age	Pipecolic Acid	Total AASA-P6C
0-12 months	Less than or equal to 5.2 umol/L	Less than or equal to 1.6 umol/L
Greater than 1 year	Less than or equal to 6.3 umol/L	Less than or equal to 3.1 umol/L

Interpretive Data:
Refer to report

Synonyms:

- Alpha-aminoadipic semialdehyde, serum
- Delta1-piperideine-6-carboxylate, Serum
- Pipecolic Acid, Serum/Plasma

Storage/Transport Temperature:
CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

Stability (from collection to initiation):
After separation from cells: Ambient: Unacceptable; Refrigerated: 24 hours; Frozen at -20°C: 1 week; Frozen at -70°C: 1 year

Reported:
4-12 days

CPT Codes:
82542

LOINC:

- 92766-5
- 48767-8
- 32334-5

Pyridoxine-Dependent Epilepsy Panel, Urine

PDEU

ORDERING

Ordering Recommendations:
Primarily used for diagnosis and monitoring of patients with pyridoxine-dependent epilepsy. Can also aid in differential diagnosis of peroxisomal disorders, hyperlysinemia type 1, and sulfite oxidase/molybdenum cofactor deficiencies.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Fri

Methodology:
Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Reported:
4-12 days

Synonyms:

- Alpha-aminoadipic semialdehyde, Urine
- Delta1-piperideine-6-carboxylate 1, Urine
- Delta1-piperideine-6-carboxylate 2, Urine
- Pipecolic Acid, Urine
- Urine pipecolic acid

COLLECTION

Sample Type:
Urine in urine container

Collect:
Random urine. First morning urine is preferred.

Preferred Volume:
1 mL

Minimum Volume:
0.3 mL

Remarks:
Clinical information is needed for appropriate interpretation. Additional required information includes age, gender, diet (e.g., TPN therapy), drug therapy, and family history. Biochemical Genetics Patient History Form is available on the ARUP Web site at http://www.aruplab.com/patienthistory or by contacting ARUP Client Services at 800-522-2787.

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 24 hours; Frozen at -20°C: 1 week; Frozen at -70°C: 1 year

Storage/Transport Temperature:
CRITICAL FROZEN (preferred). Refrigerated specimens are acceptable for testing if frozen within 24 hours from start of collection.

Unacceptable Conditions:
N/A

PROCESSING

Test Code:
PDEU

ARUP Test Code:
2013355

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transfer 1 mL urine to an ARUP standard transport tube and freeze immediately. (Min: 0.3 mL)

Preferred Volume:
1 mL

Minimum Volume:
0.3 mL

Unacceptable Conditions:
N/A

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 24 hours; Frozen at -20°C: 1 week; Frozen at -70°C: 1 year

Storage/Transport Temperature:
CRITICAL FROZEN (preferred). Refrigerated specimens are acceptable for testing if frozen within 24 hours from start of collection.

RESULT INTERPRETATION

Reference Interval:

Age	Pipecolic Acid	Total AASA-P6C
0 - 30 days	Less than or equal to19.6 mmol/mol creatinine	Less than or equal to 18.7 mmol/mol creatinine
1 - 5 months	Less than or equal to 12.1 mmol/mol creatinine	Less than or equal to 13.4 mmol/mol creatinine
6 - 11 months	Less than or equal to 7.2 mmol/mol creatinine	Less than or equal to 5.3 mmol/mol creatinine
Greater than 1 Year	Less than or equal to 1.2 mmol/mol creatinine	Less than or equal to 3.1 mmol/mol creatinine

Interpretive Data:
Refer to report.

ADMINISTRATIVE

CPT Codes:
82542

LOINC:

- 48767-8
- 32335-2
- 2161-8

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Primarily used for diagnosis and monitoring of patients with pyridoxine-dependent epilepsy. Can also aid in differential diagnosis of peroxisomal disorders, hyperlysinemia type 1, and sulfite oxidase/molybdenum cofactor deficiencies.

Test Code:
PDEU

ARUP Test Code:
2013355

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Fri

Methodology:
Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Remarks:
Clinical information is needed for appropriate interpretation. Additional required information includes age, gender, diet (e.g., TPN therapy), drug therapy, and family history. Biochemical Genetics Patient History Form is available on the ARUP Web site at http://www.aruplab.com/patienthistory or by contacting ARUP Client Services at 800-522-2787.

Collect:
Random urine. First morning urine is preferred.

Sample Type:
Urine in urine container

Preferred Volume:
1 mL

Minimum Volume:
0.3 mL

Unacceptable Conditions:
N/A

Specimen Preparation:
Transfer 1 mL urine to an ARUP standard transport tube and freeze immediately. (Min: 0.3 mL)

Reference Interval:

Age	Pipecolic Acid	Total AASA-P6C
0 - 30 days	Less than or equal to19.6 mmol/mol creatinine	Less than or equal to 18.7 mmol/mol creatinine
1 - 5 months	Less than or equal to 12.1 mmol/mol creatinine	Less than or equal to 13.4 mmol/mol creatinine
6 - 11 months	Less than or equal to 7.2 mmol/mol creatinine	Less than or equal to 5.3 mmol/mol creatinine
Greater than 1 Year	Less than or equal to 1.2 mmol/mol creatinine	Less than or equal to 3.1 mmol/mol creatinine

Interpretive Data:
Refer to report.

Synonyms:

- Alpha-aminoadipic semialdehyde, Urine
- Delta1-piperideine-6-carboxylate 1, Urine
- Delta1-piperideine-6-carboxylate 2, Urine
- Pipecolic Acid, Urine
- Urine pipecolic acid

Storage/Transport Temperature:
CRITICAL FROZEN (preferred). Refrigerated specimens are acceptable for testing if frozen within 24 hours from start of collection.

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 24 hours; Frozen at -20°C: 1 week; Frozen at -70°C: 1 year

Reported:
4-12 days

CPT Codes:
82542

LOINC:

- 48767-8
- 32335-2
- 2161-8

Pyruvate Kinase, RBC

MOLT

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
Spectrophotometry

Reported:
Test performed Monday-Saturday.

Synonyms:

- Pyruvate kinase, erythrocyte

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top

Amount to Collect:
3 mL blood

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood

PROCESSING

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Do not centrifuge or freeze; refrigerate. Order MAYO# 8659

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood

RESULT INTERPRETATION

Units:
U/g of hemoglobin

Reference Interval:
6.7 - 14.3 U/g of hemoglobin

ADMINISTRATIVE

CPT Codes:
84220-90

COMPLETE VIEW

Available Stat:
No

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Performing Lab:
Mayo

Sendout:
Yes

Methodology:
Spectrophotometry

Collect:
Lavender top

Amount to Collect:
3 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood

Specimen Preparation:
Do not centrifuge or freeze; refrigerate. Order MAYO# 8659

Units:
U/g of hemoglobin

Reference Interval:
6.7 - 14.3 U/g of hemoglobin

Synonyms:

- Pyruvate kinase, erythrocyte

Reported:
Test performed Monday-Saturday.

CPT Codes:
84220-90

Pyruvate, CSF

PYRUC

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Enzymatic

Reported:
Set up Monday, Wednesday, Friday. Turn around time 3-5 days

Synonyms:

- Pyruvic acid

COLLECTION

Sample Type:
CSF

Collect:
CSF tube or sterile collection tube

Amount to Collect:
2 mL CSF

Preferred Volume:
2 mL CSF

Minimum Volume:
1 mL CSF

Remarks:
Deliver to Clinical Laboratories immediately after collection for testing.

Stability (from collection to initiation):
Refrigerated 7 days, frozen at -20C 6 months.

Rejection Criteria:
Sample rec'd at room temperature.

PROCESSING

Test Code:
PYRUC

Test Group:
Pyruvate

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
If specimen is not clear or contains blood, centrifuge and separate supernatant fluid before freezing. Transfer fluid aseptically into a sterile plastic concical tube for transport Freeze immediately, transport to China Basin sendout frozen.

Preferred Volume:
2 mL CSF

Minimum Volume:
1 mL CSF

Rejection Criteria:
Sample rec'd at room temperature.

Stability (from collection to initiation):
Refrigerated 7 days, frozen at -20C 6 months.

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:
0.50-1.70 mg/dL

ADMINISTRATIVE

CPT Codes:
84210-90

COMPLETE VIEW

Available Stat:
No

Test Code:
PYRUC

Test Group:
Pyruvate

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Enzymatic

Remarks:
Deliver to Clinical Laboratories immediately after collection for testing.

Collect:
CSF tube or sterile collection tube

Amount to Collect:
2 mL CSF

Sample Type:
CSF

Preferred Volume:
2 mL CSF

Minimum Volume:
1 mL CSF

Rejection Criteria:
Sample rec'd at room temperature.

Specimen Preparation:
If specimen is not clear or contains blood, centrifuge and separate supernatant fluid before freezing. Transfer fluid aseptically into a sterile plastic concical tube for transport Freeze immediately, transport to China Basin sendout frozen.

Units:
mg/dL

Reference Interval:
0.50-1.70 mg/dL

Synonyms:

- Pyruvic acid

Stability (from collection to initiation):
Refrigerated 7 days, frozen at -20C 6 months.

Reported:
Set up Monday, Wednesday, Friday. Turn around time 3-5 days

CPT Codes:
84210-90

Pyruvate, plasma

PYRU

ORDERING

Ordering Recommendations:
PLEASE READ COLLECTION INSTRUCTIONS CAREFULLY BEFORE OBTAINING SAMPLES.

Available Stat:
No

Performing Lab:
Quest

Performed:
Daily, weekdays

Methodology:
Enzymatic

Reported:
1-4 days

Additional Information:
To convert mmol/L (SI units) to conventional mg/dL, multiply by 8.77.

COLLECTION

Patient Preparation:
An 8 hour fast before specimen collection is preferred.

Sample Type:
Plasma filtrate

Collect:
Special collection kit required

Amount to Collect:
2 mL blood (be sure to fill vacuatiner completely)

Note: If the patient cannot tolerate this volume contact the laboratory at x3-1667 and ask to speak to a Processing or Chemistry supervisor. The volume of blood that can be collected (minimun 1.0 mL) needs to be coordinated with the lab so we can create a speacial perchloric acid tube containing an equal volume of Perchloric acid for use in stabilizing the sample.

Preferred Volume:
2.5 mL plasma filtrate

Minimum Volume:
0.6 mL plasma filtrate

Remarks:

Note: If the patient cannot tolerate the 2 mL preferred volume, contact the laboratory at x3-1667 and ask to speak to a Processing or Chemistry supervisor. The volume of blood that can be collected (minimum 1.0 mL) needs to be coordinated with the lab so we can create a special perchloric acid tube containing an equal volume of Perchloric acid for use in stabilizing the sample.

Whole blood:

1. Collection kits containing a conical tube with 2 mL 7% Perchloric acid and 2 mL Lavender top (EDTA) vacutainers are available from the 5th Floor laboratory and the ACC phlebotomy area. Samples must be collected with this kit.

2. Place the tube containing 2 mL Perchloric acid in a cup of ice to chill

3. Draw 2 mL blood into a Lavender top (EDTA) vacutainer with minimum stasis (be sure the container fills completely) The second lavender top tube in the kit is for back-up purposes only.

4. Gently mix the EDTA sample by inversion 4-6 times

5. Carefully open the Perchloric acid tube (avoid skin contact with the Perchloric acid)

6. Using a gauze or safety wipe carefully remove the cap from the vacutainer to avoid creating droplets

7. Pour the entire contents of the vacutainer into the Perchloric acid tube

8. TIGHTLY cap the tube containing the blood/Perchloric acid mixture and mix vigorously by hand.

9. Attach a patient label to the conical tube containing the mixture

9. Place the tube back into the cup of ice and hand carry immediately to the lab for processing.

Stability (from collection to initiation):

Refrigerated 1 month, frozen at -20C 3 months

Rejection Criteria:

Sample not mixed with Perchloric acid within 30-60 seconds after collection. Not delivered on ice.

PROCESSING

Test Code:

PYRU

Test Group:

Pyruvate

Sendout:

Yes

Performing Lab:

Quest

Specimen Preparation:

Provide sample to Chemistry staff immediately upon receipt.

Chemistry will centrifuge the chilled tube containing EDTA whole blood and 7% Perchloric acid for 10 minutes at 3000 rpm. Transfer the supernatant into a specimen vial and label with a Sunquest label. Record the approximate volume of the supernatant on the requisition. Freeze at -20C.

Store and ship the sample frozen. Order Quest # 765Z.

Preferred Volume:

2.5 mL plasma filtrate

Minimum Volume:

0.6 mL plasma filtrate

Rejection Criteria:

Sample not mixed with Perchloric acid within 30-60 seconds after collection. Not delivered on ice.

Stability (from collection to initiation):

Refrigerated 1 month, frozen at -20C 3 months

RESULT INTERPRETATION

Units:

mg/dL

Reference Interval:

0.30 - 1.50 mg/dL

Additional Information:
To convert mmol/L (SI units) to conventional mg/dL, multiply by 8.77.

ADMINISTRATIVE

CPT Codes:
84210-90

LOINC Codes:
14121-8

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
PLEASE READ COLLECTION INSTRUCTIONS CAREFULLY BEFORE OBTAINING SAMPLES.

Test Code:
PYRU

Test Group:
Pyruvate

Performing Lab:
Quest

Sendout:
Yes

Performed:
Daily, weekdays

Methodology:
Enzymatic

Patient Preparation:
An 8 hour fast before specimen collection is preferred.

Remarks:
Note: If the patient cannot tolerate the 2 mL preferred volume, contact the laboratory at x3-1667 and ask to speak to a Processing or Chemistry supervisor. The volume of blood that can be collected (minimum 1.0 mL) needs to be coordinated with the lab so we can create a special perchloric acid tube containing an equal volume of Perchloric acid for use in stabilizing the sample.

Whole blood:

1. Collection kits containing a conical tube with 2 mL 7% Perchloric acid and 2 mL Lavender top (EDTA) vacutainers are available from the 5th Floor laboratory and the ACC phlebotomy area. Samples must be collected with this kit.

2. Place the tube containing 2 mL Perchloric acid in a cup of ice to chill

3. Draw 2 mL blood into a Lavender top (EDTA) vacutainer with minimum stasis (be sure the container fills completely) The second lavender top tube in the kit is for back-up purposes only.

4. Gently mix the EDTA sample by inversion 4-6 times

5. Carefully open the Perchloric acid tube (avoid skin contact with the Perchloric acid)

6. Using a gauze or safety wipe carefully remove the cap from the vacutainer to avoid creating droplets

7. Pour the entire contents of the vacutainer into the Perchloric acid tube

8. TIGHTLY cap the tube containing the blood/Perchloric acid mixture and mix vigorously by hand.

9. Attach a patient label to the conical tube containing the mixture

9. Place the tube back into the cup of ice and hand carry immediately to the lab for processing.

Collect:
Special collection kit required

Amount to Collect:
2 mL blood (be sure to fill vacuatiner completely)

Note: If the patient cannot tolerate this volume contact the laboratory at x3-1667 and ask to speak to a Processing or Chemistry supervisor. The volume of blood that can be collected (minimun 1.0 mL) needs to be coordinated with the lab so we can create a speacial perchloric acid tube containing an equal volume of Perchloric acid for use in stabilizing the sample.

Sample Type:
Plasma filtrate

Preferred Volume:
2.5 mL plasma filtrate

Minimum Volume:
0.6 mL plasma filtrate

Rejection Criteria:
Sample not mixed with Perchloric acid within 30-60 seconds after collection. Not delivered on ice.

Specimen Preparation:
Provide sample to Chemistry staff immediately upon receipt.

Chemistry will centrifuge the chilled tube containing EDTA whole blood and 7% Perchloric acid for 10 minutes at 3000 rpm. Transfer the supernatant into a specimen vial and label with a Sunquest label. Record the approximate volume of the supernatant on the requisition. Freeze at -20C.

Store and ship the sample frozen. Order Quest # 765Z.

Units:
mg/dL

Reference Interval:
0.30 - 1.50 mg/dL

Stability (from collection to initiation):
Refrigerated 1 month, frozen at -20C 3 months

Reported:
1-4 days

Additional Information:
To convert mmol/L (SI units) to conventional mg/dL, multiply by 8.77.

CPT Codes:
84210-90

LOINC Codes:
14121-8

QuantiFeron-TB Gold Plus

QFTBP

ORDERING

Ordering Recommendations:

The QuantiFERON test detects the release of IFN-gamma released by whole blood lymphocytes after incubation with tuberculin purified protein derivative and phytohemagglutinin.

The test is intended for screening asymptomatic individuals who may be at risk for latent tuberculosis (recent immigrants, prisoners and prison/jail employees) or TB exposure (military, hospital personnel). In these settings it is equivalent but no better than skin testing.

QuanitFERON testing may be more specific than skin testing when screening individuals with a history of prior BCG vaccination.

It is NOT recommended for use in patients with symptoms of active TB (known to cause decreased IFN-G responses), contacts of patients with active TB, immunosuppressed patients, patients with diabetes, silicosis, chronic renal failure, leukemia, lymphoma, head/neck cancer, lung cancer, s/p gastrectomy or jejunoileal bypass. In these situations skin testing is recommended.

Available Stat:

No

Performing Lab:

Immunology

Performed:

Tuesday and Friday (day shift)

Methodology:

Chemiluminescent Immunoassay

Reported:

5-7 days

Synonyms:

- Tuberculosis
- TB
- TB skin test
- Interferon gamma
- IFN gamma

COLLECTION

Sample Type:

Blood

Collect:

Requires special collection kit available from central laboratory containing:

QFT-Nil Control tube	Gray cap, white ring
QFT-TB1 Antigen tube	Green cap, white ring
QFT-TB2 Antigen tube	Yellow cap, white ring
QFT-Mitogen Control tube	Purple cap, white ring

Note: It is mandatory the tubes be filled correctly within the black line indicated on the tubes, underfilled or overfilled tubes will be rejected by lab.

Amount to Collect:

4 mL blood, place 1 mL of blood into each tube in the collection kit

Remarks:

A set of four QuantiFERON-TB Gold Plus tubes (Gray cap/white ring, Green cap/white ring, Yellow cap/white ring and Purple cap/white ring) must be collected at the same time, with 1mL of blood in each tube.

Note: It is mandatory the tubes be filled correctly as underfilled or overfilled tubes will be rejected by the lab.

INPATIENT:
COLLECT SAMPLE 3 AM - 6:30 PM ON MONDAY - FRIDAY ONLY. DO NOT COLLECT SAMPLE ON WEEKEND OR UCSF OBSERVED HOLIDAYS

OUTPATIENTS:
COLLECT BETWEEN 7 AM - 6 PM ON MONDAY - FRIDAY ONLY BY UCSF LABORATORY STAFF AT OUR OUTPATIENT FACILITIES. DO NOT COLLECT SAMPLE ON WEEKEND OR UCSF OBSERVED HOLIDAYS.

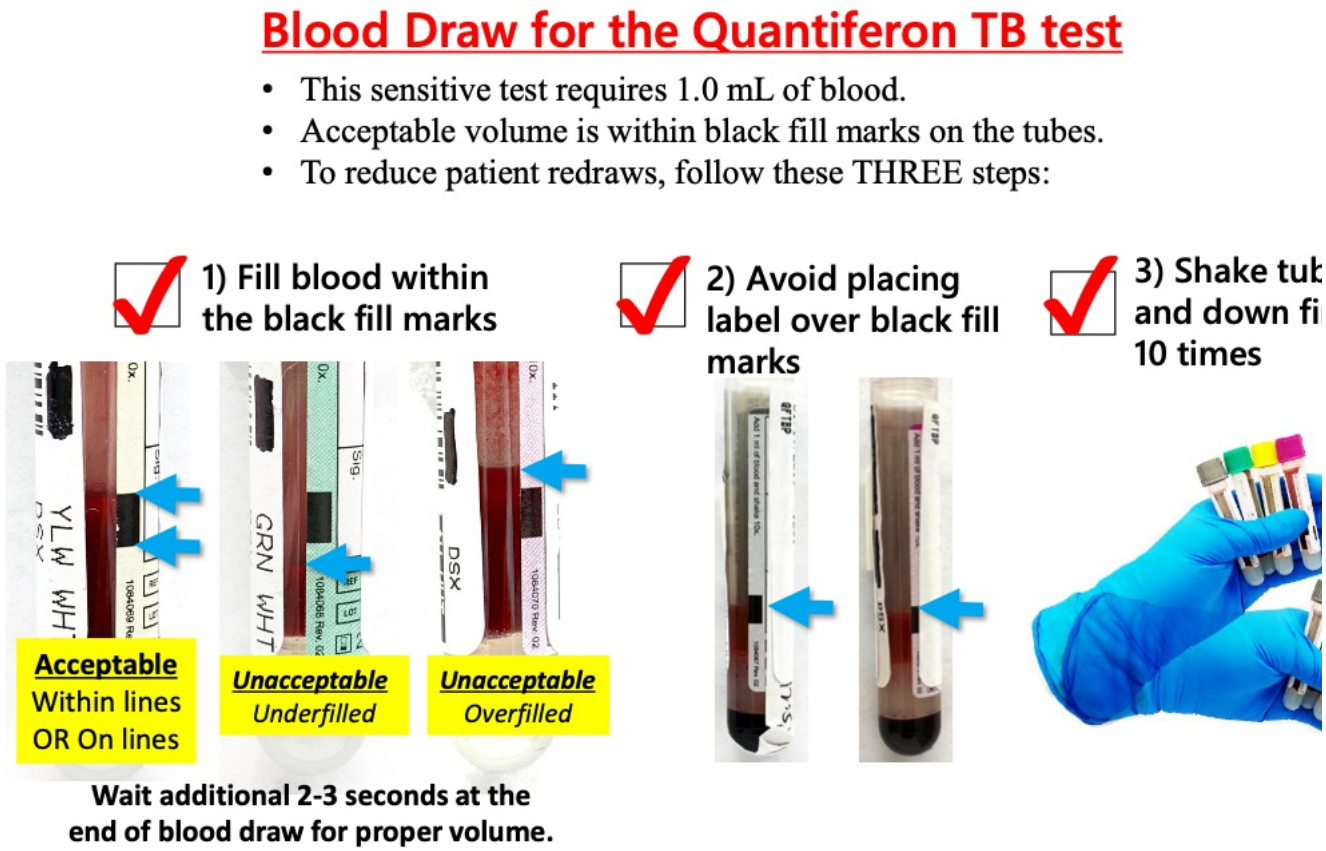
1. For Parnassus and Mission Bay inpatient only, pick up collection kits from Laboratory Central Processing.

2. Collect 1 ml of blood by venipuncture directly into each of the four tubes (Nil, TB1 Antigen, TB2 Antigen, Mitogen). Fill each tube up to the black mark indicated on the collection tube. Under or overfilling of the tubes may lead to erroneous results.

3. Mix the tubes by shaking firmly and vertically for 10 times and label tubes appropriately.

4. Please verify that all four collection tubes are collected with appropriate amount of blood (blood volume is within the black line indicated on the tube). Please do not stick label all around the tube, but allow sample level and black line visible to ease testing in the laboratory.

5. These are TIME SENSITIVE samples, please deliver the tubes to the Laboratory Central Processing immediately.



Stability (from collection to initiation):

Samples need to be incubated at China Basin as soon as possible after collection (within 16 hours of collection).

Storage/Transport Temperature:

Room Temperature

Unacceptable Conditions:

Frozen or refrigerated samples. Improperly collected samples. Overfilled or underfilled tubes received.

Grossly hemolyzed, icteric or lipemic samples as well as samples with obvious microbial contamination.

PROCESSING

Test Code:
QFTBP

Performing Lab:
Immunology

Specimen Preparation:
Accession the samples immediately upon receipt and send to Immunology Lab at China Basin at room temperature. Samples received after 6:30pm or 7pm, please send them with Microbiology Lab courier to China Basin Mircrobiology Lab. Please reject samples collected after 6:30pm that missed 8:30pm courier run.

Exception: Accept samples collected outside of "3am - 6:30pm Monday - Friday" from patients admitted for a kidney transplant at Parnassus only. The tubes will be delivered by kidney transplant unit staff to Central Processing Lab at Parnassus to accession. Send the samples to Microbiology Lab at China Basin for incubation and processing.

Please verify that all four collection tubes are collected with appropriate amount of blood (blood volume is within the black line indicated on the tube). Please do not stick label all around the tube, but allow sample level and black line visible to ease testing in the laboratory.

Unacceptable Conditions:
Frozen or refrigerated samples. Improperly collected samples. Overfilled or underfilled tubes received.

Grossly hemolyzed, icteric or lipemic samples as well as samples with obvious microbial contamination.

Stability (from collection to initiation):
Samples need to be incubated at China Basin as soon as possible after collection (within 16 hours of collection).

Storage/Transport Temperature:
Room Temperature

RESULT INTERPRETATION

Units:
IU/mL

Reference Interval:
Negative

Interpretive Data:
Results Interpretation:

Nil = QNIL (IU/mL)	TB1 - Nil = QTB1 (IU/mL)	TB2-Nil = QTB2 (IU/mL)	Mitogen - Nil = QMIT (IU/mL)	QTF-Plus Result and Interpretation
<= 8.0	< 0.35 OR >= 0.35 and <25% of Nil value	< 0.35 OR >= 0.35 and <25% of Nil value	>= 0.5	Negative M. tuberculosis infection NOT likely
<= 8.0	>= 0.35 AND >= 25% of Nil value	Any	Any	Positive M. tuberculosis infection likely
<= 8.0	Any	>= 0.35 AND >= 25% of Nil value	Any	Positive M. tuberculosis infection likely
<= 8.0	< 0.35 OR >= 0.35 and <25% of Nil value	< 0.35 OR >= 0.35 and <25% of Nil value	< 0.5	Indeterminate Likelihood of M. tuberculosis infection cannot be determined
> 8.0	Any	Any	Any	Indeterminate Likelihood of M. tuberculosis infection cannot be determined

A negative QuantiFERON-TB Gold Plus result does not preclude the possibility of Mycobacterium tuberculosis infection or tuberculosis disease. Falsely negative results can be due to the stage of infection, conditions that affect immune functions, improper blood sample collection or handling of the specimen.

A positive QuantiFERON-TB Gold Plus result indicates that a Mycobacterium tuberculosis infection is very likely. False-positive QuantiFERON-TB Gold Plus result may occur due to improper preanalytical processing of the QuantiFERON-TB Gold Plus tubes, prior infection with certain other mycobacteria or biologic variability. Positive results should be confirmed with other clinical, exposure, and laboratory findings.

Test is not interpretable with indeterminate result. An indeterminate QuantiFERON-TB Gold Plus result suggests possible preanalytic error or individual patient related factors.

ADMINISTRATIVE

CPT Codes:
86481

LOINC Codes:

71775-1 - QUANTIFERON®-TB GOLD PLUS Panel code
71776-9 - NIL
64084-7 - TB1-NIL
88517-8 - TB2-NIL
71774-4 - MITOGEN-NIL
71773-6 - QUANTIFERON®-TB GOLD PLUS Result

COMPLETE VIEW

Available Stat:

No

Ordering Recommendations:

The QuantiFERON test detects the release of IFN-gamma released by whole blood lymphocytes after incubation with tuberculin purified protein derivative and phytohemagglutinin.

The test is intended for screening asymptomatic individuals who may be at risk for latent tuberculosis (recent immigrants, prisoners and prison/jail employees) or TB exposure (military, hospital personnel). In these settings it is equivalent but no better than skin testing.

QuanitFERON testing may be more specific than skin testing when screening individuals with a history of prior BCG vaccination.

It is NOT recommended for use in patients with symptoms of active TB (known to cause decreased IFN-G responses), contacts of patients with active TB, immunosuppressed patients, patients with diabetes, silicosis, chronic renal failure, leukemia, lymphoma, head/neck cancer, lung cancer, s/p gastrectomy or jejunoileal bypass. In these situations skin testing is recommended.

Test Code:

QFTBP

Performing Lab:

Immunology

Performed:

Tuesday and Friday (day shift)

Methodology:

Chemiluminescent Immunoassay

Remarks:

A set of four QuantiFERON-TB Gold Plus tubes (Gray cap/white ring, Green cap/white ring, Yellow cap/white ring and Purple cap/white ring) must be collected at the same time, with 1mL of blood in each tube.

Note: It is mandatory the tubes be filled correctly as underfilled or overfilled tubes will be rejected by the lab.

INPATIENT:
COLLECT SAMPLE 3 AM - 6:30 PM ON MONDAY - FRIDAY ONLY. DO NOT COLLECT SAMPLE ON WEEKEND OR UCSF OBSERVED HOLIDAYS

OUTPATIENTS:
COLLECT BETWEEN 7 AM - 6 PM ON MONDAY - FRIDAY ONLY BY UCSF LABORATORY STAFF AT OUR OUTPATIENT FACILITIES. DO NOT COLLECT SAMPLE ON WEEKEND OR UCSF OBSERVED HOLIDAYS.

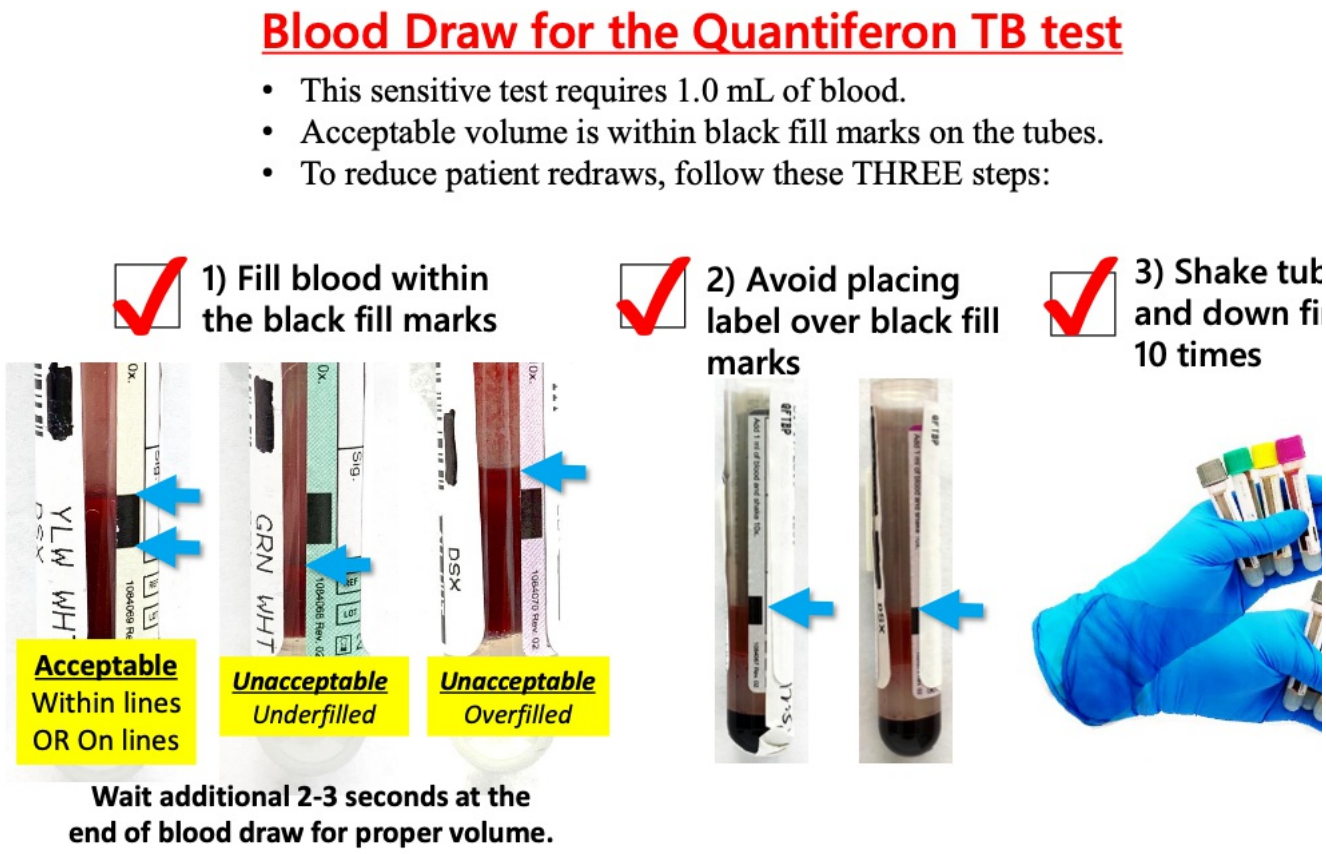
1. For Parnassus and Mission Bay inpatient only, pick up collection kits from Laboratory Central Processing.

2. Collect 1 ml of blood by venipuncture directly into each of the four tubes (Nil, TB1 Antigen, TB2 Antigen, Mitogen). Fill each tube up to the black mark indicated on the collection tube. Under or overfilling of the tubes may lead to erroneous results.

3. Mix the tubes by shaking firmly and vertically for 10 times and label tubes appropriately.

4. Please verify that all four collection tubes are collected with appropriate amount of blood (blood volume is within the black line indicated on the tube). Please do not stick label all around the tube, but allow sample level and black line visible to ease testing in the laboratory.

5. These are TIME SENSITIVE samples, please deliver the tubes to the Laboratory Central Processing immediately.



Collect:

Requires special collection kit available from central laboratory containing:

QFT-Nil Control tube	Gray cap, white ring
QFT-TB1 Antigen tube	Green cap, white ring
QFT-TB2 Antigen tube	Yellow cap, white ring
QFT-Mitogen Control tube	Purple cap, white ring

Note: It is mandatory the tubes be filled correctly within the black line indicated on the tubes, underfilled or overfilled tubes will be rejected by lab.

Amount to Collect:

4 mL blood, place 1 mL of blood into each tube in the collection kit

Sample Type:
Blood

Unacceptable Conditions:
Frozen or refrigerated samples. Improperly collected samples. Overfilled or underfilled tubes received.

Grossly hemolyzed, icteric or lipemic samples as well as samples with obvious microbial contamination.

Specimen Preparation:
Accession the samples immediately upon receipt and send to Immunology Lab at China Basin at room temperature. Samples received after 6:30pm or 7pm, please send them with Microbiology Lab courier to China Basin Mircrobiology Lab. Please reject samples collected after 6:30pm that missed 8:30pm courier run.

Exception: Accept samples collected outside of "3am - 6:30pm Monday - Friday" from patients admitted for a kidney transplant at Parnassus only. The tubes will be delivered by kidney transplant unit staff to Central Processing Lab at Parnassus to accession. Send the samples to Microbiology Lab at China Basin for incubation and processing.

Please verify that all four collection tubes are collected with appropriate amount of blood (blood volume is within the black line indicated on the tube). Please do not stick label all around the tube, but allow sample level and black line visible to ease testing in the laboratory.

Units:
IU/mL

Reference Interval:
Negative

Interpretive Data:
Results Interpretation:

Nil = QNIL (IU/mL)	TB1 - Nil = QTB1 (IU/mL)	TB2-Nil = QTB2 (IU/mL)	Mitogen - Nil = QMIT (IU/mL)	QTF-Plus Result and Interpretation
<= 8.0	< 0.35 OR >= 0.35 and <25% of Nil value	< 0.35 OR >= 0.35 and <25% of Nil value	>= 0.5	Negative M. tuberculosis infection NOT likely
<= 8.0	>= 0.35 AND >= 25% of Nil value	Any	Any	Positive M. tuberculosis infection likely
<= 8.0	Any	>= 0.35 AND >= 25% of Nil value	Any	Positive M. tuberculosis infection likely
<= 8.0	< 0.35 OR >= 0.35 and <25% of Nil value	< 0.35 OR >= 0.35 and <25% of Nil value	< 0.5	Indeterminate Likelihood of M. tuberculosis infection cannot be determined
> 8.0	Any	Any	Any	Indeterminate Likelihood of M. tuberculosis infection cannot be determined

A negative QuantiFERON-TB Gold Plus result does not preclude the possibility of Mycobacterium tuberculosis infection or tuberculosis disease. Falsely negative results can be due to the stage of infection, conditions that affect immune functions, improper blood sample collection or handling of the specimen.

A positive QuantiFERON-TB Gold Plus result indicates that a Mycobacterium tuberculosis infection is very likely. False-positive QuantiFERON-TB Gold Plus result may occur due to improper preanalytical processing of the QuantiFERON-TB Gold Plus tubes, prior infection with certain other mycobacteria or biologic variability. Positive results should be confirmed with other clinical, exposure, and laboratory findings.

Test is not interpretable with indeterminate result. An indeterminate QuantiFERON-TB Gold Plus result suggests possible preanalytic error or individual patient related factors.

Synonyms:

- Tuberculosis
- TB
- TB skin test
- Interferon gamma
- IFN gamma

Storage/Transport Temperature:
Room Temperature

Stability (from collection to initiation):
Samples need to be incubated at China Basin as soon as possible after collection (within 16 hours of collection).

Reported:
5-7 days

CPT Codes:

86481

LOINC Codes:

71775-1 - QUANTIFERON®-TB GOLD PLUS Panel code
71776-9 - NIL
64084-7 - TB1-NIL
88517-8 - TB2-NIL
71774-4 - MITOGEN-NIL
71773-6 - QUANTIFERON®-TB GOLD PLUS Result

Quantitative Amino Acids, Plasma (to Stanford, see Utilization Guidelines)

AAQTS

ORDERING

Ordering Recommendations:

This test should only be ordered for new diagnostic workup of patients with suspected disorders of amino acid metabolism. It should not be used for previously diagnosed patients for monitoring amino acid levels in response to treatment. For monitoring order "Quantitative Amino Acids, Plasma" test code "AMACP".

Approval Required:

Yes, if not ordered by Genetics or neurology. If ordered in previously diagnosed patients (see Utilization Guideleines)

Available Stat:

No, however, in exceptional circumstances when there is a need for rapid testing, courier transport to Stanford can be arranged. Please contact central processing to arrange (see 'Processing notes'). Samples for rapid testing must be accompanied by a completed test request form (see 'Additional Information').

Performing Lab:

Lucille-Packard Children's Hospital

Methodology:

Ion Exchange Chromatography

Reported:

Set up as needed, at least 2x a week. Turnaround time: One week.

Additional Information:

Samples for rapid testing must be accompanied by a completed test request form. Please contact central processing to arrange for this testing.

Synonyms:

- Glycine
- Homocystine
- Tyrosine
- Alpha-keto acids
- Arginine
- Arginosuccinase deficiency
- Arginosuccinate Lyase deficiency
- Aspartate
- Aspartic acid
- Beta-aminoisobutyric acid
- Citrulline
- Cystathionine
- Cystathionuria
- Ethanolamine
- FeCl3 Screen
- Ferric chloride screen
- Glutaimic acid
- Histidine
- Isoleucine
- Leucine
- Lysine
- Methionine
- Ornithine
- Phosphoethanolamine
- Sarcosine
- Serine
- Taurine
- Threnonine
- Valine
- Arginosuccinic acid
- Glutamine
- Stanford Rapid Amino Acids

Supplemental Test Request Form Required:

Yes

COLLECTION

Patient Preparation:

A 4 hour fast before specimen collection is preferred. If the patient has not been fasting indicate that on the test order.

The test request should be accompanied by a brief clinical history, the tentative diagnosis, and a listing of drugs, x-rays, infant formula or dietary therapy administered within the previous 3 days.

Sample Type:
Heparinized plasma, serum acceptable

Collect:
Dark Green top or Light Green top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.5 mL serum or plasma

Remarks:
If a disorder of the urea cycle is suspected, specify that the laboratory should look for argininosuccinic acid, as well. If abnormal, will comment if present. Call for phone consult with Dr. Tina Cowan (650) 724-7858

PROCESSING

Test Code:
AAQTS

Test Group:
Amino Acids

Sendout:
Yes

Performing Lab:
Lucille-Packard Children's Hospital

Specimen Preparation:
Freeze at -20C.

For requests for 'stat' testing contact MEDSPEED courier at 877-790-5122 and request Stat courier to Stanford at 3373 Hillview Ave. Palo Alto, CA 94304. Provide courier with the pick-up location, type of sample (frozen) and number of samples.

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.5 mL serum or plasma

RESULT INTERPRETATION

Reference Interval:
See report

Additional Information:
Samples for rapid testing must be accompanied by a completed test request form. Please contact central processing to arrange for this testing.

ADMINISTRATIVE

CPT Codes:
82139-90

LOINC Codes:
12176-4

COMPLETE VIEW

Approval Required:
Yes, if not ordered by Genetics or neurology. If ordered in previously diagnosed patients (see Utilization Guideleines)

Available Stat:
No, however, in exceptional circumstances when there is a need for rapid testing, courier transport to Stanford can be arranged. Please contact central processing to arrange (see 'Processing notes'). Samples for rapid testing must be accompanied by a completed test request form (see 'Additional Information').

Ordering Recommendations:
This test should only be ordered for new diagnostic workup of patients with suspected disorders of amino acid metabolism. It should not be used for previously diagnosed patients for monitoring amino acid levels in response to treatment. For monitoring order "Quantitative Amino Acids, Plasma" test code "AMACP".

Test Code:
AAQTS

Test Group:
Amino Acids

Performing Lab:
Lucille-Packard Children's Hospital

Sendout:
Yes

Methodology:
Ion Exchange Chromatography

Patient Preparation:
A 4 hour fast before specimen collection is preferred. If the patient has not been fasting indicate that on the test order.

The test request should be accompanied by a brief clinical history, the tentative diagnosis, and a listing of drugs, x-rays, infant formula or dietary therapy administered within the previous 3 days.

Remarks:
If a disorder of the urea cycle is suspected, specify that the laboratory should look for argininosuccinic acid, as well. If abnormal, will comment if present. Call for phone consult with Dr. Tina Cowan (650) 724-7858

Collect:
Dark Green top or Light Green top

Amount to Collect:
2 mL blood

Sample Type:
Heparinized plasma, serum acceptable

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.5 mL serum or plasma

Specimen Preparation:
Freeze at -20C.

For requests for 'stat' testing contact MEDSPEED courier at 877-790-5122 and request Stat courier to Stanford at 3373 Hillview Ave. Palo Alto, CA 94304. Provide courier with the pick-up location, type of sample (frozen) and number of samples.

Reference Interval:
See report

Synonyms:

- Glycine
- Homocystine
- Tyrosine
- Alpha-keto acids
- Arginine
- Arginosuccinase deficiency
- Arginosuccinate Lyase deficiency
- Aspartate
- Aspartic acid
- Beta-aminoisobutyric acid
- Citrulline
- Cystathionine
- Cystathionuria
- Ethanolamine
- FeCl3 Screen
- Ferric chloride screen
- Glutaimic acid
- Histidine
- Isoleucine
- Leucine
- Lysine
- Methionine
- Ornithine
- Phosphoethanolamine
- Sarcosine
- Serine
- Taurine
- Threnonine
- Valine
- Arginosuccinic acid
- Glutamine
- Stanford Rapid Amino Acids

Reported:
Set up as needed, at least 2x a week. Turnaround time: One week.

Additional Information:
Samples for rapid testing must be accompanied by a completed test request form. Please contact central processing to arrange for this testing.

CPT Codes:
82139-90

LOINC Codes:
12176-4

Supplemental Test Request Form Required:
Yes

Quinidine

QUIND

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
FPIA

Reported:
Test performed daily. Turnaround time 5 - 7 days.

Synonyms:

- Cardioquin
- Quinidex

COLLECTION

Sample Type:
Serum or plasma

Collect:
Red top (Gold top **NOT** acceptable), Lavendar top, Dark green top, Light green top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Remarks:
Collect specimen as a trough

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 1 week.

Unacceptable Conditions:
Collected in Gold top.

PROCESSING

Test Code:
QUIND

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Separate serum and refrigerate. Order Quest # 66944P

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Unacceptable Conditions:
Collected in Gold top.

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 1 week.

RESULT INTERPRETATION

Units:
mg/L

Reference Interval:
Therapeutic: 2.0-5.0 mg/L

Critical Values:
UCSF: >= 5 mg/L
Quest priority-1: >= 10 mg/L

ADMINISTRATIVE

CPT Codes:
80194-90

COMPLETE VIEW

Available Stat:
No

Test Code:
QUIND

Performing Lab:
Quest

Sendout:
Yes

Methodology:
FPIA

Remarks:
Collect specimen as a trough

Collect:
Red top (Gold top **NOT** acceptable), Lavendar top, Dark green top, Light green top

Amount to Collect:
2 mL blood

Sample Type:
Serum or plasma

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Unacceptable Conditions:
Collected in Gold top.

Specimen Preparation:
Separate serum and refrigerate. Order Quest # 66944P

Units:
mg/L

Reference Interval:
Therapeutic: 2.0-5.0 mg/L

Critical Values:
UCSF: >= 5 mg/L
Quest priority-1: >= 10 mg/L

Synonyms:

- Cardioquin
- Quinidex

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 1 week.

Reported:
Test performed daily. Turnaround time 5 - 7 days.

CPT Codes:
80194-90

Rabies Vaccine Response

RABET

ORDERING

Available Stat:
No

Performing Lab:
K-State rabies Laboratory via Quest

Methodology:
Rapid flourescent focus inhibition

Reported:
Test set up Monday and Thursday. Turn around time 7-10 days

Additional Information:
In humans, a titer of 1:5 or greater is considered acceptable as per ACIP. If the end point titer is <1:5, recommend booster vaccination be given.

Synonyms:

- Rabies, Antibody, Post-exposure immunization
- Rabies, Antibody, Prophylactic immunization
- RABE
- Rabies vaccine response
- Rabies Antibody, Post-vaccination titer

COLLECTION

Sample Type:
Serum

Collect:
Gold top or Red top

Amount to Collect:
5 mL blood

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Stability (from collection to initiation):
Refrigerated 2 weeks, frozen at -20C 4 weeks.

Unacceptable Conditions:
Gross hemolysis or lipemia.

PROCESSING

Test Code:
RABET

Sendout:
Yes

Performing Lab:
K-State rabies Laboratory via Quest

Specimen Preparation:
Refrigerate serum. Order Quest test # 141283P

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Unacceptable Conditions:
Gross hemolysis or lipemia.

Stability (from collection to initiation):
Refrigerated 2 weeks, frozen at -20C 4 weeks.

RESULT INTERPRETATION

Units:
IU/mL

Reference Interval:
A result >= 0.1 IU/mL is considered acceptable per ACIP.

Additional Information:
In humans, a titer of 1:5 or greater is considered acceptable as per ACIP. If the end point titer is <1:5, recommend booster vaccination be given.

ADMINISTRATIVE

CPT Codes:
86317-90

LOINC Codes:
43590-9

COMPLETE VIEW

Available Stat:
No

Test Code:
RABET

Performing Lab:
K-State rabies Laboratory via Quest

Sendout:
Yes

Methodology:
Rapid flourescent focus inhibition

Collect:
Gold top or Red top

Amount to Collect:
5 mL blood

Sample Type:
Serum

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Unacceptable Conditions:
Gross hemolysis or lipemia.

Specimen Preparation:
Refrigerate serum. Order Quest test # 141283P

Units:
IU/mL

Reference Interval:
A result >= 0.1 IU/mL is considered acceptable per ACIP.

Synonyms:

- Rabies, Antibody, Post-exposure immunization
- Rabies, Antibody, Prophylactic immunization
- RABE
- Rabies vaccine response
- Rabies Antibody, Post-vaccination titer

Stability (from collection to initiation):
Refrigerated 2 weeks, frozen at -20C 4 weeks.

Reported:
Test set up Monday and Thursday. Turn around time 7-10 days

Additional Information:
In humans, a titer of 1:5 or greater is considered acceptable as per ACIP. If the end point titer is <1:5, recommend booster vaccination be given.

CPT Codes:
86317-90

LOINC Codes:
43590-9

Rabies, Antigen (DFA) & Culture

P319

ORDERING

Available Stat:
No

Performing Lab:
California Department of Public Health, CDC

COLLECTION

Sample Type:
Skin biopsy, Saliva, CSF

Collect:
Red top , sputum cup, CSF tube or sterile collection tube

Remarks:
Call Microbiology (415-353-1268) for assistance in arranging specimen collection and referral to State Viral and Rickettsial Diseases Laboratory via SFPH.

Submit all sample types whenever possible: saliva, CSF, serum, and skin biopsy of posterior hairline.

For cases of suspected human rabies, call the VRDL Medical Epidemiology and Liaison Section (MELS) at 510-307-8585 for a consultation.

PROCESSING

Test Code:
P319

Test Group:
Rabies

Sendout:
Yes

Performing Lab:
California Department of Public Health, CDC

RESULT INTERPRETATION

Reference Interval:
Negative

COMPLETE VIEW

Available Stat:
No

Test Code:
P319

Test Group:
Rabies

Performing Lab:
California Department of Public Health, CDC

Sendout:
Yes

Remarks:
Call Microbiology (415-353-1268) for assistance in arranging specimen collection and referral to State Viral and Rickettsial Diseases Laboratory via SFPH.

Submit all sample types whenever possible: saliva, CSF, serum, and skin biopsy of posterior hairline.

For cases of suspected human rabies, call the VRDL Medical Epidemiology and Liaison Section (MELS) at 510-307-8585 for a consultation.

Collect:
Red top , sputum cup, CSF tube or sterile collection tube

Sample Type:
Skin biopsy, Saliva, CSF

Reference Interval:
Negative

Rapid HSV DNA, CSF

P377

ORDERING

Ordering Recommendations:
CSF testing should not be ordered on an immuncompetent patient unless there is no other explanation for CSF findings AND there are > 5 cells/mm3 or a protein of > 50 mg/dL These criteria do not apply if the patient is immunocompromised.

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Daily, all shifts

Methodology:
RT-PCR

Reported:
1 day

Additional Information:
Quantification can be performed on positive samples by ordering add-on HSV PCR, quantitative test

Synonyms:

- HSV PCR

COLLECTION

Sample Type:
CSF

Collect:
CSF tube

Amount to Collect:
1 mL CSF

Preferred Volume:
1 mL CSF

Minimum Volume:
0.5 mL CSF

Stability (from collection to initiation):
Refrigerated 1 week, frozen 1 month

PROCESSING

Test Code:
P377

Test Group:
Herpes simplex

Performing Lab:
Microbiology

Specimen Preparation:
Send to CB ASAP at room temperture

Preferred Volume:
1 mL CSF

Minimum Volume:
0.5 mL CSF

Stability (from collection to initiation):
Refrigerated 1 week, frozen 1 month

RESULT INTERPRETATION

Reference Interval:
Not detected

Critical Values:
Detected

Additional Information:
Quantification can be performed on positive samples by ordering add-on HSV PCR, quantitative test

ADMINISTRATIVE

CPT Codes:
87529 x2

LOINC Codes:
16952-4, 16960-7

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
CSF testing should not be ordered on an immuncompetent patient unless there is no other explanation for CSF findings AND there are > 5 cells/mm3 or a protein of > 50 mg/dL These criteria do not apply if the patient is immunocompromised.

Test Code:
P377

Test Group:
Herpes simplex

Performing Lab:
Microbiology

Performed:
Daily, all shifts

Methodology:
RT-PCR

Collect:
CSF tube

Amount to Collect:
1 mL CSF

Sample Type:
CSF

Preferred Volume:
1 mL CSF

Minimum Volume:
0.5 mL CSF

Specimen Preparation:
Send to CB ASAP at room temperture

Reference Interval:
Not detected

Critical Values:
Detected

Synonyms:

- HSV PCR

Stability (from collection to initiation):
Refrigerated 1 week, frozen 1 month

Reported:
1 day

Additional Information:
Quantification can be performed on positive samples by ordering add-on HSV PCR, quantitative test

CPT Codes:
87529 x2

LOINC Codes:
16952-4, 16960-7

RARA (17q21.2) Rearrangement FISH

RARA, BRARA

ORDERING

Available Stat:
No

Performing Lab:
Cytogenetics

Performed:
Monday - Friday, 9 am to 5 pm

Methodology:
FISH

Reported:
7-14 days

Synonyms:

- RARA
- BRARA
- 17q21 break-apart FISH

COLLECTION

Sample Type:
blood, bone marrow aspirate, bone marrow core

Collect:
Blood and bone marrow aspirate: Dark green top
Bone marrow core: Sterile container

Amount to Collect:
See Preferred Volume

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Room temperature

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

PROCESSING

Test Code:
Blood: BRARA
Bone marrow: RARA

Performing Lab:
Cytogenetics

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Room temperature

ADMINISTRATIVE

CPT Codes:
88271x2, 88275x1

COMPLETE VIEW

Available Stat:
No

Test Code:
Blood: BRARA
Bone marrow: RARA

Performing Lab:
Cytogenetics

Performed:
Monday - Friday, 9 am to 5 pm

Methodology:
FISH

Collect:
Blood and bone marrow aspirate: Dark green top
Bone marrow core: Sterile container

Amount to Collect:
See Preferred Volume

Sample Type:
blood, bone marrow aspirate, bone marrow core

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

Synonyms:

- RARA
- BRARA
- 17q21 break-apart FISH

Storage/Transport Temperature:
Room temperature

Stability (from collection to initiation):
2 days

Reported:
7-14 days

CPT Codes:
88271x2, 88275x1

RBC Associated Drug Antibodies

BOLT

ORDERING

Approval Required:
Yes, Contact Blood Bank Resident at x3-1313 (Moffitt-Long) or 6-1404 (Mission Bay).

Available Stat:
No

Performing Lab:
American Red Cross Immunhematology Reference Lab (Pomona, CA)

Performed:
Test set up Monday-Friday.

Reported:
4-7 days

Additional Information:
Testing includes a direct Coombs test (DAT), eluate and/or serum testing with drug-treated RBCs and/or in the presence of a solution of the drug (dependent upon drug under investigation); possible additional testing may be performed as needed.

Transfusion Service MDs will discuss case with the reference lab to determine if a sample of the drug is needed or not. When indicated, a vial of the drug or 2-4 capsules/tablets should be provided for testing. Powder forms of drug should not be dissolved prior to sending.

Synonyms:

- Drug-induced hemolytic anemia investigation

COLLECTION

Sample Type:
Serum and EDTA anti-coagulated whole blood

A sample of some suspected drugs may also be required (see Additional Information section).

Collect:
2 Red tops, 2 Lavender tops

Amount to Collect:
Red top: 2 x 10 mL blood
Labender (EDTA) top: 2 x 6 mL

Preferred Volume:
12 mL whole blood, 8 mL Serum

Minimum Volume:
12 mL whole blood, 8 mL Serum

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample, or phlebotomist ID.

Name of the suspected drug(s) should be included in the order.

Unacceptable Conditions:
Mislabeled or unlabeled sample, phlebotomist ID or name not documented on label.

PROCESSING

Test Code:
BOLT

Sendout:
Yes

Performing Lab:
American Red Cross Immunhematology Reference Lab (Pomona, CA)

Specimen Preparation:
Send samples to blood bank to be shipped to American Red Cross Reference Lab. Do not separate plasma or serum.

Preferred Volume:
12 mL whole blood, 8 mL Serum

Minimum Volume:
12 mL whole blood, 8 mL Serum

Unacceptable Conditions:
Mislabeled or unlabeled sample, phlebotomist ID or name not documented on label.

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
Testing includes a direct Coombs test (DAT), eluate and/or serum testing with drug-treated RBCs and/or in the presence of a solution of the drug (dependent upon drug under investigation); possible additional testing may be performed as needed.

Transfusion Service MDs will discuss case with the reference lab to determine if a sample of the drug is needed or not. When indicated, a vial of the drug or 2-4 capsules/tablets should be provided for testing. Powder forms of drug should not be dissolved prior to sending.

COMPLETE VIEW

Approval Required:
Yes, Contact Blood Bank Resident at x3-1313 (Moffitt-Long) or 6-1404 (Mission Bay).

Available Stat:
No

Test Code:
BOLT

Performing Lab:
American Red Cross Immunhematology Reference Lab (Pomona, CA)

Sendout:
Yes

Performed:
Test set up Monday-Friday.

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample, or phlebotomist ID.

Name of the suspected drug(s) should be included in the order.

Collect:
2 Red tops, 2 Lavender tops

Amount to Collect:
Red top: 2 x 10 mL blood
Labender (EDTA) top: 2 x 6 mL

Sample Type:
Serum and EDTA anti-coagulated whole blood

A sample of some suspected drugs may also be required (see Additional Information section).

Preferred Volume:
12 mL whole blood, 8 mL Serum

Minimum Volume:
12 mL whole blood, 8 mL Serum

Unacceptable Conditions:
Mislabeled or unlabeled sample, phlebotomist ID or name not documented on label.

Specimen Preparation:
Send samples to blood bank to be shipped to American Red Cross Reference Lab. Do not separate plasma or serum.

Reference Interval:
Negative

Synonyms:

- Drug-induced hemolytic anemia investigation

Reported:
4-7 days

Additional Information:
Testing includes a direct Coombs test (DAT), eluate and/or serum testing with drug-treated RBCs and/or in the presence of a solution of the drug (dependent upon drug under investigation); possible additional testing may be performed as needed.

Transfusion Service MDs will discuss case with the reference lab to determine if a sample of the drug is needed or not. When indicated, a vial of the drug or 2-4 capsules/tablets should be provided for testing. Powder forms of drug should not be dissolved prior to sending.

RBC Band 3 Protein Reduction in Hereditary Spherocytosis

RBCB3

ORDERING

Ordering Recommendations:
Use to confirm diagnosis of hereditary spherocytosis when hemolytic anemia and spherocytes are present.

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Qualitative Flow Cytometry

Reported:
1-3 days

Synonyms:

- Hereditary Spherocytosis, EMA, BAND 3, Osmotic Fragility
- HS hemolytic anema assay

COLLECTION

Sample Type:
Blood

Collect:
Lavender (EDTA) or green (sodium or lithium heparin).

Preferred Volume:
4 mL

Minimum Volume:
0.5 mL

Remarks:
Specimens must be analyzed within 7 days of collection.

Stability (from collection to initiation):
Ambient: 3 days; Refrigerated: 7 days; Frozen: Unacceptable

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Clotted or hemolyzed specimens. Specimens older than 7 days.

PROCESSING

Test Code:
RBCB3

ARUP Test Code:
2008460

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transport 4 mL whole blood in the original container. (Min: 0.5 mL)

Preferred Volume:
4 mL

Minimum Volume:
0.5 mL

Unacceptable Conditions:
Clotted or hemolyzed specimens. Specimens older than 7 days.

Stability (from collection to initiation):
Ambient: 3 days; Refrigerated: 7 days; Frozen: Unacceptable

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:
Normal

Interpretive Data:
This test can be used to confirm a suspected diagnosis of hereditary spherocytosis (HS). HS is a common inherited hemolytic anemia characterized by the presence of spherical erythrocytes (spherocytes). HS is diagnosed based on family history and clinical features, along with clinical laboratory tests, including peripheral smear examination, osmotic fragility (OF), flow cytometry, or by genetic testing (Hereditary Hemolytic Anemia Panel Sequencing, ARUP test code 2012052).

Band 3 (or solute carrier family 4 member 1, SLC4A1) is the most abundant transmembrane protein found in human red blood cells (RBC). Eosin-5-maleimide (EMA) dye binds to band 3 on intact RBC's. A reduction of fluorescence intensity will be seen in hereditary spherocytosis. This test by flow cytometry has been reported to have a sensitivity of 93 percent for a diagnosis of HS. Congenital dyserythropoietic anemia type II, Southeast Asian ovalocytosis and hereditary pyropoikilocytosis are rare disorders that may also show a positive result.

ADMINISTRATIVE

CPT Codes:
88184

LOINC:

- 33048-0

COMPLETE VIEW

Ordering Recommendations:
Use to confirm diagnosis of hereditary spherocytosis when hemolytic anemia and spherocytes are present.

Test Code:
RBCB3

ARUP Test Code:
2008460

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Qualitative Flow Cytometry

Remarks:
Specimens must be analyzed within 7 days of collection.

Collect:
Lavender (EDTA) or green (sodium or lithium heparin).

Sample Type:
Blood

Preferred Volume:
4 mL

Minimum Volume:
0.5 mL

Unacceptable Conditions:
Clotted or hemolyzed specimens. Specimens older than 7 days.

Specimen Preparation:
Transport 4 mL whole blood in the original container. (Min: 0.5 mL)

Reference Interval:
Normal

Interpretive Data:

This test can be used to confirm a suspected diagnosis of hereditary spherocytosis (HS). HS is a common inherited hemolytic anemia characterized by the presence of spherical erythrocytes (spherocytes). HS is diagnosed based on family history and clinical features, along with clinical laboratory tests, including peripheral smear examination, osmotic fragility (OF), flow cytometry, or by genetic testing (Hereditary Hemolytic Anemia Panel Sequencing, ARUP test code 2012052).

Band 3 (or solute carrier family 4 member 1, SLC4A1) is the most abundant transmembrane protein found in human red blood cells (RBC). Eosin-5-maleimide (EMA) dye binds to band 3 on intact RBC's. A reduction of fluorescence intensity will be seen in hereditary spherocytosis. This test by flow cytometry has been reported to have a sensitivity of 93 percent for a diagnosis of HS. Congenital dyserythropoietic anemia type II, Southeast Asian ovalocytosis and hereditary pyropoikilocytosis are rare disorders that may also show a positive result.

Synonyms:

- Hereditary Spherocytosis, EMA, BAND 3, Osmotic Fragility
- HS hemolytic anema assay

Storage/Transport Temperature:

Refrigerated.

Stability (from collection to initiation):

Ambient: 3 days; Refrigerated: 7 days; Frozen: Unacceptable

Reported:

1-3 days

CPT Codes:

88184

LOINC:

- 33048-0

RBC Count

CBC, CBCD, RBC

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center
San Mateo Cancer Center

Performed:
Parnassus, Mission Bay & Mt. Zion Hematology: 24-hours per day, 7-days per week
Berkeley Outpatient Center: Test available Mon-Fri (0800-1630)
San Mateo Cancer Center (Infusion patients only)

Reported:
STAT 1 hour, Routine 4 hours

Synonyms:

- Erythrocyte count
- rbc

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top

Amount to Collect:
3 mL blood

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood (250 µL in pedi-bullet)

Rejection Criteria:
Clotted specimens

PROCESSING

Test Code:
CBC, CBCD, RBC

Test Group:
RBC

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center
San Mateo Cancer Center

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood (250 µL in pedi-bullet)

Rejection Criteria:
Clotted specimens

RESULT INTERPRETATION

Units:
$x10^{12}/L$

Reference Interval:

Age	Count
0-7 days	4.0-6.6 $x10^{12}$/L
8-14 days	3.9-6.3 $x10^{12}$/L
2-4 weeks	3.6-6.2 $x10^{12}$/L
1- < 2 months	3.0-5.4 $x10^{12}$/L
2- < 3 months	2.7-4.9 $x10^{12}$/L
3- < 6 months	3.1-4.5 $x10^{12}$/L
6- < 24 months	3.7-4.7 $x10^{12}$/L
2- < 6 years	3.9-4.9 $x10^{12}$/L
6- < 12 years	4.0-5.0 $x10^{12}$/L
Male 12- < 18 years	4.2-5.6 $x10^{12}$/L
Male >= 18 years	4.4-5.9 $x10^{12}$/L
Female >= 12 years	4.0-5.2 $x10^{12}$/L

ADMINISTRATIVE

CPT Codes:
85041

COMPLETE VIEW

Available Stat:
Yes

Test Code:
CBC, CBCD, RBC

Test Group:
RBC

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center
San Mateo Cancer Center

Performed:
Parnassus, Mission Bay & Mt. Zion Hematology: 24-hours per day, 7-days per week
Berkeley Outpatient Center: Test available Mon-Fri (0800-1630)
San Mateo Cancer Center (Infusion patients only)

Collect:
Lavender top

Amount to Collect:
3 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood (250 µL in pedi-bullet)

Rejection Criteria:
Clotted specimens

Units:
$x10^{12}$/L

Reference Interval:

Age	Count
0-7 days	4.0-6.6 $x10^{12}$/L
8-14 days	3.9-6.3 $x10^{12}$/L
2-4 weeks	3.6-6.2 $x10^{12}$/L
1- < 2 months	3.0-5.4 $x10^{12}$/L
2- < 3 months	2.7-4.9 $x10^{12}$/L
3- < 6 months	3.1-4.5 $x10^{12}$/L
6- < 24 months	3.7-4.7 $x10^{12}$/L
2- < 6 years	3.9-4.9 $x10^{12}$/L
6- < 12 years	4.0-5.0 $x10^{12}$/L
Male 12- < 18 years	4.2-5.6 $x10^{12}$/L
Male >= 18 years	4.4-5.9 $x10^{12}$/L
Female >= 12 years	4.0-5.2 $x10^{12}$/L

Synonyms:

- Erythrocyte count
- rbc

Reported:

STAT 1 hour, Routine 4 hours

CPT Codes:

85041

Red Blood Cell Pit Score Studies

MOLT

ORDERING

Available Stat:
No

Performing Lab:
Hemoglobinopathy Reference Laboratory

Methodology:
Phase Contrast microscopy

Additional Information:
Providers should order a Miscellaneous Sendout Test (MOLT) in Apex for UCSF West Bay phlebotomy collections and complete the Red Blood Cell Pit Score Studies Requisition Form:
https://hemoglobinlab.ucsf.edu/sites/g/files/tkssra7391/f/wysiwyg/Pitted%20RBC%20Count_requisition.pdf

Supplemental Test Request Form Required:
Yes. See Additional Information

COLLECTION

Patient Preparation:
Patients who present to Mission Bay Outpatient Phlebotomy for sample collection, should bring a copy of the Apex MOLT order and completed RBC Pit Score Studies Requisition with them.

Sample Type:
Blood

Collect:
EDTA (lavender or pink) top tube

Amount to Collect:
1 mL

Preferred Volume:
1 mL

Minimum Volume:
1 mL

Stability (from collection to initiation):
2 weeks

Storage/Transport Temperature:
Refrigerated

PROCESSING

Test Code:
MOLT

Sendout:
Yes

Performing Lab:
Hemoglobinopathy Reference Laboratory

Specimen Preparation:
The sample is priority and need to be sent to the Main lab through a pneumatic tube within 10-15 min after collection. Central Processing Technician to transfer a drop of EDTA Whole Blood using a transfer pipette into a refrigerated 1% glutaraldehyde aliquot tube and invert the sample a few times. Aliquoting should occur within 30 to 45 minutes of collection. Note: special media tubes with 1% glutaraldehyde are available directly from the Hemoglobinopathy Reference Laboratory at UCSF Benioff Children's Hospital Oakland.
Laboratory Phone: (510) 450-7688, Supv Ext.7688. Tubes are good for one year refrigerated.

Preferred Volume:
1 mL

Minimum Volume:
1 mL

Stability (from collection to initiation):
2 weeks

Storage/Transport Temperature:
Refrigerated

RESULT INTERPRETATION

Additional Information:
Providers should order a Miscellaneous Sendout Test (MOLT) in Apex for UCSF West Bay phlebotomy collections and complete the Red Blood Cell Pit Score Studies Requisition Form:
https://hemoglobinlab.ucsf.edu/sites/g/files/tkssra7391/f/wysiwyg/Pitted%20RBC%20Count_requisition.pdf

Interpretive Data:
Counts of pitted red blood cells (RBC) can be used to assess splenic reticuloendothelial function in patients with sickle cell disease. There is an inverse relationship between the pit count and the degree of splenic dysfunction. Less than 3% of RBCs contain pits in individuals with normal splenic function, whereas up to 50% of RBCs may demonstrate pitting in individuals with functional asplenia.

COMPLETE VIEW

Available Stat:
No

Test Code:
MOLT

Performing Lab:
Hemoglobinopathy Reference Laboratory

Sendout:
Yes

Methodology:
Phase Contrast microscopy

Patient Preparation:
Patients who present to Mission Bay Outpatient Phlebotomy for sample collection, should bring a copy of the Apex MOLT order and completed RBC Pit Score Studies Requisition with them.

Collect:
EDTA (lavender or pink) top tube

Amount to Collect:
1 mL

Sample Type:
Blood

Preferred Volume:
1 mL

Minimum Volume:
1 mL

Specimen Preparation:
The sample is priority and need to be sent to the Main lab through a pneumatic tube within 10-15 min after collection. Central Processing Technician to transfer a drop of EDTA Whole Blood using a transfer pipette into a refrigerated 1% glutaraldehyde aliquot tube and invert the sample a few times. Aliquoting should occur within 30 to 45 minutes of collection. Note: special media tubes with 1% glutaraldehyde are available directly from the Hemoglobinopathy Reference Laboratory at UCSF Benioff Children's Hospital Oakland.
Laboratory Phone: (510) 450-7688, Supv Ext.7688. Tubes are good for one year refrigerated.

Interpretive Data:
Counts of pitted red blood cells (RBC) can be used to assess splenic reticuloendothelial function in patients with sickle cell disease. There is an inverse relationship between the pit count and the degree of splenic dysfunction. Less than 3% of RBCs contain pits in individuals with normal splenic function, whereas up to 50% of RBCs may demonstrate pitting in individuals with functional asplenia.

Storage/Transport Temperature:
Refrigerated

Stability (from collection to initiation):
2 weeks

Additional Information:
Providers should order a Miscellaneous Sendout Test (MOLT) in Apex for UCSF West Bay phlebotomy collections and complete the Red Blood Cell Pit Score Studies Requisition Form:
https://hemoglobinlab.ucsf.edu/sites/g/files/tkssra7391/f/wysiwyg/Pitted%20RBC%20Count_requisition.pdf

Supplemental Test Request Form Required:

Yes. See Additional Information

Red cell Indices

CBC, CBCD

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center
San Mateo Cancer Center

Performed:
Parnassus, Mission Bay & Mt. Zion Hematology: 24-hours per day, 7-days per week
Berkeley Outpatient Center: Test available Mon-Fri (0800-1630)
San Mateo Cancer Center (Infusion patients only)

Methodology:
Calculated from Hct, Hgb and RBC

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
MCV = (Hct / RBC) x 10
MCH = Hgb x 10/RBC (in millions)
MCHC = Hgb(in g/dL) x 100/Hct
RDW-CV is calculated from the width of the distribution curve of the MCV

RBC indices are calculations that provide information on physical characteristics of the red blood cells. MCH indicates the average amount of HGB inside a single RBC. MCHC indicates the average concentration of HGB in a given volume of RBCs. MCV indicates the average size of the RBCs. RDW-CV indicates the degree of variation in size of the RBCs. When interpreted together, the indices may aid in the differential diagnosis of anemias.

Certain conditions, such as cold agglutinin, lipemia, icterus, hemolysis, and dimorphic RBC population will prevent accurate results from being obtained and will not be resulted by the clinical lab.

Synonyms:

- RBC indices
- RDWCV
- CBC
- CBCD

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top

Amount to Collect:
3 mL blood

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood (or 250 µL in a pedi-bullet)

Rejection Criteria:
Clotted specimens

PROCESSING

Test Code:
CBC, CBCD

Test Group:
RBC

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center
San Mateo Cancer Center

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood (or 250 µL in a pedi-bullet)

Rejection Criteria:
Clotted specimens

RESULT INTERPRETATION

Units:
fl, pg, g/dl, %

Reference Interval:

Age	MCV	MCH	MCHC
0-7 days	95-121 fL	31-37 pg	29-37 g/dL
1- <2 weeks	88-120 fL	28-40 pg	28-38 g/dL
2- <4 weeks	86-118 fL	28-40 pg	28-38 g/dL
1- <2 months	85-117 fL	28-40 pg	29-37 g/dL
2- <3 months	77-115 fL	26-34 pg	29-37 g/dL
3- <6 months	74-108 fL	25-34 pg	30-36 g/dL
6- <24 months	70-86 fL	23-31 pg	30-36 g/dL
2- <6 years	75-87 fL	24-30 pg	31-36 g/dL
6- <12 years	77-95 fL	25-33 pg	31-36 g/dL
12- <18 years	78-98 fL	25-34 pg	31-36 g/dL
>= 18 years	80-100 fL	26-34 pg	31-36 g/dL

RDW-CV = 11.7 - 14.4%

Additional Information:
MCV = (Hct / RBC) x 10
MCH = Hgb x 10/RBC (in millions)
MCHC = Hgb(in g/dL) x 100/Hct
RDW-CV is calculated from the width of the distribution curve of the MCV

RBC indices are calculations that provide information on physical characteristics of the red blood cells. MCH indicates the average amount of HGB inside a single RBC. MCHC indicates the average concentration of HGB in a given volume of RBCs. MCV indicates the average size of the RBCs. RDW-CV indicates the degree of variation in size of the RBCs. When interpreted together, the indices may aid in the differential diagnosis of anemias.

Certain conditions, such as cold agglutinin, lipemia, icterus, hemolysis, and dimorphic RBC population will prevent accurate results from being obtained and will not be resulted by the clinical lab.

ADMINISTRATIVE

CPT Codes:
85027

COMPLETE VIEW

Available Stat:
Yes

Test Code:
CBC, CBCD

Test Group:
RBC

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center
San Mateo Cancer Center

Performed:
Parnassus, Mission Bay & Mt. Zion Hematology: 24-hours per day, 7-days per week
Berkeley Outpatient Center: Test available Mon-Fri (0800-1630)
San Mateo Cancer Center (Infusion patients only)

Methodology:
Calculated from Hct, Hgb and RBC

Collect:
Lavender top

Amount to Collect:
3 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood (or 250 µL in a pedi-bullet)

Rejection Criteria:
Clotted specimens

Units:
fl, pg, g/dl, %

Reference Interval:

Age	MCV	MCH	MCHC
0-7 days	95-121 fL	31-37 pg	29-37 g/dL
1- <2 weeks	88-120 fL	28-40 pg	28-38 g/dL
2- <4 weeks	86-118 fL	28-40 pg	28-38 g/dL
1- <2 months	85-117 fL	28-40 pg	29-37 g/dL
2- <3 months	77-115 fL	26-34 pg	29-37 g/dL
3- <6 months	74-108 fL	25-34 pg	30-36 g/dL
6- <24 months	70-86 fL	23-31 pg	30-36 g/dL
2- <6 years	75-87 fL	24-30 pg	31-36 g/dL
6- <12 years	77-95 fL	25-33 pg	31-36 g/dL
12- <18 years	78-98 fL	25-34 pg	31-36 g/dL
>= 18 years	80-100 fL	26-34 pg	31-36 g/dL

RDW-CV = 11.7 - 14.4%

Synonyms:

- RBC indices
- RDWCV
- CBC
- CBCD

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
MCV = (Hct / RBC) x 10
MCH = Hgb x 10/RBC (in millions)
MCHC = Hgb(in g/dL) x 100/Hct
RDW-CV is calculated from the width of the distribution curve of the MCV

RBC indices are calculations that provide information on physical characteristics of the red blood cells. MCH indicates the average amount of HGB inside a single RBC. MCHC indicates the average concentration of HGB in a given volume of RBCs. MCV indicates the average size of the RBCs. RDW-CV indicates the degree of variation in size of the RBCs. When interpreted together, the indices may aid in the differential diagnosis of anemias.

Certain conditions, such as cold agglutinin, lipemia, icterus, hemolysis, and dimorphic RBC population will prevent accurate results from being obtained and will not be resulted by the clinical lab.

CPT Codes:
85027

Red cell Phenotype

PHEN

ORDERING

Available Stat:
No

Performing Lab:
Parnassus and Mission Bay Blood Banks

Performed:
Test set up Monday-Friday.

Reported:
2-4 days

Additional Information:
Includes the commonly clinically significant RBC antigens: C, c, E, e, M, N, S, s, K (Kell), JKa and JKb (Kidd) & Fya and Fyb (Duffy) typing.

Synonyms:

- Rh Phenotyping

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top (6 mL size preferred)

Amount to Collect:
6 mL blood

Preferred Volume:
6 mL blood

Minimum Volume:
3 mL blood

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Unacceptable Conditions:
Unsigned, mislabeled or unlabeled sample

PROCESSING

Test Code:
PHEN

Performing Lab:
Parnassus and Mission Bay Blood Banks

Specimen Preparation:
Do not centrifuge.

Preferred Volume:
6 mL blood

Minimum Volume:
3 mL blood

Unacceptable Conditions:
Unsigned, mislabeled or unlabeled sample

RESULT INTERPRETATION

Additional Information:
Includes the commonly clinically significant RBC antigens: C, c, E, e, M, N, S, s, K (Kell), JKa and JKb (Kidd) & Fya and Fyb (Duffy) typing.

ADMINISTRATIVE

CPT Codes:
86905 x 12

LOINC Codes:
820-1

COMPLETE VIEW

Available Stat:
No

Test Code:
PHEN

Performing Lab:
Parnassus and Mission Bay Blood Banks

Performed:
Test set up Monday-Friday.

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Collect:
Lavender top (6 mL size preferred)

Amount to Collect:
6 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
6 mL blood

Minimum Volume:
3 mL blood

Unacceptable Conditions:
Unsigned, mislabeled or unlabeled sample

Specimen Preparation:
Do not centrifuge.

Synonyms:

- Rh Phenotyping

Reported:
2-4 days

Additional Information:
Includes the commonly clinically significant RBC antigens: C, c, E, e, M, N, S, s, K (Kell), JKa and JKb (Kidd) & Fya and Fyb (Duffy) typing.

CPT Codes:
86905 x 12

LOINC Codes:
820-1

Reducing Substances, stool

RSST

ORDERING

Available Stat:
No

Performing Lab:
Mission Bay Hematology

Performed:
Run 0800-1600 daily.

Methodology:
copper reduction

Reported:
1 day

Additional Information:
Reducing substances, if present, are reported semiquantitatively as equivalent to the activity of 0 (negative), 250, 500, 750, 1000, 2000 or > 2000 mg/dL of glucose (these correspond to the formerly used readings of negative, trace, 1+, etc.).

Although sucrose is not a reducing sugar it is extensively hydrolyzed by stool flora to the reducing sugars glucose and fructose and thus is detected in the assay for reducing substances in stool.

Acid hydrolysis to detect stool sucrose is unnecessary and will not be done.

See also pH, stool

Synonyms:

- Acid hydrolysis
- Reducing sugars
- Disaccharide deficiency
- stool analysis

COLLECTION

Sample Type:
Fresh liquid stool

Collect:
Clean container

Amount to Collect:
See preferred volume

Preferred Volume:
10 gm

Stability (from collection to initiation):
Frozen: 72 hours

Storage/Transport Temperature:
Frozen

Unacceptable Conditions:
Formed stool received.

PROCESSING

Test Code:
RSST

Test Group:
Reducing substances

Performing Lab:
Mission Bay Hematology

Preferred Volume:
10 gm

Unacceptable Conditions:
Formed stool received.

Stability (from collection to initiation):
Frozen: 72 hours

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:
< 500 mg/dL

Additional Information:
Reducing substances, if present, are reported semiquantitatively as equivalent to the activity of 0 (negative), 250, 500, 750, 1000, 2000 or > 2000 mg/dL of glucose (these correspond to the formerly used readings of negative, trace, 1+, etc.).

Although sucrose is not a reducing sugar it is extensively hydrolyzed by stool flora to the reducing sugars glucose and fructose and thus is detected in the assay for reducing substances in stool.

Acid hydrolysis to detect stool sucrose is unnecessary and will not be done.

See also pH, stool

ADMINISTRATIVE

CPT Codes:
84999

LOINC Codes:
11060-1

COMPLETE VIEW

Available Stat:
No

Test Code:
RSST

Test Group:
Reducing substances

Performing Lab:
Mission Bay Hematology

Performed:
Run 0800-1600 daily.

Methodology:
copper reduction

Collect:
Clean container

Amount to Collect:
See preferred volume

Sample Type:
Fresh liquid stool

Preferred Volume:
10 gm

Unacceptable Conditions:
Formed stool received.

Units:
mg/dL

Reference Interval:
< 500 mg/dL

Synonyms:

- Acid hydrolysis
- Reducing sugars
- Disaccharide deficiency
- stool analysis

Storage/Transport Temperature:
Frozen

Stability (from collection to initiation):
Frozen: 72 hours

Reported:
1 day

Additional Information:
Reducing substances, if present, are reported semiquantitatively as equivalent to the activity of 0 (negative), 250, 500, 750, 1000, 2000 or > 2000 mg/dL of glucose (these correspond to the formerly used readings of negative, trace, 1+, etc.).

Although sucrose is not a reducing sugar it is extensively hydrolyzed by stool flora to the reducing sugars glucose and fructose and thus is detected in the assay for reducing substances in stool.

Acid hydrolysis to detect stool sucrose is unnecessary and will not be done.

See also pH, stool

CPT Codes:
84999

LOINC Codes:
11060-1

Reducing Substances, urine

RSUU

ORDERING

Available Stat:
No

Performing Lab:
Mission Bay Hematology

Performed:
Run 0800-1600 daily.

Methodology:
Copper reduction

Reported:
1 day

Additional Information:
Detects reducing substances in addition to glucose, which is tested as part of Urinalysis, Routine. Detection of these substances is also part of the Metabolic Error Screen.

Note: Routine urinalysis in pediatric patients does not include testing for reducing substances, such as sugars galactose, lactose, fructose and maltose. If clinically indicated, this screening test for reducing substances may be ordered. Testing for congenital galactosemia is included in newborn screening programs in all 50 states in the U.S.

Synonyms:

- Reducing sugars
- Acid hydrolysis

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
See preferred volume

Preferred Volume:
1 mL urine

Stability (from collection to initiation):
Refrigerated: 72 hours

Storage/Transport Temperature:
Refrigerated

PROCESSING

Test Code:
RSUU

Test Group:
Reducing substances

Performing Lab:
Mission Bay Hematology

Preferred Volume:
1 mL urine

Stability (from collection to initiation):
Refrigerated: 72 hours

Storage/Transport Temperature:
Refrigerated

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:
Negative

Additional Information:

Detects reducing substances in addition to glucose, which is tested as part of Urinalysis, Routine. Detection of these substances is also part of the Metabolic Error Screen.

Note: Routine urinalysis in pediatric patients does not include testing for reducing substances, such as sugars galactose, lactose, fructose and maltose. If clinically indicated, this screening test for reducing substances may be ordered. Testing for congenital galactosemia is included in newborn screening programs in all 50 states in the U.S.

ADMINISTRATIVE

CPT Codes:
81002

LOINC Codes:
5809-9

COMPLETE VIEW

Available Stat:
No

Test Code:
RSUU

Test Group:
Reducing substances

Performing Lab:
Mission Bay Hematology

Performed:
Run 0800-1600 daily.

Methodology:
Copper reduction

Collect:
Urine cup

Amount to Collect:
See preferred volume

Sample Type:
Random urine

Preferred Volume:
1 mL urine

Units:
mg/dL

Reference Interval:
Negative

Synonyms:

- Reducing sugars
- Acid hydrolysis

Storage/Transport Temperature:
Refrigerated

Stability (from collection to initiation):
Refrigerated: 72 hours

Reported:
1 day

Additional Information:

Detects reducing substances in addition to glucose, which is tested as part of Urinalysis, Routine. Detection of these substances is also part of the Metabolic Error Screen.

Note: Routine urinalysis in pediatric patients does not include testing for reducing substances, such as sugars galactose, lactose, fructose and maltose. If clinically indicated, this screening test for reducing substances may be ordered. Testing for congenital galactosemia is included in newborn screening programs in all 50 states in the U.S.

CPT Codes:
81002

LOINC Codes:
5809-9

Reflex to SNP Array

RSNPA

ORDERING

Approval Required:
Yes, if not ordered by Genetics, Neurology or Neonatal Intensive Care Unit faculty or fellows.

Requests on inpatients require approval from Cytogenetics/Array staff.

Insurance authorization required.

Available Stat:
No

Performing Lab:
Cytogenetics

Performed:
Monday to Friday 8:00 AM to 4:30 PM

Reported:
Varies pending primary culture and results, generally 7-14 days after chromosome results

Synonyms:

- Chromosome test reflex to SNP array, SNP test pending other test results

COLLECTION

Patient Preparation:
None

Sample Type:
Amniotic Fluid, CVS, Tissue, Blood

Collect:
See primary test container type (amnio, CVS, Tissue), lavender top, dark green top or extracted DNA.

Amount to Collect:
See preferred volume.

Preferred Volume:
Adult: 5 mL whole blood
Infant/child: 3 mL whole blood
Extracted DNA: 10 micrograms

Minimum Volume:
Adult: 2 mL whole blood
Infant/child: 2 mL whole blood
Extracted DNA: 10 micrograms

Remarks:
Maintain samples at room temperature during transport to the laboratory.

Stability (from collection to initiation):
See Primary test stability

Unacceptable Conditions:
Insufficient volume, unlabeled tubes, clotted samples, Samples received in Lithium-heparin (Lt. Green top) tubes

PROCESSING

Test Code:
RSNPA

Test Group:
Cytogenetics - Microarray

Performing Lab:
Cytogenetics

Specimen Preparation:
Refrigerate samples. DO NOT CENTRIFUGE OR FREEZE. For questions, contact the microarray laboratory at 514-8964

Preferred Volume:
Adult: 5 mL whole blood
Infant/child: 3 mL whole blood
Extracted DNA: 10 micrograms

Minimum Volume:
Adult: 2 mL whole blood
Infant/child: 2 mL whole blood
Extracted DNA: 10 micrograms

Unacceptable Conditions:
Insufficient volume, unlabeled tubes, clotted samples, Samples received in Lithium-heparin (Lt. Green top) tubes

Stability (from collection to initiation):
See Primary test stability

ADMINISTRATIVE

LDT or Modified FDA:
Yes

COMPLETE VIEW

Approval Required:
Yes, if not ordered by Genetics, Neurology or Neonatal Intensive Care Unit faculty or fellows.

Requests on inpatients require approval from Cytogenetics/Array staff.

Insurance authorization required.

Available Stat:
No

Test Code:
RSNPA

Test Group:
Cytogenetics - Microarray

Performing Lab:
Cytogenetics

Performed:
Monday to Friday 8:00 AM to 4:30 PM

Patient Preparation:
None

Remarks:
Maintain samples at room temperature during transport to the laboratory.

Collect:
See primary test container type (amnio, CVS, Tissue), lavender top, dark green top or extracted DNA.

Amount to Collect:
See preferred volume.

Sample Type:
Amniotic Fluid, CVS, Tissue, Blood

Preferred Volume:
Adult: 5 mL whole blood
Infant/child: 3 mL whole blood
Extracted DNA: 10 micrograms

Minimum Volume:
Adult: 2 mL whole blood
Infant/child: 2 mL whole blood
Extracted DNA: 10 micrograms

Unacceptable Conditions:
Insufficient volume, unlabeled tubes, clotted samples, Samples received in Lithium-heparin (Lt. Green top) tubes

Specimen Preparation:
Refrigerate samples. DO NOT CENTRIFUGE OR FREEZE. For questions, contact the microarray laboratory at 514-8964

Synonyms:

- Chromosome test reflex to SNP array, SNP test pending other test results

Stability (from collection to initiation):
See Primary test stability

Reported:
Varies pending primary culture and results, generally 7-14 days after chromosome results

LDT or Modified FDA:
Yes

Relapsing Fever

P409

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Monday - Friday, day shift only

Methodology:
Microscopic examination of thick and thin Giemsa stained smears

Reported:
1-3 days

Additional Information:
The agents which cause Relapsing Fever may be very difficult to detect if the reviewer is not aware of the need to look for them.

No serologic test is available for these organisms.

Synonyms:

- Borreliosis
- Borrelia

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top

Amount to Collect:
3 mL blood

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood

Remarks:
Samples should be taken during bouts of fever as spirochetes are most likely to be present. Call Microbiology (x3-1268) and inform the staff of the need to look for the spirochetes of B. duttoni or B. recurrentis.

Request test on the Microbiology requisition.

PROCESSING

Test Code:
P409

Performing Lab:
Microbiology

Specimen Preparation:
Prepare thin and thick smears immediately upon sample receipt.

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:

The agents which cause Relapsing Fever may be very difficult to detect if the reviewer is not aware of the need to look for them.

No serologic test is available for these organisms.

ADMINISTRATIVE

CPT Codes:

87207

COMPLETE VIEW

Available Stat:

No

Test Code:

P409

Performing Lab:

Microbiology

Performed:

Monday - Friday, day shift only

Methodology:

Microscopic examination of thick and thin Giemsa stained smears

Remarks:

Samples should be taken during bouts of fever as spirochetes are most likely to be present. Call Microbiology (x3-1268) and inform the staff of the need to look for the spirochetes of B. duttoni or B. recurrentis.

Request test on the Microbiology requisition.

Collect:

Lavender top

Amount to Collect:

3 mL blood

Sample Type:

EDTA whole blood

Preferred Volume:

3 mL blood

Minimum Volume:

1 mL blood

Specimen Preparation:

Prepare thin and thick smears immediately upon sample receipt.

Reference Interval:

Negative

Synonyms:

- Borreliosis
- Borrelia

Reported:

1-3 days

Additional Information:

The agents which cause Relapsing Fever may be very difficult to detect if the reviewer is not aware of the need to look for them.

No serologic test is available for these organisms.

CPT Codes:

87207

Reptilase Time

REPT

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Clot based assay

Reported:
Test run Wednesday Turnaround 1-8 days

Additional Information:
A normal reptilase time in the setting of a prolonged thrombin time indicates the presence of an inhibitor of thrombin. Unlike thethrombin time, the Reptilase Clotting Time is not prolonged by use of heparin or hirudin.

The reptilase time can also be used as a screening test for dysfibrinogenemia. Confirmatory testing for dysfibrinogen is by comparison of functional and immunologic fibrinogen levels.

COLLECTION

Sample Type:
Citrated plasma

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

For patients with Hct's >= 55% please contact Hematology (x3-1747) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Rejection Criteria:
Received refrigerated or room temperature.

PROCESSING

Test Code:
REPT

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Specimen to be delivered to hematology lab for centrifugation and freezing prior to send out. Transport frozen on dry ice to China Basin. Do not allow the specimen to thaw. Order Quest # 37700X

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Rejection Criteria:
Received refrigerated or room temperature.

RESULT INTERPRETATION

Units:
seconds

Reference Interval:
15-19 seconds

Additional Information:
A normal reptilase time in the setting of a prolonged thrombin time indicates the presence of an inhibitor of thrombin. Unlike thethrombin time, the Reptilase Clotting Time is not prolonged by use of heparin or hirudin.

The reptilase time can also be used as a screening test for dysfibrinogenemia. Confirmatory testing for dysfibrinogen is by comparison of functional and immunologic fibrinogen levels.

ADMINISTRATIVE

CPT Codes:
85635-90

LOINC Codes:
6683-7

COMPLETE VIEW

Available Stat:
No

Test Code:
REPT

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Clot based assay

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

For patients with Hct's >= 55% please contact Hematology (x3-1747) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Sample Type:
Citrated plasma

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Rejection Criteria:
Received refrigerated or room temperature.

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Specimen Preparation:
Specimen to be delivered to hematology lab for centrifugation and freezing prior to send out. Transport frozen on dry ice to China Basin. Do not allow the specimen to thaw. Order Quest # 37700X

Units:
seconds

Reference Interval:
15-19 seconds

Reported:
Test run Wednesday Turnaround 1-8 days

Additional Information:
A normal reptilase time in the setting of a prolonged thrombin time indicates the presence of an inhibitor of thrombin. Unlike thethrombin time, the Reptilase Clotting Time is not prolonged by use of heparin or hirudin.

The reptilase time can also be used as a screening test for dysfibrinogenemia. Confirmatory testing for dysfibrinogen is by comparison of functional and immunologic fibrinogen levels.

CPT Codes:
85635-90

LOINC Codes:
6683-7

Respiratory Virus PCR Panel

P370

ORDERING

Ordering Recommendations:

IDMP guidelines for the diagnosis and management of influenza.

Available Stat:

Yes

Performing Lab:

Microbiology

Performed:

Test performed minimum of 3x per week

Methodology:

Multiplex Reverse Transcription PCR

Reported:

2-3 days

Additional Information:

Detects RSV A, RSV B, Influenza A, Influenza A subtype H1, Influenza A subtype H3, Influenza B, Parainfluenza 1, Parainfluenza 2, Parainfluenza 3, Human Metapneumovirus, Rhinovirus, and Adenovirus.

Negative results do not preclude respiratory virus infection and should not be used as the sole basis for diagnosis, treatment or other management decisions.

Testing of specimens other than NP swabs falls outside of the approved manufacturer's specimen recommendation as prescribed in the NxTAG-RPP package insert. The performance of this assay has been determined by the UCSF laboratory as acceptable for alternative respiratory specimen types such as BAL, bronchial wash, endotrachael aspirate, etc. Results should be used in conjunction with clinical findings.

The primers for detection of Rhinovirus have been shown to cross-react with Enterovirus.

Synonyms:

- RSV A
- RSV B
- Influenza A
- Influenza A subtype H1
- Influenza A subtype H3
- Influenza B
- Parainfluenza 1
- Parainfluenza 2
- Parainfluenza 3
- Human Metapneumovirus
- Rhinovirus
- Adenovirus.

COLLECTION

Sample Type:

Nasopharyngeal swab (preferred), nasal wash or aspirate, trachael aspirate, BAL, bronchial wash
Anteriror Nares swab - Sensitivity may be reduced based on this sample type

Collect:

Nasopharyngeal swab: Flocked swab in Universal Transport Medium (UTM) or Viral Holding Media (VTM), preferred. Swabs in liquid Amies elution medium (E-swab), Aptima kits, and Abbott Multi Collect kits are also acceptable.

Combined Nasopharyngeal Swab/Oropharyngeal Swab are acceptable.

Other samples: Clean container

If ordering a concurrent COVID-19 PCR, collect only one swab for both Respiratory Viral Panel and COVID-19 PCR orders. Nasopharyngeal swab will provide optimal sensitivity.

Amount to Collect:

Nasopharyngeal swab: 1 flocked swab
Fluid: 2 mL

Preferred Volume:

Nasopharyngeal swab: 1 flocked swab
Fluid: 2 mL

Minimum Volume:
Nasopharyngeal swab: 1 flocked swab
Fluid: 1 mL

Remarks:
Nasopharyngeal swab: Use flocked swab/UTM or VHM. Insert swab into the nostril, gently rotating the swab inward until resistance is met at the level of the turbinates. Rotate the swab a few times against the nasopharyngeal wall (approximately 10 sec) and then withdraw swab. Insert swab into container with Universal Transport Medium or Viral Holding Media. Break end of swab so top of vial can be screwed on securely. Appropriately label specimen and send to the laboratory.

Stability (from collection to initiation):
Refrigerated 1 week, frozen at -70C 1 month

Unacceptable Conditions:
Nasopharyngeal swab not collected using flocked swab/UTM or VHM kit, E-swab, Aptima, or Abbott Multi Collect kit

PROCESSING

Test Code:
P370

Performing Lab:
Microbiology

Preferred Volume:
Nasopharyngeal swab: 1 flocked swab
Fluid: 2 mL

Minimum Volume:
Nasopharyngeal swab: 1 flocked swab
Fluid: 1 mL

Unacceptable Conditions:
Nasopharyngeal swab not collected using flocked swab/UTM or VHM kit, E-swab, Aptima, or Abbott Multi Collect kit

Stability (from collection to initiation):
Refrigerated 1 week, frozen at -70C 1 month

RESULT INTERPRETATION

Reference Interval:
Not detected

Critical Values:
Positive for Influenza A or B, or positive for RSV on inpatients and patients currently in the Emergency Department.

Additional Information:
Detects RSV A, RSV B, Influenza A, Influenza A subtype H1, Influenza A subtype H3, Influenza B, Parainfluenza 1, Parainfluenza 2, Parainfluenza 3, Human Metapneumovirus, Rhinovirus, and Adenovirus.

Negative results do not preclude respiratory virus infection and should not be used as the sole basis for diagnosis, treatment or other management decisions.

Testing of specimens other than NP swabs falls outside of the approved manufacturer's specimen recommendation as prescribed in the NxTAG-RPP package insert. The performance of this assay has been determined by the UCSF laboratory as acceptable for alternative respiratory specimen types such as BAL, bronchial wash, endotrachael aspirate, etc. Results should be used in conjunction with clinical findings.

The primers for detection of Rhinovirus have been shown to cross-react with Enterovirus.

ADMINISTRATIVE

CPT Codes:
87633

LDT or Modified FDA:
Yes

LOINC Codes:
Note: New reporting format requires LOINC codes for individual viruses in panel.

34487-9, 49521-8, 49524-2, 40982-1, 30075-6, 30076-4, 29908-1, 29909-9, 29910-7, 40991-2, 38917-1, 39528-5

COMPLETE VIEW

Available Stat:
Yes

Ordering Recommendations:
IDMP guidelines for the diagnosis and management of influenza.

Test Code:
P370

Performing Lab:
Microbiology

Performed:
Test performed minimum of 3x per week

Methodology:
Multiplex Reverse Transcription PCR

Remarks:
Nasopharyngeal swab: Use flocked swab/UTM or VHM. Insert swab into the nostril, gently rotating the swab inward until resistance is met at the level of the turbinates. Rotate the swab a few times against the nasopharyngeal wall (approximately 10 sec) and then withdraw swab. Insert swab into container with Universal Transport Medium or Viral Holding Media. Break end of swab so top of vial can be screwed on securely. Appropriately label specimen and send to the laboratory.

Collect:
Nasopharyngeal swab: Flocked swab in Universal Transport Medium (UTM) or Viral Holding Media (VTM), preferred. Swabs in liquid Amies elution medium (E-swab), Aptima kits, and Abbott Multi Collect kits are also acceptable.

Combined Nasopharyngeal Swab/Oropharyngeal Swab are acceptable.

Other samples: Clean container

If ordering a concurrent COVID-19 PCR, collect only one swab for both Respiratory Viral Panel and COVID-19 PCR orders. Nasopharyngeal swab will provide optimal sensitivity.

Amount to Collect:
Nasopharyngeal swab: 1 flocked swab
Fluid: 2 mL

Sample Type:
Nasopharyngeal swab (preferred), nasal wash or aspirate, trachael aspirate, BAL, bronchial wash
Anteriror Nares swab - Sensitivity may be reduced based on this sample type

Preferred Volume:
Nasopharyngeal swab: 1 flocked swab
Fluid: 2 mL

Minimum Volume:
Nasopharyngeal swab: 1 flocked swab
Fluid: 1 mL

Unacceptable Conditions:
Nasopharyngeal swab not collected using flocked swab/UTM or VHM kit, E-swab, Aptima, or Abbott Multi Collect kit

Reference Interval:
Not detected

Critical Values:
Positive for Influenza A or B, or positive for RSV on inpatients and patients currently in the Emergency Department.

Synonyms:

- RSV A
- RSV B
- Influenza A
- Influenza A subtype H1
- Influenza A subtype H3
- Influenza B
- Parainfluenza 1
- Parainfluenza 2
- Parainfluenza 3
- Human Metapneumovirus
- Rhinovirus
- Adenovirus.

Stability (from collection to initiation):
Refrigerated 1 week, frozen at -70C 1 month

Reported:
2-3 days

Additional Information:

Detects RSV A, RSV B, Influenza A, Influenza A subtype H1, Influenza A subtype H3, Influenza B, Parainfluenza 1, Parainfluenza 2, Parainfluenza 3, Human Metapneumovirus, Rhinovirus, and Adenovirus.

Negative results do not preclude respiratory virus infection and should not be used as the sole basis for diagnosis, treatment or other management decisions.

Testing of specimens other than NP swabs falls outside of the approved manufacturer's specimen recommendation as prescribed in the NxTAG-RPP package insert. The performance of this assay has been determined by the UCSF laboratory as acceptable for alternative respiratory specimen types such as BAL, bronchial wash, endotrachael aspirate, etc. Results should be used in conjunction with clinical findings.

The primers for detection of Rhinovirus have been shown to cross-react with Enterovirus.

CPT Codes:

87633

LDT or Modified FDA:

Yes

LOINC Codes:

Note: New reporting format requires LOINC codes for individual viruses in panel.

34487-9, 49521-8, 49524-2, 40982-1, 30075-6, 30076-4, 29908-1, 29909-9, 29910-7, 40991-2, 38917-1, 39528-5

Reticulocyte Count

RET

ORDERING

Available Stat:
No

Performing Lab:
Parnassus, Mission Bay and Mt. Zion Hematology

Performed:
Test available 24 hours per day 7 days per week.

Methodology:
Flow cytometry and/or light microscopy

Reported:
Turnaround time 24 hours.

Reflex Testing:
If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

Synonyms:

- Retic count

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top

Amount to Collect:
3 mL blood

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood

Stability (from collection to initiation):
Specimens are stable at room temperature for 48 hours, for 72 hours at 4C.

Rejection Criteria:
Clotted specimens

PROCESSING

Test Code:
RET

Performing Lab:
Parnassus, Mission Bay and Mt. Zion Hematology

Specimen Preparation:
Do not centrifuge.

When a Reticulocyte Count must be performed manually and an RBC count is not available from a CBC or CBCD on the same sample, order an RBC.

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood

Rejection Criteria:
Clotted specimens

Stability (from collection to initiation):
Specimens are stable at room temperature for 48 hours, for 72 hours at 4C.

RESULT INTERPRETATION

Units:
$x10^9/L$

Reference Interval:

Age	Male	Female
<= 4 days	65-230 $x10^9$/L	65-230 $x10^9$/L
5-30 days	17-114 $x10^9$/L	17-86 $x10^9$/L
31-60 days	30-129 $x10^9$/L	52-112 $x10^9$/L
61-180 days	36-127 $x10^9$/L	44-116 $x10^9$/L
6 months - 2 years	36-91 $x10^9$/L	40-90 $x10^9$/L
2 years - < 6 years	35-89 $x10^9$/L	35-93 $x10^9$/L
6 years - < 12 years	31-98 $x10^9$/L	35-124 $x10^9$/L
12 years - <18 years	38-104 $x10^9$/L	35-97 $x10^9$/L
>= 18 years (Automated)	29.0-121.4 $x10^9$/L	25.6-96.9 $x10^9$/L
>= 18 years (Manual)*	21.6-115.9 $x10^9$/L	16.2-99.8 $x10^9$/L

*Manual methods are much less accurate, and give somewhat lower results (reference range: Male >=18 year old 21.6-115.9 x 109/L, Female >=18 year old 16.2 - 99.8 x 109/L). A manual assay will be performed if required due to sample or fluorescent assay problem. For <18 year old refer to the normal range table above.

The ranges 5 days to <18 years have been extrapolated from the following reference: Steven J. Soldin, Carlo Brugnara, et al. Pediatric reference ranges, 2nd ed. Washington, DC: AACC Press, 1997

ADMINISTRATIVE

CPT Codes:
85045

LOINC Codes:
14196-0

COMPLETE VIEW

Available Stat:
No

Test Code:
RET

Performing Lab:
Parnassus, Mission Bay and Mt. Zion Hematology

Performed:
Test available 24 hours per day 7 days per week.

Methodology:
Flow cytometry and/or light microscopy

Collect:
Lavender top

Amount to Collect:
3 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood

Rejection Criteria:
Clotted specimens

Specimen Preparation:
Do not centrifuge.

When a Reticulocyte Count must be performed manually and an RBC count is not available from a CBC or CBCD on the same sample, order an RBC.

Units:
$x10^9$/L

Reference Interval:

Age	Male	Female
<= 4 days	65-230 x10^9/L	65-230 x10^9/L
5-30 days	17-114 x10^9/L	17-86 x10^9/L
31-60 days	30-129 x10^9/L	52-112 x10^9/L
61-180 days	36-127 x10^9/L	44-116 x10^9/L
6 months - 2 years	36-91 x10^9/L	40-90 x10^9/L
2 years - < 6 years	35-89 x10^9/L	35-93 x10^9/L
6 years - < 12 years	31-98 x10^9/L	35-124 x10^9/L
12 years - <18 years	38-104 x10^9/L	35-97 x10^9/L
>= 18 years (Automated)	29.0-121.4 x10^9/L	25.6-96.9 x10^9/L
>= 18 years (Manual)*	21.6-115.9 x10^9/L	16.2-99.8 x10^9/L

*Manual methods are much less accurate, and give somewhat lower results (reference range: Male >=18 year old 21.6-115.9 x 109/L, Female >=18 year old 16.2 - 99.8 x 109/L). A manual assay will be performed if required due to sample or fluorescent assay problem. For <18 year old refer to the normal range table above.

The ranges 5 days to <18 years have been extrapolated from the following reference: Steven J. Soldin, Carlo Brugnara, et al. Pediatric reference ranges, 2nd ed. Washington, DC: AACC Press, 1997

Synonyms:

- Retic count

Stability (from collection to initiation):
Specimens are stable at room temperature for 48 hours, for 72 hours at 4C.

Reported:
Turnaround time 24 hours.

Reflex Testing:
If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

CPT Codes:
85045

LOINC Codes:
14196-0

Rh only

RH

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay and MtZ Blood Banks

Performed:
Test available 24 hours per day 7 days per week

Reported:
STAT 1 hour, ASAP 2 hours Routine 4 hours

Additional Information:
When and if following bone marrow or liver transplantation there is disagreement between the results of ABO or Rh results based on testing of RBCs ("forward" testing) and results based on testing of plasma ("reverse" testing), the discrepancy will be reported.

Reflex Testing:
Cord blood: If baby and mother are both Rh Negative on initial testing, weak D testing will be automatically performed on the cord sample and charged for.

Synonyms:

- Rh typing
- Rhesus typing
- cord blood tests

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top (6 mL size preferred)

Amount to Collect:
6 mL blood

Preferred Volume:
6 mL blood

Minimum Volume:
3 mL blood

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Unacceptable Conditions:
Unsigned, mislabeled, unlabeled or hemolyzed sample.

PROCESSING

Test Code:
RH

Test Group:
ABO / Rh

Performing Lab:
Parnassus, Mission Bay and MtZ Blood Banks

Specimen Preparation:
Maintain samples at room temperature and provide to Blood Bank asap.

Preferred Volume:
6 mL blood

Minimum Volume:
3 mL blood

Unacceptable Conditions:
Unsigned, mislabeled, unlabeled or hemolyzed sample.

RESULT INTERPRETATION

Additional Information:
When and if following bone marrow or liver transplantation there is disagreement between the results of ABO or Rh results based on testing of RBCs ("forward" testing) and results based on testing of plasma ("reverse" testing), the discrepancy will be reported.

COMPLETE VIEW

Available Stat:
Yes

Test Code:
RH

Test Group:
ABO / Rh

Performing Lab:
Parnassus, Mission Bay and MtZ Blood Banks

Performed:
Test available 24 hours per day 7 days per week

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Collect:
Lavender top (6 mL size preferred)

Amount to Collect:
6 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
6 mL blood

Minimum Volume:
3 mL blood

Unacceptable Conditions:
Unsigned, mislabeled, unlabeled or hemolyzed sample.

Specimen Preparation:
Maintain samples at room temperature and provide to Blood Bank asap.

Synonyms:

- Rh typing
- Rhesus typing
- cord blood tests

Reported:
STAT 1 hour, ASAP 2 hours Routine 4 hours

Reflex Testing:
Cord blood: If baby and mother are both Rh Negative on initial testing, weak D testing will be automatically performed on the cord sample and charged for.

Additional Information:
When and if following bone marrow or liver transplantation there is disagreement between the results of ABO or Rh results based on testing of RBCs ("forward" testing) and results based on testing of plasma ("reverse" testing), the discrepancy will be reported.

Rheumatoid Factor, serum, IgM

RF

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift)

Methodology:
Turbidimetry

Reported:
1-3 days

Synonyms:

- RF

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Refrigerated 72 hours; Frozen for longer stability

Storage/Transport Temperature:
Frozen

Unacceptable Conditions:
Lipemic and grossly hemolyzed samples

PROCESSING

Test Code:
RF

Test Group:
RF

Performing Lab:
Immunology

Specimen Preparation:
Frozen

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Lipemic and grossly hemolyzed samples

Stability (from collection to initiation):
Refrigerated 72 hours; Frozen for longer stability

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Units:
IU/mL

Reference Interval:
<12.5 IU/mL

ADMINISTRATIVE

CPT Codes:
86431

LOINC Codes:
15205-8

COMPLETE VIEW

Available Stat:
No

Test Code:
RF

Test Group:
RF

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift)

Methodology:
Turbidimetry

Collect:
Gold top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Lipemic and grossly hemolyzed samples

Specimen Preparation:
Frozen

Units:
IU/mL

Reference Interval:
<12.5 IU/mL

Synonyms:

- RF

Storage/Transport Temperature:
Frozen

Stability (from collection to initiation):
Refrigerated 72 hours; Frozen for longer stability

Reported:
1-3 days

CPT Codes:
86431

LOINC Codes:
15205-8

RIA For Thyroglobulin, Restricted to Endocrinology

TGRIA

ORDERING

Available Stat:
No

Performing Lab:
USC

Performed:
Tuesday-Friday

Methodology:
RIA

Reported:
6 days

COLLECTION

Sample Type:
Serum

Collect:
Gold or Red top

Amount to Collect:
6 mL blood

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Stability (from collection to initiation):
Stored at 2 - 8°C until used; Stable if frozen at - 20°C. Studies indicate that Tg in serum is remarkably stable even at ambient temperature if there are no losses due to evaporation. Samples are usually stored at 2 - 8°C for up to one week. For long-term storage, freezing samples at -10 to -20°C is preferred. Repeat thawing and freezing of samples does not influence values if there are no losses due to evaporation.

Storage/Transport Temperature:
Frozen

Unacceptable Conditions:
The best qualitative result is obtained if the use of grossly hemolyzed or lipemic samples is avoided.

PROCESSING

Test Code:
TGRIA

Sendout:
Yes

Performing Lab:
USC

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Unacceptable Conditions:
The best qualitative result is obtained if the use of grossly hemolyzed or lipemic samples is avoided.

Stability (from collection to initiation):
Stored at 2 - 8°C until used; Stable if frozen at - 20°C. Studies indicate that Tg in serum is remarkably stable even at ambient temperature if there are no losses due to evaporation. Samples are usually stored at 2 - 8°C for up to one week. For long-term storage, freezing samples at -10 to -20°C is preferred. Repeat thawing and freezing of samples does not influence values if there are no losses due to evaporation.

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Units:
ng/mL

Reference Interval:
Normal Thyroid (3 - 40 ng/mL) (0.30 - 4.00 mIU/L)
Normal Thyroid (suppressed TSH) (1.5 - 20 ng/mL) (<0.1 mIU/L)
Post Lobectomy (normal TSH) (1.5 - 20 ng/mL) (0.30 - 4.00 mIU/L)
Near-Total Thyroidectomy (suppressed TSH) (<2 ng/mL) (<0.1 mIU/L)
Goiter (thyriod enlarged) (>40 ng/mL)

Interpretive Data:
The NACB Guidelines state that any laboratory testing for Thyroglobulin MUST also determine the TgAb status of that patient's sera. The new NACB guidelines also suggest that laboratories archive specimen left after serum Tg measurement for at least 6months. This allows for concurrent re-measurement of the past and current specimens in the same run - a maneuver that eliminates the between-run error and improved the clinical sensitivity of the test. Our lab stores Tg sera indefinitely. *(Thyroid 13:57-67, 2003)

ADMINISTRATIVE

CPT Codes:
84432, 86800

COMPLETE VIEW

Available Stat:
No

Test Code:
TGRIA

Performing Lab:
USC

Sendout:
Yes

Performed:
Tuesday-Friday

Methodology:
RIA

Collect:
Gold or Red top

Amount to Collect:
6 mL blood

Sample Type:
Serum

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Unacceptable Conditions:
The best qualitative result is obtained if the use of grossly hemolyzed or lipemic samples is avoided.

Units:
ng/mL

Reference Interval:
Normal Thyroid (3 - 40 ng/mL) (0.30 - 4.00 mIU/L)
Normal Thyroid (suppressed TSH) (1.5 - 20 ng/mL) (<0.1 mIU/L)
Post Lobectomy (normal TSH) (1.5 - 20 ng/mL) (0.30 - 4.00 mIU/L)
Near-Total Thyroidectomy (suppressed TSH) (<2 ng/mL) (<0.1 mIU/L)
Goiter (thyriod enlarged) (>40 ng/mL)

Interpretive Data:
The NACB Guidelines state that any laboratory testing for Thyroglobulin MUST also determine the TgAb status of that patient's sera. The new NACB guidelines also suggest that laboratories archive specimen left after serum Tg measurement for at least 6months. This allows for concurrent re-measurement of the past and current specimens in the same run - a maneuver that eliminates the between-run error and improved the clinical sensitivity of the test. Our lab stores Tg sera indefinitely. *(Thyroid 13:57-67, 2003)

Storage/Transport Temperature:
Frozen

Stability (from collection to initiation):
Stored at 2 - 8°C until used; Stable if frozen at - 20°C. Studies indicate that Tg in serum is remarkably stable even at ambient temperature if there are no losses due to evaporation. Samples are usually stored at 2 - 8°C for up to one week. For long-term storage, freezing samples at -10 to -20°C is preferred. Repeat thawing and freezing of samples does not influence values if there are no losses due to evaporation.

Reported:
6 days

CPT Codes:
84432, 86800

Ribosomal P Antibody

RIBP

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Immunoasay

Additional Information:
Ribosomal P Antibody is present in 5-10% of patients with Systemic Lupus Eythematosus (SLE) but is highly specific for this disorder. The levels parallel disease activity and it may be particularly useful in patients with CNS involvement.

COLLECTION

Sample Type:
Serum

Collect:
Red top or Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 1 week, frozen 1 month

PROCESSING

Test Code:
RIBP

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot and freeze sample. Ship to CB frozen.

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 1 week, frozen 1 month

RESULT INTERPRETATION

Units:
AI

Reference Interval:
< 1.0 AI

Additional Information:
Ribosomal P Antibody is present in 5-10% of patients with Systemic Lupus Eythematosus (SLE) but is highly specific for this disorder. The levels parallel disease activity and it may be particularly useful in patients with CNS involvement.

ADMINISTRATIVE

CPT Codes:
83516-90

COMPLETE VIEW

Available Stat:
No

Test Code:
RIBP

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Immunoasay

Collect:
Red top or Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Specimen Preparation:
Aliquot and freeze sample. Ship to CB frozen.

Units:
AI

Reference Interval:
< 1.0 AI

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 1 week, frozen 1 month

Additional Information:
Ribosomal P Antibody is present in 5-10% of patients with Systemic Lupus Eythematosus (SLE) but is highly specific for this disorder. The levels parallel disease activity and it may be particularly useful in patients with CNS involvement.

CPT Codes:
83516-90

Rickettsial Antibody Panel

RICK

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
IFA

Reported:
3-5 days

Additional Information:
Antigen-specific IgG and IgM titers allow rapid diagnosis of infection by organisms within either of the two major groups of Rickettsia. The spotted fever group includes R. rickettsia (Rocky Mountain Spotted Fever) and R. akari (Rickettsial pox). The typhus group includes R. typhi (endemic/maurine typhus) and R. prowazeki (epidemic typhus).

Reflex Testing:
Titers will be billed separately from the initial screening test. Use titer billing codes (RMSFGT, RMSFMT, RTYPGT, RTYPMT) as appropriate.

Synonyms:

- Typhus
- RMSF
- Rocky Mountain Spotted Fever
- Rickettsial pox
- Rickettsialpox

COLLECTION

Sample Type:
Serum

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Stability (from collection to initiation):
Room temperature 1 week, Refrigerated 2 weeks, frozen 1 month

Unacceptable Conditions:
Gross hemolysis or lipemia

Rejection Criteria:
Gross hemolysis or lipemia

PROCESSING

Test Code:
RICK

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot and freeze. Transport to CB frozen. Order Quest test code 37507.

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Unacceptable Conditions:
Gross hemolysis or lipemia

Rejection Criteria:
Gross hemolysis or lipemia

Stability (from collection to initiation):
Room temperature 1 week, Refrigerated 2 weeks, frozen 1 month

RESULT INTERPRETATION

Reference Interval:
Not detected

Additional Information:
Antigen-specific IgG and IgM titers allow rapid diagnosis of infection by organisms within either of the two major groups of Rickettsia. The spotted fever group includes R. rickettsia (Rocky Mountain Spotted Fever) and R. akari (Rickettsial pox). The typhus group includes R. typhi (endemic/maurine typhus) and R. prowazeki (epidemic typhus).

ADMINISTRATIVE

CPT Codes:
86757-90 x4

COMPLETE VIEW

Available Stat:
No

Test Code:
RICK

Performing Lab:
Quest

Sendout:
Yes

Methodology:
IFA

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Rejection Criteria:
Gross hemolysis or lipemia

Unacceptable Conditions:
Gross hemolysis or lipemia

Specimen Preparation:
Aliquot and freeze. Transport to CB frozen. Order Quest test code 37507.

Reference Interval:
Not detected

Synonyms:

- Typhus
- RMSF
- Rocky Mountain Spotted Fever
- Rickettsial pox
- Rickettsialpox

Stability (from collection to initiation):
Room temperature 1 week, Refrigerated 2 weeks, frozen 1 month

Reported:
3-5 days

Reflex Testing:
Titers will be billed separately from the initial screening test. Use titer billing codes (RMSFGT, RMSFMT, RTYPGT, RTYPMT) as appropriate.

Additional Information:

Antigen-specific IgG and IgM titers allow rapid diagnosis of infection by organisms within either of the two major groups of Rickettsia. The spotted fever group includes R. rickettsia (Rocky Mountain Spotted Fever) and R. akari (Rickettsial pox). The typhus group includes R. typhi (endemic/maurine typhus) and R. prowazeki (epidemic typhus).

CPT Codes:

86757-90 x4

Ristocetin Aggregation

RIST

ORDERING

Approval Required:
Test run by appoinment only. Contact Hematology at x3-1747.

Available Stat:
No

Performing Lab:
Parnassus Hematology

Performed:
Run as needed Monday - Friday, day shift only.

Methodology:
Platelet aggregometry

Reported:
1-3 days

Additional Information:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Test RIST, Ristocetin Aggregation, is a platelet aggregation using only ristocetin at both normal and low dose concentrations.No other agonists are used.

Platelets in plasma from vWD Type-2B patients have a heightened response to low dose" ristocetin.

In Type 2B VWD, the mutant vWf has an abnormally enhanced tendency to bind to platelets.

Reflex Testing:
A platelet count is required for the performance of this assay and will be ordered and separately charged.

Synonyms:

- Ristocetin activity
- von Willebrand
- RIPA
- Ristocetin induced platelet aggregation

COLLECTION

Patient Preparation:
Patient should be rested, fasting since midnight, and no smoking before blood collection. No caffeine and no alcohol for 48 hours prior to testing. Take only medication as directed by physician before testing.

Sample Type:
Citrated whole blood

Collect:
Blue top tube (x6)

Amount to Collect:
20 mL blood

Preferred Volume:
20 mL blood

Minimum Volume:
17 mL blood

Remarks:
By appointment only, contact Hematology at x3-1747.

Samples are only collected by Hematology techs.

PROCESSING

Test Code:
RIST

Test Group:
vWD

Performing Lab:
Parnassus Hematology

Preferred Volume:
20 mL blood

Minimum Volume:
17 mL blood

RESULT INTERPRETATION

Additional Information:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Test RIST, Ristocetin Aggregation, is a platelet aggregation using only ristocetin at both normal and low dose concentrations.No other agonists are used.

Platelets in plasma from vWD Type-2B patients have a heightened response to low dose" ristocetin.

In Type 2B VWD, the mutant vWf has an abnormally enhanced tendency to bind to platelets.

ADMINISTRATIVE

CPT Codes:
85576 x3

LOINC Codes:
24380-8

COMPLETE VIEW

Approval Required:
Test run by appoinment only. Contact Hematology at x3-1747.

Available Stat:
No

Test Code:
RIST

Test Group:
vWD

Performing Lab:
Parnassus Hematology

Performed:
Run as needed Monday - Friday, day shift only.

Methodology:
Platelet aggregometry

Patient Preparation:
Patient should be rested, fasting since midnight, and no smoking before blood collection. No caffeine and no alcohol for 48 hours prior to testing. Take only medication as directed by physician before testing.

Remarks:
By appointment only, contact Hematology at x3-1747.

Samples are only collected by Hematology techs.

Collect:
Blue top tube (x6)

Amount to Collect:
20 mL blood

Sample Type:
Citrated whole blood

Preferred Volume:
20 mL blood

Minimum Volume:
17 mL blood

Synonyms:

- Ristocetin activity
- von Willebrand
- RIPA
- Ristocetin induced platelet aggregation

Reported:
1-3 days

Reflex Testing:
A platelet count is required for the performance of this assay and will be ordered and separately charged.

Additional Information:

An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Test RIST, Ristocetin Aggregation, is a platelet aggregation using only ristocetin at both normal and low dose concentrations.No other agonists are used.

Platelets in plasma from vWD Type-2B patients have a heightened response to low dose" ristocetin.

In Type 2B VWD, the mutant vWf has an abnormally enhanced tendency to bind to platelets.

CPT Codes:

85576 x3

LOINC Codes:

24380-8

Ristocetin Cofactor Activity

RCOF

ORDERING

Approval Required:
No. If testing needed outside of defined testing schedule then approval is required.

Available Stat:
No, Contact hematology x3-1747 for special testing needs.

Performing Lab:
Parnassus Hematology

Performed:
Performed once every 1 - 2 weeks from 0800 - 1600

Methodology:
Platelet agglutination

Reported:
1-14 days

Additional Information:
Von Willebrand Factor is necessary for platelet adhesion to injured endothelium.

Ristocetin Cofactor is useful in assessing binding of von Willebrand Factor to platelet factor GP1b. When combined with other tests, results are useful in diagnosis of von Willebrand Disease and in categorizing types of von Willebrand Disease.

According to National Heart Lung and Blood Institute von Willebrand Disease Clinical Practice guidelines (http://www.nhlbi.nih.gov/guidelines/vwd/index.htm), a ratio of Ristocetin Cofactor/von Willebrand Factor Antigen of <0.5-0.7 may indicate the presence of a qualitative abnormality in von Willebrand Factor (i.e. Type 2 von Willebrand Disease), provided that Ristocetin Cofactor activity and/or von Willebrand Factor Antigen are below normal. Ristocetin Cofactor/von Willebrand Factor Antigen ratios in an internal UCSF study (December 2008, 39 normal blood donors with normal Ristocetin Cofactor activity and normal von Willebrand Factor Antigen) were all >0.5.

If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for

Reflex Testing:
When von Willebrand Factor activity/Ristocetin Cofactor activity is requested, it is appropriate to perform both the Ristocetin Cofactor activity and von Willebrand Factor antigen. For this reason, both will be performed if RCOF is ordered. In the uncommon circumstance the provider wishes to perform only the Ristocetin Cofactor activity, Parnassus Hematology should be contacted at 415-353-1747.

Synonyms:

- vW Factor
- von Willebrand factor activity
- VWF activity

COLLECTION

Sample Type:
Citrated plasma

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Remarks:
Check the expiration date on the label of the blue top vacutainer before drawing the patient.

Avoid collecting when patient may be lipemic as this may result in sample rejection.

Stability (from collection to initiation):
Room temperature 4 hours, frozen at -20C 2 weeks. frozen at -80C 6 months.

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Markedly lipemic samples may be rejected.

PROCESSING

Test Code:
RCOF

Test Group:
vWD

Performing Lab:
Parnassus Hematology

Specimen Preparation:
If this test is ordered together with Factor VIII Activity and Von Willebrand Factor Antigen on the same sample, enter VWP to request all three tests.

Take sample asap to Hematology for processing. Separate and freeze plasma at -20C within 1 hour.

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Markedly lipemic samples may be rejected.

Stability (from collection to initiation):
Room temperature 4 hours, frozen at -20C 2 weeks. frozen at -80C 6 months.

RESULT INTERPRETATION

Units:
%

Reference Interval:
42-191%

Additional Information:
Von Willebrand Factor is necessary for platelet adhesion to injured endothelium.

Ristocetin Cofactor is useful in assessing binding of von Willebrand Factor to platelet factor GP1b. When combined with other tests, results are useful in diagnosis of von Willebrand Disease and in categorizing types of von Willebrand Disease.

According to National Heart Lung and Blood Institute von Willebrand Disease Clinical Practice guidelines (http://www.nhlbi.nih.gov/guidelines/vwd/index.htm), a ratio of Ristocetin Cofactor/von Willebrand Factor Antigen of <0.5-0.7 may indicate the presence of a qualitative abnormality in von Willebrand Factor (i.e. Type 2 von Willebrand Disease), provided that Ristocetin Cofactor activity and/or von Willebrand Factor Antigen are below normal. Ristocetin Cofactor/von Willebrand Factor Antigen ratios in an internal UCSF study (December 2008, 39 normal blood donors with normal Ristocetin Cofactor activity and normal von Willebrand Factor Antigen) were all >0.5.

If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for

ADMINISTRATIVE

CPT Codes:
85245

LOINC Codes:
6014-5

COMPLETE VIEW

Approval Required:
No. If testing needed outside of defined testing schedule then approval is required.

Available Stat:
No, Contact hematology x3-1747 for special testing needs.

Test Code:
RCOF

Test Group:
vWD

Performing Lab:
Parnassus Hematology

Performed:
Performed once every 1 - 2 weeks from 0800 - 1600

Methodology:
Platelet agglutination

Remarks:
Check the expiration date on the label of the blue top vacutainer before drawing the patient.

Avoid collecting when patient may be lipemic as this may result in sample rejection.

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Sample Type:
Citrated plasma

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Markedly lipemic samples may be rejected.

Specimen Preparation:
If this test is ordered together with Factor VIII Activity and Von Willebrand Factor Antigen on the same sample, enter VWP to request all three tests.

Take sample asap to Hematology for processing. Separate and freeze plasma at -20C within 1 hour.

Units:
%

Reference Interval:
42-191%

Synonyms:

- vW Factor
- von Willebrand factor activity
- VWF activity

Stability (from collection to initiation):
Room temperature 4 hours, frozen at -20C 2 weeks. frozen at -80C 6 months.

Reported:
1-14 days

Reflex Testing:
When von Willebrand Factor activity/Ristocetin Cofactor activity is requested, it is appropriate to perform both the Ristocetin Cofactor activity and von Willebrand Factor antigen. For this reason, both will be performed if RCOF is ordered. In the uncommon circumstance the provider wishes to perform only the Ristocetin Cofactor activity, Parnassus Hematology should be contacted at 415-353-1747.

Additional Information:
Von Willebrand Factor is necessary for platelet adhesion to injured endothelium.

Ristocetin Cofactor is useful in assessing binding of von Willebrand Factor to platelet factor GP1b. When combined with other tests, results are useful in diagnosis of von Willebrand Disease and in categorizing types of von Willebrand Disease.

According to National Heart Lung and Blood Institute von Willebrand Disease Clinical Practice guidelines (http://www.nhlbi.nih.gov/guidelines/vwd/index.htm), a ratio of Ristocetin Cofactor/von Willebrand Factor Antigen of <0.5-0.7 may indicate the presence of a qualitative abnormality in von Willebrand Factor (i.e. Type 2 von Willebrand Disease), provided that Ristocetin Cofactor activity and/or von Willebrand Factor Antigen are below normal. Ristocetin Cofactor/von Willebrand Factor Antigen ratios in an internal UCSF study (December 2008, 39 normal blood donors with normal Ristocetin Cofactor activity and normal von Willebrand Factor Antigen) were all >0.5.

If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for

CPT Codes:
85245

LOINC Codes:
6014-5

RNA Fusions Heme Panel

FUHBL, FUHNB

ORDERING

Ordering Recommendations:

Determine RNA Fusions in exons of genes that are joined as a result of inter and intra chromosomal rearrangements. The 112 RNA fusions detected by this assay occur predominantly in myeloid malignancies and may extend to related disorders. This assay complements the Myeloid Multi Gene Panel DNA assay at diagnosis, relapse and during remission.

Performing Lab:

Genomic Services - Molecular Diagnostics

Performed:

Run 1x per week, or as needed, day shift only

Methodology:

RNA extraction and Next Generation DNA sequencing (NGS) on the Illumina platform

Reported:

10-14 days

Additional Information:

Gene fusions leading to the expression of chimeric RNA fusion transcripts are frequent genetic abnormalities that occur in myeloid malignancies such as myelofibrosis, myelodysplastic syndromes and acute myeloid leukemia. The identification of recurrent gene rearrangements is critical for risk classification according to World Health Organization and European Leukemia Net (ELN) guidelines.

This assay can detect 112 RNA fusions, representing 118 different genes fused in myeloid malignancies. In addition, this assay has the potential of detecting novel fusion combinations when their breakpoints match those of other fusions. This assay employs the coupling of NGS and Unique Molecular Identifiers (UMI) flanking each fusion breakpoint to eliminate PCR duplicates, resulting in an accurate detection sensitivity of approximately 10 tumor cells harboring each an RNA fusion. In addition, this assay could uncover cryptic RNA fusions that escape detection by conventional cytogenetics.

A comprehensive list of RNA fusions detected by this assay is found below. Among these are recurrent RNA fusions such as BCR-ABL1, PML-RARA, CBFB-MYH11, RUNX1-RUNX1T1, KMT2A-MLLT3, DEK-NUP214, KMT2A-MLLT10, KMT2A-MLLT1, NUP98-NSD1 and KMT2A-ELL.

RNA Fusions Heme Panel
ATF7IP-JAK2, BCR-ABL1, BCR-JAK2, BCR-PDGFRA, BCR-FGFR1, BMP2K-ZNF384, CBFA2T3-GLIS2, CBFB-MYH11, CCDC6-PDGFRB, CHIC2-ETV6, CNTRL-FGFR1, CREBBP-ZNF384, CUX1-FGFR1, DEK-NUP214, EBF1-JAK2, EBF1-PDGFRB, EML1-ABL1, EP300-ZNF384, ETV6-ABL1, ETV6-PDGFRB, ETV6-NTRK3, ETV6-JAK2, ETV6-RUNX1, ETV6-ARNT, FGFR1OP-FGFR1, FIP1L1-PDGFRA, FOXP1-ABL1, INPP5D-ABL1, KAT6A-CREBBP, KMT2A-CREBBP, KMT2A-RARA, KMT2A-AFF1, KMT2A-KMT2A (MLL-PTD), KMT2A-MLLT3, KMT2A-MLLT1, KMT2A-MLLT10, KMT2A-AFDN, KMT2A-ELL, KMT2A-EPS15, KMT2A-MLLT6, KMT2A-SEPT6, KMT2A-MLLT11, KMT2A-CIP2A, KMT2A-AFF4, KMT2A-ARHGAP26, KMT2A-MAPRE1, KMT2A-SEPT5, KMT2A-SEPT9, KMT2A-TET1, KMT2A-AFF3, KMT2A-KNL1, KMT2A-FOXO3, KMT2A-MAML2, KMT2A-NRIP3, KMT2A-ARHGEF17, KMT2A-C2CD3, KMT2A-ARHGEF12, KMT2A-CBL, KMT2A-DCPS, MEF2D-CSF1R, MN1-ETV6, MNX1-ETV6, MYB-GATA1, NCOR1-LYN, NDE1-PDGFRB, NPM1-RARA, NPM1-MLF1, NUP214-ABL1, NUP98-NSD1, NUP98-HOXA9, NUP98-TOP1, NUP98-DDX10, NUP98-RAP1GDS1, NUP98-KDM5A, OFD1-JAK2, P2RY8-CRLF2, PAG1-ABL2, PAX5-ETV6, PAX5-JAK2, PCM1-JAK2, PDE4DIP-PDGFRB, PICALM-MLLT10, PML-RARA, RANBP2-ABL1, RBM15-MKL1, RCSD1-ABL1, RUNX1-RUNX1T1, SET-NUP214, SFPQ-ABL1, SNX2-ABL1, SPAG9-JAK2, SPTBN1-FLT3, SPTBN1-PDGFRB, SSBP2-JAK2, SSBP2-CSF1R, STAT5B-RARA, STIL-TAL1, STRN-PDGFRA, STRN3-JAK2, TAF15-ZNF384, TCF3-PBX1, TCF3-HLF, TERF2-JAK2, TPM3-PDGFRB, TPR-FGFR1, TRIM24-FGFR1, ZBTB16-RARA, ZBTB16-ABL1, ZC3HAV1-ABL2, ZEB2-PDGFRB, ZMIZ1-ABL1, ZMYM2-FGFR1.

Synonyms:

- FUHBL
- FUHNB
- Gene Fusions
- 5'exon-3'exon
- Next Generation Sequencing
- NGS

COLLECTION

Sample Type:

EDTA whole blood and Bone marrow aspirates

Collect:

Lavender top (EDTA)

Preferred Volume:

Blood: 3 mL
Bone marrow aspirate: 3 mL

Minimum Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL

Remarks:
Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Stability (from collection to initiation):
Refrigerated 3 days, frozen at -20C unacceptable.

Storage/Transport Temperature:
Refrigerated

Unacceptable Conditions:
Heparinized sample submitted.

PROCESSING

Test Code:
FUHBL: Blood
FUHNB: Non-blood

Performing Lab:
Genomic Services - Molecular Diagnostics

Preferred Volume:
Blood: 3 mL
Bone marrow aspirate: 3 mL

Minimum Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL

Unacceptable Conditions:
Heparinized sample submitted.

Stability (from collection to initiation):
Refrigerated 3 days, frozen at -20C unacceptable.

Storage/Transport Temperature:
Refrigerated

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
Gene fusions leading to the expression of chimeric RNA fusion transcripts are frequent genetic abnormalities that occur in myeloid malignancies such as myelofibrosis, myelodysplastic syndromes and acute myeloid leukemia. The identification of recurrent gene rearrangements is critical for risk classification according to World Health Organization and European Leukemia Net (ELN) guidelines.

This assay can detect 112 RNA fusions, representing 118 different genes fused in myeloid malignancies. In addition, this assay has the potential of detecting novel fusion combinations when their breakpoints match those of other fusions. This assay employs the coupling of NGS and Unique Molecular Identifiers (UMI) flanking each fusion breakpoint to eliminate PCR duplicates, resulting in an accurate detection sensitivity of approximately 10 tumor cells harboring each an RNA fusion. In addition, this assay could uncover cryptic RNA fusions that escape detection by conventional cytogenetics.

A comprehensive list of RNA fusions detected by this assay is found below. Among these are recurrent RNA fusions such as BCR-ABL1, PML-RARA, CBFB-MYH11, RUNX1-RUNX1T1, KMT2A-MLLT3, DEK-NUP214, KMT2A-MLLT10, KMT2A-MLLT1, NUP98-NSD1 and KMT2A-ELL.

RNA Fusions Heme Panel
ATF7IP-JAK2, BCR-ABL1, BCR-JAK2, BCR-PDGFRA, BCR-FGFR1, BMP2K-ZNF384, CBFA2T3-GLIS2, CBFB-MYH11, CCDC6-PDGFRB, CHIC2-ETV6, CNTRL-FGFR1, CREBBP-ZNF384, CUX1-FGFR1, DEK-NUP214, EBF1-JAK2, EBF1-PDGFRB, EML1-ABL1, EP300-ZNF384, ETV6-ABL1, ETV6-PDGFRB, ETV6-NTRK3, ETV6-JAK2, ETV6-RUNX1, ETV6-ARNT, FGFR1OP-FGFR1, FIP1L1-PDGFRA, FOXP1-ABL1, INPP5D-ABL1, KAT6A-CREBBP, KMT2A-CREBBP, KMT2A-RARA, KMT2A-AFF1, KMT2A-KMT2A (MLL-PTD), KMT2A-MLLT3, KMT2A-MLLT1, KMT2A-MLLT10, KMT2A-AFDN, KMT2A-ELL, KMT2A-EPS15, KMT2A-MLLT6, KMT2A-SEPT6, KMT2A-MLLT11, KMT2A-CIP2A, KMT2A-AFF4, KMT2A-ARHGAP26, KMT2A-MAPRE1, KMT2A-SEPT5, KMT2A-SEPT9, KMT2A-TET1, KMT2A-AFF3, KMT2A-KNL1, KMT2A-FOXO3, KMT2A-MAML2, KMT2A-NRIP3, KMT2A-ARHGEF17, KMT2A-C2CD3, KMT2A-ARHGEF12, KMT2A-CBL, KMT2A-DCPS, MEF2D-CSF1R, MN1-ETV6, MNX1-ETV6, MYB-GATA1, NCOR1-LYN, NDE1-PDGFRB, NPM1-RARA, NPM1-MLF1, NUP214-ABL1, NUP98-NSD1, NUP98-HOXA9, NUP98-TOP1, NUP98-DDX10, NUP98-RAP1GDS1, NUP98-KDM5A, OFD1-JAK2, P2RY8-CRLF2, PAG1-ABL2, PAX5-ETV6, PAX5-JAK2, PCM1-JAK2, PDE4DIP-PDGFRB, PICALM-MLLT10, PML-RARA, RANBP2-ABL1, RBM15-MKL1, RCSD1-ABL1, RUNX1-RUNX1T1, SET-NUP214, SFPQ-ABL1, SNX2-ABL1, SPAG9-JAK2, SPTBN1-FLT3, SPTBN1-PDGFRB, SSBP2-JAK2, SSBP2-CSF1R, STAT5B-RARA, STIL-TAL1, STRN-PDGFRA, STRN3-JAK2, TAF15-ZNF384, TCF3-PBX1, TCF3-HLF, TERF2-JAK2, TPM3-PDGFRB, TPR-FGFR1, TRIM24-FGFR1, ZBTB16-RARA, ZBTB16-ABL1, ZC3HAV1-ABL2, ZEB2-PDGFRB, ZMIZ1-ABL1, ZMYM2-FGFR1.

ADMINISTRATIVE

CPT Codes:
81455

LDT or Modified FDA:
Yes

COMPLETE VIEW

Ordering Recommendations:
Determine RNA Fusions in exons of genes that are joined as a result of inter and intra chromosomal rearrangements. The 112 RNA fusions detected by this assay occur predominantly in myeloid malignancies and may extend to related disorders. This assay complements the Myeloid Multi Gene Panel DNA assay at diagnosis, relapse and during remission.

Test Code:
FUHBL: Blood
FUHNB: Non-blood

Performing Lab:
Genomic Services - Molecular Diagnostics

Performed:
Run 1x per week, or as needed, day shift only

Methodology:
RNA extraction and Next Generation DNA sequencing (NGS) on the Illumina platform

Remarks:
Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Collect:
Lavender top (EDTA)

Sample Type:
EDTA whole blood and Bone marrow aspirates

Preferred Volume:
Blood: 3 mL
Bone marrow aspirate: 3 mL

Minimum Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL

Unacceptable Conditions:
Heparinized sample submitted.

Reference Interval:
Negative

Synonyms:

- FUHBL
- FUHNB
- Gene Fusions
- 5'exon-3'exon
- Next Generation Sequencing
- NGS

Storage/Transport Temperature:
Refrigerated

Stability (from collection to initiation):
Refrigerated 3 days, frozen at -20C unacceptable.

Reported:
10-14 days

Additional Information:

Gene fusions leading to the expression of chimeric RNA fusion transcripts are frequent genetic abnormalities that occur in myeloid malignancies such as myelofibrosis, myelodysplastic syndromes and acute myeloid leukemia. The identification of recurrent gene rearrangements is critical for risk classification according to World Health Organization and European Leukemia Net (ELN) guidelines.

This assay can detect 112 RNA fusions, representing 118 different genes fused in myeloid malignancies. In addition, this assay has the potential of detecting novel fusion combinations when their breakpoints match those of other fusions. This assay employs the coupling of NGS and Unique Molecular Identifiers (UMI) flanking each fusion breakpoint to eliminate PCR duplicates, resulting in an accurate detection sensitivity of approximately 10 tumor cells harboring each an RNA fusion. In addition, this assay could uncover cryptic RNA fusions that escape detection by conventional cytogenetics.

A comprehensive list of RNA fusions detected by this assay is found below. Among these are recurrent RNA fusions such as BCR-ABL1, PML-RARA, CBFB-MYH11, RUNX1-RUNX1T1, KMT2A-MLLT3, DEK-NUP214, KMT2A-MLLT10, KMT2A-MLLT1, NUP98-NSD1 and KMT2A-ELL.

RNA Fusions Heme Panel
ATF7IP-JAK2, BCR-ABL1, BCR-JAK2, BCR-PDGFRA, BCR-FGFR1, BMP2K-ZNF384, CBFA2T3-GLIS2, CBFB-MYH11, CCDC6-PDGFRB, CHIC2-ETV6, CNTRL-FGFR1, CREBBP-ZNF384, CUX1-FGFR1, DEK-NUP214, EBF1-JAK2, EBF1-PDGFRB, EML1-ABL1, EP300-ZNF384, ETV6-ABL1, ETV6-PDGFRB, ETV6-NTRK3, ETV6-JAK2, ETV6-RUNX1, ETV6-ARNT, FGFR1OP-FGFR1, FIP1L1-PDGFRA, FOXP1-ABL1, INPP5D-ABL1, KAT6A-CREBBP, KMT2A-CREBBP, KMT2A-RARA, KMT2A-AFF1, KMT2A-KMT2A (MLL-PTD), KMT2A-MLLT3, KMT2A-MLLT1, KMT2A-MLLT10, KMT2A-AFDN, KMT2A-ELL, KMT2A-EPS15, KMT2A-MLLT6, KMT2A-SEPT6, KMT2A-MLLT11, KMT2A-CIP2A, KMT2A-AFF4, KMT2A-ARHGAP26, KMT2A-MAPRE1, KMT2A-SEPT5, KMT2A-SEPT9, KMT2A-TET1, KMT2A-AFF3, KMT2A-KNL1, KMT2A-FOXO3, KMT2A-MAML2, KMT2A-NRIP3, KMT2A-ARHGEF17, KMT2A-C2CD3, KMT2A-ARHGEF12, KMT2A-CBL, KMT2A-DCPS, MEF2D-CSF1R, MN1-ETV6, MNX1-ETV6, MYB-GATA1, NCOR1-LYN, NDE1-PDGFRB, NPM1-RARA, NPM1-MLF1, NUP214-ABL1, NUP98-NSD1, NUP98-HOXA9, NUP98-TOP1, NUP98-DDX10, NUP98-RAP1GDS1, NUP98-KDM5A, OFD1-JAK2, P2RY8-CRLF2, PAG1-ABL2, PAX5-ETV6, PAX5-JAK2, PCM1-JAK2, PDE4DIP-PDGFRB, PICALM-MLLT10, PML-RARA, RANBP2-ABL1, RBM15-MKL1, RCSD1-ABL1, RUNX1-RUNX1T1, SET-NUP214, SFPQ-ABL1, SNX2-ABL1, SPAG9-JAK2, SPTBN1-FLT3, SPTBN1-PDGFRB, SSBP2-JAK2, SSBP2-CSF1R, STAT5B-RARA, STIL-TAL1, STRN-PDGFRA, STRN3-JAK2, TAF15-ZNF384, TCF3-PBX1, TCF3-HLF, TERF2-JAK2, TPM3-PDGFRB, TPR-FGFR1, TRIM24-FGFR1, ZBTB16-RARA, ZBTB16-ABL1, ZC3HAV1-ABL2, ZEB2-PDGFRB, ZMIZ1-ABL1, ZMYM2-FGFR1.

CPT Codes:

81455

LDT or Modified FDA:

Yes

RNA Polymerase III Antibody

RNAP

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Enzyme Linked Immunosorbent Immunoassay (ELISA)

Reported:
3-7 days

Additional Information:
Autoantibodies to RNA Polymerase III antigen are found in 11% to 23% of patients with systemic sclerosis. Patients who are positive for RNA Polymerase III antibodies do not have any of the other antibodies typically found in systemic sclerosis patients such as anti-centromere, anti-Scl-70, or anti-Pm/Scl antibodies. Thus, they are a separate serologic group. Numerous studies have shown that these patients have an increased risk of the diffuse cutaneous form of scleroderma, with high likelihood of skin involvement and hypertensive renal disease. Antibodies to several different types of RNA Polymerases are found in patients with systemic sclerosis. The immunodominant epitope on RNA Pol III was identified and cloned. The recombinant immunodominant epitope of RNA Pol III can be used in ELISA with high specificity to detect anti-RNA Pol III antibodies in patients with the diffuse cutaneous form of systemic sclerosis, with a high incidence of skin involvement.

COLLECTION

Sample Type:
Serum

Collect:
Red top or Gold top

Amount to Collect:
1.0 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 1 week, frozen 1 month.

Unacceptable Conditions:
Gross hemolysis

Rejection Criteria:
Gross hemolysis

PROCESSING

Test Code:
RNAP

Sendout:
Yes

Performing Lab:
Quest

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Gross hemolysis

Rejection Criteria:
Gross hemolysis

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 1 week, frozen 1 month.

RESULT INTERPRETATION

Units:
Units

Reference Interval:
< 20 Units

Additional Information:
Autoantibodies to RNA Polymerase III antigen are found in 11% to 23% of patients with systemic sclerosis. Patients who are positive for RNA Polymerase III antibodies do not have any of the other antibodies typically found in systemic sclerosis patients such as anti-centromere, anti-Scl-70, or anti-Pm/Scl antibodies. Thus, they are a separate serologic group. Numerous studies have shown that these patients have an increased risk of the diffuse cutaneous form of scleroderma, with high likelihood of skin involvement and hypertensive renal disease. Antibodies to several different types of RNA Polymerases are found in patients with systemic sclerosis. The immunodominant epitope on RNA Pol III was identified and cloned. The recombinant immunodominant epitope of RNA Pol III can be used in ELISA with high specificity to detect anti-RNA Pol III antibodies in patients with the diffuse cutaneous form of systemic sclerosis, with a high incidence of skin involvement.

ADMINISTRATIVE

CPT Codes:
83520-90

COMPLETE VIEW

Available Stat:
No

Test Code:
RNAP

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Enzyme Linked Immunosorbent Immunoassay (ELISA)

Collect:
Red top or Gold top

Amount to Collect:
1.0 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Rejection Criteria:
Gross hemolysis

Unacceptable Conditions:
Gross hemolysis

Units:
Units

Reference Interval:
< 20 Units

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 1 week, frozen 1 month.

Reported:
3-7 days

Additional Information:
Autoantibodies to RNA Polymerase III antigen are found in 11% to 23% of patients with systemic sclerosis. Patients who are positive for RNA Polymerase III antibodies do not have any of the other antibodies typically found in systemic sclerosis patients such as anti-centromere, anti-Scl-70, or anti-Pm/Scl antibodies. Thus, they are a separate serologic group. Numerous studies have shown that these patients have an increased risk of the diffuse cutaneous form of scleroderma, with high likelihood of skin involvement and hypertensive renal disease. Antibodies to several different types of RNA Polymerases are found in patients with systemic sclerosis. The immunodominant epitope on RNA Pol III was identified and cloned. The recombinant immunodominant epitope of RNA Pol III can be used in ELISA with high specificity to detect anti-RNA Pol III antibodies in patients with the diffuse cutaneous form of systemic sclerosis, with a high incidence of skin involvement.

CPT Codes:

83520-90

RPR for Monitoring

RPRF

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Weekdays (day shift)

Methodology:
Agglutination

Reported:
1-5 days

Additional Information:
This test should only be ordered in known positive patients in whom the RPR titer is being followed to assess treatments. Positive results will be automatically reflex tested for titer.

To screen for syphilis in patients with unknown status, please order RPRSCR - Syphilis Screen by RPR w/Reflex to Treponemal Ab.

Reflex Testing:
Yes, if positive titer will be performed at an additional charge.

Synonyms:

- Prenatal screening
- congenital infection
- prenatal infection
- Syphilis
- Treponema pallidum
- TPAB

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Stability (from collection to initiation):
Refrigerated, 2 - 8 C: up to 7 days
Frozen, -20 C or colder: 14 days

Storage/Transport Temperature:
Refrigerated

Rejection Criteria:
Grossly lipemic, hemolysed or contaminated samples.

PROCESSING

Test Code:
RPRF

Test Group:
Syphilis

Performing Lab:
Immunology

Specimen Preparation:
Refrigerate sample

Preferred Volume:
0.5 mL serum

Rejection Criteria:
Grossly lipemic, hemolysed or contaminated samples.

Stability (from collection to initiation):
Refrigerated, 2 - 8 C: up to 7 days
Frozen, -20 C or colder: 14 days

Storage/Transport Temperature:
Refrigerated

RESULT INTERPRETATION

Reference Interval:
Non-reactive

Additional Information:
This test should only be ordered in known positive patients in whom the RPR titer is being followed to assess treatments. Positive results will be automatically reflex tested for titer.

To screen for syphilis in patients with unknown status, please order RPRSCR - Syphilis Screen by RPR w/Reflex to Treponemal Ab.

ADMINISTRATIVE

CPT Codes:
86592

COMPLETE VIEW

Available Stat:
No

Test Code:
RPRF

Test Group:
Syphilis

Performing Lab:
Immunology

Performed:
Weekdays (day shift)

Methodology:
Agglutination

Collect:
Gold top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Rejection Criteria:
Grossly lipemic, hemolysed or contaminated samples.

Specimen Preparation:
Refrigerate sample

Reference Interval:
Non-reactive

Synonyms:

- Prenatal screening
- congenital infection
- prenatal infection
- Syphilis
- Treponema pallidum
- TPAB

Storage/Transport Temperature:
Refrigerated

Stability (from collection to initiation):
Refrigerated, 2 - 8 C: up to 7 days
Frozen, -20 C or colder: 14 days

Reported:
1-5 days

Reflex Testing:
Yes, if positive titer will be performed at an additional charge.

Additional Information:
This test should only be ordered in known positive patients in whom the RPR titer is being followed to assess treatments. Positive results will be automatically reflex tested for titer.

To screen for syphilis in patients with unknown status, please order RPRSCR - Syphilis Screen by RPR w/Reflex to Treponemal Ab.

CPT Codes:
86592

Rubella Antibody, IgG

RUBI

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift)

Methodology:
Chemiluminescent Immunoassay

Reported:
1-4 days

Additional Information:
For occupational or early post-exposure screening, a single specimen is generally sufficient to determine immunity to rubella infection. An EQUIVOCAL result may not provide sufficient protection from clinical illness upon exposure to rubella virus.

When congenital infection is suspected, an initial negative result most likely excludes the diagnosis. If the result is positive in the initial specimen, a second sample should be submitted 3 months later to distinguish transplacentally-transmitted maternal antibody from congenital infection.

See also entry for Rubella Culture and table for Viral Serology. Acute cases of rubella should show a rise in antibody from an initially negative or equivocal level.

Synonyms:

- Prenatal screening
- TORCH Antibodies
- German measles

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Remarks:
Avoid hemolysis

Unacceptable Conditions:
Grossly hemolyzed, lipemic or icteric samples

PROCESSING

Test Code:
RUBI

Performing Lab:
Immunology

Specimen Preparation:
Freeze sample at -20C

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Unacceptable Conditions:
Grossly hemolyzed, lipemic or icteric samples

RESULT INTERPRETATION

Units:
Index

Reference Interval:
Negative / Not-immune: < 0.90
Equivocal: 0.90 - 0.99
Positive / Immune: >= 1.00

Additional Information:
For occupational or early post-exposure screening, a single specimen is generally sufficient to determine immunity to rubella infection. An EQUIVOCAL result may not provide sufficient protection from clinical illness upon exposure to rubella virus.

When congenital infection is suspected, an initial negative result most likely excludes the diagnosis. If the result is positive in the initial specimen, a second sample should be submitted 3 months later to distinguish transplacentally-transmitted maternal antibody from congenital infection.

See also entry for Rubella Culture and table for Viral Serology. Acute cases of rubella should show a rise in antibody from an initially negative or equivocal level.

ADMINISTRATIVE

CPT Codes:
86762

LOINC Codes:
25514-1

COMPLETE VIEW

Available Stat:
No

Test Code:
RUBI

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift)

Methodology:
Chemiluminescent Immunoassay

Remarks:
Avoid hemolysis

Collect:
Gold top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Unacceptable Conditions:
Grossly hemolyzed, lipemic or icteric samples

Specimen Preparation:
Freeze sample at -20C

Units:
Index

Reference Interval:
Negative / Not-immune: < 0.90
Equivocal: 0.90 - 0.99
Positive / Immune: >= 1.00

Synonyms:

- Prenatal screening
- TORCH Antibodies
- German measles

Reported:
1-4 days

Additional Information:
For occupational or early post-exposure screening, a single specimen is generally sufficient to determine immunity to rubella infection. An EQUIVOCAL result may not provide sufficient protection from clinical illness upon exposure to rubella virus.

When congenital infection is suspected, an initial negative result most likely excludes the diagnosis. If the result is positive in the initial specimen, a second sample should be submitted 3 months later to distinguish transplacentally-transmitted maternal antibody from congenital infection.

See also entry for Rubella Culture and table for Viral Serology. Acute cases of rubella should show a rise in antibody from an initially negative or equivocal level.

CPT Codes:
86762

LOINC Codes:
25514-1

Rubella Culture

P319

ORDERING

Available Stat:
No

Performing Lab:
State Viral & Rickettsial Disease Laboratory

Methodology:
Tissue culture

Synonyms:

- Viral culture
- German measles

COLLECTION

Sample Type:
Amniotic fluid, nasal wash, random urine

Collect:
Urine cup, clean container

Amount to Collect:
See preferred volume

Preferred Volume:
>= 20 mL fluid

Minimum Volume:
1 mL fluid

Remarks:
Performed only on infants with suspected congenital infection. Contact the Microbiology laboratory (x3-1268) to obtain consultation and arrange for sendout to the State Health Dept.

PROCESSING

Test Code:
P319

Test Group:
Viral culture

Sendout:
Yes

Performing Lab:
State Viral & Rickettsial Disease Laboratory

Preferred Volume:
>= 20 mL fluid

Minimum Volume:
1 mL fluid

ADMINISTRATIVE

LOINC Codes:
29257-3

COMPLETE VIEW

Available Stat:
No

Test Code:
P319

Test Group:
Viral culture

Performing Lab:
State Viral & Rickettsial Disease Laboratory

Sendout:
Yes

Methodology:
Tissue culture

Remarks:
Performed only on infants with suspected congenital infection. Contact the Microbiology laboratory (x3-1268) to obtain consultation and arrange for sendout to the State Health Dept.

Collect:
Urine cup, clean container

Amount to Collect:
See preferred volume

Sample Type:
Amniotic fluid, nasal wash, random urine

Preferred Volume:
>= 20 mL fluid

Minimum Volume:
1 mL fluid

Synonyms:

- Viral culture
- German measles

LOINC Codes:
29257-3

Rubella PCR

P319

ORDERING

Approval Required:

Physician must discuss the case and receive approval for submission of specimens from the SF Department of Public Health Communicable Disease Control Unit (415) 554-2830.

Physician must complete VIRAL & RICKETTSIAL DISEASE SPECIMEN SUBMITTAL FORM

Available Stat:

No

Performing Lab:

State Viral & Rickettsial Disease Laboratory

Methodology:

Real time RT-PCR, molecular genotyping, viral culture

Synonyms:

- Viral culture
- German measles

Supplemental Test Request Form Required:

Yes

COLLECTION

Sample Type:

Amniotic fluid, nasal wash, random urine, NPS or throat swab in UTM

Collect:

Urine cup, clean container, UTM

Preferred Volume:

>= 20 mL fluid

Remarks:

Collect respiratory specimen within 7-10 days of symptom onset.

10-50 mL urine should be collected within 10 days of rash onset. First part of urine stream is preferable.

PROCESSING

Test Code:

P319

Test Group:

Viral culture

Sendout:

Yes

Performing Lab:

State Viral & Rickettsial Disease Laboratory

Specimen Preparation:

Urine: Centrifuge at 500-600 g for 5-10 min. at 4C. Resuspend the pellet in 2-3 mL of UTM. Store and ship at -70C.

Preferred Volume:

>= 20 mL fluid

ADMINISTRATIVE

LOINC Codes:

29257-3

COMPLETE VIEW

Approval Required:

Physician must discuss the case and receive approval for submission of specimens from the SF Department of Public Health Communicable Disease Control Unit (415) 554-2830.

Physician must complete VIRAL & RICKETTSIAL DISEASE SPECIMEN SUBMITTAL FORM

Available Stat:
No

Test Code:
P319

Test Group:
Viral culture

Performing Lab:
State Viral & Rickettsial Disease Laboratory

Sendout:
Yes

Methodology:
Real time RT-PCR, molecular genotyping, viral culture

Remarks:
Collect respiratory specimen within 7-10 days of symptom onset.

10-50 mL urine should be collected within 10 days of rash onset. First part of urine stream is preferable.

Collect:
Urine cup, clean container, UTM

Sample Type:
Amniotic fluid, nasal wash, random urine, NPS or throat swab in UTM

Preferred Volume:
>= 20 mL fluid

Specimen Preparation:
Urine: Centrifuge at 500-600 g for 5-10 min. at 4C. Resuspend the pellet in 2-3 mL of UTM. Store and ship at -70C.

Synonyms:

- Viral culture
- German measles

LOINC Codes:
29257-3

Supplemental Test Request Form Required:
Yes

Russell's Viper Venom Test

RVVTM

ORDERING

Ordering Recommendations:

Should be ordered concurrently with Lupus Anticoagulant by HEXA test.

Available Stat:

No

Performing Lab:

Parnassus Hematology

Performed:

Test run once per week (Tuesday)

Reported:

2-9 days

Additional Information:

Summary of Interpretive Information for test results:

A RVVT test result <= 45.5 seconds is NEGATIVE for lupus anticoagulant according to international guidelines for interpretation.

A negative test result in this assay does not exclude the possibility of a lupus anticoagulant. Current guidelines suggest testing for lupus anticoagulant with two clot based tests (J Thromb Haemost 2009; 7: 1737-40): in addition to this RVVT-based assay, the lupus anticoagulant by HEXA is recommended for detecting lupus anticoagulants. Lupus anticoagulant testing should be considered positive if one of the two tests gives a positive result.

Testing for lupus anticoagulant in the presence of anticoagulant therapy (including warfarin, direct thrombin inhibitors & direct factor 10a inhibitors, and supratherapeutic heparin) is not recommended due to possible interference with test results. The presence of factor deficiencies or a factor specific inhibitor may also interfere with this assay. Clinical correlation is advised.

Test results must be interpreted in their clinical context if a diagnosis of antiphospholipid syndrome is being considered. J Thromb Haemost 2006; 4: 295-306 provides consensus guidelines for diagnosis of antiphospholipid syndrome.

For detection of lupus anticoagulants, which by definition prolong a clotting time, are inhibitors, and are phospholipid dependent. Positives are automatically confirmed with an assay using a different reagent containing increased phospholipid content. An inhibitor screen is incorporated to exclude an abnormal result due to clotting factor deficiency.

Persistent presence (> 3 months) of antiphospholipid antibodies has been associated with recurrent thrombosis syndromes. A review of testing performed on UCSF patients indicates that, of all patients diagnosed with Lupus Anticoagulants, approximately 50% are detected in both Hexagonal Phospholipid Neutralization and Russell's Viper Venom tests, 25% in only the Hexagonal Phospholipid Neutralization Test, and 25% in only the Russell's Viper Venom Test.

Thrombin inhibitors (e.g. hirudin, argatroban, etc.) present in the sample to be tested may interfere in the test and lead to falsely positive results

Rivaroxaban, apixaban, and similar agents can cause false positive results in assays used to identify LA. Evaluation for a lupus anticoagulant, therefore, cannot be accurately performed in the presence of rivaroxaban.

To monitor unfractionated heparin therapy in the presence of a lupus anticoagulant, Heparin Levels may be needed.

Reflex Testing:

When lupus anticoagulant testing is requested, it is appropriate to perform BOTH the RVVT and Lupus Anticoagulant by HEXA tests. For this reason, both will be performed whenever either is ordered. In the uncommon circumstance that a provider wishes to perform only one of these tests, the hematology laboratory should be contacted at 353-1747 to request that only the single test be performed.

If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

In some circumstances a concurrent PT will be added and charged to allow RVVT interpretation.

Synonyms:

- RVVT
- RVVTD
- LA
- Lupus anticoagulant

COLLECTION

Sample Type:
Citrated plasma

Collect:
Blue top x2 filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Preferred Volume:
1 mL plasma

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

For patients with Hct's >= 55% please contact Hematology (x3-1747) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Stability (from collection to initiation):
4 hours

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected. Samples received over 4 hours from collection.

PROCESSING

Test Code:
RVVTM

Performing Lab:
Parnassus Hematology

Specimen Preparation:
Within 4 hour of collection separate, centrifuge, and freeze 1.5 mL of plasma at -20C in a plastic tube.

Note: If Lupus Anticoagulant ordered without further specification order both HEXA and RVVTM.

Preferred Volume:
1 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected. Samples received over 4 hours from collection.

Stability (from collection to initiation):
4 hours

RESULT INTERPRETATION

Units:
Seconds, Ratio

Reference Interval:
RVVT: 27.5- 44.3 seconds
RVVT Inhibitor Screen 33.5-39.9 seconds
Phospholipid Confirmatory Ratio: 1.00 - 1.19

See 'Additional Information' for interpretation of negative RVVT results.

Additional Information:

Summary of Interpretive Information for test results:

A RVVT test result <= 45.5 seconds is NEGATIVE for lupus anticoagulant according to international guidelines for interpretation.

A negative test result in this assay does not exclude the possibility of a lupus anticoagulant. Current guidelines suggest testing for lupus anticoagulant with two clot based tests (J Thromb Haemost 2009; 7: 1737-40): in addition to this RVVT-based assay, the lupus anticoagulant by HEXA is recommended for detecting lupus anticoagulants. Lupus anticoagulant testing should be considered positive if one of the two tests gives a positive result.

Testing for lupus anticoagulant in the presence of anticoagulant therapy (including warfarin, direct thrombin inhibitors & direct factor 10a inhibitors, and supratherapeutic heparin) is not recommended due to possible interference with test results. The presence of factor deficiencies or a factor specific inhibitor may also interfere with this assay. Clinical correlation is advised.

Test results must be interpreted in their clinical context if a diagnosis of antiphospholipid syndrome is being considered. J Thromb Haemost 2006; 4: 295-306 provides consensus guidelines for diagnosis of antiphospholipid syndrome.

For detection of lupus anticoagulants, which by definition prolong a clotting time, are inhibitors, and are phospholipid dependent. Positives are automatically confirmed with an assay using a different reagent containing increased phospholipid content. An inhibitor screen is incorporated to exclude an abnormal result due to clotting factor deficiency.

Persistent presence (> 3 months) of antiphospholipid antibodies has been associated with recurrent thrombosis syndromes. A review of testing performed on UCSF patients indicates that, of all patients diagnosed with Lupus Anticoagulants, approximately 50% are detected in both Hexagonal Phospholipid Neutralization and Russell's Viper Venom tests, 25% in only the Hexagonal Phospholipid Neutralization Test, and 25% in only the Russell's Viper Venom Test.

Thrombin inhibitors (e.g. hirudin, argatroban, etc.) present in the sample to be tested may interfere in the test and lead to falsely positive results

Rivaroxaban, apixaban, and similar agents can cause false positive results in assays used to identify LA. Evaluation for a lupus anticoagulant, therefore, cannot be accurately performed in the presence of rivaroxaban.

To monitor unfractionated heparin therapy in the presence of a lupus anticoagulant, Heparin Levels may be needed.

ADMINISTRATIVE

CPT Codes:
85613

LOINC Codes:
6303-2

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Should be ordered concurrently with Lupus Anticoagulant by HEXA test.

Test Code:
RVVTM

Performing Lab:
Parnassus Hematology

Performed:
Test run once per week (Tuesday)

Remarks:

1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

For patients with Hct's >= 55% please contact Hematology (x3-1747) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Collect:
Blue top x2 filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Sample Type:
Citrated plasma

Preferred Volume:
1 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected. Samples received over 4 hours from collection.

Specimen Preparation:
Within 4 hour of collection separate, centrifuge, and freeze 1.5 mL of plasma at -20C in a plastic tube.

Note: If Lupus Anticoagulant ordered without further specification order both HEXA and RVVTM.

Units:
Seconds, Ratio

Reference Interval:
RVVT: 27.5- 44.3 seconds
RVVT Inhibitor Screen 33.5-39.9 seconds
Phospholipid Confirmatory Ratio: 1.00 - 1.19

See 'Additional Information' for interpretation of negative RVVT results.

Synonyms:

- RVVT
- RVVTD
- LA
- Lupus anticoagulant

Stability (from collection to initiation):
4 hours

Reported:
2-9 days

Reflex Testing:
When lupus anticoagulant testing is requested, it is appropriate to perform BOTH the RVVT and Lupus Anticoagulant by HEXA tests. For this reason, both will be performed whenever either is ordered. In the uncommon circumstance that a provider wishes to perform only one of these tests, the hematology laboratory should be contacted at 353-1747 to request that only the single test be performed.

If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

In some circumstances a concurrent PT will be added and charged to allow RVVT interpretation.

Additional Information:

Summary of Interpretive Information for test results:

A RVVT test result <= 45.5 seconds is NEGATIVE for lupus anticoagulant according to international guidelines for interpretation.

A negative test result in this assay does not exclude the possibility of a lupus anticoagulant. Current guidelines suggest testing for lupus anticoagulant with two clot based tests (J Thromb Haemost 2009; 7: 1737-40): in addition to this RVVT-based assay, the lupus anticoagulant by HEXA is recommended for detecting lupus anticoagulants. Lupus anticoagulant testing should be considered positive if one of the two tests gives a positive result.

Testing for lupus anticoagulant in the presence of anticoagulant therapy (including warfarin, direct thrombin inhibitors & direct factor 10a inhibitors, and supratherapeutic heparin) is not recommended due to possible interference with test results. The presence of factor deficiencies or a factor specific inhibitor may also interfere with this assay. Clinical correlation is advised.

Test results must be interpreted in their clinical context if a diagnosis of antiphospholipid syndrome is being considered. J Thromb Haemost 2006; 4: 295-306 provides consensus guidelines for diagnosis of antiphospholipid syndrome.

For detection of lupus anticoagulants, which by definition prolong a clotting time, are inhibitors, and are phospholipid dependent. Positives are automatically confirmed with an assay using a different reagent containing increased phospholipid content. An inhibitor screen is incorporated to exclude an abnormal result due to clotting factor deficiency.

Persistent presence (> 3 months) of antiphospholipid antibodies has been associated with recurrent thrombosis syndromes. A review of testing performed on UCSF patients indicates that, of all patients diagnosed with Lupus Anticoagulants, approximately 50% are detected in both Hexagonal Phospholipid Neutralization and Russell's Viper Venom tests, 25% in only the Hexagonal Phospholipid Neutralization Test, and 25% in only the Russell's Viper Venom Test.

Thrombin inhibitors (e.g. hirudin, argatroban, etc.) present in the sample to be tested may interfere in the test and lead to falsely positive results

Rivaroxaban, apixaban, and similar agents can cause false positive results in assays used to identify LA. Evaluation for a lupus anticoagulant, therefore, cannot be accurately performed in the presence of rivaroxaban.

To monitor unfractionated heparin therapy in the presence of a lupus anticoagulant, Heparin Levels may be needed.

CPT Codes:

85613

LOINC Codes:

6303-2

Saccharomyces cerevisiae Antibody

MOLT

ORDERING

Available Stat:
No

Performing Lab:
Quest

Additional Information:
The presence of IgG or IgA antibodies against the mannan antigen of S. cerevisiae in patients with gastrointestinal complaints is associated with a diagnosis of Crohn's disease. Although the specificity is relatively high (90-95%), the test may also be positive in small number of patients with gluten sensitive enteropathy, primary biliary cirrhosis, and Behcet's disease.

The sensitivity of the test is low (45-60%), therefore a negative test does not rule out the diagnosis.

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

PROCESSING

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate serum, send in plastic tube, order #10295N for IgA and/or #10294N for IgG

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

RESULT INTERPRETATION

Additional Information:
The presence of IgG or IgA antibodies against the mannan antigen of S. cerevisiae in patients with gastrointestinal complaints is associated with a diagnosis of Crohn's disease. Although the specificity is relatively high (90-95%), the test may also be positive in small number of patients with gluten sensitive enteropathy, primary biliary cirrhosis, and Behcet's disease.

The sensitivity of the test is low (45-60%), therefore a negative test does not rule out the diagnosis.

COMPLETE VIEW

Available Stat:
No

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Performing Lab:
Quest

Sendout:
Yes

Collect:
Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Specimen Preparation:
Refrigerate serum, send in plastic tube, order #10295N for IgA and/or #10294N for IgG

Additional Information:
The presence of IgG or IgA antibodies against the mannan antigen of S. cerevisiae in patients with gastrointestinal complaints is associated with a diagnosis of Crohn's disease. Although the specificity is relatively high (90-95%), the test may also be positive in small number of patients with gluten sensitive enteropathy, primary biliary cirrhosis, and Behcet's disease.

The sensitivity of the test is low (45-60%), therefore a negative test does not rule out the diagnosis.

Salicylate

SAL

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Enzymatic/Colorimetric - Timed-endpoint using salicylate hydroxylase

Reported:
STAT 1 hour, Routine 1-3 days

Synonyms:

- ASA
- aspirin
- acetylsalicyclic acid

COLLECTION

Sample Type:
Serum or plasma

Collect:
Gold top or Light Green top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

Stability (from collection to initiation):
Refrigerated 14 days, frozen at -20C 6 months

PROCESSING

Test Code:
SAL

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

Stability (from collection to initiation):
Refrigerated 14 days, frozen at -20C 6 months

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:
Therapeutic: 10-30 mg/dL

According to UpToDate guidelines (Accessed August 28th 2019): Therapeutic serum salicylate concentrations fall between 10 to 30 mg/dL (0.7 to 2.2 mmol/L); values above 40 mg/dL (2.9 mmol/L) are associated with toxicity. Although toxicity does not correlate exactly with serum salicylate concentrations and symptoms, most patients exhibit signs of intoxication when the serum concentration exceeds 40 to 50 mg/dL (2.9 to 3.6 mmol/L)."

Critical Values:
> 35 mg/dL

ADMINISTRATIVE

CPT Codes:
80179

LOINC Codes:
4024-6

COMPLETE VIEW

Available Stat:
Yes

Test Code:
SAL

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Enzymatic/Colorimetric - Timed-endpoint using salicylate hydroxylase

Collect:
Gold top or Light Green top

Amount to Collect:
1 mL blood

Sample Type:
Serum or plasma

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

Units:
mg/dL

Reference Interval:
Therapeutic: 10-30 mg/dL

According to UpToDate guidelines (Accessed August 28th 2019): Therapeutic serum salicylate concentrations fall between 10 to 30 mg/dL (0.7 to 2.2 mmol/L); values above 40 mg/dL (2.9 mmol/L) are associated with toxicity. Although toxicity does not correlate exactly with serum salicylate concentrations and symptoms, most patients exhibit signs of intoxication when the serum concentration exceeds 40 to 50 mg/dL (2.9 to 3.6 mmol/L)."

Critical Values:
> 35 mg/dL

Synonyms:

- ASA
- aspirin
- acetylsalicyclic acid

Stability (from collection to initiation):
Refrigerated 14 days, frozen at -20C 6 months

Reported:
STAT 1 hour, Routine 1-3 days

CPT Codes:
80179

LOINC Codes:
4024-6

SARS-CoV-2 Ab IgG Nucleocapsid Protein

C19G

ORDERING

Ordering Recommendations:
Use for the qualitative detection of IgG antibodies against the nucleocapsid protein of SARS-CoV-2 (COVID-19) that develop in response to natural infection with SARS-CoV-2. These antibodies do not develop as a result of a COVID-19 vaccination. There are no current recommendations for assessing COVID-19 vaccine response.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Mon, Wed, Fri

Methodology:
Qualitative Chemiluminescent Immunoassay (CLIA)

Reported:
1-5 days

Synonyms:

- 2019-nCoV
- Coronavirus Disease - 2019
- COVID-19 Illness
- COVID-2019
- COVID19 IgG Ab
- SARS-CoV-2

COLLECTION

Sample Type:
Serum or plasma (Gold, red or labender-top)

Collect:
Serum separator tube (SST) or EDTA plasma

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.25 mL serum or plasma

Remarks:
Preferred: ARUP Standard Transport Tube for specimen submission (ARUP Item# 15824).

Stability (from collection to initiation):
Refrigerated: 1 week; Frozen: 1 month

Storage/Transport Temperature:
Refrigerated

Unacceptable Conditions:
Grossly hemolyzed, grossly icteric, or severely lipemic specimens. Postmortem specimens.

PROCESSING

Test Code:
C19G

ARUP Test Code:
3002776

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 0.5mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.25 mL)

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.25 mL serum or plasma

Unacceptable Conditions:
Grossly hemolyzed, grossly icteric, or severely lipemic specimens. Postmortem specimens.

Stability (from collection to initiation):
Refrigerated: 1 week; Frozen: 1 month

Storage/Transport Temperature:
Refrigerated

RESULT INTERPRETATION

Reference Interval:
Negative

Interpretive Data:
The COVID-19 IgG, Qualitative by CIA test is for in vitro diagnostic use under an FDA Emergency Use Authorization (EUA). In compliance with this authorization, please visit https://www.aruplab.com/infectious-disease/coronavirus/testing for more information and to access the applicable information sheets. This test should not be used for screening of donated blood. Use for the qualitative detection of IgG antibodies against the nucleocapsid protein of SARS-CoV-2 (COVID-19) that develop in response to natural infection with SARS-CoV-2. These antibodies do not develop as a result of a COVID-19 vaccination. There are no current recommendations for assessing COVID-19 vaccine response.

ADMINISTRATIVE

CPT Codes:
86769

LOINC:

- 94563-4

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Use for the qualitative detection of IgG antibodies against the nucleocapsid protein of SARS-CoV-2 (COVID-19) that develop in response to natural infection with SARS-CoV-2. These antibodies do not develop as a result of a COVID-19 vaccination. There are no current recommendations for assessing COVID-19 vaccine response.

Test Code:
C19G

ARUP Test Code:
3002776

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Mon, Wed, Fri

Methodology:
Qualitative Chemiluminescent Immunoassay (CLIA)

Remarks:
Preferred: ARUP Standard Transport Tube for specimen submission (ARUP Item# 15824).

Collect:
Serum separator tube (SST) or EDTA plasma

Amount to Collect:
1 mL blood

Sample Type:
Serum or plasma (Gold, red or labender-top)

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.25 mL serum or plasma

Unacceptable Conditions:
Grossly hemolyzed, grossly icteric, or severely lipemic specimens. Postmortem specimens.

Specimen Preparation:

Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 0.5mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.25 mL)

Reference Interval:

Negative

Interpretive Data:

The COVID-19 IgG, Qualitative by CIA test is for in vitro diagnostic use under an FDA Emergency Use Authorization (EUA). In compliance with this authorization, please visit https://www.aruplab.com/infectious-disease/coronavirus/testing for more information and to access the applicable information sheets. This test should not be used for screening of donated blood. Use for the qualitative detection of IgG antibodies against the nucleocapsid protein of SARS-CoV-2 (COVID-19) that develop in response to natural infection with SARS-CoV-2. These antibodies do not develop as a result of a COVID-19 vaccination. There are no current recommendations for assessing COVID-19 vaccine response.

Synonyms:

- 2019-nCoV
- Coronavirus Disease - 2019
- COVID-19 Illness
- COVID-2019
- COVID19 IgG Ab
- SARS-CoV-2

Storage/Transport Temperature:

Refrigerated

Stability (from collection to initiation):

Refrigerated: 1 week; Frozen: 1 month

Reported:

1-5 days

CPT Codes:

86769

LOINC:

- 94563-4

SARS-CoV-2 Ab IgG Spike Protein, Semi-Quantitative

COVIG2

ORDERING

Ordering Recommendations:

Semi-quantitative assay for use in the detection of IgG antibodies against the receptor binding domain (RBD) of the S1 subunit of the spike protein (S1) of SARS-CoV-2 (COVID-19) that develop in response to natural infection with SARS-CoV-2 or from a COVID-19 vaccination.

Available Stat:

No

Performing Lab:

Chemistry - China Basin

Performed:

Monday and Thursday

Methodology:

Chemiluminescent microparticle immunoassay(CMIA) two step - Abbott Architect i2000 AdviseDx SARS-CoV-2 IgG II assay

Reported:

1 - 4 days

Additional Information:

**Fact sheet for patients

**Fact sheet for provider

This assay is for in vitro diagnostic use under FDA Emergency Use Authorization only.

Immunocompromised patients who have COVID-19 may have a delayed antibody response and produce levels of antibody which may not be detected as positive by the assay.

Results obtained with this assay may not be used interchangeably with results obtained with different manufacturers' test methods.

It is unknown for how long antibodies persist following SARS-CoV-2 infection. It is not known at this time if the presence of antibodies to SARS-CoV-2 confers immunity to infection.

The clinical applicability of semi-quantitative results is currently unknown and cannot be interpreted as an indication or degree of immunity, nor protection from infection, nor compared to other SARS-CoV-2 antibody assays.

A positive result may not indicate previous SARS-CoV-2 infection. Consider other information, including clinical history and local disease prevalence, in assessing the need for a second but different serology test to confirm an immune response.

A negative result for an individual subject indicates the absence of detectable anti-SARS-CoV-2 antibodies. Negative results do not preclude SARS-CoV-2 infection and should not be used as the sole basis for patient management decisions. A negative result can occur if the quantity of the anti-SARS-CoV-2 antibodies in the specimen is below the detection limits of the assay, or if the antibodies are not present during the stage of disease in which a sample is collected. When testing for response to infection, note that this assay should only be used for testing samples collected 15 days after symptom onset.

This device should not be used to diagnose or exclude acute SARS-CoV-2 infection. Direct testing for SARS-CoV-2 with a molecular assay should be performed to evaluate for acute infection in symptomatic individuals.

Not to be used to determine SARS-CoV-2 infection in donated blood units. This test should not be used for blood donor screening.

Synonyms:

- Coronavirus
- Cov-2
- SARS-Cov-2
- Covid-19

COLLECTION

Sample Type:

Plasma or serum

Collect:

Lt Green (Li-Heparin) top preferred.

Gold and Red top acceptable

Amount to Collect:
1 mL blood

Preferred Volume:
0.3 mL plasma or serum

Minimum Volume:
0.15 mL plasma or serum

Stability (from collection to initiation):
Room temperature: 2 days
Refrigerated: 7 days
Frozen: 45 days

PROCESSING

Test Code:
COVIG2

Performing Lab:
Chemistry - China Basin

Preferred Volume:
0.3 mL plasma or serum

Minimum Volume:
0.15 mL plasma or serum

Stability (from collection to initiation):
Room temperature: 2 days
Refrigerated: 7 days
Frozen: 45 days

RESULT INTERPRETATION

Units:
AU/mL

Reference Interval:
< 50 AU/mL - Negative
>= 50 AU/mL - Positive

Additional Information:
**Fact sheet for patients

**Fact sheet for provider

This assay is for in vitro diagnostic use under FDA Emergency Use Authorization only.

Immunocompromised patients who have COVID-19 may have a delayed antibody response and produce levels of antibody which may not be detected as positive by the assay.

Results obtained with this assay may not be used interchangeably with results obtained with different manufacturers' test methods.

It is unknown for how long antibodies persist following SARS-CoV-2 infection. It is not known at this time if the presence of antibodies to SARS-CoV-2 confers immunity to infection.

The clinical applicability of semi-quantitative results is currently unknown and cannot be interpreted as an indication or degree of immunity, nor protection from infection, nor compared to other SARS-CoV-2 antibody assays.

A positive result may not indicate previous SARS-CoV-2 infection. Consider other information, including clinical history and local disease prevalence, in assessing the need for a second but different serology test to confirm an immune response.

A negative result for an individual subject indicates the absence of detectable anti-SARS-CoV-2 antibodies. Negative results do not preclude SARS-CoV-2 infection and should not be used as the sole basis for patient management decisions. A negative result can occur if the quantity of the anti-SARS-CoV-2 antibodies in the specimen is below the detection limits of the assay, or if the antibodies are not present during the stage of disease in which a sample is collected. When testing for response to infection, note that this assay should only be used for testing samples collected 15 days after symptom onset.

This device should not be used to diagnose or exclude acute SARS-CoV-2 infection. Direct testing for SARS-CoV-2 with a molecular assay should be performed to evaluate for acute infection in symptomatic individuals.

Not to be used to determine SARS-CoV-2 infection in donated blood units. This test should not be used for blood donor screening.

ADMINISTRATIVE

CPT Codes:
86769

LOINC Codes:
94563-4

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Semi-quantitative assay for use in the detection of IgG antibodies against the receptor binding domain (RBD) of the S1 subunit of the spike protein (S1) of SARS-CoV-2 (COVID-19) that develop in response to natural infection with SARS-CoV-2 or from a COVID-19 vaccination.

Test Code:
COVIG2

Performing Lab:
Chemistry - China Basin

Performed:
Monday and Thursday

Methodology:
Chemiluminescent microparticle immunoassay(CMIA) two step - Abbott Architect i2000 AdviseDx SARS-CoV-2 IgG II assay

Collect:
Lt Green (Li-Heparin) top preferred.

Gold and Red top acceptable

Amount to Collect:
1 mL blood

Sample Type:
Plasma or serum

Preferred Volume:
0.3 mL plasma or serum

Minimum Volume:
0.15 mL plasma or serum

Units:
AU/mL

Reference Interval:
< 50 AU/mL - Negative
>= 50 AU/mL - Positive

Synonyms:

- Coronavirus
- Cov-2
- SARS-Cov-2
- Covid-19

Stability (from collection to initiation):
Room temperature: 2 days
Refrigerated: 7 days
Frozen: 45 days

Reported:
1 - 4 days

Additional Information:

**Fact sheet for patients

**Fact sheet for provider

This assay is for in vitro diagnostic use under FDA Emergency Use Authorization only.

Immunocompromised patients who have COVID-19 may have a delayed antibody response and produce levels of antibody which may not be detected as positive by the assay.

Results obtained with this assay may not be used interchangeably with results obtained with different manufacturers' test methods.

It is unknown for how long antibodies persist following SARS-CoV-2 infection. It is not known at this time if the presence of antibodies to SARS-CoV-2 confers immunity to infection.

The clinical applicability of semi-quantitative results is currently unknown and cannot be interpreted as an indication or degree of immunity, nor protection from infection, nor compared to other SARS-CoV-2 antibody assays.

A positive result may not indicate previous SARS-CoV-2 infection. Consider other information, including clinical history and local disease prevalence, in assessing the need for a second but different serology test to confirm an immune response.

A negative result for an individual subject indicates the absence of detectable anti-SARS-CoV-2 antibodies. Negative results do not preclude SARS-CoV-2 infection and should not be used as the sole basis for patient management decisions. A negative result can occur if the quantity of the anti-SARS-CoV-2 antibodies in the specimen is below the detection limits of the assay, or if the antibodies are not present during the stage of disease in which a sample is collected. When testing for response to infection, note that this assay should only be used for testing samples collected 15 days after symptom onset.

This device should not be used to diagnose or exclude acute SARS-CoV-2 infection. Direct testing for SARS-CoV-2 with a molecular assay should be performed to evaluate for acute infection in symptomatic individuals.

Not to be used to determine SARS-CoV-2 infection in donated blood units. This test should not be used for blood donor screening.

CPT Codes:

86769

LOINC Codes:

94563-4

SC5b-9 Level (Terminal Complement Complex)

C5B9S

ORDERING

Available Stat:
No

Performing Lab:
Macheon

Performed:
weekly

Methodology:
ELISA

Reported:
48 hrs - 1 week

Additional Information:
A test requisition form must be completed and submitted with the sample.

Synonyms:

- Soluble Membrane Attack Complex
- sMAC
- MAC complex
- C5B9S

Supplemental Test Request Form Required:
Yes

COLLECTION

Sample Type:
Plasma

Collect:
Lavender top (EDTA)

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL plasma

Minimum Volume:
0.25 mL plasma

Stability (from collection to initiation):
1 year frozen

Storage/Transport Temperature:
Frozen

Unacceptable Conditions:
Thawed specimen

PROCESSING

Test Code:
C5B9S

Sendout:
Yes

Performing Lab:
Macheon

Specimen Preparation:
Centrifuge at room temp within 2 hours of collection. Aliquot and immediately freeze at -70C. This aliquot cannot be shared with other tests.

Preferred Volume:
1 mL plasma

Minimum Volume:
0.25 mL plasma

Unacceptable Conditions:
Thawed specimen

Stability (from collection to initiation):
1 year frozen

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Units:
ng/mL

Reference Interval:
< 250 ng/mL

Additional Information:
A test requisition form must be completed and submitted with the sample.

ADMINISTRATIVE

CPT Codes:
86160

COMPLETE VIEW

Available Stat:
No

Test Code:
C5B9S

Performing Lab:
Macheon

Sendout:
Yes

Performed:
weekly

Methodology:
ELISA

Collect:
Lavender top (EDTA)

Amount to Collect:
2 mL blood

Sample Type:
Plasma

Preferred Volume:
1 mL plasma

Minimum Volume:
0.25 mL plasma

Unacceptable Conditions:
Thawed specimen

Specimen Preparation:
Centrifuge at room temp within 2 hours of collection. Aliquot and immediately freeze at -70C. This aliquot cannot be shared with other tests.

Units:
ng/mL

Reference Interval:
< 250 ng/mL

Synonyms:

- Soluble Membrane Attack Complex
- sMAC
- MAC complex
- C5B9S

Storage/Transport Temperature:
Frozen

Stability (from collection to initiation):
1 year frozen

Reported:
48 hrs - 1 week

Additional Information:
A test requisition form must be completed and submitted with the sample.

CPT Codes:
86160

Supplemental Test Request Form Required:
Yes

Schistosoma Antibodies

SCHISS

ORDERING

Available Stat:
No

Performing Lab:
Focus via Quest

Methodology:
ELISA

Reported:
Set up once per week. Turnaround 7-14 days

Additional Information:
This assay will be run only if serial stool/urine examinations are negative.

See also Parasites-Rectal Biopsy,-Stool and-Urine.

Synonyms:

- Schistosomiasis
- Schistosoma mansoni
- Schistosoma haematobium
- Schistosoma japonicum
- Schistosoma mekongi

COLLECTION

Sample Type:
Serum

Collect:
Red top (Gold top acceptable)

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.25 mL serum

Stability (from collection to initiation):
Room temperature 2 weeks, refrigerated 2 months, frozen at -20C indefinite.

PROCESSING

Test Code:
SCHISS

Test Group:
Schistosoma

Sendout:
Yes

Performing Lab:
Focus via Quest

Specimen Preparation:
Refrigerate sample. Order Quest test # 53704P.

Preferred Volume:
1 mL serum

Minimum Volume:
0.25 mL serum

Stability (from collection to initiation):
Room temperature 2 weeks, refrigerated 2 months, frozen at -20C indefinite.

RESULT INTERPRETATION

Reference Interval:
< 1.00 = Antibody not detected

Additional Information:
This assay will be run only if serial stool/urine examinations are negative.

See also Parasites-Rectal Biopsy,-Stool and-Urine.

ADMINISTRATIVE

CPT Codes:
86682-90

LOINC Codes:
6629-0

COMPLETE VIEW

Available Stat:
No

Test Code:
SCHISS

Test Group:
Schistosoma

Performing Lab:
Focus via Quest

Sendout:
Yes

Methodology:
ELISA

Collect:
Red top (Gold top acceptable)

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.25 mL serum

Specimen Preparation:
Refrigerate sample. Order Quest test # 53704P.

Reference Interval:
< 1.00 = Antibody not detected

Synonyms:

- Schistosomiasis
- Schistosoma mansoni
- Schistosoma haematobium
- Schistosoma japonicum
- Schistosoma mekongi

Stability (from collection to initiation):
Room temperature 2 weeks, refrigerated 2 months, frozen at -20C indefinite.

Reported:
Set up once per week. Turnaround 7-14 days

Additional Information:
This assay will be run only if serial stool/urine examinations are negative.

See also Parasites-Rectal Biopsy,-Stool and-Urine.

CPT Codes:
86682-90

LOINC Codes:
6629-0

Schistosoma species

P401, P412, P404

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Monday-Friday, day shift

Methodology:
Microscopy

Reported:
1-3 days

Reflex Testing:
If direct examination of urine is negative, a concentrate will be made for examination at an additional charge.

Synonyms:

- Schistosomiasis
- Schistosoma mansoni
- Schistosoma haematobium
- Schistosoma japonicum
- Schistosoma mekongi

COLLECTION

Sample Type:
Stool, Unfixed tissue, Random urine

Collect:
Stool: Urine cup, SAF fixative vial for outpatients
Urine: 24-hour urine container
Tissue: Urine cup or sterile tube

SAF tubes and instructions available from the 1st floor ACC draw station, 2330 Post St draw station, 5th floor lab at Parnassus and 2nd floor lab at MtZ.

Remarks:
Schistosoma haematobium, collect all urine voided between 10 am - 2 pm (peak egg excretion).

For Schistosoma species other than S. haematobium, collect 3 stool samples 48 hours apart.

Rectal or urinary bladder mucosal biopsy is suitable for detection of all species. Place tissue in saline-wetted gauze (do NOT soak tissue) and submit in a urine cup or tube.

Deliver urine, unpreserved stool, and tissue to laboratory within one hour of collection.

SAF tubes and instructions available from the 1st floor ACC draw station, 2330 Post St draw station, 5th floor lab at Parnassus and 2nd floor lab at MtZ.

Stability (from collection to initiation):
Unpreserved stool: 1 hour
Stool in SAF: indefinite
Refrigerated urine and tissue: 2 days

Unacceptable Conditions:
Improperly collected/submitted sample. Unpreserved stool > 1 hour old

PROCESSING

Test Code:
Stool: P401
Urine: P412
Tissue: P404

Test Group:
Schistosoma

Performing Lab:
Microbiology

Unacceptable Conditions:
Improperly collected/submitted sample. Unpreserved stool > 1 hour old

Stability (from collection to initiation):
Unpreserved stool: 1 hour
Stool in SAF: indefinite
Refrigerated urine and tissue: 2 days

RESULT INTERPRETATION

Reference Interval:
Negative

ADMINISTRATIVE

CPT Codes:
Stool: 87177, 88313, 87206
Tissue: 87169
Urine: 87210

LOINC Codes:
10704-5

COMPLETE VIEW

Available Stat:
No

Test Code:
Stool: P401
Urine: P412
Tissue: P404

Test Group:
Schistosoma

Performing Lab:
Microbiology

Performed:
Monday-Friday, day shift

Methodology:
Microscopy

Remarks:
Schistosoma haematobium, collect all urine voided between 10 am - 2 pm (peak egg excretion).

For Schistosoma species other than S. haematobium, collect 3 stool samples 48 hours apart.

Rectal or urinary bladder mucosal biopsy is suitable for detection of all species. Place tissue in saline-wetted gauze (do NOT soak tissue) and submit in a urine cup or tube.

Deliver urine, unpreserved stool, and tissue to laboratory within one hour of collection.

SAF tubes and instructions available from the 1st floor ACC draw station, 2330 Post St draw station, 5th floor lab at Parnassus and 2nd floor lab at MtZ.

Collect:
Stool: Urine cup, SAF fixative vial for outpatients
Urine: 24-hour urine container
Tissue: Urine cup or sterile tube

SAF tubes and instructions available from the 1st floor ACC draw station, 2330 Post St draw station, 5th floor lab at Parnassus and 2nd floor lab at MtZ.

Sample Type:
Stool, Unfixed tissue, Random urine

Unacceptable Conditions:
Improperly collected/submitted sample. Unpreserved stool > 1 hour old

Reference Interval:
Negative

Synonyms:

- Schistosomiasis
- Schistosoma mansoni
- Schistosoma haematobium
- Schistosoma japonicum
- Schistosoma mekongi

Stability (from collection to initiation):
Unpreserved stool: 1 hour
Stool in SAF: indefinite
Refrigerated urine and tissue: 2 days

Reported:
1-3 days

Reflex Testing:
If direct examination of urine is negative, a concentrate will be made for examination at an additional charge.

CPT Codes:
Stool: 87177, 88313, 87206
Tissue: 87169
Urine: 87210

LOINC Codes:
10704-5

SCL-70 Antibody

SCL70I

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Friday, day shift

Methodology:
Chemiluminescent

Reported:
2-8 days

Additional Information:
Clinical Use: Scleroderma may be localized or diffuse (Progressive Systemic Sclerosis PSS) that may involve skin, gastrointestinal tracts, lungs, vascular and cardiac systems, and kidneys. Scl-70 Antibody is present in approximately 40% of patients with PSS.

Synonyms:

- Topoisomerase I antibodies
- Scleroderma

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Serum in room temperature no longer than 48 hours; 2 - 8C serum up to 10 days; -20C or colder if longer than 10 days.

Storage/Transport Temperature:
-20C

Unacceptable Conditions:
Grossly hemolyzed, icteric or lipemic serum should be avoided.

PROCESSING

Test Code:
SCL70I

Performing Lab:
Immunology

Specimen Preparation:
Freeze sample at -20C

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Grossly hemolyzed, icteric or lipemic serum should be avoided.

Stability (from collection to initiation):
Serum in room temperature no longer than 48 hours; 2 - 8C serum up to 10 days; -20C or colder if longer than 10 days.

Storage/Transport Temperature:
-20C

RESULT INTERPRETATION

Units:
CU

Reference Interval:
Negative: <20 CU
Positive: >=20 CU

Additional Information:
Clinical Use: Scleroderma may be localized or diffuse (Progressive Systemic Sclerosis PSS) that may involve skin, gastrointestinal tracts, lungs, vascular and cardiac systems, and kidneys. Scl-70 Antibody is present in approximately 40% of patients with PSS.

ADMINISTRATIVE

CPT Codes:
86235

LOINC Codes:
27416-7

COMPLETE VIEW

Available Stat:
No

Test Code:
SCL70I

Performing Lab:
Immunology

Performed:
Friday, day shift

Methodology:
Chemiluminescent

Collect:
Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Grossly hemolyzed, icteric or lipemic serum should be avoided.

Specimen Preparation:
Freeze sample at -20C

Units:
CU

Reference Interval:
Negative: <20 CU
Positive: >=20 CU

Synonyms:

- Topoisomerase I antibodies
- Scleroderma

Storage/Transport Temperature:
-20C

Stability (from collection to initiation):
Serum in room temperature no longer than 48 hours; 2 - 8C serum up to 10 days; -20C or colder if longer than 10 days.

Reported:
2-8 days

Additional Information:
Clinical Use: Scleroderma may be localized or diffuse (Progressive Systemic Sclerosis PSS) that may involve skin, gastrointestinal tracts, lungs, vascular and cardiac systems, and kidneys. Scl-70 Antibody is present in approximately 40% of patients with PSS.

CPT Codes:
86235

LOINC Codes:
27416-7

SCVMC Volatiles Screen

MOLT

ORDERING

Approval Required:
Yes

Available Stat:
No

Performing Lab:
Santa Clara Valley Medical Center

Methodology:
Head space GC-MS

Reported:
1-2 days with prior approval.

Additional Information:
This test detects methanol, acetone, isopropanol and ethanol.
This test should only be used in cases where the turn-around time for the ARUP volatiles test (VOLAS) is not adequate and/or when the Poison Control Center advises the clinicians to order it. It should not be used routinely.

If a sample for this test has to be sent out, please follow the procedure below:

1. Once you receive the sample, print the SCVMC requisition that can be found at the link below and complete the top section with the patient information and the contact information. Complete the bottom part of the form including adding the accession number of each sample.

2. If the clinicians have not placed an order for this test, add a “MOLT" on to the accession numbers of each of the samples that will be sent. In the description, please write “SCVMC volatiles screen."

3. Package the samples up in a box and attach the address label that can be found at the link below.

6. Call an AmTran courier to have the samples picked up and taken to SCVMC directly from processing at Mission Bay or Parnassus.

AmTran: 877-243-8733

The results will be called or emailed to the contact information given on the requisition form. The report will be faxed to the sendout department and will be scanned into ApeX (Monday through Friday only, not on holidays or weekends). If there are any questions, the SCVMC processing department can be called at 408-885-6585.

SCVMC requisition form

SCVMC address label

Synonyms:

- Acetone
- Ethanol
- Methanol
- Isopropanol
- Alcohol
- EtOH
- MeOH
- Volatiles

Supplemental Test Request Form Required:
Yes

COLLECTION

Sample Type:
Serum, Plasma, and Whole Blood (red top, dark green top or gray top)

Collect:
Red top, dark green top, or gray top

Amount to Collect:
2 mL of serum, plasma, and whole blood (red top, dark green top or gray top)

Minimum Volume:
1 mL of serum, plasma, and whole blood (red top, dark green top or gray top)

Remarks:

Keep sample capped.

This test detects methanol, acetone, isopropanol and ethanol.
This test should only be used in cases where the turn-around time for the ARUP volatiles test (VOLAS) is not adequate and/or when the Poison Control Center advises the clinicians to order it. It should not be used routinely.

Stability (from collection to initiation):

After separation from cells: Refrigerated 2 weeks; Frozen 1 month (adopted from ARUP laboratories)

PROCESSING

Test Code:

MOLT

Test Group:

Drug Screen

Sendout:

Yes (direct from ordering site)

Performing Lab:

Santa Clara Valley Medical Center

Specimen Preparation:

Keep capped, and store refrigerated until ready to be shipped by courier to Santa Clara Valley Medical Center

Minimum Volume:

1 mL of serum, plasma, and whole blood (red top, dark green top or gray top)

Stability (from collection to initiation):

After separation from cells: Refrigerated 2 weeks; Frozen 1 month (adopted from ARUP laboratories)

RESULT INTERPRETATION

Units:

mg/dL

Reference Interval:

Ethanol: < 20 mg/dL
Methanol: < 10 mg/dL
Acetone: < 5 mg/dL
Isopropanol: < 10 mg/dL

Additional Information:

This test detects methanol, acetone, isopropanol and ethanol.
This test should only be used in cases where the turn-around time for the ARUP volatiles test (VOLAS) is not adequate and/or when the Poison Control Center advises the clinicians to order it. It should not be used routinely.

If a sample for this test has to be sent out, please follow the procedure below:

1. Once you receive the sample, print the SCVMC requisition that can be found at the link below and complete the top section with the patient information and the contact information. Complete the bottom part of the form including adding the accession number of each sample.

2. If the clinicians have not placed an order for this test, add a “MOLT" on to the accession numbers of each of the samples that will be sent. In the description, please write “SCVMC volatiles screen."

3. Package the samples up in a box and attach the address label that can be found at the link below.

6. Call an AmTran courier to have the samples picked up and taken to SCVMC directly from processing at Mission Bay or Parnassus.

AmTran: 877-243-8733

The results will be called or emailed to the contact information given on the requisition form. The report will be faxed to the sendout department and will be scanned into ApeX (Monday through Friday only, not on holidays or weekends). If there are any questions, the SCVMC processing department can be called at 408-885-6585.

SCVMC requisition form

SCVMC address label

ADMINISTRATIVE

CPT Codes:
80320

COMPLETE VIEW

Approval Required:
Yes

Available Stat:
No

Test Code:
MOLT

Test Group:
Drug Screen

Performing Lab:
Santa Clara Valley Medical Center

Sendout:
Yes (direct from ordering site)

Methodology:
Head space GC-MS

Remarks:
Keep sample capped.

This test detects methanol, acetone, isopropanol and ethanol.
This test should only be used in cases where the turn-around time for the ARUP volatiles test (VOLAS) is not adequate and/or when the Poison Control Center advises the clinicians to order it. It should not be used routinely.

Collect:
Red top, dark green top, or gray top

Amount to Collect:
2 mL of serum, plasma, and whole blood (red top, dark green top or gray top)

Sample Type:
Serum, Plasma, and Whole Blood (red top, dark green top or gray top)

Minimum Volume:
1 mL of serum, plasma, and whole blood (red top, dark green top or gray top)

Specimen Preparation:
Keep capped, and store refrigerated until ready to be shipped by courier to Santa Clara Valley Medical Center

Units:
mg/dL

Reference Interval:
Ethanol: < 20 mg/dL
Methanol: < 10 mg/dL
Acetone: < 5 mg/dL
Isopropanol: < 10 mg/dL

Synonyms:

- Acetone
- Ethanol
- Methanol
- Isopropanol
- Alcohol
- EtOH
- MeOH
- Volatiles

Stability (from collection to initiation):
After separation from cells: Refrigerated 2 weeks; Frozen 1 month (adopted from ARUP laboratories)

Reported:
1-2 days with prior approval.

Additional Information:

This test detects methanol, acetone, isopropanol and ethanol.
This test should only be used in cases where the turn-around time for the ARUP volatiles test (VOLAS) is not adequate and/or when the Poison Control Center advises the clinicians to order it. It should not be used routinely.

If a sample for this test has to be sent out, please follow the procedure below:

1. Once you receive the sample, print the SCVMC requisition that can be found at the link below and complete the top section with the patient information and the contact information. Complete the bottom part of the form including adding the accession number of each sample.

2. If the clinicians have not placed an order for this test, add a “MOLT" on to the accession numbers of each of the samples that will be sent. In the description, please write “SCVMC volatiles screen."

3. Package the samples up in a box and attach the address label that can be found at the link below.

6. Call an AmTran courier to have the samples picked up and taken to SCVMC directly from processing at Mission Bay or Parnassus.

AmTran: 877-243-8733

The results will be called or emailed to the contact information given on the requisition form. The report will be faxed to the sendout department and will be scanned into ApeX (Monday through Friday only, not on holidays or weekends). If there are any questions, the SCVMC processing department can be called at 408-885-6585.

SCVMC requisition form

SCVMC address label

CPT Codes:

80320

Supplemental Test Request Form Required:

Yes

Second Trimester Screen

STS

ORDERING

Available Stat:
No

Performing Lab:
Western Clinical Laboratories, Inc.

Reported:
10 days from time of receipt at Western Clinical laboratories

Additional Information:
For questions, call the California Prenatal Screening Program at (866) 718-7915 Toll Free.

Synonyms:

- Triple screen
- Obstetrical screen
- Down's syndrome screen
- Neural tube defect screen
- Alpha-fetoprotein
- alpha-fetoglobulin
- AFP3
- E3
- Expanded AFP screening
- Maternal serum screen
- MSS3
- Maternal tests
- Prenatal screening

Supplemental Test Request Form Required:
Yes

COLLECTION

Patient Preparation:
Have the patient read the Program booklet and sign the consent form. The consent is to remain with the clinic.

Sample Type:
Serum is used for testing but the entire unopened tube must be sent.

Collect:
Special SST supplied in Prenatal Screening test kit.

Amount to Collect:
3.5 mL blood

Preferred Volume:
3.5 mL blood (1.5 mL serum)

Minimum Volume:
3.5 mL blood (1.5 mL serum)

Remarks:

Prior to collection:
Send the remainder of the Program form with the patient to have the sample collected between 15 weeks to 20 weeks of pregnancy (Second Trimester). Include a completed Routine Laboratory requisition listing 'Second Trimester Screen' in the lower right corner of the form.

To allow correct billing, provide Medi-Cal information, if applicable. Otherwise, enclose a copy of insurance card.

At the time of collection: Complete Part B (green) at the bottom of form.

Draw the patient's blood using the 3.5 mL serum separator tube supplied in the program kit.

Apply the white collection label from the top of this page to the tube with the patient's name and collection date.

Rejection Criteria:

1. No information on tube or in package containing the tube
2. Specimen arrives with no test request form (TRF)
3. Tube arrives damaged or broken
4. Quantity of serum is insufficient for analysis
5. Specimen arrives hemolyzed
6. Specimen arrives over 30 days (1st trimester) or 10 days (2nd trimester) after blood collection date (1st trimester)
7. EDTA contamination in tube
8. 1st trimester specimen is not properly centrifuged
- Let whole blood stand 1/h hr to 1 hr before centrifuging to aid clot formation.
- Centrifuge at 1000 x g for minimum of 10 minutes.
9. TRF number on TRF does not match TRF number on tube
10. Patient last name on tube does not match spelling of patient last name on TRF
11. Patient last name or TRF number is absent from either tube or TRF
12. Different middle initials on tube vs TRF

PROCESSING

Test Code:

STS

Test Group:

Prenatal screening

Sendout:

Yes

Performing Lab:

Western Clinical Laboratories, Inc.

Specimen Preparation:

Let whole blood stand for 1/2 hour to 1 hour after time of collection before centrifuging to aid clot formation. Centrifuge tube and place the centrifuged tube in the blue plastic tray. Place plastic tray in the absorbent pouch. Seal the pouch.

Place the white copy of the completed form, the insurance information in the red mailing box.

Remove the Business Reply label from the top of the form and place it on the red box, mail the same day, if possible.

If specimen is sent by courier, follow the courier's instructions for packaging.

Preferred Volume:

3.5 mL blood (1.5 mL serum)

Minimum Volume:

3.5 mL blood (1.5 mL serum)

Rejection Criteria:

1. No information on tube or in package containing the tube
2. Specimen arrives with no test request form (TRF)
3. Tube arrives damaged or broken
4. Quantity of serum is insufficient for analysis
5. Specimen arrives hemolyzed
6. Specimen arrives over 30 days (1st trimester) or 10 days (2nd trimester) after blood collection date (1st trimester)
7. EDTA contamination in tube
8. 1st trimester specimen is not properly centrifuged
- Let whole blood stand 1/h hr to 1 hr before centrifuging to aid clot formation.
- Centrifuge at 1000 x g for minimum of 10 minutes.
9. TRF number on TRF does not match TRF number on tube
10. Patient last name on tube does not match spelling of patient last name on TRF
11. Patient last name or TRF number is absent from either tube or TRF
12. Different middle initials on tube vs TRF

RESULT INTERPRETATION

Additional Information:

For questions, call the California Prenatal Screening Program at (866) 718-7915 Toll Free.

ADMINISTRATIVE

CPT Codes:

The Prenatal Screening Billing Code is assigned by the Program upon request.

COMPLETE VIEW

Available Stat:

No

Test Code:
STS

Test Group:
Prenatal screening

Performing Lab:
Western Clinical Laboratories, Inc.

Sendout:
Yes

Patient Preparation:
Have the patient read the Program booklet and sign the consent form. The consent is to remain with the clinic.

Remarks:

Prior to collection:
Send the remainder of the Program form with the patient to have the sample collected between 15 weeks to 20 weeks of pregnancy (Second Trimester). Include a completed Routine Laboratory requisition listing 'Second Trimester Screen' in the lower right corner of the form.

To allow correct billing, provide Medi-Cal information, if applicable. Otherwise, enclose a copy of insurance card.

At the time of collection: Complete Part B (green) at the bottom of form.

Draw the patient's blood using the 3.5 mL serum separator tube supplied in the program kit.

Apply the white collection label from the top of this page to the tube with the patient's name and collection date.

Collect:
Special SST supplied in Prenatal Screening test kit.

Amount to Collect:
3.5 mL blood

Sample Type:
Serum is used for testing but the entire unopened tube must be sent.

Preferred Volume:
3.5 mL blood (1.5 mL serum)

Minimum Volume:
3.5 mL blood (1.5 mL serum)

Rejection Criteria:
1. No information on tube or in package containing the tube
2. Specimen arrives with no test request form (TRF)
3. Tube arrives damaged or broken
4. Quantity of serum is insufficient for analysis
5. Specimen arrives hemolyzed
6. Specimen arrives over 30 days (1st trimester) or 10 days (2nd trimester) after blood collection date (1st trimester)
7. EDTA contamination in tube
8. 1st trimester specimen is not properly centrifuged
- Let whole blood stand 1/h hr to 1 hr before centrifuging to aid clot formation.
- Centrifuge at 1000 x g for minimum of 10 minutes.
9. TRF number on TRF does not match TRF number on tube
10. Patient last name on tube does not match spelling of patient last name on TRF
11. Patient last name or TRF number is absent from either tube or TRF
12. Different middle initials on tube vs TRF

Specimen Preparation:
Let whole blood stand for 1/2 hour to 1 hour after time of collection before centrifuging to aid clot formation. Centrifuge tube and place the centrifuged tube in the blue plastic tray. Place plastic tray in the absorbent pouch. Seal the pouch.

Place the white copy of the completed form, the insurance information in the red mailing box.

Remove the Business Reply label from the top of the form and place it on the red box, mail the same day, if possible.

If specimen is sent by courier, follow the courier's instructions for packaging.

Synonyms:

- Triple screen
- Obstetrical screen
- Down's syndrome screen
- Neural tube defect screen
- Alpha-fetoprotein
- alpha-fetoglobulin
- AFP3
- E3
- Expanded AFP screening
- Maternal serum screen
- MSS3
- Maternal tests
- Prenatal screening

Reported:
10 days from time of receipt at Western Clinical laboratories

Additional Information:
For questions, call the California Prenatal Screening Program at (866) 718-7915 Toll Free.

CPT Codes:
The Prenatal Screening Billing Code is assigned by the Program upon request.

Supplemental Test Request Form Required:
Yes

Sedimentation Rate

ESR

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Parnassus and Mount Zion: Westergren
Mission Bay: Roller 20PN

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
The erythrocyte sedimentation rate increases with age; the upper limit is not clearly defined for patients > 60 years old.

Synonyms:

- Sed rate
- ESR
- Erythrocyte sedimentation rate

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top

Amount to Collect:
2 mL blood

Preferred Volume:
2 mL blood

Stability (from collection to initiation):
Parnassus and Mount Zion: Sample stable for 12 hours at 4 C, for only 5 hours at room temperature.
Mission Bay: Sample stable for 24 hours at 4 C, for only 5 hours at room temperature.

Unacceptable Conditions:
Parnassus and Mount Zion: > 5 hrs at room temperature, >12 hrs at 4 C
Mission Bay: > 5 hrs at room temperature, >24 hrs at 4 C

PROCESSING

Test Code:
ESR

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology

Preferred Volume:
2 mL blood

Unacceptable Conditions:
Parnassus and Mount Zion: > 5 hrs at room temperature, >12 hrs at 4 C
Mission Bay: > 5 hrs at room temperature, >24 hrs at 4 C

Stability (from collection to initiation):
Parnassus and Mount Zion: Sample stable for 12 hours at 4 C, for only 5 hours at room temperature.
Mission Bay: Sample stable for 24 hours at 4 C, for only 5 hours at room temperature.

RESULT INTERPRETATION

Units:
mm/h

Reference Interval:

Parnassus and Mt Zion:

Male	0-10 mm/h
Female	0-15 mm/h

Mission Bay:

Age (yrs)	Male	Female
0-14	2-34 mm/h	2-34 mm/h
15-50	2-28 mm/h	2-37 mm/h
51-70	2-37 mm/h	2-39 mm/h
> 70	3-46 mm/h	3-46 mm/h

Additional Information:

The erythrocyte sedimentation rate increases with age; the upper limit is not clearly defined for patients > 60 years old.

ADMINISTRATIVE

CPT Codes:

85651

LOINC Codes:

4537-7

COMPLETE VIEW

Available Stat:

Yes

Test Code:

ESR

Performing Lab:

Parnassus, Mission Bay & Mt. Zion Hematology

Performed:

Test available 24 hours per day 7 days per week

Methodology:

Parnassus and Mount Zion: Westergren
Mission Bay: Roller 20PN

Collect:

Lavender top

Amount to Collect:

2 mL blood

Sample Type:

EDTA whole blood

Preferred Volume:

2 mL blood

Unacceptable Conditions:

Parnassus and Mount Zion: > 5 hrs at room temperature, >12 hrs at 4 C
Mission Bay: > 5 hrs at room temperature, >24 hrs at 4 C

Units:

mm/h

Reference Interval:

Parnassus and Mt Zion:

Male	0-10 mm/h
Female	0-15 mm/h

Mission Bay:

Age (yrs)	Male	Female
0-14	2-34 mm/h	2-34 mm/h
15-50	2-28 mm/h	2-37 mm/h
51-70	2-37 mm/h	2-39 mm/h
> 70	3-46 mm/h	3-46 mm/h

Synonyms:

- Sed rate
- ESR
- Erythrocyte sedimentation rate

Stability (from collection to initiation):

Parnassus and Mount Zion: Sample stable for 12 hours at 4 C, for only 5 hours at room temperature.
Mission Bay: Sample stable for 24 hours at 4 C, for only 5 hours at room temperature.

Reported:

STAT 1 hour, Routine 4 hours

Additional Information:

The erythrocyte sedimentation rate increases with age; the upper limit is not clearly defined for patients > 60 years old.

CPT Codes:

85651

LOINC Codes:

4537-7

Selenium, serum/plasma

SE

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Atomic Absorption Spectroscopy

Reported:
Test performed Tuesday and Friday. Turnaround time: 2-4 days.

Additional Information:
To convert µg/L to µmol/L (SI units) multiply by 0.0127.

Selenium is an essential trace element, and is commonly used in industry such as semiconductors, ceramics, glass, and rubber. It is important to monitor its level for health and for avoiding selenosis, especially when it is used as an element of parenteral nutrition. Concentrations are also monitored in children with propionic acidemia who require special diets with supplements.

COLLECTION

Patient Preparation:
Patient should refrain from taking vitamins or mineral supplements at least three days prior to specimen collection.

Sample Type:
Serum or plasma

Collect:
Navy blue top without gel (EDTA or plain)

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL serum or plasma

Minimum Volume:
0.7 mL serum or plasma

Remarks:
Be sure to gently mix the specimen promptly after phlebotomy.

Stability (from collection to initiation):
Room temperature: 8 hours
Refrigerated: 14 days
Frozen: 1 month

Rejection Criteria:
Hemolyzed specimen

PROCESSING

Test Code:
SE

Test Group:
Selenium

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Centrifuge the Navy Blue-EDTA tube within 1 hour of collection and pour off the plasma into a plastic trace element shipping container supplied by reference laboratory. Freeze plasma at -20C. Ship frozen. Order Quest # 5507

Preferred Volume:
2 mL serum or plasma

Minimum Volume:
0.7 mL serum or plasma

Rejection Criteria:
Hemolyzed specimen

Stability (from collection to initiation):
Room temperature: 8 hours
Refrigerated: 14 days
Frozen: 1 month

RESULT INTERPRETATION

Units:
µg/L (mcg/L)

Reference Interval:

< 2 years	16-71 µg/L
2-3 years	40-103 µg/L
4-16 years	55-134 µg/L
> 16 years	63-160 µg/L

Additional Information:
To convert µg/L to µmol/L (SI units) multiply by 0.0127.

Selenium is an essential trace element, and is commonly used in industry such as semiconductors, ceramics, glass, and rubber. It is important to monitor its level for health and for avoiding selenosis, especially when it is used as an element of parenteral nutrition. Concentrations are also monitored in children with propionic acidemia who require special diets with supplements.

ADMINISTRATIVE

CPT Codes:
84255-90

LOINC Codes:
5724-0

COMPLETE VIEW

Available Stat:
No

Test Code:
SE

Test Group:
Selenium

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Atomic Absorption Spectroscopy

Patient Preparation:
Patient should refrain from taking vitamins or mineral supplements at least three days prior to specimen collection.

Remarks:
Be sure to gently mix the specimen promptly after phlebotomy.

Collect:
Navy blue top without gel (EDTA or plain)

Amount to Collect:
4 mL blood

Sample Type:
Serum or plasma

Preferred Volume:
2 mL serum or plasma

Minimum Volume:
0.7 mL serum or plasma

Rejection Criteria:
Hemolyzed specimen

Specimen Preparation:
Centrifuge the Navy Blue-EDTA tube within 1 hour of collection and pour off the plasma into a plastic trace element shipping container supplied by reference laboratory. Freeze plasma at -20C. Ship frozen. Order Quest # 5507

Units:
µg/L (mcg/L)

Reference Interval:

< 2 years	16-71 µg/L
2-3 years	40-103 µg/L
4-16 years	55-134 µg/L
> 16 years	63-160 µg/L

Stability (from collection to initiation):
Room temperature: 8 hours
Refrigerated: 14 days
Frozen: 1 month

Reported:
Test performed Tuesday and Friday. Turnaround time: 2-4 days.

Additional Information:
To convert µg/L to µmol/L (SI units) multiply by 0.0127.

Selenium is an essential trace element, and is commonly used in industry such as semiconductors, ceramics, glass, and rubber. It is important to monitor its level for health and for avoiding selenosis, especially when it is used as an element of parenteral nutrition. Concentrations are also monitored in children with propionic acidemia who require special diets with supplements.

CPT Codes:
84255-90

LOINC Codes:
5724-0

Selenium, urine

SELRU

ORDERING

Available Stat:
No

Performing Lab:
National Medical Services via Quest

Methodology:
Graphite furnace atomic absorption spectrophotometry (GFAAS)

Reported:
Performed at NMS Tuesday & Saturday. Turnaround 7-14 days

Additional Information:
Concentrations are diet dependent.

Creatinine is also run and reported on the sample

Synonyms:

- Se

COLLECTION

Sample Type:
Random urine

Collect:
Acid washed (trace metal free) container or urine cup

Amount to Collect:
15 mL urine

Preferred Volume:
5 mL urine

Minimum Volume:
3 mL urine

Remarks:
Clean catch uirne

Stability (from collection to initiation):
Room temperature 2 weeks, refrigerated 2 weeks.

Rejection Criteria:
Frozen sample received

PROCESSING

Test Code:
SELRU

Test Group:
Selenium

Sendout:
Yes

Performing Lab:
National Medical Services via Quest

Specimen Preparation:
Aliquot urine in acid washed (trace metal free) container and refrigerate. DO NOT freeze.

Ship sample refrigerated to Quest, order test # 8829X. If patient is B/T, order LabCorp test # 071613.

Preferred Volume:
5 mL urine

Minimum Volume:
3 mL urine

Rejection Criteria:
Frozen sample received

Stability (from collection to initiation):
Room temperature 2 weeks, refrigerated 2 weeks.

RESULT INTERPRETATION

Units:
µg/L (µg/g Creratinine)

Reference Interval:
Selenium: <= 200 µg/L
Corrected for Creatinine: < 25 µg/g Creatinine

Additional Information:
Concentrations are diet dependent.

Creatinine is also run and reported on the sample

ADMINISTRATIVE

CPT Codes:
84255-90, 82570-90

LOINC Codes:
5726-5

COMPLETE VIEW

Available Stat:
No

Test Code:
SELRU

Test Group:
Selenium

Performing Lab:
National Medical Services via Quest

Sendout:
Yes

Methodology:
Graphite furnace atomic absorption spectrophotometry (GFAAS)

Remarks:
Clean catch uirne

Collect:
Acid washed (trace metal free) container or urine cup

Amount to Collect:
15 mL urine

Sample Type:
Random urine

Preferred Volume:
5 mL urine

Minimum Volume:
3 mL urine

Rejection Criteria:
Frozen sample received

Specimen Preparation:
Aliquot urine in acid washed (trace metal free) container and refrigerate. DO NOT freeze.

Ship sample refrigerated to Quest, order test # 8829X. If patient is B/T, order LabCorp test # 071613.

Units:
µg/L (µg/g Creratinine)

Reference Interval:
Selenium: <= 200 µg/L
Corrected for Creatinine: < 25 µg/g Creatinine

Synonyms:

- Se

Stability (from collection to initiation):
Room temperature 2 weeks, refrigerated 2 weeks.

Reported:
Performed at NMS Tuesday & Saturday. Turnaround 7-14 days

Additional Information:

Concentrations are diet dependent.

Creatinine is also run and reported on the sample

CPT Codes:

84255-90, 82570-90

LOINC Codes:

5726-5

Semen Analysis

SEMN

ORDERING

Available Stat:

No

Performing Lab:

This testing is no longer offered through the UCSF Clinical Laboratories. If testing is desired, please contact the UCSF Reproductive Clinic at (415) 353-7475 (option 1).

PROCESSING

Performing Lab:

This testing is no longer offered through the UCSF Clinical Laboratories. If testing is desired, please contact the UCSF Reproductive Clinic at (415) 353-7475 (option 1).

COMPLETE VIEW

Available Stat:

No

Performing Lab:

This testing is no longer offered through the UCSF Clinical Laboratories. If testing is desired, please contact the UCSF Reproductive Clinic at (415) 353-7475 (option 1).

Sendout Kit

SOKIT

ORDERING

Ordering Recommendations:

This order should be used for all of the following send out tests that utilize vendor specific collection kits (NOTE: The collection kits are NOT stocked by the UCSF Clinical Labs and must be provided by the ordering clinic):

Myriad - Prenatal Screen, Cell-free DNA (CFFD)
NavDx - Blood Test for Oropharyngeal Cancer
Natera - Signatera MRD
4Kscore
Guardant
FoundationOne CDX

Available Stat:

No

Performing Lab:

Depending on which test is being collected: Myriad, NavDx, Natera, 4Kscore, Guardant, FoundationOne

Performed:

See vendor website/kit literature.

Methodology:

See vendor website/kit literature.

Reported:

See vendor website/kit literature.

COLLECTION

Sample Type:

See vendor website/kit literature.

Collect:

See vendor website/kit literature.

Amount to Collect:

See vendor website/kit literature.

Remarks:

Vendor specific collection kit is required for this testing. Kit it to be brought by the patient from the ordering clinic.

Stability (from collection to initiation):

See vendor website/kit literature.

Storage/Transport Temperature:

See vendor website/kit literature.

Unacceptable Conditions:

See vendor website/kit literature.

PROCESSING

Test Code:

SOKIT

Sendout:

Yes

Performing Lab:

Depending on which test is being collected: Myriad, NavDx, Natera, 4Kscore, Guardant, FoundationOne

Specimen Preparation:

See vendor website/kit literature.

Unacceptable Conditions:

See vendor website/kit literature.

Stability (from collection to initiation):

See vendor website/kit literature.

Storage/Transport Temperature:

See vendor website/kit literature.

RESULT INTERPRETATION

Reference Interval:

See vendor website/kit literature.

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
This order should be used for all of the following send out tests that utilize vendor specific collection kits (NOTE: The collection kits are NOT stocked by the UCSF Clinical Labs and must be provided by the ordering clinic):

Myriad - Prenatal Screen, Cell-free DNA (CFFD)
NavDx - Blood Test for Oropharyngeal Cancer
Natera - Signatera MRD
4Kscore
Guardant
FoundationOne CDX

Test Code:
SOKIT

Performing Lab:
Depending on which test is being collected: Myriad, NavDx, Natera, 4Kscore, Guardant, FoundationOne

Sendout:
Yes

Performed:
See vendor website/kit literature.

Methodology:
See vendor website/kit literature.

Remarks:
Vendor specific collection kit is required for this testing. Kit it to be brought by the patient from the ordering clinic.

Collect:
See vendor website/kit literature.

Amount to Collect:
See vendor website/kit literature.

Sample Type:
See vendor website/kit literature.

Unacceptable Conditions:
See vendor website/kit literature.

Specimen Preparation:
See vendor website/kit literature.

Reference Interval:
See vendor website/kit literature.

Storage/Transport Temperature:
See vendor website/kit literature.

Stability (from collection to initiation):
See vendor website/kit literature.

Reported:
See vendor website/kit literature.

Serotonin

SERO

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
LC/MS/MS

Reported:
Test run Monday-Saturday. Turnaround time: 3-5 days.

COLLECTION

Patient Preparation:
Patient should avoid food high in indoles: avocado, banana, tomato, plum, walnut, pineapple, and eggplant. Patient should also avoid tobacco, tea and coffee three days prior to specimen collection.

Sample Type:
Blood

Collect:
QUEST-PROVIDED KIT

Amount to Collect:
4 mL blood

Preferred Volume:
4 mL blood

Minimum Volume:
1 mL blood

Remarks:
Proper specimen collection, storage and shipment are critical for serotonin whole blood analysis. Strict adherence to the following specimen collection instructions will ensure the most meaningful results.

1. Draw blood into the EDTA 7.2-mg Vacutainer® tube.
2. After drawing the blood, mix well and immediately transfer all blood to the enclosed container, which contains 35 mg of ascorbic acid.
3. Mix well and freeze immediately.
4. Ship frozen. Expiration date for ascorbic acid container is the same as the EDTA tube provided in the kit.

Stability (from collection to initiation):
Frozen: 30 days

Storage/Transport Temperature:
Frozen

Unacceptable Conditions:
Received room temperature • Received refrigerated • EDTA (lavender-top) collection without ascorbic acid

PROCESSING

Test Code:
SERO

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Proper specimen collection, storage and shipment are critical for serotonin whole blood analysis. Strict adherence to the following specimen collection instructions will ensure the most meaningful results.

1. Draw blood into the EDTA 7.2-mg Vacutainer® tube.
2. After drawing the blood, mix well and immediately transfer all blood to the enclosed container, which contains 35 mg of ascorbic acid.
3. Mix well and freeze immediately.
4. Ship frozen. Expiration date for ascorbic acid container is the same as the EDTA tube provided in the kit.

Preferred Volume:
4 mL blood

Minimum Volume:
1 mL blood

Unacceptable Conditions:
Received room temperature • Received refrigerated • EDTA (lavender-top) collection without ascorbic acid

Stability (from collection to initiation):
Frozen: 30 days

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Units:
ng/mL

Reference Interval:
56-244 ng/mL

ADMINISTRATIVE

CPT Codes:
84260

LOINC Codes:
2939-7

COMPLETE VIEW

Available Stat:
No

Test Code:
SERO

Performing Lab:
Quest

Sendout:
Yes

Methodology:
LC/MS/MS

Patient Preparation:
Patient should avoid food high in indoles: avocado, banana, tomato, plum, walnut, pineapple, and eggplant. Patient should also avoid tobacco, tea and coffee three days prior to specimen collection.

Remarks:
Proper specimen collection, storage and shipment are critical for serotonin whole blood analysis. Strict adherence to the following specimen collection instructions will ensure the most meaningful results.

1. Draw blood into the EDTA 7.2-mg Vacutainer® tube.
2. After drawing the blood, mix well and immediately transfer all blood to the enclosed container, which contains 35 mg of ascorbic acid.
3. Mix well and freeze immediately.
4. Ship frozen. Expiration date for ascorbic acid container is the same as the EDTA tube provided in the kit.

Collect:
QUEST-PROVIDED KIT

Amount to Collect:
4 mL blood

Sample Type:
Blood

Preferred Volume:
4 mL blood

Minimum Volume:
1 mL blood

Unacceptable Conditions:
Received room temperature • Received refrigerated • EDTA (lavender-top) collection without ascorbic acid

Specimen Preparation:

Proper specimen collection, storage and shipment are critical for serotonin whole blood analysis. Strict adherence to the following specimen collection instructions will ensure the most meaningful results.

1. Draw blood into the EDTA 7.2-mg Vacutainer® tube.
2. After drawing the blood, mix well and immediately transfer all blood to the enclosed container, which contains 35 mg of ascorbic acid.
3. Mix well and freeze immediately.
4. Ship frozen. Expiration date for ascorbic acid container is the same as the EDTA tube provided in the kit.

Units:

ng/mL

Reference Interval:

56-244 ng/mL

Storage/Transport Temperature:

Frozen

Stability (from collection to initiation):

Frozen: 30 days

Reported:

Test run Monday-Saturday. Turnaround time: 3-5 days.

CPT Codes:

84260

LOINC Codes:

2939-7

Serum Preparation & Storage

HTSPS (Sunquest: ILSPS)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Synonyms:

- Serum for Waitlist, Save Transplant Serum

COLLECTION

Sample Type:
Serum

Collect:
Red top x 2

Amount to Collect:
12 mL blood

Preferred Volume:
6 mL serum

Minimum Volume:
2 mL serum

Remarks:
Fill Red top tube completely. If being collected with other antibody and or crossmatch testing, collect 2 tubes.

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to72 hours

Unacceptable Conditions:
Hemolyzed sample

PROCESSING

Test Code:
HTSPS (Sunquest: ILSPS)

Test Group:
HLA Sample

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Preferred Volume:
6 mL serum

Minimum Volume:
2 mL serum

Unacceptable Conditions:
Hemolyzed sample

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to72 hours

ADMINISTRATIVE

CPT Codes:
N/A

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTSPS (Sunquest: ILSPS)

Test Group:
HLA Sample

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Remarks:
Fill Red top tube completely. If being collected with other antibody and or crossmatch testing, collect 2 tubes.

Collect:
Red top x 2

Amount to Collect:
12 mL blood

Sample Type:
Serum

Preferred Volume:
6 mL serum

Minimum Volume:
2 mL serum

Unacceptable Conditions:
Hemolyzed sample

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Synonyms:

- Serum for Waitlist, Save Transplant Serum

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to72 hours

CPT Codes:
N/A

Severe Acute Respiratory Syndrome

P319

ORDERING

Available Stat:
No

Performing Lab:
State Viral & Rickettsial Disease Laboratory

Additional Information:
Laboratory testing is performed at the State of California DHS Viral and Rickettsial Disease Laboratory, and at the Centers for Disease Control, on hospitalized patients with unexplained pneumonia AND, for SARS, with travel to Guangdong Province, China.

Testing is performed for a broad range of pathogens, including Coronavirus, other respiratory viruses, human metapneumovirus, Mycoplasma, and Chlamydia.

Specimens should be kept refrigerated until delivered to the Microbiology laboratory.

Synonyms:

- SARS

COLLECTION

Sample Type:
Nasopharyngeal swab or wash, Serum, Stool or rectal swab, BAL, trachael aspirate, pleural fluid.

Collect:
Swabs in viral transport media, Gold top, stool in urine cup, fluid in Red top or other sterile container.

Amount to Collect:
Blood: 10 mL
Stool: 50 mL

Preferred Volume:
5 mL serum **AND** 50 mL stool

Minimum Volume:
2.5 mL serum **AND** 10 mL stool

Remarks:
Before submitting specimens for SARS testing, clinicians who suspect cases of SARS are requested to report such cases to UCSF Infection Control at 476-5793 and San Francisco Communicable Disease Control Unit at (415)554-2830.

Contact UCSF Microbiology Laboratory (3-1268) to obtain the Unexplained Pneumonia Screening form for specimen submission, and to facilitate transport of specimens to San Francisco DPH Laboratory.

Both upper respiratory (nasopharyngeal swab or wash) and blood are required samples. Stool and lower respiratory samples may also be submitted but are not required.

PROCESSING

Test Code:
P319

Sendout:
Yes

Performing Lab:
State Viral & Rickettsial Disease Laboratory

Specimen Preparation:
Refrigerate sample

Preferred Volume:
5 mL serum **AND** 50 mL stool

Minimum Volume:
2.5 mL serum **AND** 10 mL stool

RESULT INTERPRETATION

Additional Information:

Laboratory testing is performed at the State of California DHS Viral and Rickettsial Disease Laboratory, and at the Centers for Disease Control, on hospitalized patients with unexplained pneumonia AND, for SARS, with travel to Guangdong Province, China.

Testing is performed for a broad range of pathogens, including Coronavirus, other respiratory viruses, human metapneumovirus, Mycoplasma, and Chlamydia.

Specimens should be kept refrigerated until delivered to the Microbiology laboratory.

ADMINISTRATIVE

LOINC Codes:

29257-3

COMPLETE VIEW

Available Stat:

No

Test Code:

P319

Performing Lab:

State Viral & Rickettsial Disease Laboratory

Sendout:

Yes

Remarks:

Before submitting specimens for SARS testing, clinicians who suspect cases of SARS are requested to report such cases to UCSF Infection Control at 476-5793 and San Francisco Communicable Disease Control Unit at (415)554-2830.

Contact UCSF Microbiology Laboratory (3-1268) to obtain the Unexplained Pneumonia Screening form for specimen submission, and to facilitate transport of specimens to San Francisco DPH Laboratory.

Both upper respiratory (nasopharyngeal swab or wash) and blood are required samples. Stool and lower respiratory samples may also be submitted but are not required.

Collect:

Swabs in viral transport media, Gold top, stool in urine cup, fluid in Red top or other sterile container.

Amount to Collect:

Blood: 10 mL
Stool: 50 mL

Sample Type:

Nasopharyngeal swab or wash, Serum, Stool or rectal swab, BAL, trachael aspirate, pleural fluid.

Preferred Volume:

5 mL serum **AND** 50 mL stool

Minimum Volume:

2.5 mL serum **AND** 10 mL stool

Specimen Preparation:

Refrigerate sample

Synonyms:

- SARS

Additional Information:

Laboratory testing is performed at the State of California DHS Viral and Rickettsial Disease Laboratory, and at the Centers for Disease Control, on hospitalized patients with unexplained pneumonia AND, for SARS, with travel to Guangdong Province, China.

Testing is performed for a broad range of pathogens, including Coronavirus, other respiratory viruses, human metapneumovirus, Mycoplasma, and Chlamydia.

Specimens should be kept refrigerated until delivered to the Microbiology laboratory.

LOINC Codes:

29257-3

Sex Hormone Binding Globulin

SHBG

ORDERING

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative Electrochemiluminescent Immunoassay

Reported:
Within 24 hours

Synonyms:

- SBP
- Sex Steroid Binding Protein
- SHBG
- TeBG
- Testosterone-Estradiol Binding Globulin
- Testosterone-Estradiol Binding Globulin (TeBG)
- Testosterone-Estrogen Binding Globulin

COLLECTION

Sample Type:
Serum (gold top) or plasma (green top)

Collect:
Serum separator tube. Also acceptable: Green (lithium heparin).

Amount to Collect:
1 ml blood

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.4 mL serum or plasma

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 1 week; Frozen: 6 months

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Specimens collected in lavender (EDTA) or pink (K_2EDTA). Grossly hemolyzed specimens.

PROCESSING

Test Code:
SHBG

ARUP Test Code:
0099375

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Allow specimen to clot completely at room temperature. Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 0.5 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.4 mL)

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.4 mL serum or plasma

Unacceptable Conditions:
Specimens collected in lavender (EDTA) or pink (K_2EDTA). Grossly hemolyzed specimens.

Stability (from collection to initiation):
After separation from cells: Ambient: 48 hours; Refrigerated: 1 week; Frozen: 6 months

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Units:
nmol/L

Reference Interval:

Age	Male	Female
1-30 days	13-85 nmol/L	14-60 nmol/L
31-364 days	70-250 nmol/L	60-215 nmol/L
1-3 years	50-180 nmol/L	60-190 nmol/L
4-6 years	45-175 nmol/L	55-170 nmol/L
7-9 years	28-190 nmol/L	35-170 nmol/L
10-12 years	23-160 nmol/L	17-155 nmol/L
13-15 years	13-140 nmol/L	11-120 nmol/L
16-17 years	10-60 nmol/L	19-145 nmol/L
18-49 years	17-56 nmol/L	25-122 nmol/L
50 years and older	19-76 nmol/L	17-125 nmol/L
Tanner Stage I	26-186 nmol/L	30-173 nmol/L
Tanner Stage II	22-169 nmol/L	16-127 nmol/L
Tanner Stage III	13-104 nmol/L	12-98 nmol/L
Tanner Stage IV	11-60 nmol/L	14-151 nmol/L
Tanner Stage V	11-71 nmol/L	23-165 nmol/L

ADMINISTRATIVE

CPT Codes:
84270

LOINC:

- 13967-5

COMPLETE VIEW

Available Stat:
No

Test Code:
SHBG

ARUP Test Code:
0099375

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative Electrochemiluminescent Immunoassay

Collect:
Serum separator tube. Also acceptable: Green (lithium heparin).

Amount to Collect:
1 ml blood

Sample Type:
Serum (gold top) or plasma (green top)

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.4 mL serum or plasma

Unacceptable Conditions:
Specimens collected in lavender (EDTA) or pink (K_2EDTA). Grossly hemolyzed specimens.

Specimen Preparation:

Allow specimen to clot completely at room temperature. Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 0.5 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.4 mL)

Units:

nmol/L

Reference Interval:

Age	Male	Female
1-30 days	13-85 nmol/L	14-60 nmol/L
31-364 days	70-250 nmol/L	60-215 nmol/L
1-3 years	50-180 nmol/L	60-190 nmol/L
4-6 years	45-175 nmol/L	55-170 nmol/L
7-9 years	28-190 nmol/L	35-170 nmol/L
10-12 years	23-160 nmol/L	17-155 nmol/L
13-15 years	13-140 nmol/L	11-120 nmol/L
16-17 years	10-60 nmol/L	19-145 nmol/L
18-49 years	17-56 nmol/L	25-122 nmol/L
50 years and older	19-76 nmol/L	17-125 nmol/L
Tanner Stage I	26-186 nmol/L	30-173 nmol/L
Tanner Stage II	22-169 nmol/L	16-127 nmol/L
Tanner Stage III	13-104 nmol/L	12-98 nmol/L
Tanner Stage IV	11-60 nmol/L	14-151 nmol/L
Tanner Stage V	11-71 nmol/L	23-165 nmol/L

Synonyms:

- SBP
- Sex Steroid Binding Protein
- SHBG
- TeBG
- Testosterone-Estradiol Binding Globulin
- Testosterone-Estradiol Binding Globulin (TeBG)
- Testosterone-Estrogen Binding Globulin

Storage/Transport Temperature:

Refrigerated.

Stability (from collection to initiation):

After separation from cells: Ambient: 48 hours; Refrigerated: 1 week; Frozen: 6 months

Reported:

Within 24 hours

CPT Codes:

84270

LOINC:

- 13967-5

Sialic Acid

MOLT

ORDERING

Available Stat:
No

Performing Lab:
JMC

Reported:
Turnaround: 2-4 weeks.

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
See preferred volume

Preferred Volume:
5 mL urine

Remarks:
A detailed clinical history must accompany the test request or be sent by fax to (215) 955-9554.

PROCESSING

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Test Group:
Sialic acid

Sendout:
Yes

Performing Lab:
JMC

Specimen Preparation:
Ship by Federal Express at room temperature:

Dr. David A. Wenger, Jefferson Medical College, Jefferson Alumni Hall, Rm. 394, 1024 Locust St., Philadelphia, PA 19107, ph: (215) 955-4923, fax: 955-9554, david.wenger@mail.tju.edu

Preferred Volume:
5 mL urine

RESULT INTERPRETATION

Reference Interval:
Negative

COMPLETE VIEW

Available Stat:
No

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Test Group:
Sialic acid

Performing Lab:
JMC

Sendout:
Yes

Remarks:
A detailed clinical history must accompany the test request or be sent by fax to (215) 955-9554.

Collect:
Urine cup

Amount to Collect:
See preferred volume

Sample Type:
Random urine

Preferred Volume:
5 mL urine

Specimen Preparation:
Ship by Federal Express at room temperature:

Dr. David A. Wenger, Jefferson Medical College, Jefferson Alumni Hall, Rm. 394, 1024 Locust St., Philadelphia, PA 19107, ph: (215) 955-4923, fax: 955-9554, david.wenger@mail.tju.edu

Reference Interval:
Negative

Reported:
Turnaround: 2-4 weeks.

sIL-2RA LEVEL

SIL2RA

ORDERING

Available Stat:
No

Performing Lab:
Machaon

Methodology:
Elisa

Reported:
< 1 week

Synonyms:

- CD25
- Soluble IL-2R

COLLECTION

Sample Type:
Plasma

Collect:
EDTA lavender-top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL plasma

Stability (from collection to initiation):
Room Temp.: 3 days
Refrigerated: 3 days
Frozen (-20C): 1 month
Frozen (-80C): 6 months

Storage/Transport Temperature:
Frozen

PROCESSING

Test Code:
SIL2RA

Sendout:
Yes

Performing Lab:
Machaon

Preferred Volume:
1 mL plasma

Stability (from collection to initiation):
Room Temp.: 3 days
Refrigerated: 3 days
Frozen (-20C): 1 month
Frozen (-80C): 6 months

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Units:
pg/mL

Reference Interval:
EDTA Plasma: 214-1910 pg/mL
Serum: 325-1785 pg/mL

Interpretive Data:
This test is used to detect soluble IL-2Ralpha in human plasma or serum produced in response to increased activation of B and T cells and immune system activation. Studies show elevated levels of sIL-2Ralpha in serum with the onset of rejection episodes in allograft recipients, autoimmune diseases such as rheumatoid arthritis and systemic lupus erythematosus (SLE), hemophagocytic lymphohistiocytosis (HLH) and in the course of some leukemias and lymphomas. This test may be of diagnostic and/or prognostic value in HLH, granulomatous, autoimmune, and malignant diseases.

ADMINISTRATIVE

CPT Codes:
83520

LOINC Codes:
44422-4

COMPLETE VIEW

Available Stat:
No

Test Code:
SIL2RA

Performing Lab:
Machaon

Sendout:
Yes

Methodology:
Elisa

Collect:
EDTA lavender-top

Amount to Collect:
2 mL blood

Sample Type:
Plasma

Preferred Volume:
1 mL plasma

Units:
pg/mL

Reference Interval:
EDTA Plasma: 214-1910 pg/mL
Serum: 325-1785 pg/mL

Interpretive Data:
This test is used to detect soluble IL-2Ralpha in human plasma or serum produced in response to increased activation of B and T cells and immune system activation. Studies show elevated levels of sIL-2Ralpha in serum with the onset of rejection episodes in allograft recipients, autoimmune diseases such as rheumatoid arthritis and systemic lupus erythematosus (SLE), hemophagocytic lymphohistiocytosis (HLH) and in the course of some leukemias and lymphomas. This test may be of diagnostic and/or prognostic value in HLH, granulomatous, autoimmune, and malignant diseases.

Synonyms:

- CD25
- Soluble IL-2R

Storage/Transport Temperature:
Frozen

Stability (from collection to initiation):
Room Temp.: 3 days
Refrigerated: 3 days
Frozen (-20C): 1 month
Frozen (-80C): 6 months

Reported:
< 1 week

CPT Codes:
83520

LOINC Codes:
44422-4

Sirolimus

SIRO

ORDERING

Available Stat:
No

Performing Lab:
China Basin Chemistry

Performed:
Daily (day shift)

Methodology:
Abbott Architect Chemiluminescent Immunoassay

Reported:
For samples received by 1200 (Monday-Friday) and 1000 (weekends and holidays) the results will be available by 1600. Results for samples that miss the cut-off times will be available the following day.

Note: Samples from Berkeley Outpatient Clinic (BOPC) will be reported next day.

Additional Information:
Sirolimus is an immunosuppresant drug used to prevent organ graft rejection. Therapeutic drug monitoring is used to optimize dose.

This method yields results approximately 20% higher than the Abbott IMx immunoassay due to improved extraction and recovery of sirolimus from whole blood samples. Information regarding cross reactivity of this assay with metabolites and other drugs can be found in the link to the Lab Procedure. See the lab manual's "A Guide on Drug Level Monitoring" (in the Chemistry Guide) for additional information.

Synonyms:

- Rapamune

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top

Amount to Collect:
2 mL blood

Preferred Volume:
2 mL whole blood

Minimum Volume:
0.3 mL whole blood

Note: This volume does not allow for repeat testing if needed.

Remarks:
Time to steady state: 6-10 days

Trough samples should be collected no more than 30-60 minutes before next dose

PROCESSING

Test Code:
SIRO

Performing Lab:
China Basin Chemistry

Specimen Preparation:
Refrigerate

Preferred Volume:
2 mL whole blood

Minimum Volume:
0.3 mL whole blood

Note: This volume does not allow for repeat testing if needed.

RESULT INTERPRETATION

Units:
µg/L

Reference Interval:
Therapeutic trough: 5 - 15 µg/L

Additional Information:
Sirolimus is an immunosuppresant drug used to prevent organ graft rejection. Therapeutic drug monitoring is used to optimize dose.

This method yields results approximately 20% higher than the Abbott IMx immunoassay due to improved extraction and recovery of sirolimus from whole blood samples. Information regarding cross reactivity of this assay with metabolites and other drugs can be found in the link to the Lab Procedure. See the lab manual's "A Guide on Drug Level Monitoring" (in the Chemistry Guide) for additional information.

ADMINISTRATIVE

CPT Codes:
80195

LOINC Codes:
29247-4

COMPLETE VIEW

Available Stat:
No

Test Code:
SIRO

Performing Lab:
China Basin Chemistry

Performed:
Daily (day shift)

Methodology:
Abbott Architect Chemiluminescent Immunoassay

Remarks:
Time to steady state: 6-10 days

Trough samples should be collected no more than 30-60 minutes before next dose

Collect:
Lavender top

Amount to Collect:
2 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
2 mL whole blood

Minimum Volume:
0.3 mL whole blood

Note: This volume does not allow for repeat testing if needed.

Specimen Preparation:
Refrigerate

Units:
µg/L

Reference Interval:
Therapeutic trough: 5 - 15 µg/L

Synonyms:

- Rapamune

Reported:
For samples received by 1200 (Monday-Friday) and 1000 (weekends and holidays) the results will be available by 1600. Results for samples that miss the cut-off times will be available the following day.

Note: Samples from Berkeley Outpatient Clinic (BOPC) will be reported next day.

Additional Information:

Sirolimus is an immunosuppresant drug used to prevent organ graft rejection. Therapeutic drug monitoring is used to optimize dose.

This method yields results approximately 20% higher than the Abbott IMx immunoassay due to improved extraction and recovery of sirolimus from whole blood samples. Information regarding cross reactivity of this assay with metabolites and other drugs can be found in the link to the Lab Procedure. See the lab manual's "A Guide on Drug Level Monitoring" (in the Chemistry Guide) for additional information.

CPT Codes:

80195

LOINC Codes:

29247-4

Sjogren's Antibodies

SSAB

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Friday (day shift)

Methodology:
Chemiluminescent

Reported:
2-9 days

Additional Information:
Antibodies to SSA (Ro) are present in approximately 60-70% of patients with Sjogren's syndrome and 30-40% of patients with systemic lupus erythematosus (SLE). The presence of this autoantibody in pregnant women has been associated with development of neonatal congenital heart block and neonatal lupus. Antibodies to SSB (La) are found in approximately 60% of patients with Sjogren's syndrome and 11-24% of patients with SLE.

Clinical correlation is advised. Repeat testing may be considered, if clinically indicated.

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Grossly hemolyzed, lipemic or icteric samples

PROCESSING

Test Code:
SSAB

Performing Lab:
Immunology

Specimen Preparation:
Freeze serum at -20C

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Grossly hemolyzed, lipemic or icteric samples

RESULT INTERPRETATION

Units:
Chemiluminescent Units (CU)

Reference Interval:
anti-SSA-Ro52, anti-SSA-Ro60 and anti-SSB:

Negative: < 20 CU
Positive: >= 20 CU

Additional Information:

Antibodies to SSA (Ro) are present in approximately 60-70% of patients with Sjogren's syndrome and 30-40% of patients with systemic lupus erythematosus (SLE). The presence of this autoantibody in pregnant women has been associated with development of neonatal congenital heart block and neonatal lupus. Antibodies to SSB (La) are found in approximately 60% of patients with Sjogren's syndrome and 11-24% of patients with SLE.

Clinical correlation is advised. Repeat testing may be considered, if clinically indicated.

ADMINISTRATIVE

CPT Codes:
86235 x3

LOINC Codes:
33569-5

COMPLETE VIEW

Available Stat:
No

Test Code:
SSAB

Performing Lab:
Immunology

Performed:
Friday (day shift)

Methodology:
Chemiluminescent

Collect:
Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Grossly hemolyzed, lipemic or icteric samples

Specimen Preparation:
Freeze serum at -20C

Units:
Chemiluminescent Units (CU)

Reference Interval:
anti-SSA-Ro52, anti-SSA-Ro60 and anti-SSB:

Negative: < 20 CU
Positive: >= 20 CU

Reported:
2-9 days

Additional Information:

Antibodies to SSA (Ro) are present in approximately 60-70% of patients with Sjogren's syndrome and 30-40% of patients with systemic lupus erythematosus (SLE). The presence of this autoantibody in pregnant women has been associated with development of neonatal congenital heart block and neonatal lupus. Antibodies to SSB (La) are found in approximately 60% of patients with Sjogren's syndrome and 11-24% of patients with SLE.

Clinical correlation is advised. Repeat testing may be considered, if clinically indicated.

CPT Codes:
86235 x3

LOINC Codes:
33569-5

Smooth Muscle Antibodies

ASMGAB

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Moday (day shift)

Methodology:
EIA

Reported:
2 - 8 days

Synonyms:

- ACTIN IgG ANTIBODIES

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
1.0 (blood)

Preferred Volume:
0.5 (serum)

Minimum Volume:
0.5 (serum)

Unacceptable Conditions:
Grossly hemolyzed, Icteric or lipemic serum

PROCESSING

Test Code:
ASMGAB

Performing Lab:
Immunology

Specimen Preparation:
Freeze sample at -20C

Preferred Volume:
0.5 (serum)

Minimum Volume:
0.5 (serum)

Unacceptable Conditions:
Grossly hemolyzed, Icteric or lipemic serum

RESULT INTERPRETATION

Units:
Units

Reference Interval:
Negative: < 20 Units
Weak Positive: 20 - 30 Units
Moderate to Strong Positive: > 30 Units

ADMINISTRATIVE

CPT Codes:
86015

LOINC Codes:
44706-0

COMPLETE VIEW

Available Stat:
No

Test Code:
ASMGAB

Performing Lab:
Immunology

Performed:
Moday (day shift)

Methodology:
EIA

Collect:
Gold top

Amount to Collect:
1.0 (blood)

Sample Type:
Serum

Preferred Volume:
0.5 (serum)

Minimum Volume:
0.5 (serum)

Unacceptable Conditions:
Grossly hemolyzed, Icteric or lipemic serum

Specimen Preparation:
Freeze sample at -20C

Units:
Units

Reference Interval:
Negative: < 20 Units
Weak Positive: 20 - 30 Units
Moderate to Strong Positive: > 30 Units

Synonyms:

- ACTIN IgG ANTIBODIES

Reported:
2 - 8 days

CPT Codes:
86015

LOINC Codes:
44706-0

SNP Array for Blood Analysis (aka Microarray)

SNPAB

ORDERING

Approval Required:
Yes, if not ordered by Genetics, Neurology or Neonatal Intensive Care Unit faculty or fellows. Requests on inpatients require approval fromCytogenetics/Array staff.

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics (Microarray)

Methodology:
GDA SNP Array

Reported:
10-21 days

Additional Information:

Limitations

Genomic aberrations that may not be detected by SNP array assay include:
- Balanced rearrangement (i.e. balanced translocation, insertion or inversion) and tetraploidy resulted from endoduplication.
- Low level (<30%) mosaicism for unbalanced rearrangements and aneuploidy.
- Nucleotide sequence changes (i.e. point mutation or small insertion/deletion below the level of detection or cut-off thresholds) Imbalances of regions not represented on the array.
- Genomic changes in mixed samples (i.e. prenatal samples with maternal cell contamination).

Synonyms:

- SNP array blood

COLLECTION

Sample Type:
EDTA or heparinized whole blood

Peripheral blood specimen requested. Please contact the lab at 415-353-4844 or Cyto-Mgr@ucsfmedctr.org to request approval of an alternative specimen type, if necessary.

Cytogenetics laboratory only accepts genomic DNA samples for clinical microarray testing when they are extracted in a CLIA-certified laboratory and meet the lab requirement, including >=500 ng DNA with a concentration >=50ng/uL and A260/280 ratio >=1.8. Electrophoresis gel image and/or DNA integrity related information should also be provided to the lab. Acceptance of any extracted gDNA sample should be approved by the lab director. Contact Cytogenetics 514-8964.

Collect:
Lavender top preferred , Dark green top acceptable

Amount to Collect:
Adult: 5 mL blood
Infant/Child: 3 mL blood

Preferred Volume:
Adult: 5 mL blood
Infant/Child: 3 mL blood
Extracted DNA: 10 micrograms

Minimum Volume:
Adult: 2 mL blood
Infant/Child: 2 mL blood
Extracted DNA: 10 micrograms

Remarks:
Insurance pre-authorization required for outpatients

Do not collect sample in lithium heparin (Lt. Green top).

Transport sample at room temperature as soon as possible to lab. If transport is delayed refrigerate sample.

Without insurance pre -authorization, the lab will change the order to SNP microarray Processing, Extraction and Storage and hold DNA for six months. Microarray will be run upon insurance authorization approval within 6 months.

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 2 weeks.

Unacceptable Conditions:
Insufficient volume, unlabeled tubes, clotted samples, samples received in Lithium-heparin (Lt. Green top) tubes.

PROCESSING

Test Code:
SNPAB

Performing Lab:
Medical Genomics - Cytogenetics (Microarray)

Specimen Preparation:
Refrigerate samples **DO NOT CENTRIFUGE OR FREEZE.** Transport asap to China Basin Cytogenetics.

For questions, contact the microarray laboratory at 514-8964.

Preferred Volume:
Adult: 5 mL blood
Infant/Child: 3 mL blood
Extracted DNA: 10 micrograms

Minimum Volume:
Adult: 2 mL blood
Infant/Child: 2 mL blood
Extracted DNA: 10 micrograms

Unacceptable Conditions:
Insufficient volume, unlabeled tubes, clotted samples, samples received in Lithium-heparin (Lt. Green top) tubes.

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 2 weeks.

RESULT INTERPRETATION

Additional Information:

Limitations

Genomic aberrations that may not be detected by SNP array assay include:
- Balanced rearrangement (i.e. balanced translocation, insertion or inversion) and tetraploidy resulted from endoduplication.
- Low level (<30%) mosaicism for unbalanced rearrangements and aneuploidy.
- Nucleotide sequence changes (i.e. point mutation or small insertion/deletion below the level of detection or cut-off thresholds) Imbalances of regions not represented on the array.
- Genomic changes in mixed samples (i.e. prenatal samples with maternal cell contamination).

ADMINISTRATIVE

CPT Codes:
81229

Note: Additional charges for MCC studies when necessary, culture set-up fees may apply.

LDT or Modified FDA:
Yes

COMPLETE VIEW

Approval Required:
Yes, if not ordered by Genetics, Neurology or Neonatal Intensive Care Unit faculty or fellows. Requests on inpatients require approval fromCytogenetics/Array staff.

Available Stat:
No

Test Code:
SNPAB

Performing Lab:
Medical Genomics - Cytogenetics (Microarray)

Methodology:
GDA SNP Array

Remarks:
Insurance pre-authorization required for outpatients

Do not collect sample in lithium heparin (Lt. Green top).

Transport sample at room temperature as soon as possible to lab. If transport is delayed refrigerate sample.

Without insurance pre -authorization, the lab will change the order to SNP microarray Processing, Extraction and Storage and hold DNA for six months. Microarray will be run upon insurance authorization approval within 6 months.

Collect:
Lavender top preferred , Dark green top acceptable

Amount to Collect:
Adult: 5 mL blood
Infant/Child: 3 mL blood

Sample Type:
EDTA or heparinized whole blood

Peripheral blood specimen requested. Please contact the lab at 415-353-4844 or Cyto-Mgr@ucsfmedctr.org to request approval of an alternative specimen type, if necessary.

Cytogenetics laboratory only accepts genomic DNA samples for clinical microarray testing when they are extracted in a CLIA-certified laboratory and meet the lab requirement, including >=500 ng DNA with a concentration >=50ng/uL and A260/280 ratio >=1.8. Electrophoresis gel image and/or DNA integrity related information should also be provided to the lab. Acceptance of any extracted gDNA sample should be approved by the lab director. Contact Cytogenetics 514-8964.

Preferred Volume:
Adult: 5 mL blood
Infant/Child: 3 mL blood
Extracted DNA: 10 micrograms

Minimum Volume:
Adult: 2 mL blood
Infant/Child: 2 mL blood
Extracted DNA: 10 micrograms

Unacceptable Conditions:
Insufficient volume, unlabeled tubes, clotted samples, samples received in Lithium-heparin (Lt. Green top) tubes.

Specimen Preparation:
Refrigerate samples **DO NOT CENTRIFUGE OR FREEZE.** Transport asap to China Basin Cytogenetics.

For questions, contact the microarray laboratory at 514-8964.

Synonyms:

- SNP array blood

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 2 weeks.

Reported:
10-21 days

Additional Information:

Limitations

Genomic aberrations that may not be detected by SNP array assay include:
- Balanced rearrangement (i.e. balanced translocation, insertion or inversion) and tetraploidy resulted from endoduplication.
- Low level (<30%) mosaicism for unbalanced rearrangements and aneuploidy.
- Nucleotide sequence changes (i.e. point mutation or small insertion/deletion below the level of detection or cut-off thresholds) Imbalances of regions not represented on the array.
- Genomic changes in mixed samples (i.e. prenatal samples with maternal cell contamination).

CPT Codes:
81229

Note: Additional charges for MCC studies when necessary, culture set-up fees may apply.

LDT or Modified FDA:
Yes

SNP Array for Cancer Analysis

SNPAC

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
GDA SNP Array

Reported:
10-14 days

Additional Information:
Limitations
Genomic aberrations that may not be detected by SNP array assay include:
- Balanced rearrangement (i.e. balanced translocation, insertion or inversion) and tetraploidy resulted from endoduplication.
- Low level (<30%) mosaicism or clone for unbalanced rearrangements, aneuploidy, and copy-number neutral loss of heterozygosity.
- Nucleotide sequence changes (i.e. point mutation or small insertion/deletion below the level of detection or cut-off thresholds) Imbalances of regions not represented on the array

Synonyms:

- Microarray
- SNP array cancer

COLLECTION

Sample Type:
EDTA or heparinized whole bone marrow

Cytogenetics laboratory only accepts genomic DNA samples for clinical microarray
testing when they are extracted in a CLIA-certified laboratory and meet the lab requirement, including >=500 ng DNA with a concentration >=50ng/uL and
A260/280 ratio >=1.8.
Electrophoresis gel image and/or DNA integrity related information should also
be provided to the lab. Acceptance of any extracted gDNA sample should be approved by the lab director. Contact Cytogenetics 514-8964.

Collect:
Both lavender top and dark green top acceptable

Preferred Volume:
Adult: 3 mL bone marrow
Infant/Child: 2 mL bone marrow
Extracted DNA: 10 micrograms

Minimum Volume:
Adult: 1 mL bone marrow
Infant/Child: 1 mL bone marrow
Extracted DNA: 10 micrograms

Remarks:
Insurance pre-authorization required for outpatients

Do not collect sample in lithium heparin (Light Green top).

Transport sample at room temperature as soon as possible to lab. If transport is delayed refrigerate sample.

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 2 weeks

Unacceptable Conditions:
Insufficient volume, unlabeled tubes, clotted samples, samples received in Lithium-heparin (Lt. Green top) tubes.

PROCESSING

Test Code:
SNPAC

Performing Lab:
Medical Genomics - Cytogenetics

Preferred Volume:
Adult: 3 mL bone marrow
Infant/Child: 2 mL bone marrow
Extracted DNA: 10 micrograms

Minimum Volume:
Adult: 1 mL bone marrow
Infant/Child: 1 mL bone marrow
Extracted DNA: 10 micrograms

Unacceptable Conditions:
Insufficient volume, unlabeled tubes, clotted samples, samples received in Lithium-heparin (Lt. Green top) tubes.

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 2 weeks

RESULT INTERPRETATION

Additional Information:
Limitations
Genomic aberrations that may not be detected by SNP array assay include:
- Balanced rearrangement (i.e. balanced translocation, insertion or inversion) and tetraploidy resulted from endoduplication.
- Low level (<30%) mosaicism or clone for unbalanced rearrangements, aneuploidy, and copy-number neutral loss of heterozygosity.
- Nucleotide sequence changes (i.e. point mutation or small insertion/deletion below the level of detection or cut-off thresholds) Imbalances of regions not represented on the array

ADMINISTRATIVE

CPT Codes:
81229

COMPLETE VIEW

Available Stat:
No

Test Code:
SNPAC

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
GDA SNP Array

Remarks:
Insurance pre-authorization required for outpatients

Do not collect sample in lithium heparin (Light Green top).

Transport sample at room temperature as soon as possible to lab. If transport is delayed refrigerate sample.

Collect:
Both lavender top and dark green top acceptable

Sample Type:
EDTA or heparinized whole bone marrow

Cytogenetics laboratory only accepts genomic DNA samples for clinical microarray
testing when they are extracted in a CLIA-certified laboratory and meet the lab requirement, including >=500 ng DNA with a concentration >=50ng/uL and
A260/280 ratio >=1.8.
Electrophoresis gel image and/or DNA integrity related information should also
be provided to the lab. Acceptance of any extracted gDNA sample should be approved by the lab director. Contact Cytogenetics 514-8964.

Preferred Volume:
Adult: 3 mL bone marrow
Infant/Child: 2 mL bone marrow
Extracted DNA: 10 micrograms

Minimum Volume:
Adult: 1 mL bone marrow
Infant/Child: 1 mL bone marrow
Extracted DNA: 10 micrograms

Unacceptable Conditions:
Insufficient volume, unlabeled tubes, clotted samples, samples received in Lithium-heparin (Lt. Green top) tubes.

Synonyms:

- Microarray
- SNP array cancer

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 2 weeks

Reported:
10-14 days

Additional Information:
Limitations
Genomic aberrations that may not be detected by SNP array assay include:
- Balanced rearrangement (i.e. balanced translocation, insertion or inversion) and tetraploidy resulted from endoduplication.
- Low level (<30%) mosaicism or clone for unbalanced rearrangements, aneuploidy, and copy-number neutral loss of heterozygosity.
- Nucleotide sequence changes (i.e. point mutation or small insertion/deletion below the level of detection or cut-off thresholds) Imbalances of regions not represented on the array

CPT Codes:
81229

SNP Array for Prenatal Analysis (aka Microarray)

SNPAP

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics (Microarray)

Methodology:
GDA SNP Array

Reported:
3-21 days

Additional Information:
Limitations
Genomic aberrations that may not be detected by SNP array assay include:
- Balanced rearrangement (i.e. balanced translocation, insertion or inversion) and tetraploidy resulted from endoduplication.
- Low level (<30%) mosaicism for unbalanced rearrangements and aneuploidy
- Nucleotide sequence changes (i.e. point mutation or small insertion/deletion below the level of detection or cut-off thresholds)
Imbalances of regions not represented on the array
- Genomic changes in mixed samples (i.e. prenatal samples with maternal cell contamination)

The lab will charge a tissue culture setup fees (TCAFCV) if SNP microarray is ordered without chromosomes studies

Synonyms:

- SNP array amniocentesis
- SNP array CVS
- SNP array chorionic villus sample

COLLECTION

Sample Type:
Amniotic fluid or chorionic villi only

Cytogenetics laboratory only accepts genomic DNA samples for clinical microarray testing when they are extracted in a CLIA-certified laboratory and meet the lab requirement, including >=500 ng DNA with a concentration >=50ng/uL and A260/280 ratio >=1.8. Electrophoresis gel image and/or DNA integrity related information should also be provided to the lab. Acceptance of any extracted gDNA sample should be approved by the lab director. Contact Cytogenetics 514-8964.

Collect:
Sterile centrifuge tube, CVS in transport media provided by lab

Amount to Collect:
See preferred volume.

Preferred Volume:
Direct Array ONLY:

Amniotic fluid	25 mL non-bloody fluid (20 mL for array 5 mL for backup)
Placental Villi	20-25 mg
Cultured cells	2 confluent T25 flasks

Chromosome analysis with reflex to array if normal

Amniotic fluid	30 mL non-bloody fluid
Placental Villi	30 mg

Additional fluid or villi may be needed if additional tests are ordered

Aneuvysion FISH add 5 mL amniotic fluid or 5 mg villi.

Minimum Volume:

Amniotic fluid	20 mL
Villi	20 mg

These minimum amounts may limit testing that can be performed

Remarks:

Insurance pre-authorization required for outpatients

Do not collect sample in lithium heparin (Lt. Green top).

Transport sample at room temperature as soon as possible to lab. If transport is delayed refrigerate sample.

Stability (from collection to initiation):

24 hours at Room temperature

Unacceptable Conditions:

Leaking, contaminated, frozen or mislabeled tube(s)

PROCESSING

Test Code:

SNPAP

Performing Lab:

Medical Genomics - Cytogenetics (Microarray)

Specimen Preparation:

Refrigerate samples **DO NOT CENTRIFUGE OR FREEZE.** Transport asap to China Basin Cytogenetics

For questions, contact the microarray laboratory at 514-8964

Preferred Volume:

Direct Array ONLY:

Amniotic fluid	25 mL non-bloody fluid (20 mL for array 5 mL for backup)
Placental Villi	20-25 mg
Cultured cells	2 confluent T25 flasks

Chromosome analysis with reflex to array if normal

Amniotic fluid	30 mL non-bloody fluid
Placental Villi	30 mg

Additional fluid or villi may be needed if additional tests are ordered

Aneuvysion FISH add 5 mL amniotic fluid or 5 mg villi.

Minimum Volume:

Amniotic fluid	20 mL
Villi	20 mg

These minimum amounts may limit testing that can be performed

Unacceptable Conditions:

Leaking, contaminated, frozen or mislabeled tube(s)

Stability (from collection to initiation):

24 hours at Room temperature

RESULT INTERPRETATION

Additional Information:

Limitations
Genomic aberrations that may not be detected by SNP array assay include:
- Balanced rearrangement (i.e. balanced translocation, insertion or inversion) and tetraploidy resulted from endoduplication.
- Low level (<30%) mosaicism for unbalanced rearrangements and aneuploidy
- Nucleotide sequence changes (i.e. point mutation or small insertion/deletion below the level of detection or cut-off thresholds)

Imbalances of regions not represented on the array
- Genomic changes in mixed samples (i.e. prenatal samples with maternal cell contamination)

The lab will charge a tissue culture setup fees (TCAFCV) if SNP microarray is ordered without chromosomes studies

ADMINISTRATIVE

CPT Codes:
81229, 88233

Note: Additional charges for MCC studies when necessary, culture set-up fees may apply.

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
SNPAP

Performing Lab:
Medical Genomics - Cytogenetics (Microarray)

Methodology:
GDA SNP Array

Remarks:
Insurance pre-authorization required for outpatients

Do not collect sample in lithium heparin (Lt. Green top).

Transport sample at room temperature as soon as possible to lab. If transport is delayed refrigerate sample.

Collect:
Sterile centrifuge tube, CVS in transport media provided by lab

Amount to Collect:
See preferred volume.

Sample Type:
Amniotic fluid or chorionic villi only

Cytogenetics laboratory only accepts genomic DNA samples for clinical microarray testing when they are extracted in a CLIA-certified laboratory and meet the lab requirement, including >=500 ng DNA with a concentration >=50ng/uL and A260/280 ratio >=1.8. Electrophoresis gel image and/or DNA integrity related information should also be provided to the lab. Acceptance of any extracted gDNA sample should be approved by the lab director. Contact Cytogenetics 514-8964.

Preferred Volume:
Direct Array ONLY:

Amniotic fluid	25 mL non-bloody fluid (20 mL for array 5 mL for backup)
Placental Villi	20-25 mg
Cultured cells	2 confluent T25 flasks

Chromosome analysis with reflex to array if normal

Amniotic fluid	30 mL non-bloody fluid
Placental Villi	30 mg

Additional fluid or villi may be needed if additional tests are ordered

Aneuvysion FISH add 5 mL amniotic fluid or 5 mg villi.

Minimum Volume:

Amniotic fluid	20 mL
Villi	20 mg

These minimum amounts may limit testing that can be performed

Unacceptable Conditions:
Leaking, contaminated, frozen or mislabeled tube(s)

Specimen Preparation:
Refrigerate samples **DO NOT CENTRIFUGE OR FREEZE.** Transport asap to China Basin Cytogenetics

For questions, contact the microarray laboratory at 514-8964

Synonyms:

- SNP array amniocentesis
- SNP array CVS
- SNP array chorionic villus sample

Stability (from collection to initiation):
24 hours at Room temperature

Reported:
3-21 days

Additional Information:
Limitations
Genomic aberrations that may not be detected by SNP array assay include:
- Balanced rearrangement (i.e. balanced translocation, insertion or inversion) and tetraploidy resulted from endoduplication.
- Low level (<30%) mosaicism for unbalanced rearrangements and aneuploidy
- Nucleotide sequence changes (i.e. point mutation or small insertion/deletion below the level of detection or cut-off thresholds)
Imbalances of regions not represented on the array
- Genomic changes in mixed samples (i.e. prenatal samples with maternal cell contamination)

The lab will charge a tissue culture setup fees (TCAFCV) if SNP microarray is ordered without chromosomes studies

CPT Codes:
81229, 88233

Note: Additional charges for MCC studies when necessary, culture set-up fees may apply.

LDT or Modified FDA:
Yes

SNP Array for Tissue and POC (aka Microarray)

SNPAT

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics (Microarray)

Methodology:
GDA SNP Array

Reported:
7-21 days

Additional Information:
Limitations
Genomic aberrations that may not be detected by SNP array assay include:
- Balanced rearrangement (i.e. balanced translocation, insertion or inversion) and tetraploidy resulted from endoduplication.
- Low level (<30%) mosaicism for unbalanced rearrangements and aneuploidy
- Nucleotide sequence changes (i.e. point mutation or small insertion/deletion below the level of detection or cut-off thresholds)
Imbalances of regions not represented on the array
- Genomic changes in mixed samples (i.e. prenatal samples with maternal cell contamination)

The lab will charge a tissue culture setup fees (TCAFCV) if SNP microarray is ordered without chromosomes studies

The lab will charge a tissue culture setup fees (TCPOC) if SNP microarray is ordered without chromosome studies

Synonyms:

- SNP array amniocentesis
- SNP array CVS
- SNP array chorionic villus sample
- ACGHT
- Array CGH Tissue or Products of Conception

COLLECTION

Sample Type:
Tissue or POC

Cytogenetics laboratory only accepts genomic DNA samples for clinical microarray testing when they are extracted in a CLIA-certified laboratory and meet the lab requirement, including >=500 ng DNA with a concentration >=50ng/uL and A260/280 ratio >=1.8. Electrophoresis gel image and/or DNA integrity related information should also be provided to the lab. Acceptance of any extracted gDNA sample should be approved by the lab director. Contact Cytogenetics 514-8964.

Collect:
Sterile centrifuge tube with transport media provided by lab, Hanks balanced salt solution or RPMI with antibiotics

Amount to Collect:
1 cc (Cubic centimeter) or 20 mg tissue

Preferred Volume:
1 cc (Cubic centimeter) or 20 mg tissue

Minimum Volume:
0.3 cc (Cubic centimeter) or 15 mg tissue

Remarks:
Insurance pre-authorization required for outpatients

Label tube with type of tissue being submitted

Transport sample at room temperature as soon as possible to lab. If transport is delayed refrigerate sample.

Without insurance pre -authorization, the lab will change the order to SNP microarray Processing, Extraction and Storage and hold DNA for six months . Microarray will be run upon insurance authorization approval within 6 months.

Stability (from collection to initiation):
48 hours at Room temperature

Unacceptable Conditions:
Leaking, contaminated, frozen or mislabeled tube(s)

PROCESSING

Test Code:
SNPAT

Performing Lab:
Medical Genomics - Cytogenetics (Microarray)

Specimen Preparation:
Refrigerate samples **DO NOT CENTRIFUGE OR FREEZE.** Transport asap to China Basin Cytogenetics

For questions, contact the microarray laboratory at 514-8964

Preferred Volume:
1 cc (Cubic centimeter) or 20 mg tissue

Minimum Volume:
0.3 cc (Cubic centimeter) or 15 mg tissue

Unacceptable Conditions:
Leaking, contaminated, frozen or mislabeled tube(s)

Stability (from collection to initiation):
48 hours at Room temperature

RESULT INTERPRETATION

Additional Information:
Limitations
Genomic aberrations that may not be detected by SNP array assay include:
- Balanced rearrangement (i.e. balanced translocation, insertion or inversion) and tetraploidy resulted from endoduplication.
- Low level (<30%) mosaicism for unbalanced rearrangements and aneuploidy
- Nucleotide sequence changes (i.e. point mutation or small insertion/deletion below the level of detection or cut-off thresholds)
Imbalances of regions not represented on the array
- Genomic changes in mixed samples (i.e. prenatal samples with maternal cell contamination)

The lab will charge a tissue culture setup fees (TCAFCV) if SNP microarray is ordered without chromosomes studies

The lab will charge a tissue culture setup fees (TCPOC) if SNP microarray is ordered without chromosome studies

ADMINISTRATIVE

CPT Codes:
81229, 88233

Note: Additional charges for MCC studies when necessary, culture set-up fees may apply

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
SNPAT

Performing Lab:
Medical Genomics - Cytogenetics (Microarray)

Methodology:
GDA SNP Array

Remarks:
Insurance pre-authorization required for outpatients

Label tube with type of tissue being submitted

Transport sample at room temperature as soon as possible to lab. If transport is delayed refrigerate sample.

Without insurance pre -authorization, the lab will change the order to SNP microarray Processing, Extraction and Storage and hold DNA for six months . Microarray will be run upon insurance authorization approval within 6 months.

Collect:
Sterile centrifuge tube with transport media provided by lab, Hanks balanced salt solution or RPMI with antibiotics

Amount to Collect:
1 cc (Cubic centimeter) or 20 mg tissue

Sample Type:
Tissue or POC

Cytogenetics laboratory only accepts genomic DNA samples for clinical microarray testing when they are extracted in a CLIA-certified laboratory and meet the lab requirement, including >=500 ng DNA with a concentration >=50ng/uL and A260/280 ratio >=1.8. Electrophoresis gel image and/or DNA integrity related information should also be provided to the lab. Acceptance of any extracted gDNA sample should be approved by the lab director. Contact Cytogenetics 514-8964.

Preferred Volume:
1 cc (Cubic centimeter) or 20 mg tissue

Minimum Volume:
0.3 cc (Cubic centimeter) or 15 mg tissue

Unacceptable Conditions:
Leaking, contaminated, frozen or mislabeled tube(s)

Specimen Preparation:
Refrigerate samples **DO NOT CENTRIFUGE OR FREEZE.** Transport asap to China Basin Cytogenetics

For questions, contact the microarray laboratory at 514-8964

Synonyms:

- SNP array amniocentesis
- SNP array CVS
- SNP array chorionic villus sample
- ACGHT
- Array CGH Tissue or Products of Conception

Stability (from collection to initiation):
48 hours at Room temperature

Reported:
7-21 days

Additional Information:
Limitations
Genomic aberrations that may not be detected by SNP array assay include:
- Balanced rearrangement (i.e. balanced translocation, insertion or inversion) and tetraploidy resulted from endoduplication.
- Low level (<30%) mosaicism for unbalanced rearrangements and aneuploidy
- Nucleotide sequence changes (i.e. point mutation or small insertion/deletion below the level of detection or cut-off thresholds)
Imbalances of regions not represented on the array
- Genomic changes in mixed samples (i.e. prenatal samples with maternal cell contamination)

The lab will charge a tissue culture setup fees (TCAFCV) if SNP microarray is ordered without chromosomes studies

The lab will charge a tissue culture setup fees (TCPOC) if SNP microarray is ordered without chromosome studies

CPT Codes:
81229, 88233

Note: Additional charges for MCC studies when necessary, culture set-up fees may apply

LDT or Modified FDA:
Yes

SNP Array, Family Follow-Up

PSNPA

ORDERING

Approval Required:

Yes, if not ordered by Genetics, Neurology or Neonatal Intensive Care Unit faculty or fellows. Requests on inpatients require approval fromCytogenetics/Array staff. Insurance authorization required.

Available Stat:

No

Performing Lab:

Medical Genomics - Cytogenetics (Microarray)

Methodology:

850K SNP array

Reported:

10-21 days

Additional Information:

Limitations

Genomic aberrations that may not be detected by SNP array assay include:
- Balanced rearrangement (i.e. balanced translocation, insertion or inversion) and tetraploidy resulted from endoduplication.
- Low level (<30%) mosaicism for unbalanced rearrangements and aneuploidy
- Nucleotide sequence changes (i.e. point mutation or small insertion/deletion below the level of detection or cut-off thresholds) Imbalances of regions not represented on the array
- Genomic changes in mixed samples (i.e. prenatal samples with maternal cell contamination)

Synonyms:

- Parental SNP Array

COLLECTION

Sample Type:

EDTA or Heparinized whole blood, Extracted DNA

Cytogenetics laboratory only accepts genomic DNA samples for clinical microarray testing when they are extracted in a CLIA-certified laboratory and meet the lab requirement, including >=500 ng DNA with a concentration >=50ng/uL and A260/280 ratio >=1.8. Electrophoresis gel image and/or DNA integrity related information should also be provided to the lab. Acceptance of any extracted gDNA sample should be approved by the lab director. Contact Cytogenetics 514-8964.

Collect:

Lavender top preferred, Dark green top acceptable

Amount to Collect:

See preferred volume

Preferred Volume:

Adult	5 mL whole blood
Infant/Child	3 mL whole blood
Extracted DNA	10 µg (mcg)

Minimum Volume:

Adult	2 mL whole blood
Infant/Child	2 mL whole blood
Extracted DNA	10 µg (mcg)

Remarks:

Insurance pre-authorization required for outpatients

Only collect samples Monday - Friday and avoid holidays.

Do not collect sample in lithium heparin (Lt. Green top).

Transport sample at room temperature as soon as possible to lab. If transport is delayed refrigerate sample.

Stability (from collection to initiation):

Room temperature 4 days, refrigerated 2 weeks

PROCESSING

Test Code:
PSNPA

Test Group:
Microarray

Performing Lab:
Medical Genomics - Cytogenetics (Microarray)

Specimen Preparation:
Refrigerate samples **DO NOT CENTRIFUGE OR FREEZE.** Transport asap to China Basin Cytogenetics

For questions, contact the microarray laboratory at 514-8964

Preferred Volume:

Adult	5 mL whole blood
Infant/Child	3 mL whole blood
Extracted DNA	10 µg (mcg)

Minimum Volume:

Adult	2 mL whole blood
Infant/Child	2 mL whole blood
Extracted DNA	10 µg (mcg)

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 2 weeks

RESULT INTERPRETATION

Additional Information:

Limitations

Genomic aberrations that may not be detected by SNP array assay include:
- Balanced rearrangement (i.e. balanced translocation, insertion or inversion) and tetraploidy resulted from endoduplication.
- Low level (<30%) mosaicism for unbalanced rearrangements and aneuploidy
- Nucleotide sequence changes (i.e. point mutation or small insertion/deletion below the level of detection or cut-off thresholds) Imbalances of regions not represented on the array
- Genomic changes in mixed samples (i.e. prenatal samples with maternal cell contamination)

ADMINISTRATIVE

CPT Codes:
81229

LDT or Modified FDA:
Yes

LOINC Codes:
62375-1

COMPLETE VIEW

Approval Required:
Yes, if not ordered by Genetics, Neurology or Neonatal Intensive Care Unit faculty or fellows. Requests on inpatients require approval fromCytogenetics/Array staff. Insurance authorization required.

Available Stat:
No

Test Code:
PSNPA

Test Group:
Microarray

Performing Lab:
Medical Genomics - Cytogenetics (Microarray)

Methodology:
850K SNP array

Remarks:

Insurance pre-authorization required for outpatients

Only collect samples Monday - Friday and avoid holidays.

Do not collect sample in lithium heparin (Lt. Green top).

Transport sample at room temperature as soon as possible to lab. If transport is delayed refrigerate sample.

Collect:

Lavender top preferred, Dark green top acceptable

Amount to Collect:

See preferred volume

Sample Type:

EDTA or Heparinized whole blood, Extracted DNA

Cytogenetics laboratory only accepts genomic DNA samples for clinical microarray testing when they are extracted in a CLIA-certified laboratory and meet the lab requirement, including >=500 ng DNA with a concentration >=50ng/uL and A260/280 ratio >=1.8. Electrophoresis gel image and/or DNA integrity related information should also be provided to the lab. Acceptance of any extracted gDNA sample should be approved by the lab director. Contact Cytogenetics 514-8964.

Preferred Volume:

Adult	5 mL whole blood
Infant/Child	3 mL whole blood
Extracted DNA	10 µg (mcg)

Minimum Volume:

Adult	2 mL whole blood
Infant/Child	2 mL whole blood
Extracted DNA	10 µg (mcg)

Specimen Preparation:

Refrigerate samples **DO NOT CENTRIFUGE OR FREEZE.** Transport asap to China Basin Cytogenetics

For questions, contact the microarray laboratory at 514-8964

Synonyms:

- Parental SNP Array

Stability (from collection to initiation):

Room temperature 4 days, refrigerated 2 weeks

Reported:

10-21 days

Additional Information:

Limitations

Genomic aberrations that may not be detected by SNP array assay include:
- Balanced rearrangement (i.e. balanced translocation, insertion or inversion) and tetraploidy resulted from endoduplication.
- Low level (<30%) mosaicism for unbalanced rearrangements and aneuploidy
- Nucleotide sequence changes (i.e. point mutation or small insertion/deletion below the level of detection or cut-off thresholds) Imbalances of regions not represented on the array
- Genomic changes in mixed samples (i.e. prenatal samples with maternal cell contamination)

CPT Codes:

81229

LDT or Modified FDA:

Yes

LOINC Codes:

62375-1

SNP microarray Processing, Extraction and Storage

SNPES

ORDERING

Available Stat:
No

Performing Lab:
Cytogenetics

Performed:
Monday to Friday day shift only

Methodology:
DNA Extraction

Reported:
2-3 days

Additional Information:
DNA will be held for 6 months. If no testing is ordered within that time frame, the DNA will be discarded.

For questions, contact the Cytogenetics-microarray laboratory at 514-8964.

Synonyms:

- Hold for SNP microarray

COLLECTION

Sample Type:
Blood, amniotic fluid, CVS, Tissue, POC

Collect:
Lavender top preferred for blood , Dark green top acceptable

Amount to Collect:
See preferred volume.

Preferred Volume:

Adult	5 mL blood
Infant/Child	3 mL blood
Amniotic fluid	25 ml (25ml for array and 5ml backup)
Placental Villi	20-25 mg
Cultured cells	2 confluent T25 flasks
Tissue	1 cc (Cubic centimeter) or 20 mg tissue

Minimum Volume:

Adult	2 mL blood
Infant/Child	2 mL blood
Amniotic fluid	20 ml
Placental Villi	20 mg
Cultured cells	2 confluent T25 flasks
Tissue	0.3 cc (Cubic centimeter) or 15 mg tissue

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 2 weeks.

Unacceptable Conditions:
Unlabeled tubes, QNS, clotted samples, samples received in Lithium-heparin (Lt. Green top) tubes.

PROCESSING

Test Code:
SNPES

Performing Lab:
Cytogenetics

Specimen Preparation:
Refrigerate samples DO NOT CENTRIFUGE OR FREEZE. Transport asap to China Basin Cytogenetics

For questions, contact the Cytogenetics-microarray laboratory at 514-8964

Preferred Volume:

Adult	5 mL blood
Infant/Child	3 mL blood
Amniotic fluid	25 ml (25ml for array and 5ml backup)
Placental Villi	20-25 mg
Cultured cells	2 confluent T25 flasks
Tissue	1 cc (Cubic centimeter) or 20 mg tissue

Minimum Volume:

Adult	2 mL blood
Infant/Child	2 mL blood
Amniotic fluid	20 ml
Placental Villi	20 mg
Cultured cells	2 confluent T25 flasks
Tissue	0.3 cc (Cubic centimeter) or 15 mg tissue

Unacceptable Conditions:
Unlabeled tubes, QNS, clotted samples, samples received in Lithium-heparin (Lt. Green top) tubes.

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 2 weeks.

RESULT INTERPRETATION

Additional Information:
DNA will be held for 6 months. If no testing is ordered within that time frame, the DNA will be discarded.

For questions, contact the Cytogenetics-microarray laboratory at 514-8964.

ADMINISTRATIVE

CPT Codes:
81479

COMPLETE VIEW

Available Stat:
No

Test Code:
SNPES

Performing Lab:
Cytogenetics

Performed:
Monday to Friday day shift only

Methodology:
DNA Extraction

Collect:
Lavender top preferred for blood , Dark green top acceptable

Amount to Collect:
See preferred volume.

Sample Type:
Blood, amniotic fluid, CVS, Tissue, POC

Preferred Volume:

Adult	5 mL blood
Infant/Child	3 mL blood
Amniotic fluid	25 ml (25ml for array and 5ml backup)
Placental Villi	20-25 mg
Cultured cells	2 confluent T25 flasks
Tissue	1 cc (Cubic centimeter) or 20 mg tissue

Minimum Volume:

Adult	2 mL blood
Infant/Child	2 mL blood
Amniotic fluid	20 ml
Placental Villi	20 mg
Cultured cells	2 confluent T25 flasks
Tissue	0.3 cc (Cubic centimeter) or 15 mg tissue

Unacceptable Conditions:

Unlabeled tubes, QNS, clotted samples, samples received in Lithium-heparin (Lt. Green top) tubes.

Specimen Preparation:

Refrigerate samples DO NOT CENTRIFUGE OR FREEZE. Transport asap to China Basin Cytogenetics

For questions, contact the Cytogenetics-microarray laboratory at 514-8964

Synonyms:

- Hold for SNP microarray

Stability (from collection to initiation):

Room temperature 4 days, refrigerated 2 weeks.

Reported:

2-3 days

Additional Information:

DNA will be held for 6 months. If no testing is ordered within that time frame, the DNA will be discarded.

For questions, contact the Cytogenetics-microarray laboratory at 514-8964.

CPT Codes:

81479

Sodium, 24 hour (or timed) urine

NAUR

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 7 days per week from 8:00 AM to midnight only.

Methodology:
Indirect, solid state electrode

Reported:
STAT 1 hour, Routine same or next day.

Additional Information:
Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

Synonyms:

- Urine electrolytes
- Na

COLLECTION

Sample Type:
Timed urine collection

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container, 10g Boric Acid

Amount to Collect:
Entire urine output for collection period

Preferred Volume:
1 mL urine

Minimum Volume:
0.2 mL urine

Remarks:
Refrigerate the collection container during the period of the collection.

Note that the minimum acceptable time period for a 'timed' collection is 6 hours.

Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

Stability (from collection to initiation):
Room temperature 45 days, refrigerated 45 days, frozen at -20C 1 year

PROCESSING

Test Code:
NAUR

Test Group:
Sodium

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
1 mL urine

Minimum Volume:
0.2 mL urine

Stability (from collection to initiation):
Room temperature 45 days, refrigerated 45 days, frozen at -20C 1 year

RESULT INTERPRETATION

Units:
mmol/D

Reference Interval:
Usually 40-220 mmol/D. Output varies with diet.

Additional Information:
Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

ADMINISTRATIVE

CPT Codes:
84300

COMPLETE VIEW

Available Stat:
Yes

Test Code:
NAUR

Test Group:
Sodium

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 7 days per week from 8:00 AM to midnight only.

Methodology:
Indirect, solid state electrode

Remarks:
Refrigerate the collection container during the period of the collection.

Note that the minimum acceptable time period for a 'timed' collection is 6 hours.

Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container, 10g Boric Acid

Amount to Collect:
Entire urine output for collection period

Sample Type:
Timed urine collection

Preferred Volume:
1 mL urine

Minimum Volume:
0.2 mL urine

Units:
mmol/D

Reference Interval:
Usually 40-220 mmol/D. Output varies with diet.

Synonyms:

- Urine electrolytes
- Na

Stability (from collection to initiation):
Room temperature 45 days, refrigerated 45 days, frozen at -20C 1 year

Reported:
STAT 1 hour, Routine same or next day.

Additional Information:

Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

CPT Codes:

84300

Sodium, Body Fluid

NABF

ORDERING

Available Stat:
No

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Indirect, solid state electrode

Reported:
4 hours

Additional Information:
Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context.

Interpretive information on this testing can be found at https://aruplab.com/bodyfluids

Turbid samples, including watery stools, will be centrifuged and the test run on the supernatant.

Synonyms:

- Na
- Body fluid electrolytes

COLLECTION

Sample Type:
Body Fluid

Collect:
Clean, empty container OR red top (no additives)
Note: Do NOT collect in red top with clot activator (silicone coated).

Amount to Collect:
5 mL fluid

Preferred Volume:
1 mL fluid

Minimum Volume:
0.2 mL fluid

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 2 days, frozen at -20C 1 week

PROCESSING

Test Code:
NABF

Test Group:
Sodium

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
1 mL fluid

Minimum Volume:
0.2 mL fluid

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 2 days, frozen at -20C 1 week

RESULT INTERPRETATION

Units:
mmol/L

Additional Information:
Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context.

Interpretive information on this testing can be found at https://aruplab.com/bodyfluids

Turbid samples, including watery stools, will be centrifuged and the test run on the supernatant.

ADMINISTRATIVE

CPT Codes:
84302

LOINC Codes:
2950-4

COMPLETE VIEW

Available Stat:
No

Test Code:
NABF

Test Group:
Sodium

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Indirect, solid state electrode

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Collect:
Clean, empty container OR red top (no additives)
Note: Do NOT collect in red top with clot activator (silicone coated).

Amount to Collect:
5 mL fluid

Sample Type:
Body Fluid

Preferred Volume:
1 mL fluid

Minimum Volume:
0.2 mL fluid

Units:
mmol/L

Synonyms:

- Na
- Body fluid electrolytes

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 2 days, frozen at -20C 1 week

Reported:
4 hours

Additional Information:
Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context.

Interpretive information on this testing can be found at https://aruplab.com/bodyfluids

Turbid samples, including watery stools, will be centrifuged and the test run on the supernatant.

CPT Codes:
84302

LOINC Codes:
2950-4

Sodium, Fecal

SODF

ORDERING

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative Ion-Selective Electrode

Reported:
1-2 days

Synonyms:

- Na fecal

COLLECTION

Collect:
Liquid random stool.

Stability (from collection to initiation):
Ambient: 1 hour; Refrigerated: 2 weeks; Frozen: 6 months

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Formed or viscous stool.

PROCESSING

Test Code:
SODF

ARUP Test Code:
0020379

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transfer a 5 g stool to an unpreserved stool transport vial (ARUP Supply #40910). Available online through eSupply using ARUP Connect(TM) or contact Client Services at (800) 522-2787. (Min: 1 g) Do not add saline or water to liquefy specimen.

Unacceptable Conditions:
Formed or viscous stool.

Stability (from collection to initiation):
Ambient: 1 hour; Refrigerated: 2 weeks; Frozen: 6 months

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:
A reference range has not been established for fecal specimens.

Interpretive Data:
This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:
84302

LOINC:

- 15207-4

COMPLETE VIEW

Available Stat:
No

Test Code:
SODF

ARUP Test Code:
0020379

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative Ion-Selective Electrode

Collect:
Liquid random stool.

Unacceptable Conditions:
Formed or viscous stool.

Specimen Preparation:
Transfer a 5 g stool to an unpreserved stool transport vial (ARUP Supply #40910). Available online through eSupply using ARUP Connect(TM) or contact Client Services at (800) 522-2787. (Min: 1 g) Do not add saline or water to liquefy specimen.

Reference Interval:
A reference range has not been established for fecal specimens.

Interpretive Data:
This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Synonyms:

- Na fecal

Storage/Transport Temperature:
Refrigerated.

Stability (from collection to initiation):
Ambient: 1 hour; Refrigerated: 2 weeks; Frozen: 6 months

Reported:
1-2 days

CPT Codes:
84302

LOINC:

- 15207-4

Sodium, Plasma / Serum

NA

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Chemistry: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center (Mon-Fri 0800-1630)

Methodology:
Parnassus, Mission Bay & Mt. Zion Chemistry: Indirect, solid state electrode on Abbott Architect
Berkeley Outpatient Center: Indirect ISE on Roche cobas c311

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
1. This is an indirect method and so is susceptible to pseudohyponatremia in samples with high protein or lipid concentrations. If pseudohyponatremia is suspected, testing for whole blood electrolytes using a direct ion selective electrode can be ordered which is not susceptible to this interference.

Parnassus, Mission Bay, and Mt. Zion Chemistry:
Serum/Plasma samples with a lipemic index concentration of >= 200 on the Abbott Architect analyzer will be automatically run on the ABL90 blood gas analyzer with a direct ion selective electrode assay for sodium. The comment “Electrolytes determined on the blood gas analyzer to avoid assay interference from lipemia/turbidity" will be appended to the result.

Berkeley Outpatient Center:
Serum/Plasma samples with a lipemic index concentration of >500 on the Roche chemistry analyzer will be resulted and a comment will be attached to the result stating that “Lipemia or turbidity present, may tend to decrease result."

2. High levels of glucose can also lower electrolyte concentrations, each 100 mg/dL causing an apparent decrease in serum sodium of 1.6 mmol/L (Ref: Schrier RW: Manual of Nephrology, Boston, Little Brown, 1981). Hyperglycemia can reduce serum sodium levels regardless of the method used for sodium measurement.

Synonyms:

- Na
- Electrolytes
- Anion gap

COLLECTION

Sample Type:
Plasma or serum

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Room temperature 2 weeks, refrigerated 2 weeks, frozen at -20C 1 year

PROCESSING

Test Code:
NA

Test Group:
Sodium

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Room temperature 2 weeks, refrigerated 2 weeks, frozen at -20C 1 year

RESULT INTERPRETATION

Units:
mmol/L

Reference Interval:
Parnassus, Mission Bay & Mt. Zion Chemistry

< 1 year	131 - 145 mmol/L
>= 1 year	135 - 145 mmol/L

1. Normal range for children less than 1 year old adapted from Beckman Coulter's "Pediatric Reference Range Guidelines for Synchron Systems" Bulletin 9345.
2. Adult reference range adopted from the Abbott c system package insert.

Berkeley Outpatient Center

Age	mmol/L
>= 19 years	135-145

UCSF Clinical Labs at Berkeley Outpatient Center verified the adult reference range (>= 19 years) stated in the Roche PHOS2 package insert by running 20 male and 20 female lab volunteers.

Critical Values:
< 125 mmol/L or > 155 mmol/L

Additional Information:
1. This is an indirect method and so is susceptible to pseudohyponatremia in samples with high protein or lipid concentrations. If pseudohyponatremia is suspected, testing for whole blood electrolytes using a direct ion selective electrode can be ordered which is not susceptible to this interference.

Parnassus, Mission Bay, and Mt. Zion Chemistry:
Serum/Plasma samples with a lipemic index concentration of >= 200 on the Abbott Architect analyzer will be automatically run on the ABL90 blood gas analyzer with a direct ion selective electrode assay for sodium. The comment “Electrolytes determined on the blood gas analyzer to avoid assay interference from lipemia/turbidity" will be appended to the result.

Berkeley Outpatient Center:
Serum/Plasma samples with a lipemic index concentration of >500 on the Roche chemistry analyzer will be resulted and a comment will be attached to the result stating that “Lipemia or turbidity present, may tend to decrease result."

2. High levels of glucose can also lower electrolyte concentrations, each 100 mg/dL causing an apparent decrease in serum sodium of 1.6 mmol/L (Ref: Schrier RW: Manual of Nephrology, Boston, Little Brown, 1981). Hyperglycemia can reduce serum sodium levels regardless of the method used for sodium measurement.

ADMINISTRATIVE

CPT Codes:
84295

LOINC Codes:
2951-2

COMPLETE VIEW

Available Stat:
Yes

Test Code:
NA

Test Group:
Sodium

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Chemistry: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center (Mon-Fri 0800-1630)

Methodology:
Parnassus, Mission Bay & Mt. Zion Chemistry: Indirect, solid state electrode on Abbott Architect
Berkeley Outpatient Center: Indirect ISE on Roche cobas c311

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
1 mL blood

Sample Type:
Plasma or serum

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Units:
mmol/L

Reference Interval:
Parnassus, Mission Bay & Mt. Zion Chemistry

< 1 year	131 - 145 mmol/L
>= 1 year	135 - 145 mmol/L

1. Normal range for children less than 1 year old adapted from Beckman Coulter's "Pediatric Reference Range Guidelines for Synchron Systems" Bulletin 9345.
2. Adult reference range adopted from the Abbott c system package insert.

Berkeley Outpatient Center

Age	mmol/L
>= 19 years	135-145

UCSF Clinical Labs at Berkeley Outpatient Center verified the adult reference range (>= 19 years) stated in the Roche PHOS2 package insert by running 20 male and 20 female lab volunteers.

Critical Values:
< 125 mmol/L or > 155 mmol/L

Synonyms:

- Na
- Electrolytes
- Anion gap

Stability (from collection to initiation):
Room temperature 2 weeks, refrigerated 2 weeks, frozen at -20C 1 year

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
1. This is an indirect method and so is susceptible to pseudohyponatremia in samples with high protein or lipid concentrations. If pseudohyponatremia is suspected, testing for whole blood electrolytes using a direct ion selective electrode can be ordered which is not susceptible to this interference.

Parnassus, Mission Bay, and Mt. Zion Chemistry:
Serum/Plasma samples with a lipemic index concentration of >= 200 on the Abbott Architect analyzer will be automatically run on the ABL90 blood gas analyzer with a direct ion selective electrode assay for sodium. The comment “Electrolytes determined on the blood gas analyzer to avoid assay interference from lipemia/turbidity" will be appended to the result.

Berkeley Outpatient Center:
Serum/Plasma samples with a lipemic index concentration of >500 on the Roche chemistry analyzer will be resulted and a comment will be attached to the result stating that “Lipemia or turbidity present, may tend to decrease result."

2. High levels of glucose can also lower electrolyte concentrations, each 100 mg/dL causing an apparent decrease in serum sodium of 1.6 mmol/L (Ref: Schrier RW: Manual of Nephrology, Boston, Little Brown, 1981). Hyperglycemia can reduce serum sodium levels regardless of the method used for sodium measurement.

CPT Codes:
84295

LOINC Codes:
2951-2

Sodium, random urine

NAU

ORDERING

Available Stat:
Yes (Note: smaples originating from Mount Zion may take 3-6 hours to be reported)

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Indirect, solid state electrode

Reported:
STAT 1 hour, Routine same or next day.

Note: smaples originating from Mount Zion may exceed the 1 hour TAT.

Additional Information:
Output varies with diet, but the concentration usually exceeds 20 mmol/L.

Synonyms:

- Urine electrolytes
- Na

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
20 mL urine

Preferred Volume:
1 mL urine

Minimum Volume:
0.2 mL urine

Stability (from collection to initiation):
Room temperature 45 days, refrigerated 45 days, frozen at -20C 1 year

PROCESSING

Test Code:
NAU

Test Group:
Sodium

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
1 mL urine

Minimum Volume:
0.2 mL urine

Stability (from collection to initiation):
Room temperature 45 days, refrigerated 45 days, frozen at -20C 1 year

RESULT INTERPRETATION

Units:
mmol/L

Reference Interval:
Output varies with diet, but the concentration usually exceeds 20 mmol/L.

Additional Information:
Output varies with diet, but the concentration usually exceeds 20 mmol/L.

ADMINISTRATIVE

CPT Codes:
84300

LOINC Codes:
2955-3

COMPLETE VIEW

Available Stat:
Yes (Note: smaples originating from Mount Zion may take 3-6 hours to be reported)

Test Code:
NAU

Test Group:
Sodium

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Indirect, solid state electrode

Collect:
Urine cup

Amount to Collect:
20 mL urine

Sample Type:
Random urine

Preferred Volume:
1 mL urine

Minimum Volume:
0.2 mL urine

Units:
mmol/L

Reference Interval:
Output varies with diet, but the concentration usually exceeds 20 mmol/L.

Synonyms:

- Urine electrolytes
- Na

Stability (from collection to initiation):
Room temperature 45 days, refrigerated 45 days, frozen at -20C 1 year

Reported:
STAT 1 hour, Routine same or next day.

Note: smaples originating from Mount Zion may exceed the 1 hour TAT.

Additional Information:
Output varies with diet, but the concentration usually exceeds 20 mmol/L.

CPT Codes:
84300

LOINC Codes:
2955-3

Sodium, Whole Blood

NAWB

ORDERING

Ordering Recommendations:
Follow the link for information about Blood Gas Panels that contain this test.

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay and Mt Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Potentiometry: Radiometer ABL 90 FLEX Plus

Reported:
Stat 15 min, Routine 30 min

Additional Information:
A level < 110 mmol/L or > 170 mmol/L will automatically be re-assayed.

High levels of glucose can lower electrolyte concentrations, each 100 mg/dL causing an apparent decrease in serum sodium of 1.6 mmol/L Ref: Schrier RW: Manual of Nephrology, Boston, Little Brown, 1981

Synonyms:

- Na
- Electrolytes
- Na+
- Sodium
- ARTBGL
- VENBGL
- CVBGL
- MVBGL
- CAPBG
- MVBGCX
- CIRBGA
- CIRBGV
- BLYTEG
- NLYTE
- Blood gas
- ABG

COLLECTION

Sample Type:
Heparinized whole blood (Blood gas syringe only)

Collect:
Plastic blood gas syringe containing 100 U of dry heparin or capillary tube with 70 IU/ml dry electrolyte-balanced heparin

Amount to Collect:
3 mL blood

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood

Remarks:

Arterial puncture:

Due to the risk of arterial damage and subsequent distal ischemia, prior to puncturing an artery the RN assesses the collateral circulation. If the radial artery is to be punctured, then the pulse of the ulnar artery is assessed. If the dorsalis pedis artery is to be accessed then the posterial tibial pulse is assessed and likewise if the posterial tibial approach is used the dorsalis pedis pulse is assessed. The modified Allens's test may be used to assess collateral circulation of the ulnar artery before a radial artery puncture, but it does not always ensure adequate flow. A Doppler ultrasound flow indicator may be used to verify collateral circulation. If the collateral circulation is poor and the RN cannot palpate a pulse then the physician should be notified before proceeding. If for any reason the circulation is compromised to the extremity being assessed for arterial puncture then the physician should be notified prior to proceeding.

1. Palpate the radial artery and identify the site where the pulse is the strongest. Avoid areas with overlying veins to prevent venous admixture.
2. Prepare the patient's skin with an alcohol or 2% chlorhexidine wipe/swab.
3. Place two or three fingers along the course of the artery both to locate its position and direction, and to stabilize it.
4. Penetrate the skin smoothly holding the needle at 30-60 degree angle with the needle bevel up and pointed proximally. The angle of the butterfly" IV catheter should not exceed 45° for pediatric patients.
5. Re-establish the position and direction of the artery by palpation.
6. Gently and slowly advance the needle or butterfly", aiming directly for the area of maximum pulsation.
7. When the arterial lumen has been entered, less resistance is felt and blood appears in the syringe above the needle hub.
8. Obtain required amount of arterial blood for test(s).
9. If blood is not obtained on first attempt, withdraw the needle to just below the skin surface and advance needle at same angle but at 1 mm to either side of previous attempt.
10. Place the 2x2 gauze over the site of the puncture then withdraw the needle from the artery. Press firmly at the site for at least five minutes, or until the bleeding stops. Apply bandage or pressure dressing.
11. Expel any air bubble in the syringe with air filter cap placed on specimen syringe.
12. Label sample with patient's name, ID number and DOB.

Venous samples:

1. Avoid excessive venous stasis from prolonged tourniquet application or clenching of the fist prior to sample collection.
2. For central line draws make sure to waste a full red top tube then draw via the blood gas syringe as noted above.
3. Fill syringe completely, remove needle (in peripheral draws), cap sample, expel all bubbles (while holding syringe upright) until blood hits the top of cap.
4. Label sample with patient's name, ID number and DOB.

Capillary Samples:

1. The following are recommended sampling sites: earlobe, fingertip, big toe, heel. The heel and big toe are more suitable for use on neonates and infants.
2. Warm the area or puncture site for 5 to 10 minutes prior to actual sampling. This accelerates flow for blood to be representative of general status of patient.
3. Make a puncture using a lancet or similar device. Do not squeeze the area to avoid tissue juice from mixing into blood sample.
4. Wipe off the first drop of blood. Take the sample from the center of the second drop of blood and hold the capillary at a slightly downward angle for an uninterrupted blood flow. Avoid getting air bubbles in the specimen.
5. Refrain from squeezing or milking the puncture site as this may result in faulty measurements or cause hemolysis of blood sample and cause elevated K+ readings.
6. Apply accompanying caps to both ends of the capillary tube and mix the sample with the heparin immediately after collection to prevent blood from clotting. The manufacturer recommends the use of a mixing wire and magnet for capillary samples.
7. Label sample with patient's name, ID and DOB.

Deliver samples immediately to lab for testing. Samples delivered to the lab >30 minutes after collection may yield erroneous results.

Unacceptable Conditions:

Samples with needle attached, containing large bubbles, unlabeled, clotted or of insufficient volume

PROCESSING

Test Code:

NAWB: Parnassus and Mission Bay
NAWBG: Mt Zion

Test Group:

Sodium

Performing Lab:

Parnassus, Mission Bay and Mt Zion Chemistry

Preferred Volume:

3 mL blood

Minimum Volume:

1 mL blood

Unacceptable Conditions:
Samples with needle attached, containing large bubbles, unlabeled, clotted or of insufficient volume

RESULT INTERPRETATION

Units:
mmol/L

Reference Interval:
Arterial:
136 - 146 mmol/L

Arterial reference range adopted from the UCSF reference range previously used with the ABL 835 blood gas analyzers.
Venous:
136-146 mmol/L

Venous reference range adopted from Ress KL et al, Pathology 2018, volume 50, supplement page S94 and verified by running 25 male and 25 female normal volunteers from UCSF Clinical Laboratories

Critical Values:
< 125 mmol/L or > 155 mmol/L

Additional Information:
A level < 110 mmol/L or > 170 mmol/L will automatically be re-assayed.

High levels of glucose can lower electrolyte concentrations, each 100 mg/dL causing an apparent decrease in serum sodium of 1.6 mmol/L Ref: Schrier RW: Manual of Nephrology, Boston, Little Brown, 1981

ADMINISTRATIVE

CPT Codes:
84295

LOINC Codes:
2947-0

COMPLETE VIEW

Available Stat:
Yes

Ordering Recommendations:
Follow the link for information about Blood Gas Panels that contain this test.

Test Code:
NAWB: Parnassus and Mission Bay
NAWBG: Mt Zion

Test Group:
Sodium

Performing Lab:
Parnassus, Mission Bay and Mt Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Potentiometry: Radiometer ABL 90 FLEX Plus

Remarks:

Arterial puncture:

Due to the risk of arterial damage and subsequent distal ischemia, prior to puncturing an artery the RN assesses the collateral circulation. If the radial artery is to be punctured, then the pulse of the ulnar artery is assessed. If the dorsalis pedis artery is to be accessed then the posterial tibial pulse is assessed and likewise if the posterial tibial approach is used the dorsalis pedis pulse is assessed. The modified Allens's test may be used to assess collateral circulation of the ulnar artery before a radial artery puncture, but it does not always ensure adequate flow. A Doppler ultrasound flow indicator may be used to verify collateral circulation. If the collateral circulation is poor and the RN cannot palpate a pulse then the physician should be notified before proceeding. If for any reason the circulation is compromised to the extremity being assessed for arterial puncture then the physician should be notified prior to proceeding.

1. Palpate the radial artery and identify the site where the pulse is the strongest. Avoid areas with overlying veins to prevent venous admixture.
2. Prepare the patient's skin with an alcohol or 2% chlorhexidine wipe/swab.
3. Place two or three fingers along the course of the artery both to locate its position and direction, and to stabilize it.
4. Penetrate the skin smoothly holding the needle at 30-60 degree angle with the needle bevel up and pointed proximally. The angle of the butterfly" IV catheter should not exceed 45° for pediatric patients.
5. Re-establish the position and direction of the artery by palpation.
6. Gently and slowly advance the needle or butterfly", aiming directly for the area of maximum pulsation.
7. When the arterial lumen has been entered, less resistance is felt and blood appears in the syringe above the needle hub.
8. Obtain required amount of arterial blood for test(s).
9. If blood is not obtained on first attempt, withdraw the needle to just below the skin surface and advance needle at same angle but at 1 mm to either side of previous attempt.
10. Place the 2x2 gauze over the site of the puncture then withdraw the needle from the artery. Press firmly at the site for at least five minutes, or until the bleeding stops. Apply bandage or pressure dressing.
11. Expel any air bubble in the syringe with air filter cap placed on specimen syringe.
12. Label sample with patient's name, ID number and DOB.

Venous samples:

1. Avoid excessive venous stasis from prolonged tourniquet application or clenching of the fist prior to sample collection.
2. For central line draws make sure to waste a full red top tube then draw via the blood gas syringe as noted above.
3. Fill syringe completely, remove needle (in peripheral draws), cap sample, expel all bubbles (while holding syringe upright) until blood hits the top of cap.
4. Label sample with patient's name, ID number and DOB.

Capillary Samples:

1. The following are recommended sampling sites: earlobe, fingertip, big toe, heel. The heel and big toe are more suitable for use on neonates and infants.
2. Warm the area or puncture site for 5 to 10 minutes prior to actual sampling. This accelerates flow for blood to be representative of general status of patient.
3. Make a puncture using a lancet or similar device. Do not squeeze the area to avoid tissue juice from mixing into blood sample.
4. Wipe off the first drop of blood. Take the sample from the center of the second drop of blood and hold the capillary at a slightly downward angle for an uninterrupted blood flow. Avoid getting air bubbles in the specimen.
5. Refrain from squeezing or milking the puncture site as this may result in faulty measurements or cause hemolysis of blood sample and cause elevated K+ readings.
6. Apply accompanying caps to both ends of the capillary tube and mix the sample with the heparin immediately after collection to prevent blood from clotting. The manufacturer recommends the use of a mixing wire and magnet for capillary samples.
7. Label sample with patient's name, ID and DOB.

Deliver samples immediately to lab for testing. Samples delivered to the lab >30 minutes after collection may yield erroneous results.

Collect:

Plastic blood gas syringe containing 100 U of dry heparin or capillary tube with 70 IU/ml dry electrolyte-balanced heparin

Amount to Collect:

3 mL blood

Sample Type:

Heparinized whole blood (Blood gas syringe only)

Preferred Volume:

3 mL blood

Minimum Volume:

1 mL blood

Unacceptable Conditions:

Samples with needle attached, containing large bubbles, unlabeled, clotted or of insufficient volume

Units:

mmol/L

Reference Interval:

Arterial:

136 - 146 mmol/L

Arterial reference range adopted from the UCSF reference range previously used with the ABL 835 blood gas analyzers.

Venous:

136-146 mmol/L

Venous reference range adopted from Ress KL et al, Pathology 2018, volume 50, supplement page S94 and verified by running 25 male and 25 female normal volunteers from UCSF Clinical Laboratories

Critical Values:

< 125 mmol/L or > 155 mmol/L

Synonyms:

- Na
- Electrolytes
- Na+
- Sodium
- ARTBGL
- VENBGL
- CVBGL
- MVBGL
- CAPBG
- MVBGCX
- CIRBGA
- CIRBGV
- BLYTEG
- NLYTE
- Blood gas
- ABG

Reported:

Stat 15 min, Routine 30 min

Additional Information:

A level < 110 mmol/L or > 170 mmol/L will automatically be re-assayed.

High levels of glucose can lower electrolyte concentrations, each 100 mg/dL causing an apparent decrease in serum sodium of 1.6 mmol/L Ref: Schrier RW: Manual of Nephrology, Boston, Little Brown, 1981

CPT Codes:

84295

LOINC Codes:

2947-0

Solid Tumor Cytogenetics

CYSTU

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Giemsa banding and brightfield microscopy

Reported:
21 days

Synonyms:

- Cytogenetic analysis
- Karyotype
- Karyotyping

COLLECTION

Sample Type:
Fresh tumor tissue (Formalin-fixed, paraffin-embedded unacceptable)

Collect:
Orange screw top tube (25 mL) with transport media available for clinical lab.

Amount to Collect:
1 cubic centimeter of tumor tissue

Preferred Volume:
1 cubic centimeter of tumor tissue

Minimum Volume:
0.5 cubic centimeter of tumor tissue

Remarks:
Collect in transport media provided by lab, keep sample in room temperature until received by lab, specimen must be kept moist and sterile. Transport to laboratory immediately.

Stability (from collection to initiation):
1 day

Unacceptable Conditions:
Sample submitted in formalin or alcohol or other fixative. Frozen samples. Formalin fixed paraffin embedded (FFPE) samples.

PROCESSING

Test Code:
CYSTU

Performing Lab:
Medical Genomics - Cytogenetics

Preferred Volume:
1 cubic centimeter of tumor tissue

Minimum Volume:
0.5 cubic centimeter of tumor tissue

Unacceptable Conditions:
Sample submitted in formalin or alcohol or other fixative. Frozen samples. Formalin fixed paraffin embedded (FFPE) samples.

Stability (from collection to initiation):
1 day

ADMINISTRATIVE

CPT Codes:
88239, 88262, 88280

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
CYSTU

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Giemsa banding and brightfield microscopy

Remarks:
Collect in transport media provided by lab, keep sample in room temperature until received by lab, specimen must be kept moist and sterile. Transport to laboratory immediately.

Collect:
Orange screw top tube (25 mL) with transport media available for clinical lab.

Amount to Collect:
1 cubic centimeter of tumor tissue

Sample Type:
Fresh tumor tissue (Formalin-fixed, paraffin-embedded unacceptable)

Preferred Volume:
1 cubic centimeter of tumor tissue

Minimum Volume:
0.5 cubic centimeter of tumor tissue

Unacceptable Conditions:
Sample submitted in formalin or alcohol or other fixative. Frozen samples. Formalin fixed paraffin embedded (FFPE) samples.

Synonyms:

- Cytogenetic analysis
- Karyotype
- Karyotyping

Stability (from collection to initiation):
1 day

Reported:
21 days

CPT Codes:
88239, 88262, 88280

LDT or Modified FDA:
Yes

Soluble Transferrin Receptor

SOLTR

ORDERING

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative Immunoturbidimetry

Reported:
Within 24 hours

Synonyms:

- sTfR
- TfR
- Transferrin Receptor
- Transferrin Receptor Level

COLLECTION

Sample Type:
Serum or plasma; Gold or red top

Collect:
Serum separator tube or plasma separator tube. Also acceptable: green (lithium heparin).

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

Stability (from collection to initiation):
After separation from cells: Ambient: 72 hours; Refrigerated: 1 week; Frozen: 1 month (avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Contaminated, severely hemolyzed, icteric, or lipemic specimens.

PROCESSING

Test Code:
SOLTR

ARUP Test Code:
0070283

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.3 mL)

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

Unacceptable Conditions:
Contaminated, severely hemolyzed, icteric, or lipemic specimens.

Stability (from collection to initiation):
After separation from cells: Ambient: 72 hours; Refrigerated: 1 week; Frozen: 1 month (avoid repeated freeze/thaw cycles)

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:
Male - 18 years & older: 2.2-5.0 mg/L
Female - 18 years & older: 1.9-4.4 mg/L

Interpretive Data:
People of African descent and those residing at 5,200 feet (1,600 meters) above sea level were found to have a 6% higher normal value. These differences were additive. Reference intervals have not been established for pregnant females, patients under 18 years of age, and recent or frequent blood donors.

Serum soluble transferrin receptor increases in iron deficiency and is usually unaffected by chronic disease states. In general, to increase sensitivity and specificity, the measurement of serum soluble transferrin receptor should be performed in combination with other tests of iron status, including ferritin, TIBC, and serum iron (refer to table below).

	Tests for Changes in:	Iron Deficiency Anemia	Anemia of Chronic Disease	Iron Deficiency & Anemia of Chronic Disease
Ferritin	Iron Stores	Low	High	Normal or High
TIBC	Iron Status	High	Low	Normal or High
Serum Iron	Iron Status	Low	Low	Low
sTfR	Iron Status	High	Normal	High

ADMINISTRATIVE

CPT Codes:
84238

LOINC:

- 30248-9

COMPLETE VIEW

Available Stat:
No

Test Code:
SOLTR

ARUP Test Code:
0070283

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative Immunoturbidimetry

Collect:
Serum separator tube or plasma separator tube. Also acceptable: green (lithium heparin).

Amount to Collect:
2 mL blood

Sample Type:
Serum or plasma; Gold or red top

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

Unacceptable Conditions:
Contaminated, severely hemolyzed, icteric, or lipemic specimens.

Specimen Preparation:
Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.3 mL)

Reference Interval:

Male - 18 years & older: 2.2-5.0 mg/L
Female - 18 years & older: 1.9-4.4 mg/L

Interpretive Data:

People of African descent and those residing at 5,200 feet (1,600 meters) above sea level were found to have a 6% higher normal value. These differences were additive. Reference intervals have not been established for pregnant females, patients under 18 years of age, and recent or frequent blood donors.

Serum soluble transferrin receptor increases in iron deficiency and is usually unaffected by chronic disease states. In general, to increase sensitivity and specificity, the measurement of serum soluble transferrin receptor should be performed in combination with other tests of iron status, including ferritin, TIBC, and serum iron (refer to table below).

	Tests for Changes in:	**Iron Deficiency Anemia**	**Anemia of Chronic Disease**	**Iron Deficiency & Anemia of Chronic Disease**
Ferritin	Iron Stores	Low	High	Normal or High
TIBC	Iron Status	High	Low	Normal or High
Serum Iron	Iron Status	Low	Low	Low
sTfR	Iron Status	High	Normal	High

Synonyms:

- sTfR
- TfR
- Transferrin Receptor
- Transferrin Receptor Level

Storage/Transport Temperature:

Refrigerated.

Stability (from collection to initiation):

After separation from cells: Ambient: 72 hours; Refrigerated: 1 week; Frozen: 1 month (avoid repeated freeze/thaw cycles)

Reported:

Within 24 hours

CPT Codes:

84238

LOINC:

- 30248-9

Specimen Validity Test Panel

SVP

ORDERING

Available Stat:
No

Performing Lab:
Quest

Performed:
Monday - Saturday

Methodology:
Specrophotometry

Reported:
2-3 days

COLLECTION

Sample Type:
Urine

Collect:
Urine container

Amount to Collect:
20 mL

Minimum Volume:
7 mL

Stability (from collection to initiation):
Ambient: 5 days
Refrigerated: 7 days
Frozen: 30 days

Storage/Transport Temperature:
Frozen

PROCESSING

Test Code:
SVP

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
ALIQUOT ON FREEZE. SEND TO CHINA BASIN FROZEN. ORDER QUEST TEST CODE 39343.

Minimum Volume:
7 mL

Stability (from collection to initiation):
Ambient: 5 days
Refrigerated: 7 days
Frozen: 30 days

Storage/Transport Temperature:
Frozen

ADMINISTRATIVE

CPT Codes:
82570, 83986, 84311

LOINC Codes:
2965-2, 2756-5, 2161-8, 58714-7

COMPLETE VIEW

Available Stat:
No

Test Code:
SVP

Performing Lab:
Quest

Sendout:
Yes

Performed:
Monday - Saturday

Methodology:
Specrophotometry

Collect:
Urine container

Amount to Collect:
20 mL

Sample Type:
Urine

Minimum Volume:
7 mL

Specimen Preparation:
ALIQUOT ON FREEZE. SEND TO CHINA BASIN FROZEN. ORDER QUEST TEST CODE 39343.

Storage/Transport Temperature:
Frozen

Stability (from collection to initiation):
Ambient: 5 days
Refrigerated: 7 days
Frozen: 30 days

Reported:
2-3 days

CPT Codes:
82570, 83986, 84311

LOINC Codes:
2965-2, 2756-5, 2161-8, 58714-7

Sperm Count and Motility

SPMO

ORDERING

Available Stat:

No

Performing Lab:

This test is no longer performed by the UCSF Clinical Laboratories. If testing is desired, please contact the UCSF Reproductive Clinic at (415) 353-7475 (option 1).

Synonyms:

- Semen

PROCESSING

Performing Lab:

This test is no longer performed by the UCSF Clinical Laboratories. If testing is desired, please contact the UCSF Reproductive Clinic at (415) 353-7475 (option 1).

COMPLETE VIEW

Available Stat:

No

Performing Lab:

This test is no longer performed by the UCSF Clinical Laboratories. If testing is desired, please contact the UCSF Reproductive Clinic at (415) 353-7475 (option 1).

Synonyms:

- Semen

Sperm Count, Post Vasectomy

PSCT

ORDERING

Available Stat:

No

Performing Lab:

This test is no longer performed by the UCSF Clinical Laboratories. If testing is desired, please contact the UCSF Reproductive Clinic at (415) 353-7475 (option 1).

Synonyms:

- Pelleted sperm count

PROCESSING

Performing Lab:

This test is no longer performed by the UCSF Clinical Laboratories. If testing is desired, please contact the UCSF Reproductive Clinic at (415) 353-7475 (option 1).

COMPLETE VIEW

Available Stat:

No

Performing Lab:

This test is no longer performed by the UCSF Clinical Laboratories. If testing is desired, please contact the UCSF Reproductive Clinic at (415) 353-7475 (option 1).

Synonyms:

- Pelleted sperm count

Spinal Muscular Atrophy

SMAPCR

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Molecular Diagnostics

Performed:
Run 1-2x per week, and as needed.

Methodology:
Real time PCR for copy number analysis and allele-specific probes hybridization for linked variants detection.

Reported:
14-21 days

Additional Information:
Spinal muscular atrophy (SMA) is an autosomal recessive disorder with a carrier rate of about 1 in 50 in the US, leading to disease in approximately 1 in 10,000 live births. SMA is a neuromuscular disorder and a frequently inherited cause of infant mortality. SMA is characterized by degeneration of lower motor neurons in the spinal cord and brain stem, leading to muscle wasting and paralysis. The disorder is classified into four subtypes (I-IV) based on the age of onset, which can range from infancy to adulthood. In its most severe form (Type I), SMA leads to death in infancy. In other non-fatal forms, affected individuals become disabled. Treatment in these cases is aimed at slow progression of the disease.

SMN1 Copy Number Assay
SMA is most often caused by deletions in the*SMN1* gene and thus molecular testing assesses the number of copies of *SMN1*. Individuals affected with SMA have 0 copies of the *SMN1* gene, whereas individuals with 1 copy of the *SMN1* gene are predicted to be carriers of SMA. Individuals with 2 or more copies have a reduced risk to be carriers, namely because individuals, who are carriers of SMA as a result of either 2 or 3 copies of *SMN1* on one chromosome and the absence of *SMN1* on the other chromosome (termed as 2+0 or 3+0) cannot be detected by this assay. The 2+0 genotype occurs in about 3-4% of the general population. This assay will determine SMN1 copy number, but will not detect intragenic mutations within the*SMN1*gene.

SMN1 Linked Variants Assay
Duplication of SMN1 has been linked to a haplotype that spans two linked variants (rs143838139 and rs200800214). The presence of these two variants, especially in Ashkenazi Jews and Asians, increases the likelihood of a 2+0 SMN1 genotype, but does not confirm it. This assay will also determine the presence or absence of these two linked variants. Carrier risks estimation based on SMN1 copy number analysis and detection of the linked variants is shown in the Table below.

SMN2 Copy Number Assay
SMN2 is adjacent to SMN1 on chromosome 5 and differs from it by only a few bases. However, SMN2 expresses only about 10% of functional mRNA due to a defect in RNA splicing. Individuals can carry multiple copy numbers of SMN2, ranging from 0 to 5 copies per chromosome. Thus, the presence of multiple copy numbers of SMN2 with 0 copy SMN1 is associated with reduced severity of SMA, thereby accounting for the various SMA phenotypic subtypes. This assay will also determine SMN2 copy number.

Ethnic Group	Prior Risk	**CN Detect. Rate**	**CN3 Res. Risk**	**CN2+NEG LV Res. Risk**	**CN2+POS LV Res. Risk**
Caucasian	1 in 35	95%	1 in 3,500	1 in 769	1 in 29
Ashkenazi Jewish	1 in 41	90%	1 in 4,000	1 in 580	Likely Carrier
Asian	1 in 53	93%	1 in 5,000	1 in 702	Likely Carrier
African American	1 in 66	71%	1 in 3,000	1 in 396	1 in 34
Hispanic	1 in 117	91%	1 in 11,000	1 in 1762	1 in 140

1. Hendrickson BC et al. Differences in SMN1 allele frequencies among ethnic groups within North America. J Med Genet. 46:641-644, 2009
2. Ogino S et al. Genetic risk assessment in carrier testing for spinal muscular atrophy. Am J Med Genet; 110:301-317, 2002
3. Prior TW et al. Technical standards and guidelines for spinal muscular atrophy testing. Genet in Med. 13:686-694, 2011
4. Luo M et al. An Ashkenazi Jewish SMN1 haplotype specific to duplication alleles improves pan-ethnic carrier screening for spinal muscular atrophy. Genet Med. 16:149-156, 2013
5. Sugarman EA et al. Pan-ethnic carrier screening and prenatal diagnosis for spinal muscular atrophy: clinical laboratory analysis of >72,400 specimens. Eur J Hum Genet. 27-32, 2012

This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

Synonyms:

- Werdnig-Hoffmann disease
- SMA type I, II, III, IV
- Congenital axonal neuropathy

COLLECTION

Sample Type:
EDTA whole blood
Amniotic fluid
Cultured amniocytes
Chorionic villi
Cultured chorionic villi

Collect:
Lavender top

Amount to Collect:
See preferred volume.

Preferred Volume:

Blood	5 ml
Amniotic fluid	20 ml
Cultured amniocytes	2 T25 flasks
Chorionic villi	20 mg
Cultured chorionic villi	2 T25 flasks

Minimum Volume:

Blood	2 ml
Amniotic fluid	10 ml
Cultured amniocytes	1 T25 flasks
Chorionic villi	10 mg
Cultured chorionic villi:	1 T25 flask

Remarks:
Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Unacceptable Conditions:
Heparinized samples. Low confluence cultures. Insufficient amount of amniotic fluid or chorionic villi

PROCESSING

Test Code:
SMAPCR

Performing Lab:
Medical Genomics - Molecular Diagnostics

Specimen Preparation:
Refrigerate sample. DO NOT centrifuge or freeze.

Preferred Volume:

Blood	5 ml
Amniotic fluid	20 ml
Cultured amniocytes	2 T25 flasks
Chorionic villi	20 mg
Cultured chorionic villi	2 T25 flasks

Minimum Volume:

Blood	2 ml
Amniotic fluid	10 ml
Cultured amniocytes	1 T25 flasks
Chorionic villi	10 mg
Cultured chorionic villi:	1 T25 flask

Unacceptable Conditions:
Heparinized samples. Low confluence cultures. Insufficient amount of amniotic fluid or chorionic villi

RESULT INTERPRETATION

Reference Interval:

SMN1: 2 copies
SMN2: 2 copies
SMN1 c.*3+80T>G (rs143838139) - Not detected
SMN1 c.*211_*212del(rs200800214) - Not detected

Additional Information:

Spinal muscular atrophy (SMA) is an autosomal recessive disorder with a carrier rate of about 1 in 50 in the US, leading to disease in approximately 1 in 10,000 live births. SMA is a neuromuscular disorder and a frequently inherited cause of infant mortality. SMA is characterized by degeneration of lower motor neurons in the spinal cord and brain stem, leading to muscle wasting and paralysis. The disorder is classified into four subtypes (I-IV) based on the age of onset, which can range from infancy to adulthood. In its most severe form (Type I), SMA leads to death in infancy. In other non-fatal forms, affected individuals become disabled. Treatment in these cases is aimed at slow progression of the disease.

SMN1 Copy Number Assay

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SMN1 Linked Variants Assay

Duplication of SMN1 has been linked to a haplotype that spans two linked variants (rs143838139 and rs200800214). The presence of these two variants, especially in Ashkenazi Jews and Asians, increases the likelihood of a 2+0 SMN1 genotype, but does not confirm it. This assay will also determine the presence or absence of these two linked variants. Carrier risks estimation based on SMN1 copy number analysis and detection of the linked variants is shown in the Table below.

SMN2 Copy Number Assay

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Ethnic Group	Prior Risk	**CN Detect. Rate**	**CN3 Res. Risk**	**CN2+NEG LV Res. Risk**	**CN2+POS LV Res. Risk**
Caucasian	1 in 35	95%	1 in 3,500	1 in 769	1 in 29
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This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

ADMINISTRATIVE

CPT Codes:

81329, 81337

LDT or Modified FDA:

Yes

COMPLETE VIEW

Available Stat:

No

Test Code:

SMAPCR

Performing Lab:
Medical Genomics - Molecular Diagnostics

Performed:
Run 1-2x per week, and as needed.

Methodology:
Real time PCR for copy number analysis and allele-specific probes hybridization for linked variants detection.

Remarks:
Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Collect:
Lavender top

Amount to Collect:
See preferred volume.

Sample Type:
EDTA whole blood
Amniotic fluid
Cultured amniocytes
Chorionic villi
Cultured chorionic villi

Preferred Volume:

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Unacceptable Conditions:
Heparinized samples. Low confluence cultures. Insufficient amount of amniotic fluid or chorionic villi

Specimen Preparation:
Refrigerate sample. DO NOT centrifuge or freeze.

Reference Interval:
SMN1: 2 copies
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Synonyms:

- Werdnig-Hoffmann disease
- SMA type I, II, III, IV
- Congenital axonal neuropathy

Reported:
14-21 days

Additional Information:

Spinal muscular atrophy (SMA) is an autosomal recessive disorder with a carrier rate of about 1 in 50 in the US, leading to disease in approximately 1 in 10,000 live births. SMA is a neuromuscular disorder and a frequently inherited cause of infant mortality. SMA is characterized by degeneration of lower motor neurons in the spinal cord and brain stem, leading to muscle wasting and paralysis. The disorder is classified into four subtypes (I-IV) based on the age of onset, which can range from infancy to adulthood. In its most severe form (Type I), SMA leads to death in infancy. In other non-fatal forms, affected individuals become disabled. Treatment in these cases is aimed at slow progression of the disease.

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Ethnic Group	Prior Risk	**CN Detect. Rate**	**CN3 Res. Risk**	**CN2+NEG LV Res. Risk**	**CN2+POS LV Res. Risk**
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African American	1 in 66	71%	1 in 3,000	1 in 396	1 in 34
Hispanic	1 in 117	91%	1 in 11,000	1 in 1762	1 in 140

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5. Sugarman EA et al. Pan-ethnic carrier screening and prenatal diagnosis for spinal muscular atrophy: clinical laboratory analysis of >72,400 specimens. Eur J Hum Genet. 27-32, 2012

This test was developed and its performance characteristics determined by the Clinical Laboratories at the Medical Center at UC San Francisco. It has not been cleared or approved by the U.S. Food and Drug Administration.

CPT Codes:

81329, 81337

LDT or Modified FDA:

Yes

St. Louis Equine Encephalitis Antibody

SLOUB

ORDERING

Available Stat:
No

Performing Lab:
Focus via Quest

Methodology:
IFA

Reported:
Test performed 5x per week. Turnaround 3-5 days

COLLECTION

Sample Type:
Serum

Collect:
Red top or Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.1 mL serum

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 2 weeks, frozen at -20C 6 months.

PROCESSING

Test Code:
SLOUB

Sendout:
Yes

Performing Lab:
Focus via Quest

Specimen Preparation:
Freeze serum at -20C. Order Quest test #2649F

Preferred Volume:
1 mL serum

Minimum Volume:
0.1 mL serum

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 2 weeks, frozen at -20C 6 months.

RESULT INTERPRETATION

Units:
Titer

Reference Interval:
IgG: < 1:16 titer
IgM: < 1:20 titer

ADMINISTRATIVE

CPT Codes:
86653-90 (x2)

LOINC Codes:
9578-6

COMPLETE VIEW

Available Stat:
No

Test Code:
SLOUB

Performing Lab:
Focus via Quest

Sendout:
Yes

Methodology:
IFA

Collect:
Red top or Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.1 mL serum

Specimen Preparation:
Freeze serum at -20C. Order Quest test #2649F

Units:
Titer

Reference Interval:
IgG: < 1:16 titer
IgM: < 1:20 titer

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 2 weeks, frozen at -20C 6 months.

Reported:
Test performed 5x per week. Turnaround 3-5 days

CPT Codes:
86653-90 (x2)

LOINC Codes:
9578-6

Staph aureus Culture

P115

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Set up daily, day and evening shift.

Methodology:
Culture

Reported:
2-4 days

Reflex Testing:
Susceptibility testing is performed if Staphylococcus aureus is isolated.

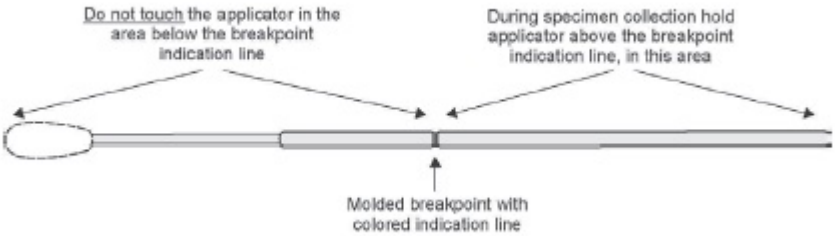
COLLECTION

Sample Type:
Anterior nares swab to screen for carrier, skin or soft tissue swab

Collect:
E-swab (liquid Amies elution medium) or Amies transport medium with charcoal. Amies Gel and Amies/Stuart Liquid Swab Transport Systems have also been validated for culture.

Remarks:
For Amies trasnport media with charcoal:
1. Run both swabs quickly under tap water to slightly moisten the swabs.
2. Using both swabs at the same time, gently insert the swabs approx 1/4 " into the anterior nares (just inside the nasal orofice). Swab in a circular motion; and repeat in second nostril, using the same two (2) swabs.
3. Place swabs into Amies (charcoal) transport media, cap and deliver per protocol to Microbiology.

For E-swab:
1. Do NOT prewet the swab.
2. Grasp the swab shaft at the very end.
3. Gently insert the swab approx 1/4 " into the anterior nares (just inside the nasal orofice). Swab in a circular motion; and repeat in second nostril, using the same swab.
4. After collection, break the swab off into the liquid media inside the tube at the colored breakpoint mark and tightly secure the cap.



Stability (from collection to initiation):
24 hours at room temperature or refrigerated

Unacceptable Conditions:
Swabs not submitted in transport medium

PROCESSING

Test Code:
P115

Performing Lab:
Microbiology

Unacceptable Conditions:
Swabs not submitted in transport medium

Stability (from collection to initiation):
24 hours at room temperature or refrigerated

ADMINISTRATIVE

CPT Codes:
87081

COMPLETE VIEW

Available Stat:
No

Test Code:
P115

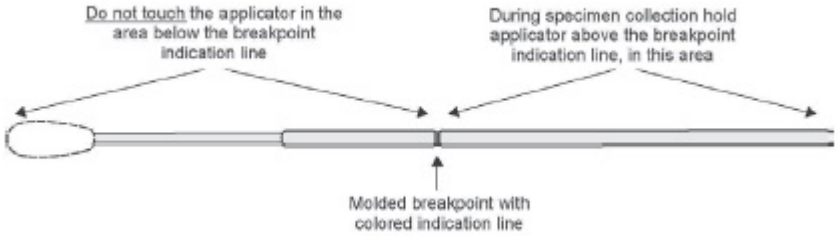
Performing Lab:
Microbiology

Performed:
Set up daily, day and evening shift.

Methodology:
Culture

Remarks:
For Amies trasnport media with charcoal:
1. Run both swabs quickly under tap water to slightly moisten the swabs.
2. Using both swabs at the same time, gently insert the swabs approx 1/4 " into the anterior nares (just inside the nasal orofice). Swab in a circular motion; and repeat in second nostril, using the same two (2) swabs.
3. Place swabs into Amies (charcoal) transport media, cap and deliver per protocol to Microbiology.

For E-swab:
1. Do NOT prewet the swab.
2. Grasp the swab shaft at the very end.
3. Gently insert the swab approx 1/4 " into the anterior nares (just inside the nasal orofice). Swab in a circular motion; and repeat in second nostril, using the same swab.
4. After collection, break the swab off into the liquid media inside the tube at the colored breakpoint mark and tightly secure the cap.



Collect:
E-swab (liquid Amies elution medium) or Amies transport medium with charcoal. Amies Gel and Amies/Stuart Liquid Swab Transport Systems have also been validated for culture.

Sample Type:
Anterior nares swab to screen for carrier, skin or soft tissue swab

Unacceptable Conditions:
Swabs not submitted in transport medium

Stability (from collection to initiation):
24 hours at room temperature or refrigerated

Reported:
2-4 days

Reflex Testing:
Susceptibility testing is performed if Staphylococcus aureus is isolated.

CPT Codes:
87081

Steroid Panel, Congenital Adrenal Hyperplasia

MOLT

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
LC/MS/MS

Reported:
4-7 days

Additional Information:
Includes:

Androstenedione; 11-Deoxycortisol; Cortisol; DHEA, Unconjugated; 17-Hydroxypregnenolone; Progesterone; 17-Hydroxyprogesterone; Testosterone, Total, LC/MS/MS; Deoxycorticosterone

Synonyms:

- CAH

COLLECTION

Sample Type:
Serum

Collect:
Red top (Gold top NOT acceptable)

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.25 mL serum

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 1 week, frozen 1 month

Unacceptable Conditions:
Hemolysis, gross lipemia, gross icterus. Collected in Gold top or other gel containing tube.

Rejection Criteria:
Hemolysis, gross lipemia, gross icterus

PROCESSING

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Spin, aliquot and freeze serum at -20C. Order Quest test # 90398

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.25 mL serum

Unacceptable Conditions:
Hemolysis, gross lipemia, gross icterus. Collected in Gold top or other gel containing tube.

Rejection Criteria:
Hemolysis, gross lipemia, gross icterus

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 1 week, frozen 1 month

RESULT INTERPRETATION

Additional Information:
Includes:

Androstenedione; 11-Deoxycortisol; Cortisol; DHEA, Unconjugated; 17-Hydroxypregnenolone; Progesterone; 17-Hydroxyprogesterone; Testosterone, Total, LC/MS/MS; Deoxycorticosterone

ADMINISTRATIVE

CPT Codes:
82157-90, 82634-90, 82533-90, 82626-90, 84143-90, 84144-90, 83498-90, 84403-90, 82633-90

COMPLETE VIEW

Available Stat:
No

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Performing Lab:
Quest

Sendout:
Yes

Methodology:
LC/MS/MS

Collect:
Red top (Gold top NOT acceptable)

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.25 mL serum

Rejection Criteria:
Hemolysis, gross lipemia, gross icterus

Unacceptable Conditions:
Hemolysis, gross lipemia, gross icterus. Collected in Gold top or other gel containing tube.

Specimen Preparation:
Spin, aliquot and freeze serum at -20C. Order Quest test # 90398

Synonyms:

- CAH

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 1 week, frozen 1 month

Reported:
4-7 days

Additional Information:
Includes:

Androstenedione; 11-Deoxycortisol; Cortisol; DHEA, Unconjugated; 17-Hydroxypregnenolone; Progesterone; 17-Hydroxyprogesterone; Testosterone, Total, LC/MS/MS; Deoxycorticosterone

CPT Codes:
82157-90, 82634-90, 82533-90, 82626-90, 84143-90, 84144-90, 83498-90, 84403-90, 82633-90

Sterols
STER

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
Gas Chromatography-Mass Spectrometry (GC-MS)/Gas Chromatography-Flame Ionization Detection (GC-FID)

Reported:
7-9 days

Additional Information:
Testing includes desmosterol, lathosterol, campesterol, and sitosterol for the investigation of desmosterolosis and sitosterolemia.

Synonyms:

- photosterols
- desmosterol
- lathosterol
- campesterol
- sitosterol
- desmosterolosis
- sitosterolemia

COLLECTION

Patient Preparation:
Fasting (12 hours or more, infants just before next feeding).

Sample Type:
Plasma

Collect:
Dark green top or lavender top

Spin down within 45 minutes of draw. Aliquot and freeze. Transport to China Basin.

Amount to Collect:
2 mL

Preferred Volume:
1 mL

Minimum Volume:
0.2 mL

Stability (from collection to initiation):
Frozen/refrigerated: 90 days (plasma)

PROCESSING

Test Code:
STER

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Spin down within 45 minutes of draw. Aliquot and freeze. Transport to CB frozen. Order Mayo test code STER.

Preferred Volume:
1 mL

Minimum Volume:
0.2 mL

Stability (from collection to initiation):
Frozen/refrigerated: 90 days (plasma)

RESULT INTERPRETATION

Additional Information:
Testing includes desmosterol, lathosterol, campesterol, and sitosterol for the investigation of desmosterolosis and sitosterolemia.

ADMINISTRATIVE

CPT Codes:
82542-90

LOINC Codes:
75740-1, 75738-5, 75741-9, 75739-3

COMPLETE VIEW

Available Stat:
No

Test Code:
STER

Performing Lab:
Mayo

Sendout:
Yes

Methodology:
Gas Chromatography-Mass Spectrometry (GC-MS)/Gas Chromatography-Flame Ionization Detection (GC-FID)

Patient Preparation:
Fasting (12 hours or more, infants just before next feeding).

Collect:
Dark green top or lavender top

Spin down within 45 minutes of draw. Aliquot and freeze. Transport to China Basin.

Amount to Collect:
2 mL

Sample Type:
Plasma

Preferred Volume:
1 mL

Minimum Volume:
0.2 mL

Specimen Preparation:
Spin down within 45 minutes of draw. Aliquot and freeze. Transport to CB frozen. Order Mayo test code STER.

Synonyms:

- photosterols
- desmosterol
- lathosterol
- campesterol
- sitosterol
- desmosterolosis
- sitosterolemia

Stability (from collection to initiation):
Frozen/refrigerated: 90 days (plasma)

Reported:
7-9 days

Additional Information:
Testing includes desmosterol, lathosterol, campesterol, and sitosterol for the investigation of desmosterolosis and sitosterolemia.

CPT Codes:
82542-90

LOINC Codes:
75740-1, 75738-5, 75741-9, 75739-3

Streptococcus Group A Antigen

P116

ORDERING

Available Stat:
Yes

Performing Lab:
Microbiology

Performed:
Daily, day and evening shifts until 9 PM

Methodology:
Lateral flow immunassay

Reported:
1 hour after receipt at China Basin Microbiology

Additional Information:
Sensitivity is approximately 70% compared with culture. Culture will be performed automatically on antigen negative samples.

Excess blood or mucus on the swab may interfere with the test performance and may yield a false positive result.

Reflex Testing:
Negative samples are automatically reflexed to culture at an additional charge.

Synonyms:

- Beta-hemolytic Strep
- beta-strep

COLLECTION

Sample Type:
Throat swab

Collect:
Polyester (Dacron) swabs x2 in sterile dry plastic tube without preservative. Alternatively, swabs can be returned to the original sterile sleeve after collection. Do not use E-swabs or other transport media.

Amount to Collect:
2 swabs

Preferred Volume:
2 swabs

Minimum Volume:
2 swabs

If only one swab is received, Group A Streptococcus Culture will be performed instead of the antigen test.

Remarks:
Swab tonsils or tonsilar crypts and posterior pharynx.

Deliver immediately to laboratory. refrigerate if transport is delayed.

Stability (from collection to initiation):
Refrigerated 3 days

Unacceptable Conditions:
Swab submitted in transport media or preservative.

PROCESSING

Test Code:
P116

Test Group:
Streptococcus

Performing Lab:
Microbiology

Specimen Preparation:
If antigen test is negative set up a group A strep culture

Preferred Volume:
2 swabs

Minimum Volume:
2 swabs

If only one swab is received, Group A Streptococcus Culture will be performed instead of the antigen test.

Unacceptable Conditions:
Swab submitted in transport media or preservative.

Stability (from collection to initiation):
Refrigerated 3 days

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
Sensitivity is approximately 70% compared with culture. Culture will be performed automatically on antigen negative samples.

Excess blood or mucus on the swab may interfere with the test performance and may yield a false positive result.

ADMINISTRATIVE

CPT Codes:
87880

LOINC Codes:
18481-2

COMPLETE VIEW

Available Stat:
Yes

Test Code:
P116

Test Group:
Streptococcus

Performing Lab:
Microbiology

Performed:
Daily, day and evening shifts until 9 PM

Methodology:
Lateral flow immunassay

Remarks:
Swab tonsils or tonsilar crypts and posterior pharynx.

Deliver immediately to laboratory. refrigerate if transport is delayed.

Collect:
Polyester (Dacron) swabs x2 in sterile dry plastic tube without preservative. Alternatively, swabs can be returned to the original sterile sleeve after collection. Do not use E-swabs or other transport media.

Amount to Collect:
2 swabs

Sample Type:
Throat swab

Preferred Volume:
2 swabs

Minimum Volume:
2 swabs

If only one swab is received, Group A Streptococcus Culture will be performed instead of the antigen test.

Unacceptable Conditions:
Swab submitted in transport media or preservative.

Specimen Preparation:
If antigen test is negative set up a group A strep culture

Reference Interval:
Negative

Synonyms:

- Beta-hemolytic Strep
- beta-strep

Stability (from collection to initiation):
Refrigerated 3 days

Reported:
1 hour after receipt at China Basin Microbiology

Reflex Testing:
Negative samples are automatically reflexed to culture at an additional charge.

Additional Information:
Sensitivity is approximately 70% compared with culture. Culture will be performed automatically on antigen negative samples.

Excess blood or mucus on the swab may interfere with the test performance and may yield a false positive result.

CPT Codes:
87880

LOINC Codes:
18481-2

Streptococcus Group A Culture

P118

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Set up daily, all shifts

Methodology:
Selective media

Reported:
2 days

Additional Information:
If other organisms are requested the specimen will be processed as Bacterial Culture, Respiratory

Synonyms:

- Bacterial culture
- Beta-hemolytic Strep
- beta-strep
- Throat culture

COLLECTION

Sample Type:
Throat swab

Collect:
E-swab (liquid Amies elution medium) or Amies transport medium with charcoal, or dry Polyester swab in original sterile paper sleeve. Amies Gel and Amies/Stuart Liquid Swab Transport Systems have also been validated for culture.

Note: If Streptococcus Group A antigen testing is also being requested it is required to submit two polyester swabs in the original sterile paper sleeve or sterile dry plastic tube.

Remarks:
If other throat organisms are of interest they must be specified on the Microbiology requisition.

Stability (from collection to initiation):
Room temperature 24 hours

PROCESSING

Test Code:
P118

Performing Lab:
Microbiology

Stability (from collection to initiation):
Room temperature 24 hours

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
If other organisms are requested the specimen will be processed as Bacterial Culture, Respiratory

ADMINISTRATIVE

CPT Codes:
87081

LOINC Codes:
11268-0

COMPLETE VIEW

Available Stat:
No

Test Code:
P118

Performing Lab:
Microbiology

Performed:
Set up daily, all shifts

Methodology:
Selective media

Remarks:
If other throat organisms are of interest they must be specified on the Microbiology requisition.

Collect:
E-swab (liquid Amies elution medium) or Amies transport medium with charcoal, or dry Polyester swab in original sterile paper sleeve. Amies Gel and Amies/Stuart Liquid Swab Transport Systems have also been validated for culture.

Note: If Streptococcus Group A antigen testing is also being requested it is required to submit two polyester swabs in the original sterile paper sleeve or sterile dry plastic tube.

Sample Type:
Throat swab

Reference Interval:
Negative

Synonyms:

- Bacterial culture
- Beta-hemolytic Strep
- beta-strep
- Throat culture

Stability (from collection to initiation):
Room temperature 24 hours

Reported:
2 days

Additional Information:
If other organisms are requested the specimen will be processed as Bacterial Culture, Respiratory

CPT Codes:
87081

LOINC Codes:
11268-0

Streptococcus Group B Culture

P138

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Set up daily, day and evening shifts

Methodology:
Culture

Reported:
3 days

Additional Information:
For detection of carriers prior to delivery.

If penicillin allergy is indicated on the requisition microbiology will perform susceptability studies to erythromycin and clindamycin.

Synonyms:

- Bacterial culture

COLLECTION

Sample Type:
Anal-vaginal swab

Collect:
E-swab (liquid Amies elution medium) or Amies transport medium with charcoal. Amies Gel and Amies/Stuart Liquid Swab Transport Systems have also been validated for culture.

Remarks:
Collect combined rectal and introital sample.

Indicate on requisition if the patient is allergic to penicillin.

Stability (from collection to initiation):
Room temperature 12 hours

Unacceptable Conditions:
Swabs not received in E-swab, Todd-Hewitt (LIM) broth, or charcoal transport media.

PROCESSING

Test Code:
P138

Performing Lab:
Microbiology

Specimen Preparation:
E-swabs should be vortexed briefly prior to placing the swab in Todd-Hewitt (LIM) broth for incubation. Charcoal swabs should be placed into Todd-Hewitt (LIM) broth prior to incubation.

Unacceptable Conditions:
Swabs not received in E-swab, Todd-Hewitt (LIM) broth, or charcoal transport media.

Stability (from collection to initiation):
Room temperature 12 hours

RESULT INTERPRETATION

Critical Values:
Positive culture from L&D patient.

Additional Information:
For detection of carriers prior to delivery.

If penicillin allergy is indicated on the requisition microbiology will perform susceptability studies to erythromycin and clindamycin.

ADMINISTRATIVE

CPT Codes:
87081

LOINC Codes:
582-7

COMPLETE VIEW

Available Stat:
No

Test Code:
P138

Performing Lab:
Microbiology

Performed:
Set up daily, day and evening shifts

Methodology:
Culture

Remarks:
Collect combined rectal and introital sample.

Indicate on requisition if the patient is allergic to penicillin.

Collect:
E-swab (liquid Amies elution medium) or Amies transport medium with charcoal. Amies Gel and Amies/Stuart Liquid Swab Transport Systems have also been validated for culture.

Sample Type:
Anal-vaginal swab

Unacceptable Conditions:
Swabs not received in E-swab, Todd-Hewitt (LIM) broth, or charcoal transport media.

Specimen Preparation:
E-swabs should be vortexed briefly prior to placing the swab in Todd-Hewitt (LIM) broth for incubation. Charcoal swabs should be placed into Todd-Hewitt (LIM) broth prior to incubation.

Critical Values:
Positive culture from L&D patient.

Synonyms:

- Bacterial culture

Stability (from collection to initiation):
Room temperature 12 hours

Reported:
3 days

Additional Information:
For detection of carriers prior to delivery.

If penicillin allergy is indicated on the requisition microbiology will perform susceptability studies to erythromycin and clindamycin.

CPT Codes:
87081

LOINC Codes:
582-7

Subtel Interphase deletion 11Q FISH

11QT, B11QT

ORDERING

Performing Lab:
Cytogenetics

Performed:
Monday - Friday, 9AM to 5PM

Methodology:
FISH

Reported:
7-14 days

Synonyms:

- 11QT
- B11QT

COLLECTION

Sample Type:
Bone marrow aspirate, Bone marrow core, Blood

Collect:
Bone marrow: Dark Green Top Sodium Heparin tube
Bone Core : Sterile container with medium
Blood: Dark Green Top Sodium Heparin tube

Preferred Volume:
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm
Blood: 2 m

Minimum Volume:
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm
Blood: 1 mL

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Room temperature

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen

PROCESSING

Test Code:
11QT: Non-blood/bone marrow
B11QT: Blood

Performing Lab:
Cytogenetics

Preferred Volume:
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm
Blood: 2 m

Minimum Volume:
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm
Blood: 1 mL

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Room temperature

ADMINISTRATIVE

CPT Codes:
88271x1, 88275x1

COMPLETE VIEW

Test Code:
11QT: Non-blood/bone marrow
B11QT: Blood

Performing Lab:
Cytogenetics

Performed:
Monday - Friday, 9AM to 5PM

Methodology:
FISH

Collect:
Bone marrow: Dark Green Top Sodium Heparin tube
Bone Core : Sterile container with medium
Blood: Dark Green Top Sodium Heparin tube

Sample Type:
Bone marrow aspirate, Bone marrow core, Blood

Preferred Volume:
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm
Blood: 2 m

Minimum Volume:
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm
Blood: 1 mL

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen

Synonyms:

- 11QT
- B11QT

Storage/Transport Temperature:
Room temperature

Stability (from collection to initiation):
2 days

Reported:
7-14 days

CPT Codes:
88271x1, 88275x1

Subtelomere FISH

CYSUB

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Set up daily, Monday-Friday

Methodology:
Fluorescent in-situ hybridization

Additional Information:
Each FISH test is developed and its performance characteristics determined by the UCSF Cytogenetics Laboratory as required by CLIA '88 regulations. It has not been cleared or approved for specific uses by the U.S. Food and Drug Administration. All FISH probes undergo internal validation and quality control testing at UCSF Cytogenetics Lab prior to use.

Reflex Testing:
If an abnormality is detected the Director will determine the appropriate additional studies to be performed to characterize the abnormality.

Additional testing may be omitted if specifically requested when the sample is submitted for cytogenetic analysis.

Synonyms:

- Cytogenetic analysis
- chromosome analysis
- Karyotype
- Karyotyping

COLLECTION

Sample Type:
Heparinized whole blood, Unfixed tissue

Collect:
Blood: Dark green top
POC: 15 mL centrifuge tube with transport media (RPMI, FBS, L-Glutamine, Sodium Heparin and PenStrep). Available from Cytogenetics.

Amount to Collect:
2 ml blood

Preferred Volume:
2 mL blood

Minimum Volume:
1 mL blood

Remarks:
Keep samples at Room temperature. DO NOT CENTRIFUGE for any reason.

Stability (from collection to initiation):
48 hours

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

PROCESSING

Test Code:
CYSUB

Test Group:
Chromosome Analysis

Performing Lab:
Medical Genomics - Cytogenetics

Specimen Preparation:
Keep samples at Room temperature. DO NOT CENTRIFUGE for any reason. Send all tubes and completed paperwork asap to the Cytogenetics laboratory at China Basin.

Preferred Volume:
2 mL blood

Minimum Volume:
1 mL blood

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

Stability (from collection to initiation):
48 hours

RESULT INTERPRETATION

Reference Interval:
Normal. See Additional Information

Additional Information:
Each FISH test is developed and its performance characteristics determined by the UCSF Cytogenetics Laboratory as required by CLIA '88 regulations. It has not been cleared or approved for specific uses by the U.S. Food and Drug Administration. All FISH probes undergo internal validation and quality control testing at UCSF Cytogenetics Lab prior to use.

ADMINISTRATIVE

CPT Codes:
88273x3, 88271x8

LDT or Modified FDA:
Yes

LOINC Codes:
49040-9

COMPLETE VIEW

Available Stat:
No

Test Code:
CYSUB

Test Group:
Chromosome Analysis

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Set up daily, Monday-Friday

Methodology:
Fluorescent in-situ hybridization

Remarks:
Keep samples at Room temperature. DO NOT CENTRIFUGE for any reason.

Collect:
Blood: Dark green top
POC: 15 mL centrifuge tube with transport media (RPMI, FBS, L-Glutamine, Sodium Heparin and PenStrep). Available from Cytogenetics.

Amount to Collect:
2 ml blood

Sample Type:
Heparinized whole blood, Unfixed tissue

Preferred Volume:
2 mL blood

Minimum Volume:
1 mL blood

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

Specimen Preparation:
Keep samples at Room temperature. DO NOT CENTRIFUGE for any reason. Send all tubes and completed paperwork asap to the Cytogenetics laboratory at China Basin.

Reference Interval:
Normal. See Additional Information

Synonyms:

- Cytogenetic analysis
- chromosome analysis
- Karyotype
- Karyotyping

Stability (from collection to initiation):
48 hours

Reflex Testing:
If an abnormality is detected the Director will determine the appropriate additional studies to be performed to characterize the abnormality.

Additional testing may be omitted if specifically requested when the sample is submitted for cytogenetic analysis.

Additional Information:
Each FISH test is developed and its performance characteristics determined by the UCSF Cytogenetics Laboratory as required by CLIA '88 regulations. It has not been cleared or approved for specific uses by the U.S. Food and Drug Administration. All FISH probes undergo internal validation and quality control testing at UCSF Cytogenetics Lab prior to use.

CPT Codes:
88273x3, 88271x8

LDT or Modified FDA:
Yes

LOINC Codes:
49040-9

Sulfatide Autoantibody

SULFAB

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
ELISA

Reported:
7-10 days

COLLECTION

Sample Type:
Serum

Collect:
Gold top or Red top

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL serum

Minimum Volume:
0.5 mL

Stability (from collection to initiation):
Room Temperature: 72 hours
Refrigerated: 21 days
Frozen: 4 months

Storage/Transport Temperature:
Frozen

PROCESSING

Test Code:
SULFAB

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot and freeze. Send to CB frozen. Order Quest test code 30175.

Preferred Volume:
2 mL serum

Minimum Volume:
0.5 mL

Stability (from collection to initiation):
Room Temperature: 72 hours
Refrigerated: 21 days
Frozen: 4 months

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Reference Interval:

	IgM	IgG
Normal	< 1100	<900
Elevated	1100	900
Very High	1700	1500

ADMINISTRATIVE

CPT Codes:
83520x2

LOINC Codes:
49549-9, 8251-1, 8265-1

COMPLETE VIEW

Available Stat:
No

Test Code:
SULFAB

Performing Lab:
Quest

Sendout:
Yes

Methodology:
ELISA

Collect:
Gold top or Red top

Amount to Collect:
4 mL blood

Sample Type:
Serum

Preferred Volume:
2 mL serum

Minimum Volume:
0.5 mL

Specimen Preparation:
Aliquot and freeze. Send to CB frozen. Order Quest test code 30175.

Reference Interval:

	IgM	IgG
Normal	< 1100	<900
Elevated	1100	900
Very High	1700	1500

Storage/Transport Temperature:
Frozen

Stability (from collection to initiation):
Room Temperature: 72 hours
Refrigerated: 21 days
Frozen: 4 months

Reported:
7-10 days

CPT Codes:
83520x2

LOINC Codes:
49549-9, 8251-1, 8265-1

Supersaturation Profile, Urine

SUPSAT

ORDERING

Ordering Recommendations:
Use for kidney stone risk assessment and monitoring; includes interpretation of data. Panel includes calcium, chloride, citric acid, creatinine, magnesium, oxalate, pH, phosphorous, potassium, sodium, sulfate, and uric acid.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Mon, Wed, Fri

Methodology:
Quantitative Spectrophotometry/Quantitative Enzymatic Assay/Quantitative Ion-Selective Electrode

Reported:
1-8 days

Synonyms:

- Calculi Risk
- Calculus Risk
- choride
- citric aci
- creatinine
- Kidney Stone Profile
- Kidney Stone Risk Assessment
- magnesium
- oxalate
- phosphorus
- potassium
- Stone Risk Profile
- sulfate
- uric acid

COLLECTION

Collect:
24-hour urine. Refrigerate during collection.

Remarks:
Record total volume and collection time interval on tube and test request form.

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: Unacceptable; Frozen: 2 weeks

Storage/Transport Temperature:
Frozen.

PROCESSING

Test Code:
SUPSAT

ARUP Test Code:
2008771

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:

Thoroughly mix entire collection (24-hour) in one container. Transport four separate 4 mL aliquots of urine using Calculi Risk/Supersaturation Urine Collection Kit (ARUP supply# 46007). Available online through eSupply using ARUP Connect(TM) or contact Client Services at (800) 522-2787. Do not exceed 4 mL in tubes.
Aliquot according to the following specifications:
1st aliquot (pH 2): Transfer 4 mL urine into a Sulfamic Acid Tube. (Min: 4 mL) Mix well. Freeze immediately.
2nd aliquot (pH 2): Transfer 4 mL urine into a Sulfamic Acid Tube. (Min: 4 mL) Mix well. Freeze immediately.
3rd aliquot (pH 9): Transfer 4 mL urine into a Sodium Carbonate Tube. (Min: 4 mL) Mix well. Freeze immediately.
4th aliquot: Transfer 4 mL urine into an Unpreserved Tube. (Min: 4 mL) Freeze immediately.
If collection kit is unavailable, transport four 4 mL unadjusted aliquots of urine.
New York State Clients: Two 100 mL aliquots

Stability (from collection to initiation):

Ambient: Unacceptable; Refrigerated: Unacceptable; Frozen: 2 weeks

Storage/Transport Temperature:

Frozen.

RESULT INTERPRETATION

Reference Interval:

<table>
<tr><th>Components</th><th>Reference Interval</th></tr>
<tr><td>Calcium, Urine - per 24h</td><td>
<table>
<tr><th>Diet</th><th>Reference Interval (mg/d)</th></tr>
<tr><td>Calcium-free diet</td><td>5-40</td></tr>
<tr><td>Low calcium diet (less than 800 mg/d)</td><td>50-150</td></tr>
<tr><td>Average calcium diet (about 800 mg/d)</td><td>100-250</td></tr>
<tr><td>High calcium diet (greater than 800 mg/d)</td><td>> 250</td></tr>
</table>
</td></tr>
<tr><td>Creatinine, Urine - per 24h</td><td>
<table>
<tr><th>Age</th><th>Male (mg/d)</th><th>Female (mg/d)</th></tr>
<tr><td>3-8 years</td><td>140-700</td><td>140-700</td></tr>
<tr><td>9-12 years</td><td>300-1300</td><td>300-1300</td></tr>
<tr><td>13-17 years</td><td>500-2300</td><td>400-1600</td></tr>
<tr><td>18-50 years</td><td>1000-2500</td><td>700-1600</td></tr>
<tr><td>51-80 years</td><td>800-2100</td><td>500-1400</td></tr>
<tr><td>81 years and older</td><td>600-2000</td><td>400-1300</td></tr>
</table>
</td></tr>
<tr><td>Magnesium, Urine per 24h</td><td>12-199 mg/d</td></tr>
<tr><td>Phosphorus, Urine - per 24h</td><td>400-1300 mg/d</td></tr>
<tr><td>Uric Acid, Urine - per 24h</td><td>250-750 mg/d</td></tr>
<tr><td>Citric Acid, Urine - per 24h</td><td>18 years and older: 320-1240 mg/d</td></tr>
<tr><td>Oxalate, Urine - per 24h</td><td>
<table>
<tr><th>Age</th><th>Male (mg/d)</th><th>Female (mg/d)</th></tr>
<tr><td>0-12 years</td><td>7-31</td><td>7-31</td></tr>
<tr><td>13 years and older</td><td>16-49</td><td>13-40</td></tr>
</table>
</td></tr>
<tr><td>Sodium, Urine - per 24h</td><td>51-286 mmol/d</td></tr>
<tr><td>Potassium, Urine - per 24h</td><td>25-125 mmol/d</td></tr>
<tr><td>Chloride, Urine - per 24h</td><td>140-250 mmol/d</td></tr>
<tr><td>Sulfate, Urine - per 24h</td><td>6-30 mmol/d</td></tr>
</table>

Interpretive Data:

The values determined for this specimen are placed on the chart to indicate the approximate risk associated with the particular concentrations. Increased risk is to the right of center; decreased risk, to the left. Relative supersaturation calculated for calcium oxalate, calcium hydrogen phosphate (brushite) and uric acid calculi is displayed. Relative risk increases from the middle to the right side of this chart.

Per 24h calculations are provided to aid interpretation for collections with a duration of 24 hours and an average daily urine volume. For specimens with notable deviations in collection time or volume, ratios of analytes to a corresponding urine creatinine concentration may assist in result interpretation.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:

82340; 82436; 82507; 84560; 83735; 83945; 84105; 84133; 84300; 84392; 83986

LOINC:

- 30211-7
- 19124-7
- 19153-6
- 2701-1
- 3086-6
- 2756-5
- 2162-6
- 42678-3
- 26889-6
- 17862-4
- 11526-1
- 2829-0
- 2161-8
- 2955-3
- 34736-9
- 2700-3
- 2079-2
- 2828-2
- 2956-1
- 42673-4
- 47780-2
- 2778-9
- 2128-7
- 24447-5
- 6687-8
- 3087-4
- 48767-8
- 2779-7
- 6874-2
- 2078-4

COMPLETE VIEW

Available Stat:

No

Ordering Recommendations:

Use for kidney stone risk assessment and monitoring; includes interpretation of data. Panel includes calcium, chloride, citric acid, creatinine, magnesium, oxalate, pH, phosphorous, potassium, sodium, sulfate, and uric acid.

Test Code:

SUPSAT

ARUP Test Code:

2008771

Performing Lab:

ARUP

Sendout:

Yes

Performed:

Mon, Wed, Fri

Methodology:

Quantitative Spectrophotometry/Quantitative Enzymatic Assay/Quantitative Ion-Selective Electrode

Remarks:

Record total volume and collection time interval on tube and test request form.

Collect:

24-hour urine. Refrigerate during collection.

Specimen Preparation:

Thoroughly mix entire collection (24-hour) in one container. Transport four separate 4 mL aliquots of urine using Calculi Risk/Supersaturation Urine Collection Kit (ARUP supply# 46007). Available online through eSupply using ARUP Connect(TM) or contact Client Services at (800) 522-2787. Do not exceed 4 mL in tubes.
Aliquot according to the following specifications:
1st aliquot (pH 2): Transfer 4 mL urine into a Sulfamic Acid Tube. (Min: 4 mL) Mix well. Freeze immediately.
2nd aliquot (pH 2): Transfer 4 mL urine into a Sulfamic Acid Tube. (Min: 4 mL) Mix well. Freeze immediately.
3rd aliquot (pH 9): Transfer 4 mL urine into a Sodium Carbonate Tube. (Min: 4 mL) Mix well. Freeze immediately.
4th aliquot: Transfer 4 mL urine into an Unpreserved Tube. (Min: 4 mL) Freeze immediately.
If collection kit is unavailable, transport four 4 mL unadjusted aliquots of urine.
New York State Clients: Two 100 mL aliquots

Reference Interval:

Components	Reference Interval
Calcium, Urine - per 24h	

Diet	Reference Interval (mg/d)
Calcium-free diet	5-40
Low calcium diet (less than 800 mg/d)	50-150
Average calcium diet (about 800 mg/d)	100-250
High calcium diet (greater than 800 mg/d)	> 250

Creatinine, Urine - per 24h

Age	Male (mg/d)	Female (mg/d)
3-8 years	140-700	140-700
9-12 years	300-1300	300-1300
13-17 years	500-2300	400-1600
18-50 years	1000-2500	700-1600
51-80 years	800-2100	500-1400
81 years and older	600-2000	400-1300

Magnesium, Urine per 24h	12-199 mg/d
Phosphorus, Urine - per 24h	400-1300 mg/d
Uric Acid, Urine - per 24h	250-750 mg/d
Citric Acid, Urine - per 24h	18 years and older: 320-1240 mg/d

Oxalate, Urine - per 24h

Age	Male (mg/d)	Female (mg/d)
0-12 years	7-31	7-31
13 years and older	16-49	13-40

Sodium, Urine - per 24h	51-286 mmol/d
Potassium, Urine - per 24h	25-125 mmol/d
Chloride, Urine - per 24h	140-250 mmol/d
Sulfate, Urine - per 24h	6-30 mmol/d

Interpretive Data:

The values determined for this specimen are placed on the chart to indicate the approximate risk associated with the particular concentrations. Increased risk is to the right of center; decreased risk, to the left. Relative supersaturation calculated for calcium oxalate, calcium hydrogen phosphate (brushite) and uric acid calculi is displayed. Relative risk increases from the middle to the right side of this chart.

Per 24h calculations are provided to aid interpretation for collections with a duration of 24 hours and an average daily urine volume. For specimens with notable deviations in collection time or volume, ratios of analytes to a corresponding urine creatinine concentration may assist in result interpretation.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Synonyms:

- Calculi Risk
- Calculus Risk
- choride
- citric aci
- creatinine
- Kidney Stone Profile
- Kidney Stone Risk Assessment
- magnesium
- oxalate
- phosphorus
- potassium
- Stone Risk Profile
- sulfate
- uric acid

Storage/Transport Temperature:

Frozen.

Stability (from collection to initiation):

Ambient: Unacceptable; Refrigerated: Unacceptable; Frozen: 2 weeks

Reported:

1-8 days

CPT Codes:

82340; 82436; 82507; 84560; 83735; 83945; 84105; 84133; 84300; 84392; 83986

LOINC:

- 30211-7
- 19124-7
- 19153-6
- 2701-1
- 3086-6
- 2756-5
- 2162-6
- 42678-3
- 26889-6
- 17862-4
- 11526-1
- 2829-0
- 2161-8
- 2955-3
- 34736-9
- 2700-3
- 2079-2
- 2828-2
- 2956-1
- 42673-4
- 47780-2
- 2778-9
- 2128-7
- 24447-5
- 6687-8
- 3087-4
- 48767-8
- 2779-7
- 6874-2
- 2078-4

Notes:

Compare to StoneRisk Diagnostic Profile

SYN Tap Test

MOLT

ORDERING

Available Stat:
No

Performing Lab:
Amprion

Supplemental Test Request Form Required:
https://ampriondx.com/wp-content/uploads/2024/03/FRMCFS-2-Test-Requisition-Form-v7.0.pdf

COLLECTION

Sample Type:
CSF

Collect:
Sterile tube

Amount to Collect:
1 mL

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Storage/Transport Temperature:
Frozen

PROCESSING

Test Code:
MOLT

Sendout:
Yes

Performing Lab:
Amprion

Specimen Preparation:
Freeze and send to CB. Forms are required: https://ampriondx.com/wp-content/uploads/2024/03/FRMCFS-2-Test-Requisition-Form-v7.0.pdf

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Storage/Transport Temperature:
Frozen

COMPLETE VIEW

Available Stat:
No

Test Code:
MOLT

Performing Lab:
Amprion

Sendout:
Yes

Collect:
Sterile tube

Amount to Collect:
1 mL

Sample Type:
CSF

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Specimen Preparation:
Freeze and send to CB. Forms are required: https://ampriondx.com/wp-content/uploads/2024/03/FRMCFS-2-Test-Requisition-Form-v7.0.pdf

Storage/Transport Temperature:
Frozen

Supplemental Test Request Form Required:
https://ampriondx.com/wp-content/uploads/2024/03/FRMCFS-2-Test-Requisition-Form-v7.0.pdf

Syphilis Screen by RPR with Reflex to Treponemal Antibody

RPRSCR

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Weekdays (day shift)

Methodology:
Agglutination

Reported:
1-5 days

Additional Information:
RPR is a non-treponemal syphilis test using a cardiolipin substrate. Positive results will automatically be titered and reflex to the Treponemal Antibody Screen (TREPAB) at additional charge. Positive results on both tests provide strong evidence of syphilis. However, false positive tests can be seen in association with autoimmune disease, and cross-reactivity occurs with non-syphilis treponemal infections.

Successful treatment of syphilis is generally indicated by loss of RPR positivity.

Reflex Testing:
Yes. If positive, titer and Treponemal Ab will be performed at additional charge.

Synonyms:

- TPAB
- Treponema pallidum
- Syphilis
- prenatal infection
- congenital infection
- prenatal screening

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
1 mL serum

Remarks:
Avoid hemolysis, transport to laboratory as soon as possible. If transport is delayed refrigerate the sample.

Stability (from collection to initiation):
Refrigerated, 2 - 8 C: up to 7 days
Frozen, -20 C or colder: 14 days

Storage/Transport Temperature:
Refrigerated

Rejection Criteria:
Grossly lipemic, hemolysed or contaminated samples.

PROCESSING

Test Code:
RPRSCR

Test Group:
Syphilis

Performing Lab:
Immunology

Preferred Volume:
1 mL serum

Minimum Volume:
1 mL serum

Rejection Criteria:
Grossly lipemic, hemolysed or contaminated samples.

Stability (from collection to initiation):
Refrigerated, 2 - 8 C: up to 7 days
Frozen, -20 C or colder: 14 days

Storage/Transport Temperature:
Refrigerated

RESULT INTERPRETATION

Reference Interval:
Non-reactive

Additional Information:
RPR is a non-treponemal syphilis test using a cardiolipin substrate. Positive results will automatically be titered and reflex to the Treponemal Antibody Screen (TREPAB) at additional charge. Positive results on both tests provide strong evidence of syphilis. However, false positive tests can be seen in association with autoimmune disease, and cross-reactivity occurs with non-syphilis treponemal infections.

Successful treatment of syphilis is generally indicated by loss of RPR positivity.

ADMINISTRATIVE

CPT Codes:
86592

COMPLETE VIEW

Available Stat:
No

Test Code:
RPRSCR

Test Group:
Syphilis

Performing Lab:
Immunology

Performed:
Weekdays (day shift)

Methodology:
Agglutination

Remarks:
Avoid hemolysis, transport to laboratory as soon as possible. If transport is delayed refrigerate the sample.

Collect:
Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
1 mL serum

Rejection Criteria:
Grossly lipemic, hemolysed or contaminated samples.

Reference Interval:
Non-reactive

Synonyms:

- TPAB
- Treponema pallidum
- Syphilis
- prenatal infection
- congenital infection
- prenatal screening

Storage/Transport Temperature:
Refrigerated

Stability (from collection to initiation):
Refrigerated, 2 - 8 C: up to 7 days
Frozen, -20 C or colder: 14 days

Reported:
1-5 days

Reflex Testing:
Yes. If positive, titer and Treponemal Ab will be performed at additional charge.

Additional Information:
RPR is a non-treponemal syphilis test using a cardiolipin substrate. Positive results will automatically be titered and reflex to the Treponemal Antibody Screen (TREPAB) at additional charge. Positive results on both tests provide strong evidence of syphilis. However, false positive tests can be seen in association with autoimmune disease, and cross-reactivity occurs with non-syphilis treponemal infections.

Successful treatment of syphilis is generally indicated by loss of RPR positivity.

CPT Codes:
86592

T&B Cell Crossmatch - Pronase Treatment (for Donor)

HTTBXFRP (Sunquest: ILTBPD)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Luminex-based

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Additional Information:
This test assigns cPRA (calculated PRA) and determines specific Class II antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring. This test is NOT for evaluation of transfusion-related fever or refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

Reflex Testing:
Yes

Synonyms:

- Class II Single Antigen Testing by Luminex, Single Antigen Specificity Class II

COLLECTION

Sample Type:
ACD Whole blood

Collect:
ACD (Yellow top) x 6

Amount to Collect:
51 mL blood

Preferred Volume:
51 mL serum

Minimum Volume:
Contact ITL

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

PROCESSING

Test Code:
HTTBXFRP (Sunquest: ILTBPD)

Test Group:
HLA Antibody Testing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Preferred Volume:
51 mL serum

Minimum Volume:
Contact ITL

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

RESULT INTERPRETATION

Additional Information:
This test assigns cPRA (calculated PRA) and determines specific Class II antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring. This test is NOT for evaluation of transfusion-related fever or refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

ADMINISTRATIVE

CPT Codes:
86833

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTTBXFRP (Sunquest: ILTBPD)

Test Group:
HLA Antibody Testing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Luminex-based

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Collect:
ACD (Yellow top) x 6

Amount to Collect:
51 mL blood

Sample Type:
ACD Whole blood

Preferred Volume:
51 mL serum

Minimum Volume:
Contact ITL

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Synonyms:

- Class II Single Antigen Testing by Luminex, Single Antigen Specificity Class II

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Reflex Testing:
Yes

Additional Information:
This test assigns cPRA (calculated PRA) and determines specific Class II antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring. This test is NOT for evaluation of transfusion-related fever or refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

CPT Codes:
86833

T&B Cell Crossmatch - Pronase Treatment (for Recipient)

HTTBXFRP (Sunquest: ILTBPX)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Luminex-based

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Additional Information:
This test assigns cPRA (calculated PRA) and determines specific Class II antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring. This test is NOT for evaluation of transfusion-related fever or refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

Reflex Testing:
Yes

Synonyms:

- Class II Single Antigen Testing by Luminex, Single Antigen Specificity Class II

COLLECTION

Sample Type:
Serum

Collect:
Red top

Amount to Collect:
6 mL blood

Preferred Volume:
3 mL serum

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

PROCESSING

Test Code:
HTTBXFRP (Sunquest: ILTBPX)

Test Group:
HLA Antibody Testing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Preferred Volume:
3 mL serum

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

RESULT INTERPRETATION

Additional Information:
This test assigns cPRA (calculated PRA) and determines specific Class II antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring. This test is NOT for evaluation of transfusion-related fever or refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

ADMINISTRATIVE

CPT Codes:
86833

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTTBXFRP (Sunquest: ILTBPX)

Test Group:
HLA Antibody Testing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Luminex-based

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Collect:
Red top

Amount to Collect:
6 mL blood

Sample Type:
Serum

Preferred Volume:
3 mL serum

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Synonyms:

- Class II Single Antigen Testing by Luminex, Single Antigen Specificity Class II

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Reflex Testing:
Yes

Additional Information:
This test assigns cPRA (calculated PRA) and determines specific Class II antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring. This test is NOT for evaluation of transfusion-related fever or refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

CPT Codes:
86833

T&B Cell Crossmatch by Flow Cytometry (for Donor)

HTTBXFR (Sunquest: ILTXFD)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Luminex-based

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Additional Information:
This test assigns cPRA (calculated PRA) and determines specific Class II antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring. This test is NOT for evaluation of transfusion-related fever or refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

Reflex Testing:
Yes

Synonyms:

- Class II Single Antigen Testing by Luminex, Single Antigen Specificity Class II

COLLECTION

Sample Type:
ACD Whole blood

Collect:
ACD (Yellow top) x 6

Amount to Collect:
51 mL blood

Preferred Volume:
51 mL serum

Minimum Volume:
Contact ITL

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

PROCESSING

Test Code:
HTTBXFR (Sunquest: ILTXFD)

Test Group:
HLA Antibody Testing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Preferred Volume:
51 mL serum

Minimum Volume:
Contact ITL

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

RESULT INTERPRETATION

Additional Information:
This test assigns cPRA (calculated PRA) and determines specific Class II antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring. This test is NOT for evaluation of transfusion-related fever or refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

ADMINISTRATIVE

CPT Codes:
86833

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTTBXFR (Sunquest: ILTXFD)

Test Group:
HLA Antibody Testing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Luminex-based

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Collect:
ACD (Yellow top) x 6

Amount to Collect:
51 mL blood

Sample Type:
ACD Whole blood

Preferred Volume:
51 mL serum

Minimum Volume:
Contact ITL

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Synonyms:

- Class II Single Antigen Testing by Luminex, Single Antigen Specificity Class II

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Reflex Testing:
Yes

Additional Information:
This test assigns cPRA (calculated PRA) and determines specific Class II antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring. This test is NOT for evaluation of transfusion-related fever or refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

CPT Codes:
86833

T&B Cell Crossmatch by Flow Cytometry (for Recipient)

HTTBXFR (Sunquest: ILTXFR)

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Luminex-based

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Additional Information:
This test assigns cPRA (calculated PRA) and determines specific Class II antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring. This test is NOT for evaluation of transfusion-related fever or refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

Reflex Testing:
Yes

Synonyms:

- Class II Single Antigen Testing by Luminex, Single Antigen Specificity Class II

COLLECTION

Sample Type:
Serum

Collect:
Red top

Amount to Collect:
6 mL blood

Preferred Volume:
3 mL serum

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

PROCESSING

Test Code:
HTTBXFR (Sunquest: ILTXFR)

Test Group:
HLA Antibody Testing

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Preferred Volume:
3 mL serum

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

RESULT INTERPRETATION

Additional Information:
This test assigns cPRA (calculated PRA) and determines specific Class II antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring. This test is NOT for evaluation of transfusion-related fever or refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

ADMINISTRATIVE

CPT Codes:
86833

COMPLETE VIEW

Available Stat:
Yes

Test Code:
HTTBXFR (Sunquest: ILTXFR)

Test Group:
HLA Antibody Testing

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Luminex-based

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Collect:
Red top

Amount to Collect:
6 mL blood

Sample Type:
Serum

Preferred Volume:
3 mL serum

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Synonyms:

- Class II Single Antigen Testing by Luminex, Single Antigen Specificity Class II

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 11 working days.

Reflex Testing:
Yes

Additional Information:
This test assigns cPRA (calculated PRA) and determines specific Class II antibodies. It is used in both pre-transplant antibody testing and post-transplant monitoring. This test is NOT for evaluation of transfusion-related fever or refractoriness to platelet transfusions (contact Blood Bank, 415-353-1313).

CPT Codes:
86833

T&B-Cell Crossmatch by Flow Cytometry (For Donor)

ILTXFD

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Cytotoxicity (AHG)

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 5 working days.

Synonyms:

- T&B-Cell Crossmatch by Flow

COLLECTION

Sample Type:
ACD anticoagulated whole blood

Collect:
Yellow top (ACD) x6

Amount to Collect:
50 mL blood

Preferred Volume:
50 mL blood

Minimum Volume:
4 mL blood

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 48 hours

Unacceptable Conditions:
Specimen > 48 hours

PROCESSING

Test Code:
ILTXFD

Test Group:
HLA Crossmatching

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Preferred Volume:
50 mL blood

Minimum Volume:
4 mL blood

Unacceptable Conditions:
Specimen > 48 hours

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 48 hours

ADMINISTRATIVE

CPT Codes:
86825 x2

COMPLETE VIEW

Available Stat:
Yes

Test Code:
ILTXFD

Test Group:
HLA Crossmatching

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Cytotoxicity (AHG)

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Collect:
Yellow top (ACD) x6

Amount to Collect:
50 mL blood

Sample Type:
ACD anticoagulated whole blood

Preferred Volume:
50 mL blood

Minimum Volume:
4 mL blood

Unacceptable Conditions:
Specimen > 48 hours

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Synonyms:

- T&B-Cell Crossmatch by Flow

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 48 hours

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 5 working days.

CPT Codes:
86825 x2

T&B-Cell Crossmatch by Flow Cytometry (Recipient)

ILTXFR

ORDERING

Available Stat:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Flow Cytometry

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 5 working days.

Synonyms:

- T&B-Cell Crossmatch by Flow

COLLECTION

Sample Type:
Serum

Collect:
Red top

Amount to Collect:
6 mL blood

Preferred Volume:
4 mL serum

Minimum Volume:
2 mL serum

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to72 hours

Unacceptable Conditions:
Hemolyzed sample

PROCESSING

Test Code:
ILTXFR

Test Group:
HLA Crossmatching

Sendout:
Yes

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Preferred Volume:
4 mL serum

Minimum Volume:
2 mL serum

Unacceptable Conditions:
Hemolyzed sample

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to72 hours

ADMINISTRATIVE

CPT Codes:
86825 x2

COMPLETE VIEW

Available Stat:
Yes

Test Code:
ILTXFR

Test Group:
HLA Crossmatching

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Sendout:
Yes

Methodology:
Flow Cytometry

Remarks:
SAMPLE COLLECTION GUIDE FOR ITL TESTS

ITL (415) 476-3387

Collect:
Red top

Amount to Collect:
6 mL blood

Sample Type:
Serum

Preferred Volume:
4 mL serum

Minimum Volume:
2 mL serum

Unacceptable Conditions:
Hemolyzed sample

Specimen Preparation:
Keep sample at Room Temperature, DO NOT refrigerate or centrifuge.

Synonyms:

- T&B-Cell Crossmatch by Flow

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to72 hours

Reported:
Test run Monday - Friday. Expected TAT for routine test is < 5 working days.

CPT Codes:
86825 x2

T3, Reverse

T3RV

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
LC/MS/MS

Reported:
3-5 days

Additional Information:

Reverse T3 has limited application. The assay may be useful in the diagnosis of nonthyroidal illness (NTI). In hospitalized or sick patients with low triiodothyronine (T3) values, elevated reverse triiodothyronine (rT3) values are consistent with sick euthyroid syndrome (nonthyroidal illness). Measurements of rT3 may be useful in neonates to distinguish euthyroid sick syndrome from central hypothyroidism. The finding on an elevated rT3 level in a critically ill patient may help exclude a diagnosis of hypothyroidism.

This test is performed using a kit that has not been cleared or approved by the FDA. The analytical performance characteristics of this test have been determined by Quest Diagnostics Nichols Institute. This test should not be used for diagnosis without confirmation by other medically established means.

Synonyms:

- Reverse T3
- RT3

COLLECTION

Sample Type:
Serum

Collect:
Red top

Amount to Collect:
1 mL blood

Preferred Volume:
0.25 mL serum

Minimum Volume:
0.15 mL serum

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 3 weeks, frozen 3 weeks

PROCESSING

Test Code:
T3RV

Test Group:
Thyroid tests

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze serum, ship frozen to China Basin

Preferred Volume:
0.25 mL serum

Minimum Volume:
0.15 mL serum

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 3 weeks, frozen 3 weeks

RESULT INTERPRETATION

Units:
ng/dL

Reference Interval:
Male: 9-28 ng/dL
Female: 7-24 ng/dL

Additional Information:

Reverse T3 has limited application. The assay may be useful in the diagnosis of nonthyroidal illness (NTI). In hospitalized or sick patients with low triiodothyronine (T3) values, elevated reverse triiodothyronine (rT3) values are consistent with sick euthyroid syndrome (nonthyroidal illness). Measurements of rT3 may be useful in neonates to distinguish euthyroid sick syndrome from central hypothyroidism. The finding on an elevated rT3 level in a critically ill patient may help exclude a diagnosis of hypothyroidism.

This test is performed using a kit that has not been cleared or approved by the FDA. The analytical performance characteristics of this test have been determined by Quest Diagnostics Nichols Institute. This test should not be used for diagnosis without confirmation by other medically established means.

ADMINISTRATIVE

CPT Codes:
84482-90

LOINC Codes:
3052-8

COMPLETE VIEW

Available Stat:
No

Test Code:
T3RV

Test Group:
Thyroid tests

Performing Lab:
Quest

Sendout:
Yes

Methodology:
LC/MS/MS

Collect:
Red top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.25 mL serum

Minimum Volume:
0.15 mL serum

Specimen Preparation:
Freeze serum, ship frozen to China Basin

Units:
ng/dL

Reference Interval:
Male: 9-28 ng/dL
Female: 7-24 ng/dL

Synonyms:

- Reverse T3
- RT3

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 3 weeks, frozen 3 weeks

Reported:
3-5 days

Additional Information:

Reverse T3 has limited application. The assay may be useful in the diagnosis of nonthyroidal illness (NTI). In hospitalized or sick patients with low triiodothyronine (T3) values, elevated reverse triiodothyronine (rT3) values are consistent with sick euthyroid syndrome (nonthyroidal illness). Measurements of rT3 may be useful in neonates to distinguish euthyroid sick syndrome from central hypothyroidism. The finding on an elevated rT3 level in a critically ill patient may help exclude a diagnosis of hypothyroidism.

This test is performed using a kit that has not been cleared or approved by the FDA. The analytical performance characteristics of this test have been determined by Quest Diagnostics Nichols Institute. This test should not be used for diagnosis without confirmation by other medically established means.

CPT Codes:
84482-90

LOINC Codes:
3052-8

T3, Total

T3

ORDERING

Available Stat:
No

Performing Lab:
China Basin Chemistry

Performed:
Monday - Saturday (day shift)

Methodology:
Chemiluminescent Microparticle Immunoassay (Abbott Architect i2000)

Reported:
0 to 2 days

Additional Information:
The total T3 level may be elevated in the < 5% of hyperthyroid patients in whom the FT4 level is normal (T3 toxicosis). Measurement of T3 is of no value in the diagnosis of hypothyroidism. Total T3 can be affected by changes in thyroid binding protein levels. Measurements of Free T3 better reflect biologically active hormone levels than measurements of total T3.

Synonyms:

- Triiodothyronine

COLLECTION

Sample Type:
Plasma

Collect:
Light Green top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL plasma

Minimum Volume:
0.25 mL plasma

PROCESSING

Test Code:
T3

Test Group:
Thyroid tests

Performing Lab:
China Basin Chemistry

Specimen Preparation:
Refrigerate.

Gold top and red top tubes should not be rejected. Gold top and red top tubes are acceptable tube types as long as the tube has been allowed to sit for at least 30 minutes before centrifugation.

Preferred Volume:
0.5 mL plasma

Minimum Volume:
0.25 mL plasma

RESULT INTERPRETATION

Units:
nmol/L

Reference Interval:

Age	Male	Female
0-12 months	0.9-3.1 nmol/L	1.6-3.5 nmol/L

Age	Male & Female
1-5 years	1.6-3.1 nmol/L
6-10 years	1.6-2.8 nmol/L
11-14 years	1.0-2.9 nmol/L
15-18 years	1.1-2.7 nmol/L
>18 years	0.9-2.4 nmol/L

Adult reference ranges adopted from manufacturer reference range studies (95% CI) and verified in-house using blood donor samples (N=124) (excluding autologous donors) on no medications and negative for anti-Tg and TPO antibodies.

Pediatric reference ranges adopted from Clinical Biochemistry 42 (2009) 885-891. Canadian Laboratory Initiative on Pediatric Reference Interval Database (CALIPER).

Additional Information:

The total T3 level may be elevated in the < 5% of hyperthyroid patients in whom the FT4 level is normal (T3 toxicosis). Measurement of T3 is of no value in the diagnosis of hypothyroidism. Total T3 can be affected by changes in thyroid binding protein levels. Measurements of Free T3 better reflect biologically active hormone levels than measurements of total T3.

ADMINISTRATIVE

CPT Codes:
84480

LOINC Codes:
3053-6

COMPLETE VIEW

Available Stat:
No

Test Code:
T3

Test Group:
Thyroid tests

Performing Lab:
China Basin Chemistry

Performed:
Monday - Saturday (day shift)

Methodology:
Chemiluminescent Microparticle Immunoassay (Abbott Architect i2000)

Collect:
Light Green top

Amount to Collect:
1 mL blood

Sample Type:
Plasma

Preferred Volume:
0.5 mL plasma

Minimum Volume:
0.25 mL plasma

Specimen Preparation:
Refrigerate.

Gold top and red top tubes should not be rejected. Gold top and red top tubes are acceptable tube types as long as the tube has been allowed to sit for at least 30 minutes before centrifugation.

Units:
nmol/L

Reference Interval:

Age	Male	Female
0-12 months	0.9-3.1 nmol/L	1.6-3.5 nmol/L

Age	Male & Female
1-5 years	1.6-3.1 nmol/L
6-10 years	1.6-2.8 nmol/L
11-14 years	1.0-2.9 nmol/L
15-18 years	1.1-2.7 nmol/L
>18 years	0.9-2.4 nmol/L

Adult reference ranges adopted from manufacturer reference range studies (95% CI) and verified in-house using blood donor samples (N=124) (excluding autologous donors) on no medications and negative for anti-Tg and TPO antibodies.

Pediatric reference ranges adopted from Clinical Biochemistry 42 (2009) 885-891. Canadian Laboratory Initiative on Pediatric Reference Interval Database (CALIPER).

Synonyms:

- Triiodothyronine

Reported:
0 to 2 days

Additional Information:
The total T3 level may be elevated in the < 5% of hyperthyroid patients in whom the FT4 level is normal (T3 toxicosis). Measurement of T3 is of no value in the diagnosis of hypothyroidism. Total T3 can be affected by changes in thyroid binding protein levels. Measurements of Free T3 better reflect biologically active hormone levels than measurements of total T3.

CPT Codes:
84480

LOINC Codes:
3053-6

T4 Free, Direct Dialysis

FT4D

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Equilibrium dialysis, Mass Spectrometry

Reported:
Test performed Monday-Saturday. Turnaround time: 2-4 days.

Additional Information:
Testing is only indicated if there is a descrepancy between the results for TSH and Free T4.

Synonyms:

- tetraiodothyronine
- thyroxine

COLLECTION

Sample Type:
Serum

Collect:
Red top preferred, Gold top acceptable

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL serum

Minimum Volume:
0.2 mL serum

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 1 week, frozen at -20C 4 weeks

PROCESSING

Test Code:
FT4D

Test Group:
Thyroid tests

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate. Order Quest # 35167

Preferred Volume:
2 mL serum

Minimum Volume:
0.2 mL serum

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 1 week, frozen at -20C 4 weeks

RESULT INTERPRETATION

Units:
ng/dL

Reference Interval:

Prematures, 25-30 weeks, first week of life	0.5-3.3 ng/dL
Prematures, 31-36 weeks, first week of life	1.3-4.7 ng/dL
Cord blood, > 37 weeks	1.2-2.2 ng/dL
Birth-4 days	2.2-5.3 ng/dL
2 weeks-2 years	0.8-2.0 ng/dL
3-20 years	1.0-2.4 ng/dL
21-87 yr	0.8-2.7 ng/dL

Pregnancy:

First trimester	0.9-2.0 ng/dL
Second trimester	0.8-1.5 ng/dL
Third trimester	0.8-1.7 ng/dL

Additional Information:
Testing is only indicated if there is a descrepancy between the results for TSH and Free T4.

ADMINISTRATIVE

CPT Codes:
84439-90

LOINC Codes:
6892-4

COMPLETE VIEW

Available Stat:
No

Test Code:
FT4D

Test Group:
Thyroid tests

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Equilibrium dialysis, Mass Spectrometry

Collect:
Red top preferred, Gold top acceptable

Amount to Collect:
4 mL blood

Sample Type:
Serum

Preferred Volume:
2 mL serum

Minimum Volume:
0.2 mL serum

Specimen Preparation:
Refrigerate. Order Quest # 35167

Units:
ng/dL

Reference Interval:

Prematures, 25-30 weeks, first week of life	0.5-3.3 ng/dL
Prematures, 31-36 weeks, first week of life	1.3-4.7 ng/dL
Cord blood, > 37 weeks	1.2-2.2 ng/dL
Birth-4 days	2.2-5.3 ng/dL
2 weeks-2 years	0.8-2.0 ng/dL
3-20 years	1.0-2.4 ng/dL
21-87 yr	0.8-2.7 ng/dL

Pregnancy:

First trimester	0.9-2.0 ng/dL
Second trimester	0.8-1.5 ng/dL
Third trimester	0.8-1.7 ng/dL

Synonyms:

- tetraiodothyronine
- thyroxine

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 1 week, frozen at -20C 4 weeks

Reported:
Test performed Monday-Saturday. Turnaround time: 2-4 days.

Additional Information:
Testing is only indicated if there is a descrepancy between the results for TSH and Free T4.

CPT Codes:
84439-90

LOINC Codes:
6892-4

T4, Total

TT4

ORDERING

Available Stat:
No

Performing Lab:
Quest

Performed:
Mon-Sat

Methodology:
Immunoassay

Reported:
1-2 days.

Additional Information:
Conversion: 1 µg/dL = 12.9 nmol/L

Clinical significance: Thyroxine (T4) is the major secretory hormone of the thyroid. Only 0.03% of T4 is unbound and free for exchange with tissues. Thyroid function may be assessed with thyroid stimulating hormone (TSH) and free T4 measured.

Although free T4 is generally preferred over total T4 when monitoring thyroid function, the total T4 measurement may be preferred for monitoring of pregnant patients where total T4 reference ranges are available. The total T4 concentrations tend to be stable throughout pregnancy at 150% of the values in non- pregnant subjects and can be useful when the levels are evaluated according to pregnancy specific total T4 reference ranges which are approx. 1.5 times greater than non-pregnant ranges.

Reference: Mandel SJ, Spencer CA, Hollowell JG., Are detection and treatment of thyroid insufficiency in pregnancy feasible?Thyroid. 2005 Jan;15(1):44-53.

Synonyms:

- thyroxine
- tetraiodothyronine

COLLECTION

Sample Type:
Serum

Collect:
Gold or red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Remarks:
Indicate testing is for pregnant patient on requisition.

Stability (from collection to initiation):
Room temperature and Refrigerated: 7 days
Frozen: 28 days

Storage/Transport Temperature:
Frozen

PROCESSING

Test Code:
TT4

Test Group:
Thyroid tests

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Store at room temperature. Order Quest # 17733

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature and Refrigerated: 7 days
Frozen: 28 days

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Units:
µg/dL (mcg/dL)

Reference Interval:

Age	Gender	Ref Interval (mcg/dL)
< 1 month		4.5-17.2
1-23 months		5.9-13.9
2-12 years		5.7-11.6
13-20 years	Male	5.1-10.3
13-20 years	Female	5.3-11.7
>20 years	Male	4.9-10.5
>20 years	Female	5.1-11.9

Additional Information:
Conversion: 1 µg/dL = 12.9 nmol/L

Clinical significance: Thyroxine (T4) is the major secretory hormone of the thyroid. Only 0.03% of T4 is unbound and free for exchange with tissues. Thyroid function may be assessed with thyroid stimulating hormone (TSH) and free T4 measured.

Although free T4 is generally preferred over total T4 when monitoring thyroid function, the total T4 measurement may be preferred for monitoring of pregnant patients where total T4 reference ranges are available. The total T4 concentrations tend to be stable throughout pregnancy at 150% of the values in non- pregnant subjects and can be useful when the levels are evaluated according to pregnancy specific total T4 reference ranges which are approx. 1.5 times greater than non-pregnant ranges.

Reference: Mandel SJ, Spencer CA, Hollowell JG., Are detection and treatment of thyroid insufficiency in pregnancy feasible?Thyroid. 2005 Jan;15(1):44-53.

Interpretive Data:
For the diagnosis of hypothyroidism and hyperthyroidism.

ADMINISTRATIVE

CPT Codes:
84436

LOINC Codes:
3026-2

COMPLETE VIEW

Available Stat:
No

Test Code:
TT4

Test Group:
Thyroid tests

Performing Lab:
Quest

Sendout:
Yes

Performed:
Mon-Sat

Methodology:
Immunoassay

Remarks:
Indicate testing is for pregnant patient on requisition.

Collect:
Gold or red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Specimen Preparation:
Store at room temperature. Order Quest # 17733

Units:
µg/dL (mcg/dL)

Reference Interval:

Age	Gender	Ref Interval (mcg/dL)
< 1 month		4.5-17.2
1-23 months		5.9-13.9
2-12 years		5.7-11.6
13-20 years	Male	5.1-10.3
13-20 years	Female	5.3-11.7
>20 years	Male	4.9-10.5
>20 years	Female	5.1-11.9

Interpretive Data:
For the diagnosis of hypothyroidism and hyperthyroidism.

Synonyms:

- thyroxine
- tetraiodothyronine

Storage/Transport Temperature:
Frozen

Stability (from collection to initiation):
Room temperature and Refrigerated: 7 days
Frozen: 28 days

Reported:
1-2 days.

Additional Information:
Conversion: 1 µg/dL = 12.9 nmol/L

Clinical significance: Thyroxine (T4) is the major secretory hormone of the thyroid. Only 0.03% of T4 is unbound and free for exchange with tissues. Thyroid function may be assessed with thyroid stimulating hormone (TSH) and free T4 measured.

Although free T4 is generally preferred over total T4 when monitoring thyroid function, the total T4 measurement may be preferred for monitoring of pregnant patients where total T4 reference ranges are available. The total T4 concentrations tend to be stable throughout pregnancy at 150% of the values in non- pregnant subjects and can be useful when the levels are evaluated according to pregnancy specific total T4 reference ranges which are approx. 1.5 times greater than non-pregnant ranges.

Reference: Mandel SJ, Spencer CA, Hollowell JG., Are detection and treatment of thyroid insufficiency in pregnancy feasible?Thyroid. 2005 Jan;15(1):44-53.

CPT Codes:
84436

LOINC Codes:
3026-2

Tacrolimus, Trough

TAC

ORDERING

Available Stat:
No

Performing Lab:
China Basin Chemistry

Performed:
Daily (day shift)

Methodology:
Chemiluminescent Immunoassay - Abbott Architect

Reported:
For samples received by 1200 (Monday-Friday) and 1000 (weekends and holidays) the results will be available by 1600. Results for samples that miss the cut-off times will be available the following day.

Note: Samples from Berkeley Outpatient Clinic (BOPC) will be reported next day.

Additional Information:
See the lab manual's "A Guide on Drug Level Monitoring" (in the Chemistry Guide) for additional information.

Synonyms:

- Prograf
- FK 506
- FK506
- Hecoria

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top

Amount to Collect:
3 mL blood

Preferred Volume:
3 mL blood

Minimum Volume:
0.3 mL blood

This volume does not allow for repeat testing if needed.

Remarks:
Time to steady state: 3 doses

Collect trough samples no more than 30-60 minutes before AM dose. Samples should not be drawn from any line through which the drug has been infused but only from a peripheral site.

Specimens must be received in the laboratory by 1200 (Monday-F) or 1000 (Weekends and holidays) for same day results.

Stability (from collection to initiation):
Refrigerated 1 week.

Unacceptable Conditions:
Samples collected outside of stated time frames

PROCESSING

Test Code:
TAC

Performing Lab:
China Basin Chemistry

Preferred Volume:
3 mL blood

Minimum Volume:
0.3 mL blood

This volume does not allow for repeat testing if needed.

Unacceptable Conditions:
Samples collected outside of stated time frames

Stability (from collection to initiation):
Refrigerated 1 week.

RESULT INTERPRETATION

Units:
µg/L

Reference Interval:
Therapeutic trough: 5 -15 µg/L

Additional Information:
See the lab manual's "A Guide on Drug Level Monitoring" (in the Chemistry Guide) for additional information.

ADMINISTRATIVE

CPT Codes:
80197

LOINC Codes:
11253-2

COMPLETE VIEW

Available Stat:
No

Test Code:
TAC

Performing Lab:
China Basin Chemistry

Performed:
Daily (day shift)

Methodology:
Chemiluminescent Immunoassay - Abbott Architect

Remarks:
Time to steady state: 3 doses

Collect trough samples no more than 30-60 minutes before AM dose. Samples should not be drawn from any line through which the drug has been infused but only from a peripheral site.

Specimens must be received in the laboratory by 1200 (Monday-F) or 1000 (Weekends and holidays) for same day results.

Collect:
Lavender top

Amount to Collect:
3 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
3 mL blood

Minimum Volume:
0.3 mL blood

This volume does not allow for repeat testing if needed.

Unacceptable Conditions:
Samples collected outside of stated time frames

Units:
µg/L

Reference Interval:
Therapeutic trough: 5 -15 µg/L

Synonyms:

- Prograf
- FK 506
- FK506
- Hecoria

Stability (from collection to initiation):

Refrigerated 1 week.

Reported:

For samples received by 1200 (Monday-Friday) and 1000 (weekends and holidays) the results will be available by 1600. Results for samples that miss the cut-off times will be available the following day.

Note: Samples from Berkeley Outpatient Clinic (BOPC) will be reported next day.

Additional Information:

See the lab manual's "A Guide on Drug Level Monitoring" (in the Chemistry Guide) for additional information.

CPT Codes:

80197

LOINC Codes:

11253-2

Tapeworm Segments

P404

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Monday-Friday, day shift

Methodology:
Microscopy

Reported:
1-3 days

Additional Information:
Examination of proglottid segments can reliably identify the infecting species, whereas the eggs of the beef and pork tapeworms are indistinguishable.

See also Taenia solium Antibody.

COLLECTION

Sample Type:
Stool

Collect:
Urine cup or clean container with moistened gauze

Remarks:
Collect 3 samples over 10 days (no more than one per 48 hours) to improve the chance of a positive result. Includes genus, species and stage of intestinal parasite on requisition.

Containers and instructions are available from Specimen Receiving, outpatient phlebotomy, or Microbiology.

Specimens may be collected by colonic aspiration or proctoscopy. Only SAF-preserved specimens should be submitted.

Stability (from collection to initiation):
Refrigerated 24 hours

PROCESSING

Test Code:
P404

Performing Lab:
Microbiology

Stability (from collection to initiation):
Refrigerated 24 hours

RESULT INTERPRETATION

Additional Information:
Examination of proglottid segments can reliably identify the infecting species, whereas the eggs of the beef and pork tapeworms are indistinguishable.

See also Taenia solium Antibody.

ADMINISTRATIVE

CPT Codes:
87169

LOINC Codes:
673-4

COMPLETE VIEW

Available Stat:
No

Test Code:
P404

Performing Lab:
Microbiology

Performed:
Monday-Friday, day shift

Methodology:
Microscopy

Remarks:
Collect 3 samples over 10 days (no more than one per 48 hours) to improve the chance of a positive result. Includes genus, species and stage of intestinal parasite on requisition.

Containers and instructions are available from Specimen Receiving, outpatient phlebotomy, or Microbiology.

Specimens may be collected by colonic aspiration or proctoscopy. Only SAF-preserved specimens should be submitted.

Collect:
Urine cup or clean container with moistened gauze

Sample Type:
Stool

Stability (from collection to initiation):
Refrigerated 24 hours

Reported:
1-3 days

Additional Information:
Examination of proglottid segments can reliably identify the infecting species, whereas the eggs of the beef and pork tapeworms are indistinguishable.

See also Taenia solium Antibody.

CPT Codes:
87169

LOINC Codes:
673-4

T-Cell Receptor Beta Gene Rearrangement

TCRB

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
PCR

Reported:
5 - 7 days

Additional Information:
This assay which interrogates the T-cell receptor beta locus (TCRB) by a PCR method based on the BIOMED-2 consensus, is useful for establishing clonality of T-cell lymphoid neoplasms and identification of minimal residual disease or early recurrence in patients with a previous diagnosis of a T-cell neoplasm. It can be used in association with T-cell receptor (TCR) gamma PCR assay (Test code 90509), since false-negative results can occur in up to 5-10% of T-cell malignancies with TCRB PCR alone.

Synonyms:

- TCR Beta
- T-cell clonality

COLLECTION

Sample Type:
Whole blood, bone marrow

Collect:
Lavender top

Amount to Collect:
See preferred volume.

Preferred Volume:
Whole blood: 5 mL
Marrow: 1 mL

Stability (from collection to initiation):
Room temperature 1 week, Refrigerated 1 week.

PROCESSING

Test Code:
TCRB

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Do not aliquot or freeze. Store ambient and transport to CB. Order Quest test code 91446.

Preferred Volume:
Whole blood: 5 mL
Marrow: 1 mL

Stability (from collection to initiation):
Room temperature 1 week, Refrigerated 1 week.

RESULT INTERPRETATION

Additional Information:
This assay which interrogates the T-cell receptor beta locus (TCRB) by a PCR method based on the BIOMED-2 consensus, is useful for establishing clonality of T-cell lymphoid neoplasms and identification of minimal residual disease or early recurrence in patients with a previous diagnosis of a T-cell neoplasm. It can be used in association with T-cell receptor (TCR) gamma PCR assay (Test code 90509), since false-negative results can occur in up to 5-10% of T-cell malignancies with TCRB PCR alone.

ADMINISTRATIVE

CPT Codes:
81340-90, 84999-90

COMPLETE VIEW

Available Stat:
No

Test Code:
TCRB

Performing Lab:
Quest

Sendout:
Yes

Methodology:
PCR

Collect:
Lavender top

Amount to Collect:
See preferred volume.

Sample Type:
Whole blood, bone marrow

Preferred Volume:
Whole blood: 5 mL
Marrow: 1 mL

Specimen Preparation:
Do not aliquot or freeze. Store ambient and transport to CB. Order Quest test code 91446.

Synonyms:

- TCR Beta
- T-cell clonality

Stability (from collection to initiation):
Room temperature 1 week, Refrigerated 1 week.

Reported:
5 - 7 days

Additional Information:
This assay which interrogates the T-cell receptor beta locus (TCRB) by a PCR method based on the BIOMED-2 consensus, is useful for establishing clonality of T-cell lymphoid neoplasms and identification of minimal residual disease or early recurrence in patients with a previous diagnosis of a T-cell neoplasm. It can be used in association with T-cell receptor (TCR) gamma PCR assay (Test code 90509), since false-negative results can occur in up to 5-10% of T-cell malignancies with TCRB PCR alone.

CPT Codes:
81340-90, 84999-90

T-Cell Receptor Gamma Gene Rearrangement

TCRG

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
PCR

Reported:
5 - 7 days

Additional Information:
This assay which interrogates the T-cell receptor gamma locus (TCRG) by a PCR method based on the BIOMED-2 consensus, is useful for establishing clonality of T-cell lymphoid neoplasms and identification of minimal residual disease or early recurrence in patients with a previous diagnosis of a T-cell neoplasm. It can be used in association with the T-cell receptor beta (TCRB) PCR assay (Test code 91446) since false-negative results can occur in up to 5-10% of T-cell malignancies when testing for TCRG PCR only.

Synonyms:

- TCR Gamma
- T-cell clonality

COLLECTION

Sample Type:
Whole blood, bone marrow

Collect:
Lavender top

Amount to Collect:
See preferred volume.

Preferred Volume:
Whole blood: 5 mL
Marrow: 1 mL

Minimum Volume:
Whole blood: 3 mL
Marrow: 0.5 mL

Stability (from collection to initiation):
Room temperature 1 week, Refrigerated 1 week.

PROCESSING

Test Code:
TCRG

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Do not aliquot or freeze. Store ambient and transport to CB. Order Quest test code 90509.

Preferred Volume:
Whole blood: 5 mL
Marrow: 1 mL

Minimum Volume:
Whole blood: 3 mL
Marrow: 0.5 mL

Stability (from collection to initiation):
Room temperature 1 week, Refrigerated 1 week.

RESULT INTERPRETATION

Additional Information:
This assay which interrogates the T-cell receptor gamma locus (TCRG) by a PCR method based on the BIOMED-2 consensus, is useful for establishing clonality of T-cell lymphoid neoplasms and identification of minimal residual disease or early recurrence in patients with a previous diagnosis of a T-cell neoplasm. It can be used in association with the T-cell receptor beta (TCRB) PCR assay (Test code 91446) since false-negative results can occur in up to 5-10% of T-cell malignancies when testing for TCRG PCR only.

ADMINISTRATIVE

CPT Codes:
81342-90, 84999-90

COMPLETE VIEW

Available Stat:
No

Test Code:
TCRG

Performing Lab:
Quest

Sendout:
Yes

Methodology:
PCR

Collect:
Lavender top

Amount to Collect:
See preferred volume.

Sample Type:
Whole blood, bone marrow

Preferred Volume:
Whole blood: 5 mL
Marrow: 1 mL

Minimum Volume:
Whole blood: 3 mL
Marrow: 0.5 mL

Specimen Preparation:
Do not aliquot or freeze. Store ambient and transport to CB. Order Quest test code 90509.

Synonyms:

- TCR Gamma
- T-cell clonality

Stability (from collection to initiation):
Room temperature 1 week, Refrigerated 1 week.

Reported:
5 - 7 days

Additional Information:
This assay which interrogates the T-cell receptor gamma locus (TCRG) by a PCR method based on the BIOMED-2 consensus, is useful for establishing clonality of T-cell lymphoid neoplasms and identification of minimal residual disease or early recurrence in patients with a previous diagnosis of a T-cell neoplasm. It can be used in association with the T-cell receptor beta (TCRB) PCR assay (Test code 91446) since false-negative results can occur in up to 5-10% of T-cell malignancies when testing for TCRG PCR only.

CPT Codes:
81342-90, 84999-90

T-cell subsets, CD3/CD4/CD8 quantitation for Peripheral Blood

THS

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday-Saturday(day shift)

Methodology:
Flow Cytometry

Reported:
2-3 days

Additional Information:
Absolute counts are enumerated from an internal bead standard. CBC data is not required. CD4 results are automatically forwarded to California public health per regulations. However, this does not absolve the ordering provider from any additional reporting if such is required.

Synonyms:

- CD3
- CD4
- CD8
- Inducer
- Cytotoxic
- T cells
- CD4/CD8

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top

Amount to Collect:
3 mL blood

Preferred Volume:
3 mL blood

Storage/Transport Temperature:
Room Temperature

Unacceptable Conditions:
Refrigerated sample received. Sample > 48 hours old when received. Reject hemolyzed samples.

PROCESSING

Test Code:
THS

Test Group:
CD

Performing Lab:
Immunology

Specimen Preparation:
DO NOT refrigerate, store at room temperature and ship to China Basin.

Preferred Volume:
3 mL blood

Unacceptable Conditions:
Refrigerated sample received. Sample > 48 hours old when received. Reject hemolyzed samples.

Storage/Transport Temperature:
Room Temperature

RESULT INTERPRETATION

Units:
% and x10^6 cells/L

Reference Interval:

Subset	Percentage	Absolute
CD3 (T) Cells	57-83%	827-2547 x10e6 cells/L
CD4 (helper-inducer) T Cells	32-63%	488-1711 x10e6 cells/L
CD8 (cytotoxic-suppressor) T Cells	9-39%	154-1097 x10e6 cells/L

CD4 / CD8 (Helper/Supressor) ratio: 0.7-3.9

Note: Reference values are for >= 18 year olds. For pediatric ranges please see:

Kotylo, PA, et al. 1993. Reference ranges for Lymphocyte Subsets in Pediatric Patients. Am. J. Clin. Pathol 100:111-115

Lin, S-C., et al. 1998. Age-Related Changes in Blood Lymphocytes of Chinese Children. Ped. Allergy Immunol. 9:215-220

Melaranci, C., et al. 1992. T. Cell Subpopulations in Pediatric Healthy Children: age-normal values. J. Clin. Lab. Immunol. 30:143-149

Tosato, F., et al. 2015. Lymphocytes Subset Reference Values in Childhood. Cytometry Part A. 87A:81-85.

Additional Information:
Absolute counts are enumerated from an internal bead standard. CBC data is not required. CD4 results are automatically forwarded to California public health per regulations. However, this does not absolve the ordering provider from any additional reporting if such is required.

ADMINISTRATIVE

LOINC Codes:
65759-3

COMPLETE VIEW

Available Stat:
No

Test Code:
THS

Test Group:
CD

Performing Lab:
Immunology

Performed:
Monday-Saturday(day shift)

Methodology:
Flow Cytometry

Collect:
Lavender top

Amount to Collect:
3 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
3 mL blood

Unacceptable Conditions:
Refrigerated sample received. Sample > 48 hours old when received. Reject hemolyzed samples.

Specimen Preparation:
DO NOT refrigerate, store at room temperature and ship to China Basin.

Units:
% and x10^6 cells/L

Reference Interval:

Subset	Percentage	Absolute
CD3 (T) Cells	57-83%	827-2547 x10e6 cells/L
CD4 (helper-inducer) T Cells	32-63%	488-1711 x10e6 cells/L
CD8 (cytotoxic-suppressor) T Cells	9-39%	154-1097 x10e6 cells/L

CD4 / CD8 (Helper/Supressor) ratio: 0.7-3.9

Note: Reference values are for >= 18 year olds. For pediatric ranges please see:

Kotylo, PA, et al. 1993. Reference ranges for Lymphocyte Subsets in Pediatric Patients. Am. J. Clin. Pathol 100:111-115

Lin, S-C., et al. 1998. Age-Related Changes in Blood Lymphocytes of Chinese Children. Ped. Allergy Immunol. 9:215-220

Melaranci, C., et al. 1992. T. Cell Subpopulations in Pediatric Healthy Children: age-normal values. J. Clin. Lab. Immunol. 30:143-149

Tosato, F., et al. 2015. Lymphocytes Subset Reference Values in Childhood. Cytometry Part A. 87A:81-85.

Synonyms:

- CD3
- CD4
- CD8
- Inducer
- Cytotoxic
- T cells
- CD4/CD8

Storage/Transport Temperature:
Room Temperature

Reported:
2-3 days

Additional Information:
Absolute counts are enumerated from an internal bead standard. CBC data is not required. CD4 results are automatically forwarded to California public health per regulations. However, this does not absolve the ordering provider from any additional reporting if such is required.

LOINC Codes:
65759-3

T-cell Subsets, Regulatory

TREGS

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
Flow cytometry

Additional Information:
Used in evaluating patients with clinical features of IPEX (immune dysregulation, polyendocrinopathy, enteropathy, X-linked inheritance) and other primary immunodeficiencies, autoimmune diseases, allergy and asthma, and graft-vs-host disease post-hematopoietic stem cell transplantation

Synonyms:

- Tregs
- T-regs

COLLECTION

Sample Type:
EDTA Whole blood

Collect:
Lavender top

Amount to Collect:
3 mL blood

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood

Remarks:
Collect samples Monday - Thursday only, Do not collect, Friday, weekends or holidays.

Requires a separate lavender top be collected.

Unacceptable Conditions:
Gross hemolysis or lipemia

Rejection Criteria:
Gross hemolysis or lipemia

PROCESSING

Test Code:
TREGS

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Send specimen in original tube. Do not aliquot.

Send specimen Monday through Thursday only. Specimen must arrive at Mayo within 24 hours of draw and by 10 a.m. on Friday.

Draw and package specimen as close to shipping time as possible. Ship specimen overnight. Order MML test code TREGS.

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood

Unacceptable Conditions:
Gross hemolysis or lipemia

Rejection Criteria:
Gross hemolysis or lipemia

RESULT INTERPRETATION

Additional Information:
Used in evaluating patients with clinical features of IPEX (immune dysregulation, polyendocrinopathy, enteropathy, X-linked inheritance) and other primary immunodeficiencies, autoimmune diseases, allergy and asthma, and graft-vs-host disease post-hematopoietic stem cell transplantation

ADMINISTRATIVE

CPT Codes:
86359-90, 86361-90

COMPLETE VIEW

Available Stat:
No

Test Code:
TREGS

Performing Lab:
Mayo

Sendout:
Yes

Methodology:
Flow cytometry

Remarks:
Collect samples Monday - Thursday only, Do not collect, Friday, weekends or holidays.

Requires a separate lavender top be collected.

Collect:
Lavender top

Amount to Collect:
3 mL blood

Sample Type:
EDTA Whole blood

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood

Rejection Criteria:
Gross hemolysis or lipemia

Unacceptable Conditions:
Gross hemolysis or lipemia

Specimen Preparation:
Send specimen in original tube. Do not aliquot.

Send specimen Monday through Thursday only. Specimen must arrive at Mayo within 24 hours of draw and by 10 a.m. on Friday.

Draw and package specimen as close to shipping time as possible. Ship specimen overnight. Order MML test code TREGS.

Synonyms:

- Tregs
- T-regs

Additional Information:
Used in evaluating patients with clinical features of IPEX (immune dysregulation, polyendocrinopathy, enteropathy, X-linked inheritance) and other primary immunodeficiencies, autoimmune diseases, allergy and asthma, and graft-vs-host disease post-hematopoietic stem cell transplantation

CPT Codes:
86359-90, 86361-90

TCR Alpha Beta/CD19 Depletion by Clinimacs

TCRDEP

ORDERING

Available Stat:
No

Performing Lab:
Pediatric Cellular Therapy Laboratory (PTCL)

Performed:
PROCESSING PERFORMED MONDAY - FRIDAY. NO HOLIDAYS & WEEKENDS. MUST MAKE PRIOR ARRANGEMENT WITH THE LABORATORY.

Methodology:
CLINIMACS PLUS OR CLINIMACS PRODIGY

COLLECTION

Sample Type:
HPC, APHERESIS, HPC, MARROW

Collect:
APHERESIS COLLECTION BAG, MARROW COLLECTION BAG

Remarks:
CONTACT PEDIATRIC APHERESIS DEPARTMENT OR PEDIATRIC INFUSION CENTER OR PARNASSUS INFUSION CENTER

Stability (from collection to initiation):
CELLS MUST BE PROCESSED WITHIN 24 HOURS AFTER COILLECTION

Storage/Transport Temperature:
HPC, APHERESIS MUST BE STORED AT TEMPERATURE BETWEEN 2 TO 8 DEG C & HPC, MARROW MUST BE STORED AT ROOM TEMPERATURE

Unacceptable Conditions:
PLEASE CALL PCTL AT 6-4860

PROCESSING

Test Code:
TCRDEP

Performing Lab:
Pediatric Cellular Therapy Laboratory (PTCL)

Unacceptable Conditions:
PLEASE CALL PCTL AT 6-4860

Stability (from collection to initiation):
CELLS MUST BE PROCESSED WITHIN 24 HOURS AFTER COILLECTION

Storage/Transport Temperature:
HPC, APHERESIS MUST BE STORED AT TEMPERATURE BETWEEN 2 TO 8 DEG C & HPC, MARROW MUST BE STORED AT ROOM TEMPERATURE

RESULT INTERPRETATION

Units:
%, x 10 e6 / kg, x 10 e4 / kg

Interpretive Data:
THIS IS A HIGH COMPLEXITY TESTING AND PROCFESSING THAT NEEDS PRIOR ARRANGEMENT WITH PCTL. CONTACT ATTENDING MD FOR DOSING GUIDELINES.

ADMINISTRATIVE

CPT Codes:
38210

COMPLETE VIEW

Available Stat:
No

Test Code:
TCRDEP

Performing Lab:
Pediatric Cellular Therapy Laboratory (PTCL)

Performed:
PROCESSING PERFORMED MONDAY - FRIDAY. NO HOLIDAYS & WEEKENDS. MUST MAKE PRIOR ARRANGEMENT WITH THE LABORATORY.

Methodology:
CLINIMACS PLUS OR CLINIMACS PRODIGY

Remarks:
CONTACT PEDIATRIC APHERESIS DEPARTMENT OR PEDIATRIC INFUSION CENTER OR PARNASSUS INFUSION CENTER

Collect:
APHERESIS COLLECTION BAG, MARROW COLLECTION BAG

Sample Type:
HPC, APHERESIS, HPC, MARROW

Unacceptable Conditions:
PLEASE CALL PCTL AT 6-4860

Units:
%, x 10 e6 / kg, x 10 e4 / kg

Interpretive Data:
THIS IS A HIGH COMPLEXITY TESTING AND PROCFESSING THAT NEEDS PRIOR ARRANGEMENT WITH PCTL. CONTACT ATTENDING MD FOR DOSING GUIDELINES.

Storage/Transport Temperature:
HPC, APHERESIS MUST BE STORED AT TEMPERATURE BETWEEN 2 TO 8 DEG C & HPC, MARROW MUST BE STORED AT ROOM TEMPERATURE

Stability (from collection to initiation):
CELLS MUST BE PROCESSED WITHIN 24 HOURS AFTER COILLECTION

CPT Codes:
38210

TCRA Break-apart Rearrangement FISH

TCRA, BTCRA

ORDERING

Available Stat:
No

Performing Lab:
Cytogenetics

Performed:
Monday - Friday, 9AM to 5PM

Methodology:
FISH

Reported:
7-14 days

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Synonyms:

- TCRA
- 14q11.2 BA FISH
- BTCRA

COLLECTION

Sample Type:
Bone marrow aspirate, Bone marrow core, Blood

Collect:
Bone marrow: Dark Green Top Sodium Heparin tube
Bone Core: Sterile container with medium
Blood: Dark Green Top Sodium Heparin tube

Preferred Volume:
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm
Blood : 2 mL

Minimum Volume:
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm
Blood: 1 mL

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Room temperature

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen

PROCESSING

Performing Lab:
Cytogenetics

Preferred Volume:
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm
Blood : 2 mL

Minimum Volume:
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm
Blood: 1 mL

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Room temperature

ADMINISTRATIVE

CPT Codes:
88271x2, 88275x1

COMPLETE VIEW

Available Stat:
No

Performing Lab:
Cytogenetics

Performed:
Monday - Friday, 9AM to 5PM

Methodology:
FISH

Collect:
Bone marrow: Dark Green Top Sodium Heparin tube
Bone Core: Sterile container with medium
Blood: Dark Green Top Sodium Heparin tube

Sample Type:
Bone marrow aspirate, Bone marrow core, Blood

Preferred Volume:
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm
Blood : 2 mL

Minimum Volume:
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm
Blood: 1 mL

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen

Synonyms:

- TCRA
- 14q11.2 BA FISH
- BTCRA

Storage/Transport Temperature:
Room temperature

Stability (from collection to initiation):
2 days

Reported:
7-14 days

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

CPT Codes:
88271x2, 88275x1

TdT

TDT

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday-sat (day shift)

Reported:
1-2 days

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Synonyms:

- Terminal deoxynucleotidyl Transferase

COLLECTION

Sample Type:
EDTA whole blood, Bone marrow, Unfixed tissue

Collect:
Lavender top

Amount to Collect:
3 mL blood

Preferred Volume:
Specimen amount varies-contact Immunology at x3-1712.

PROCESSING

Test Code:
TDT

Performing Lab:
Immunology

Specimen Preparation:
Hold bone marrow and blood specimens at room temperature. Do NOT centrifuge.

Refrigerate fine needle aspirates in special holding medium.

Each specimen should be assigned its own accession number.

If specimens are delivered to Specimen Receiving, contact Immunology immediately. If a specimen arrives after 1700 hours Monday-Friday, hold it at room temperature for delivery to Immunology after 0800 hours the following morning. After 1700 hours on Saturday, on Sunday or on a holiday contact the resident on call.

If a glass slide is received with an FNA sample, label it with an accession number label and send it with the sample to CB for testing.

Preferred Volume:
Specimen amount varies-contact Immunology at x3-1712.

RESULT INTERPRETATION

Reference Interval:
Negative

ADMINISTRATIVE

CPT Codes:
88346

LDT or Modified FDA:
Yes

LOINC Codes:
30117-6

COMPLETE VIEW

Available Stat:
No

Test Code:
TDT

Performing Lab:
Immunology

Performed:
Monday-sat (day shift)

Collect:
Lavender top

Amount to Collect:
3 mL blood

Sample Type:
EDTA whole blood, Bone marrow, Unfixed tissue

Preferred Volume:
Specimen amount varies-contact Immunology at x3-1712.

Specimen Preparation:
Hold bone marrow and blood specimens at room temperature. Do NOT centrifuge.

Refrigerate fine needle aspirates in special holding medium.

Each specimen should be assigned its own accession number.

If specimens are delivered to Specimen Receiving, contact Immunology immediately. If a specimen arrives after 1700 hours Monday-Friday, hold it at room temperature for delivery to Immunology after 0800 hours the following morning. After 1700 hours on Saturday, on Sunday or on a holiday contact the resident on call.

If a glass slide is received with an FNA sample, label it with an accession number label and send it with the sample to CB for testing.

Reference Interval:
Negative

Synonyms:

- Terminal deoxynucleotidyl Transferase

Reported:
1-2 days

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

CPT Codes:
88346

LDT or Modified FDA:
Yes

LOINC Codes:
30117-6

TEG

TEG

ORDERING

Approval Required:
By appointment only, contact Mission Bay Hematology at x-60194.

Available Stat:
No

Performing Lab:
Mission Bay Hematology

Performed:
By appointment only, 0800-1530 daily

Reported:
2 hours

Additional Information:
If patient is on a Heparinized line at the time of draw, please order a HEPTEG.

Synonyms:

- Thromboelastograph (TEG5000)

COLLECTION

Sample Type:
Citrated Whole Blood

Collect:
Citrated Blue Top

Amount to Collect:
2.7 mL

Preferred Volume:
2.7 mL

Minimum Volume:
2.7 mL

Remarks:
By appointment only, contact Mission Bay Hematology at x-60194.

1. Use a 21G needle to perform the venipuncture.
2. Draw and discard the first 3 mL of blood or fill another tube. Blue top cannot be the first tube drawn .
3. After collection, mix each tube by gently inverting 3 to 4 times.
4. Discard the sample if there is a venous collapse or stoppage of blood flow during collection. Likewise, avoid prolonged placement of the tourniquet or a traumatic phlebotomy.
5. Sample should be hand delivered immediately to the Hematology laboratory.

Stability (from collection to initiation):
Room Temperature, hand deliver immediately to Hematology Laboratory within 30 minutes of collection.

Unacceptable Conditions:
Unapproved orders, sample past stability time, tubed samples, samples from a traumatic phlebotomy, over or under filled tubes.

PROCESSING

Test Code:
TEG

Performing Lab:
Mission Bay Hematology

Preferred Volume:
2.7 mL

Minimum Volume:
2.7 mL

Unacceptable Conditions:
Unapproved orders, sample past stability time, tubed samples, samples from a traumatic phlebotomy, over or under filled tubes.

Stability (from collection to initiation):
Room Temperature, hand deliver immediately to Hematology Laboratory within 30 minutes of collection.

RESULT INTERPRETATION

Units:
R (min) K (min) Angle (deg) MA (mm)

Reference Interval:
ADULT NORMAL VALUES: TEG

R (min)	K (min)	Angle (deg)	MA (mm)
5.0-10.4	0.8-2.8	55.2-78.4	50.6-69.4

The thrombelastograph has been cleared by the U.S. FDA as a medical device indicated for use with adult patients where an evaluation of their blood coagulation properties is desired. The use of TEG in pediatric patients has not been cleared by the FDA. The performance characteristics of the test were assessed by the UCSF Clinical Laboratories.

Additional Information:
If patient is on a Heparinized line at the time of draw, please order a HEPTEG.

ADMINISTRATIVE

CPT Codes:
85347, 85384, 85576, 85390

LOINC Codes:
67790-6

COMPLETE VIEW

Approval Required:
By appointment only, contact Mission Bay Hematology at x-60194.

Available Stat:
No

Test Code:
TEG

Performing Lab:
Mission Bay Hematology

Performed:
By appointment only, 0800-1530 daily

Remarks:
By appointment only, contact Mission Bay Hematology at x-60194.

1. Use a 21G needle to perform the venipuncture.
2. Draw and discard the first 3 mL of blood or fill another tube. Blue top cannot be the first tube drawn .
3. After collection, mix each tube by gently inverting 3 to 4 times.
4. Discard the sample if there is a venous collapse or stoppage of blood flow during collection. Likewise, avoid prolonged placement of the tourniquet or a traumatic phlebotomy.
5. Sample should be hand delivered immediately to the Hematology laboratory.

Collect:
Citrated Blue Top

Amount to Collect:
2.7 mL

Sample Type:
Citrated Whole Blood

Preferred Volume:
2.7 mL

Minimum Volume:
2.7 mL

Unacceptable Conditions:
Unapproved orders, sample past stability time, tubed samples, samples from a traumatic phlebotomy, over or under filled tubes.

Units:
R (min) K (min) Angle (deg) MA (mm)

Reference Interval:

ADULT NORMAL VALUES: TEG

R (min)	K (min)	Angle (deg)	MA (mm)
5.0-10.4	0.8-2.8	55.2-78.4	50.6-69.4

The thrombelastograph has been cleared by the U.S. FDA as a medical device indicated for use with adult patients where an evaluation of their blood coagulation properties is desired. The use of TEG in pediatric patients has not been cleared by the FDA. The performance characteristics of the test were assessed by the UCSF Clinical Laboratories.

Synonyms:

- Thromboelastograph (TEG5000)

Stability (from collection to initiation):

Room Temperature, hand deliver immediately to Hematology Laboratory within 30 minutes of collection.

Reported:

2 hours

Additional Information:

If patient is on a Heparinized line at the time of draw, please order a HEPTEG.

CPT Codes:

85347, 85384, 85576, 85390

LOINC Codes:

67790-6

Telomere Length Analysis

MOLT

ORDERING

Available Stat:
No

Performing Lab:
RepeatDx

Methodology:
Flow-FISH

Reported:
1-2 weeks

Additional Information:
DO NOT COLLECT UNLESS REPEATDX TEST REQUEST FORMS HAVE BEEN COMPLETED AND SUPPLIED TO THE PATIENT.

https://repeatdx.com/wp-content/uploads/2015/11/RDx-req-form-USA-2017-fillable-1.pdf

Supplemental Test Request Form Required:
Yes

COLLECTION

Sample Type:
Blood

Collect:
EDTA Lavender top

Amount to Collect:
5-10 mL

Preferred Volume:
5-10 mL

Minimum Volume:
5 mL

Remarks:
CAN ONLY BE COLLECTED MONDAY (BEFORE NOON)-WEDNESDAY (BEFORE NOON), barring holidays.

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Ambient

Unacceptable Conditions:
>2 days old

PROCESSING

Test Code:
MOLT

Sendout:
Yes

Performing Lab:
RepeatDx

Preferred Volume:
5-10 mL

Minimum Volume:
5 mL

Unacceptable Conditions:
>2 days old

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Ambient

RESULT INTERPRETATION

Additional Information:

DO NOT COLLECT UNLESS REPEATDX TEST REQUEST FORMS HAVE BEEN COMPLETED AND SUPPLIED TO THE PATIENT.

https://repeatdx.com/wp-content/uploads/2015/11/RDx-req-form-USA-2017-fillable-1.pdf

Interpretive Data:

The Flow FISH telomere length measurements used by RepeatDx® have been shown to be valuable as a screening test for inherited telomere biology disorders resulting from mutations in specific genes. Flow FISH analysis has the unique advantage over other telomere length protocols by providing information on a variety of cell types from one blood sample. Fluorescent signals from telomeres are assessed on a single cell basis by flow cytometry, with patient results reported for lymphocytes, granulocytes, B-cells, naïve and memory T-cells, and NK cells.

All patient telomere length profiles are reported in relationship to age-matched controls and are available for all age ranges from pediatric to geriatric. This telomere reference curve was established by the study of over 800 healthy individuals between birth and 100 years of age. This informative technique allows analysis and comparisons of the telomere length between different cell types and within one cell type, e.g. in differentiating between constitutional deficiencies and specific cell type deficiencies.

Studies have shown that the telomere length declines with age, and follows distinct patterns in T-cells, B-cells and hematopoietic precursor cells. Longitudinal studies of hematopoietic stem cell transplantation have shown a rapid telomere length decline in the first year after transplant followed by stabilization.

ADMINISTRATIVE

CPT Codes:

88184, 88185X3

COMPLETE VIEW

Available Stat:

No

Test Code:

MOLT

Performing Lab:

RepeatDx

Sendout:

Yes

Methodology:

Flow-FISH

Remarks:

CAN ONLY BE COLLECTED MONDAY (BEFORE NOON)-WEDNESDAY (BEFORE NOON), barring holidays.

Collect:

EDTA Lavender top

Amount to Collect:

5-10 mL

Sample Type:

Blood

Preferred Volume:

5-10 mL

Minimum Volume:

5 mL

Unacceptable Conditions:

>2 days old

Interpretive Data:

The Flow FISH telomere length measurements used by RepeatDx® have been shown to be valuable as a screening test for inherited telomere biology disorders resulting from mutations in specific genes. Flow FISH analysis has the unique advantage over other telomere length protocols by providing information on a variety of cell types from one blood sample. Fluorescent signals from telomeres are assessed on a single cell basis by flow cytometry, with patient results reported for lymphocytes, granulocytes, B-cells, naïve and memory T-cells, and NK cells.

All patient telomere length profiles are reported in relationship to age-matched controls and are available for all age ranges from pediatric to geriatric. This telomere reference curve was established by the study of over 800 healthy individuals between birth and 100 years of age. This informative technique allows analysis and comparisons of the telomere length between different cell types and within one cell type, e.g. in differentiating between constitutional deficiencies and specific cell type deficiencies.

Studies have shown that the telomere length declines with age, and follows distinct patterns in T-cells, B-cells and hematopoietic precursor cells. Longitudinal studies of hematopoietic stem cell transplantation have shown a rapid telomere length decline in the first year after transplant followed by stabilization.

Storage/Transport Temperature:

Ambient

Stability (from collection to initiation):

2 days

Reported:

1-2 weeks

Additional Information:

DO NOT COLLECT UNLESS REPEATDX TEST REQUEST FORMS HAVE BEEN COMPLETED AND SUPPLIED TO THE PATIENT.

https://repeatdx.com/wp-content/uploads/2015/11/RDx-req-form-USA-2017-fillable-1.pdf

CPT Codes:

88184, 88185X3

Supplemental Test Request Form Required:

Yes

Testosterone, Free & Total, Immunoassay

FTCA

ORDERING

Available Stat:
No

Performing Lab:
China Basin Chemistry

Performed:
Sunday and Wednesday (day shift)

Methodology:
Total Testosterone (Chemiluminescent Microparticle Immunoassay - Abbott Architect i2000), Free Testosterone calculation

Reported:
Test run on Sunday and Wednesday. Turnaround time 1-5 days

Additional Information:
Reference ranges adopted from Quest Diagnostics based on correlation studies comparing our method with the Quest method and by in-house testing of 24 normal male and 31 normal female volunteers in the UCSF Laboratory.

Includes determination of total testosterone.

Free: To convert pg/mL to pmol/L (SI units) multiply by 3.467.

Total: To convert ng/dL to nmol/L (SI units) multiply by 0.0347.

Synonyms:

- Free testosterone

COLLECTION

Sample Type:
Serum

Collect:
Red top

Amount to Collect:
2 mL (blood)

Preferred Volume:
1 mL (serum)

Minimum Volume:
0.75 mL (serum)

Stability (from collection to initiation):
Refrigerated serum: 8 days
Frozen serum: 3 months

PROCESSING

Test Code:
FTCA

Test Group:
Testosterone

Performing Lab:
China Basin Chemistry

Specimen Preparation:
Refrigerate serum.

Preferred Volume:
1 mL (serum)

Minimum Volume:
0.75 mL (serum)

Stability (from collection to initiation):
Refrigerated serum: 8 days
Frozen serum: 3 months

RESULT INTERPRETATION

Units:
pg/mL (free) and ng/dL (total)

Reference Interval:
Testosterone, Total:

Males:

Age (years)	ng/dL
18-39	307-1068
40-49	270-1068
50-59	252-1068
60-69	251-1068
70-79	251-1065
80-99	181-1050

Females >= 18 years: 9-55 ng/dL

Testosterone, Free:

Age	Males	Females
18-69 years	35-155 pg/mL	0.1-6.4 pg/mL
70-89 years	30-135 pg/mL	0.2-3.7 pg/mL

Additional Information:
Reference ranges adopted from Quest Diagnostics based on correlation studies comparing our method with the Quest method and by in-house testing of 24 normal male and 31 normal female volunteers in the UCSF Laboratory.

Includes determination of total testosterone.

Free: To convert pg/mL to pmol/L (SI units) multiply by 3.467.

Total: To convert ng/dL to nmol/L (SI units) multiply by 0.0347.

ADMINISTRATIVE

CPT Codes:
84402 and 84403

LOINC Codes:
2991-8 and 2986-8

COMPLETE VIEW

Available Stat:
No

Test Code:
FTCA

Test Group:
Testosterone

Performing Lab:
China Basin Chemistry

Performed:
Sunday and Wednesday (day shift)

Methodology:
Total Testosterone (Chemiluminescent Microparticle Immunoassay - Abbott Architect i2000), Free Testosterone calculation

Collect:
Red top

Amount to Collect:
2 mL (blood)

Sample Type:
Serum

Preferred Volume:
1 mL (serum)

Minimum Volume:
0.75 mL (serum)

Specimen Preparation:
Refrigerate serum.

Units:
pg/mL (free) and ng/dL (total)

Reference Interval:
Testosterone, Total:

Males:

Age (years)	ng/dL
18-39	307-1068
40-49	270-1068
50-59	252-1068
60-69	251-1068
70-79	251-1065
80-99	181-1050

Females >= 18 years: 9-55 ng/dL

Testosterone, Free:

Age	Males	Females
18-69 years	35-155 pg/mL	0.1-6.4 pg/mL
70-89 years	30-135 pg/mL	0.2-3.7 pg/mL

Synonyms:

- Free testosterone

Stability (from collection to initiation):
Refrigerated serum: 8 days
Frozen serum: 3 months

Reported:
Test run on Sunday and Wednesday. Turnaround time 1-5 days

Additional Information:
Reference ranges adopted from Quest Diagnostics based on correlation studies comparing our method with the Quest method and by in-house testing of 24 normal male and 31 normal female volunteers in the UCSF Laboratory.

Includes determination of total testosterone.

Free: To convert pg/mL to pmol/L (SI units) multiply by 3.467.

Total: To convert ng/dL to nmol/L (SI units) multiply by 0.0347.

CPT Codes:
84402 and 84403

LOINC Codes:
2991-8 and 2986-8

Testosterone, Free & Total, Ultrasensitive

FTCP

ORDERING

Available Stat:
No

Performing Lab:
China Basin Chemistry

Performed:
Tuesday and Wednesday, reports next day

Methodology:
Total testosterone by LC-MS/MS, free testosterone by calculation

Reported:
Test run twice per week. Turnaround time 2-8 days

Additional Information:
Reference ranges adopted from Quest Diagnostics based on correlation studies comparing our method with the Quest method and by in-house testing of 24 normal male and 31 normal female volunteers in the UCSF Laboratory.

Includes determination of total testosterone.

Free: To convert pg/mL to pmol/L (SI units) multiply by 3.467.

Total: To convert ng/dL to nmol/L (SI units) multiply by 0.0347.

Synonyms:

- Free testosterone

COLLECTION

Sample Type:
Serum

Collect:
Red top

Amount to Collect:
2 mL (blood)

Preferred Volume:
1 mL (serum)

Minimum Volume:
0.75 mL (serum)

Stability (from collection to initiation):
Refrigerated serum: 8 days
Frozen serum: 3 months

PROCESSING

Test Code:
FTCP

Test Group:
Testosterone

Performing Lab:
China Basin Chemistry

Specimen Preparation:
Refrigerate serum.

Preferred Volume:
1 mL (serum)

Minimum Volume:
0.75 mL (serum)

Stability (from collection to initiation):
Refrigerated serum: 8 days
Frozen serum: 3 months

RESULT INTERPRETATION

Units:
pg/mL (free) and ng/dL (total)

Reference Interval:
Testosterone, Total:

Age	Males	Females
Premature (26-28 weeks)	59-125 ng/dL	5-16 ng/dL
Premature (31-35 weeks)	37-198 ng/dL	5-22 ng/dL
Newborn	75-400 ng/dL	20-64 ng/dL
1-5 months	14-363 ng/dL	< 20 ng/dL
6-24 months	< 37 ng/dL	< 9 ng/dL
2-3 years	< 15 ng/dL	< 20 ng/dL
4-5 years	< 19 ng/dL	< 30 ng/dL
6-7 years	< 13 ng/dL	< 7 ng/dL
8-9 years	2-8 ng/dL	1-11 ng/dL
10-11 years	2-165 ng/dL	3-32 ng/dL
12-13 years	3-619 ng/dL	6-50 ng/dL
14-15 years	31-733 ng/dL	6-52 ng/dL
16-17 years	158-826 ng/dL	9-58 ng/dL
18-39 years	300-1080 ng/dL	9-55 ng/dL
40-59 years	300-890 ng/dL	9-55 ng/dL
60 years and older	300-720 ng/dL	5-32 ng/dL

Total testosterone reference ranges by pubertal stage :

Tanner Stage	Males	Females
Tanner Stage I	2-15 ng/dL	2-17 ng/dL
Tanner Stage II	3-303 ng/dL	5-40 ng/dL
Tanner Stage III	10-851 ng/dL	10-63 ng/dL
Tanner Stage IV-V	162-847 ng/dL	11-62 ng/dL

Testosterone, Free:

Age	Males	Females
5 -9.9 years	<= 5.3 pg/mL	0.2-5.0 pg/mL
10-13.9 years	0.7-52.0 pg/mL	0.1-7.4 pg/mL
14-17.9 years	18-111 pg/mL	0.5-3.9 pg/mL
18-69 years	35-155 pg/mL	0.1-6.4 pg/mL

Additional Information:
Reference ranges adopted from Quest Diagnostics based on correlation studies comparing our method with the Quest method and by in-house testing of 24 normal male and 31 normal female volunteers in the UCSF Laboratory.

Includes determination of total testosterone.

Free: To convert pg/mL to pmol/L (SI units) multiply by 3.467.

Total: To convert ng/dL to nmol/L (SI units) multiply by 0.0347.

ADMINISTRATIVE

CPT Codes:
84402 and 84403

LOINC Codes:
2991-8 and 2986-8

COMPLETE VIEW

Available Stat:
No

Test Code:
FTCP

Test Group:
Testosterone

Performing Lab:
China Basin Chemistry

Performed:
Tuesday and Wednesday, reports next day

Methodology:
Total testosterone by LC-MS/MS, free testosterone by calculation

Collect:
Red top

Amount to Collect:
2 mL (blood)

Sample Type:
Serum

Preferred Volume:
1 mL (serum)

Minimum Volume:
0.75 mL (serum)

Specimen Preparation:
Refrigerate serum.

Units:
pg/mL (free) and ng/dL (total)

Reference Interval:

Testosterone, Total:

Age	Males	Females
Premature (26-28 weeks)	59-125 ng/dL	5-16 ng/dL
Premature (31-35 weeks)	37-198 ng/dL	5-22 ng/dL
Newborn	75-400 ng/dL	20-64 ng/dL
1-5 months	14-363 ng/dL	< 20 ng/dL
6-24 months	< 37 ng/dL	< 9 ng/dL
2-3 years	< 15 ng/dL	< 20 ng/dL
4-5 years	< 19 ng/dL	< 30 ng/dL
6-7 years	< 13 ng/dL	< 7 ng/dL
8-9 years	2-8 ng/dL	1-11 ng/dL
10-11 years	2-165 ng/dL	3-32 ng/dL
12-13 years	3-619 ng/dL	6-50 ng/dL
14-15 years	31-733 ng/dL	6-52 ng/dL
16-17 years	158-826 ng/dL	9-58 ng/dL
18-39 years	300-1080 ng/dL	9-55 ng/dL
40-59 years	300-890 ng/dL	9-55 ng/dL
60 years and older	300-720 ng/dL	5-32 ng/dL

Total testosterone reference ranges by pubertal stage :

Tanner Stage	Males	Females
Tanner Stage I	2-15 ng/dL	2-17 ng/dL
Tanner Stage II	3-303 ng/dL	5-40 ng/dL
Tanner Stage III	10-851 ng/dL	10-63 ng/dL
Tanner Stage IV-V	162-847 ng/dL	11-62 ng/dL

Testosterone, Free:

Age	Males	Females
5 -9.9 years	<= 5.3 pg/mL	0.2-5.0 pg/mL
10-13.9 years	0.7-52.0 pg/mL	0.1-7.4 pg/mL
14-17.9 years	18-111 pg/mL	0.5-3.9 pg/mL
18-69 years	35-155 pg/mL	0.1-6.4 pg/mL

Synonyms:

- Free testosterone

Stability (from collection to initiation):

Refrigerated serum: 8 days
Frozen serum: 3 months

Reported:

Test run twice per week. Turnaround time 2-8 days

Additional Information:

Reference ranges adopted from Quest Diagnostics based on correlation studies comparing our method with the Quest method and by in-house testing of 24 normal male and 31 normal female volunteers in the UCSF Laboratory.

Includes determination of total testosterone.

Free: To convert pg/mL to pmol/L (SI units) multiply by 3.467.

Total: To convert ng/dL to nmol/L (SI units) multiply by 0.0347.

CPT Codes:

84402 and 84403

LOINC Codes:

2991-8 and 2986-8

Testosterone, Total, Ultrasensitive

PTES

ORDERING

Available Stat:
No

Performing Lab:
China Basin Chemistry

Performed:
Tuesday and Wednesday, reports next day

Methodology:
LC/MS/MS

Reported:
Test run twice per week. Turnaround time 2-8 days.

Additional Information:
This assay is primarily intended for testing in pediatric patients with suspected or complex endocrine abnormalities or in settings where very low levels of testosterone are expected. For routine testing in adult patients, order "Testosterone, Total, Immunoassay" (test code TTES).

Testing may be helpful in assessing testicular function in males and managing hirsutism, virilization in females. Measurement of testosterone by LC/MS/MS overcomes interferences and the known limitations of direct immunoassays in measurement of testosterone values in the lower range. These advantages are particularly relevant for assessment of testosterone in women, children/infants, and men on testosterone reduction therapy for prostate cancer.

Reference ranges adapted from ARUP Laboratories (Clin Chem 2010; 56(7):1138-1147) based on patient correlation studies comparing this LC/MSMS method with the ARUP method and by in-house testing of 20 normal male and 20 normal female volunteers in the UCSF Chemistry laboratory at China Basin.

Synonyms:

- Testosterone ultrasensitive

COLLECTION

Sample Type:
Serum

Collect:
Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Refrigerated serum on cells: 3 days
Refrigerated serum: 2 weeks
Frozen serum: 3 years

PROCESSING

Test Code:
PTES

Test Group:
Testosterone

Performing Lab:
China Basin Chemistry

Specimen Preparation:
Centrifuge samples aliquot serum and refrigerate

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Refrigerated serum on cells: 3 days
Refrigerated serum: 2 weeks
Frozen serum: 3 years

RESULT INTERPRETATION

Units:
ng/dL

Reference Interval:

Age	Males	Females
Premature (26-28 weeks)	59-125 ng/dL	5-16 ng/dL
Premature (31-35 weeks)	37-198 ng/dL	5-22 ng/dL
Newborn	75-400 ng/dL	20-64 ng/dL
1-5 months	14-363 ng/dL	< 20 ng/dL
6-24 months	< 37 ng/dL	< 9 ng/dL
2-3 years	< 15 ng/dL	< 20 ng/dL
4-5 years	< 19 ng/dL	< 30 ng/dL
6-7 years	< 13 ng/dL	< 7 ng/dL
8-9 years	2-8 ng/dL	1-11 ng/dL
10-11 years	2-165 ng/dL	3-32 ng/dL
12-13 years	3-619 ng/dL	6-50 ng/dL
14-15 years	31-733 ng/dL	6-52 ng/dL
16-17 years	158-826 ng/dL	9-58 ng/dL
18-39 years	300-1080 ng/dL	9-55 ng/dL
40-59 years	300-890 ng/dL	9-55 ng/dL
60 years and older	300-720 ng/dL	5-32 ng/dL

Tanner Stage	Males	Females
Tanner Stage I	2-15 ng/dL	2-17 ng/dL
Tanner Stage II	3-303 ng/dL	5-40 ng/dL
Tanner Stage III	10-851 ng/dL	10-63 ng/dL
Tanner Stage IV-V	162-847 ng/dL	11-62 ng/dL

Additional Information:
This assay is primarily intended for testing in pediatric patients with suspected or complex endocrine abnormalities or in settings where very low levels of testosterone are expected. For routine testing in adult patients, order "Testosterone, Total, Immunoassay" (test code TTES).

Testing may be helpful in assessing testicular function in males and managing hirsutism, virilization in females. Measurement of testosterone by LC/MS/MS overcomes interferences and the known limitations of direct immunoassays in measurement of testosterone values in the lower range. These advantages are particularly relevant for assessment of testosterone in women, children/infants, and men on testosterone reduction therapy for prostate cancer.

Reference ranges adapted from ARUP Laboratories (Clin Chem 2010; 56(7):1138-1147) based on patient correlation studies comparing this LC/MSMS method with the ARUP method and by in-house testing of 20 normal male and 20 normal female volunteers in the UCSF Chemistry laboratory at China Basin.

ADMINISTRATIVE

CPT Codes:
84403

LDT or Modified FDA:
Yes

LOINC Codes:
51005-7

COMPLETE VIEW

Available Stat:
No

Test Code:
PTES

Test Group:
Testosterone

Performing Lab:
China Basin Chemistry

Performed:
Tuesday and Wednesday, reports next day

Methodology:
LC/MS/MS

Collect:
Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Specimen Preparation:
Centrifuge samples aliquot serum and refrigerate

Units:
ng/dL

Reference Interval:

Age	Males	Females
Premature (26-28 weeks)	59-125 ng/dL	5-16 ng/dL
Premature (31-35 weeks)	37-198 ng/dL	5-22 ng/dL
Newborn	75-400 ng/dL	20-64 ng/dL
1-5 months	14-363 ng/dL	< 20 ng/dL
6-24 months	< 37 ng/dL	< 9 ng/dL
2-3 years	< 15 ng/dL	< 20 ng/dL
4-5 years	< 19 ng/dL	< 30 ng/dL
6-7 years	< 13 ng/dL	< 7 ng/dL
8-9 years	2-8 ng/dL	1-11 ng/dL
10-11 years	2-165 ng/dL	3-32 ng/dL
12-13 years	3-619 ng/dL	6-50 ng/dL
14-15 years	31-733 ng/dL	6-52 ng/dL
16-17 years	158-826 ng/dL	9-58 ng/dL
18-39 years	300-1080 ng/dL	9-55 ng/dL
40-59 years	300-890 ng/dL	9-55 ng/dL
60 years and older	300-720 ng/dL	5-32 ng/dL

Tanner Stage	Males	Females
Tanner Stage I	2-15 ng/dL	2-17 ng/dL
Tanner Stage II	3-303 ng/dL	5-40 ng/dL
Tanner Stage III	10-851 ng/dL	10-63 ng/dL
Tanner Stage IV-V	162-847 ng/dL	11-62 ng/dL

Synonyms:

- Testosterone ultrasensitive

Stability (from collection to initiation):
Refrigerated serum on cells: 3 days
Refrigerated serum: 2 weeks
Frozen serum: 3 years

Reported:
Test run twice per week. Turnaround time 2-8 days.

Additional Information:

This assay is primarily intended for testing in pediatric patients with suspected or complex endocrine abnormalities or in settings where very low levels of testosterone are expected. For routine testing in adult patients, order "Testosterone, Total, Immunoassay" (test code TTES).

Testing may be helpful in assessing testicular function in males and managing hirsutism, virilization in females. Measurement of testosterone by LC/MS/MS overcomes interferences and the known limitations of direct immunoassays in measurement of testosterone values in the lower range. These advantages are particularly relevant for assessment of testosterone in women, children/infants, and men on testosterone reduction therapy for prostate cancer.

Reference ranges adapted from ARUP Laboratories (Clin Chem 2010; 56(7):1138-1147) based on patient correlation studies comparing this LC/MSMS method with the ARUP method and by in-house testing of 20 normal male and 20 normal female volunteers in the UCSF Chemistry laboratory at China Basin.

CPT Codes:

84403

LDT or Modified FDA:

Yes

LOINC Codes:

51005-7

Testosterone,Total, Immunoassay

TTES

ORDERING

Available Stat:
No

Performing Lab:
China Basin Chemistry

Performed:
Sunday and Wednesday (day shift)

Methodology:
Two Step Chemiluminescent Microparticle Immunoassay on Abbott Architect i2000

Reported:
1-4 days

Additional Information:
This assay is performed in-house and is suitable for use in adult patients to assess general endocrine function.

To convert ng/dL to nmol/L (SI units) multiply by 0.0347.

For pediatric patients, see entry for Testosterone, Total, Ultrasensitive.

COLLECTION

Sample Type:
Serum

Collect:
Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Refrigerated serum on cells: 3 days
Refrigerated serum: 2 weeks
Frozen serum: 3 years

PROCESSING

Test Code:
TTES

Test Group:
Testosterone

Performing Lab:
China Basin Chemistry

Specimen Preparation:
Refrigerate

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Refrigerated serum on cells: 3 days
Refrigerated serum: 2 weeks
Frozen serum: 3 years

RESULT INTERPRETATION

Units:
ng/dL

Reference Interval:

Males:

Age (years)	ng/dL
18-39	307-1068
40-49	270-1068
50-59	252-1068
60-69	251-1068
70-79	251-1065
80-99	181-1050

Females >= 18 years: 9-55 ng/dL

Reference ranges for females adapted from ARUP Laboratories & vendor performed studies and verified by in-house testing of 20 normal female volunteers in the UCSF laboratory.

Reference ranges for males adapted from Travison et al, J Clin Endocrinol Metab, 2017, 102(4): 1161-1173 based on data from non-obese men (n=6933) and verified by a method comparison study between UCSF and LabCorp.

Additional Information:

This assay is performed in-house and is suitable for use in adult patients to assess general endocrine function.

To convert ng/dL to nmol/L (SI units) multiply by 0.0347.

For pediatric patients, see entry for Testosterone, Total, Ultrasensitive.

ADMINISTRATIVE

CPT Codes:
84403

LOINC Codes:
49041-7

COMPLETE VIEW

Available Stat:
No

Test Code:
TTES

Test Group:
Testosterone

Performing Lab:
China Basin Chemistry

Performed:
Sunday and Wednesday (day shift)

Methodology:
Two Step Chemiluminescent Microparticle Immunoassay on Abbott Architect i2000

Collect:
Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Specimen Preparation:
Refrigerate

Units:
ng/dL

Reference Interval:

Males:

Age (years)	ng/dL
18-39	307-1068
40-49	270-1068
50-59	252-1068
60-69	251-1068
70-79	251-1065
80-99	181-1050

Females >= 18 years: 9-55 ng/dL

Reference ranges for females adapted from ARUP Laboratories & vendor performed studies and verified by in-house testing of 20 normal female volunteers in the UCSF laboratory.

Reference ranges for males adapted from Travison et al, J Clin Endocrinol Metab, 2017, 102(4): 1161-1173 based on data from non-obese men (n=6933) and verified by a method comparison study between UCSF and LabCorp.

Stability (from collection to initiation):

Refrigerated serum on cells: 3 days
Refrigerated serum: 2 weeks
Frozen serum: 3 years

Reported:

1-4 days

Additional Information:

This assay is performed in-house and is suitable for use in adult patients to assess general endocrine function.

To convert ng/dL to nmol/L (SI units) multiply by 0.0347.

For pediatric patients, see entry for Testosterone, Total, Ultrasensitive.

CPT Codes:

84403

LOINC Codes:

49041-7

Tetanus Antitoxin

TETA

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Enzyme Immunoassay

Reported:
Test run Monday & Thursday. Turnaround time: 1-5 days.

Additional Information:
Following immunization, levels usually increase approx. 4-fold.

Synonyms:

- Tetanus antitoxoid

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

PROCESSING

Test Code:
TETA

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze at -20C. Order Quest # 50922P

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

RESULT INTERPRETATION

Units:
IU/mL

Reference Interval:
Detectable: > 0.1 IU/mL
Protective: > 0.15 IU/mL

Additional Information:
Following immunization, levels usually increase approx. 4-fold.

ADMINISTRATIVE

CPT Codes:
86774-90

LOINC Codes:
41483-9

COMPLETE VIEW

Available Stat:
No

Test Code:
TETA

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Enzyme Immunoassay

Collect:
Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Specimen Preparation:
Freeze at -20C. Order Quest # 50922P

Units:
IU/mL

Reference Interval:
Detectable: > 0.1 IU/mL
Protective: > 0.15 IU/mL

Synonyms:

- Tetanus antitoxoid

Reported:
Test run Monday & Thursday. Turnaround time: 1-5 days.

Additional Information:
Following immunization, levels usually increase approx. 4-fold.

CPT Codes:
86774-90

LOINC Codes:
41483-9

Tetrahydrocannabinol Screen, Urine

THC

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Homogeneous competitive enzyme immunoassay

Reported:
Stat 2 hours, Routine 4 hours

Additional Information:
This immunoassay is only a screening test and is not definitive. Results cannot be used for medico-legal purposes.

A concentration of < 50 µg/L is considered negative by this test. A positive result is >= 50 µg/L and indicates the presence of this class of drugs.

Cannabis metabolites can be detected in urine up to 95 days after use.(From: Verstraete AG. Detection Times of Drugs of Abuse in Blood, Urine and Oral Fluid. Ther Drug Monit, 26(2) April 2004, 200-205)

False positive results may occur due to other cross reacting substances, however, positive results are NOT routinely confirmed by a second method. If confirmation of the test result is required, it is the responsibility of the physician to separately order a specific confirmatory test for the drug identified. False negative results are also possible, for example, with use of newer JWH compounds and other synthetic cannabinoids.

Click here for List of Cross Reactive Substances

Samples are held for 7 days. Contact laboratory at x 31667 to request confirmatory testing. Confirmation test code THCQNT.

Synonyms:

- THC
- marijuana
- Tetrahydrocannabinol
- cannabis
- pot
- Cannabinoids

COLLECTION

Sample Type:
Random Urine

Collect:
Urine cup

Amount to Collect:
See preferred volume

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Stability (from collection to initiation):
Parnassus: Refrigerated 5 days, frozen at -20C 2 weeks

Mission Bay: Refrigerated 7 days, frozen at -20C 2 weeks

PROCESSING

Test Code:
THC

Test Group:
Cannabinoid

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Stability (from collection to initiation):
Parnassus: Refrigerated 5 days, frozen at -20C 2 weeks

Mission Bay: Refrigerated 7 days, frozen at -20C 2 weeks

RESULT INTERPRETATION

Reference Interval:
Negative

Note: a negative result indicates that this class of drugs is not present, or they are present at a concentration below the cut-off concentration of 50 µg/L

Additional Information:
This immunoassay is only a screening test and is not definitive. Results cannot be used for medico-legal purposes.

A concentration of < 50 µg/L is considered negative by this test. A positive result is >= 50 µg/L and indicates the presence of this class of drugs.

Cannabis metabolites can be detected in urine up to 95 days after use.(From: Verstraete AG. Detection Times of Drugs of Abuse in Blood, Urine and Oral Fluid. Ther Drug Monit, 26(2) April 2004, 200-205)

False positive results may occur due to other cross reacting substances, however, positive results are NOT routinely confirmed by a second method. If confirmation of the test result is required, it is the responsibility of the physician to separately order a specific confirmatory test for the drug identified. False negative results are also possible, for example, with use of newer JWH compounds and other synthetic cannabinoids.

Click here for List of Cross Reactive Substances

Samples are held for 7 days. Contact laboratory at x 31667 to request confirmatory testing. Confirmation test code THCQNT.

ADMINISTRATIVE

CPT Codes:
80307

LOINC Codes:
18282-4

COMPLETE VIEW

Available Stat:
Yes

Test Code:
THC

Test Group:
Cannabinoid

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Homogeneous competitive enzyme immunoassay

Collect:
Urine cup

Amount to Collect:
See preferred volume

Sample Type:
Random Urine

Preferred Volume:
1 mL urine

Minimum Volume:
0.5 mL urine

Reference Interval:
Negative

Note: a negative result indicates that this class of drugs is not present, or they are present at a concentration below the cut-off concentration of 50 µg/L

Synonyms:

- THC
- marijuana
- Tetrahydrocannabinol
- cannabis
- pot
- Cannabinoids

Stability (from collection to initiation):
Parnassus: Refrigerated 5 days, frozen at -20C 2 weeks

Mission Bay: Refrigerated 7 days, frozen at -20C 2 weeks

Reported:
Stat 2 hours, Routine 4 hours

Additional Information:
This immunoassay is only a screening test and is not definitive. Results cannot be used for medico-legal purposes.

A concentration of < 50 µg/L is considered negative by this test. A positive result is >= 50 µg/L and indicates the presence of this class of drugs.

Cannabis metabolites can be detected in urine up to 95 days after use.(From: Verstraete AG. Detection Times of Drugs of Abuse in Blood, Urine and Oral Fluid. Ther Drug Monit, 26(2) April 2004, 200-205)

False positive results may occur due to other cross reacting substances, however, positive results are NOT routinely confirmed by a second method. If confirmation of the test result is required, it is the responsibility of the physician to separately order a specific confirmatory test for the drug identified. False negative results are also possible, for example, with use of newer JWH compounds and other synthetic cannabinoids.

Click here for List of Cross Reactive Substances

Samples are held for 7 days. Contact laboratory at x 31667 to request confirmatory testing. Confirmation test code THCQNT.

CPT Codes:
80307

LOINC Codes:
18282-4

TH/TO Autoantibody

THTO

ORDERING

Available Stat:
No

Performing Lab:
LabCorp (via ARUP)

Methodology:
RIPA gel radiography

Reported:
14-21 days

COLLECTION

Sample Type:
Serum

Collect:
Gold or Red-top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Room temperature: 7 days
Refrigerated: 14 days
Frozen: 60 days

Storage/Transport Temperature:
Frozen

Unacceptable Conditions:
Grossly hemolyzed; bacterial contamination; lipemic specimen; icteric specimen; non-serum specimen types

PROCESSING

Test Code:
THTO

Sendout:
Yes

Performing Lab:
LabCorp (via ARUP)

Specimen Preparation:
Aliquot and freeze serum. Send to China Basin frozen. Send to ARUP using miscellaneous order procedure, with LabCorp test code 520016

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Grossly hemolyzed; bacterial contamination; lipemic specimen; icteric specimen; non-serum specimen types

Stability (from collection to initiation):
Room temperature: 7 days
Refrigerated: 14 days
Frozen: 60 days

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Reference Interval:
Negative

Interpretive Data:
The Th/To antibodies are present in 10-19% of patients with limited SSc, in 11% of patients with diffuse cutaneous SSc, and in 3% of patients with primary Raynaud's disease. Anti-Th/To antibody has been shown to be highly specific for patients with SSc.

COMPLETE VIEW

Available Stat:
No

Test Code:
THTO

Performing Lab:
LabCorp (via ARUP)

Sendout:
Yes

Methodology:
RIPA gel radiography

Collect:
Gold or Red-top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Unacceptable Conditions:
Grossly hemolyzed; bacterial contamination; lipemic specimen; icteric specimen; non-serum specimen types

Specimen Preparation:
Aliquot and freeze serum. Send to China Basin frozen. Send to ARUP using miscellaneous order procedure, with LabCorp test code 520016

Reference Interval:
Negative

Interpretive Data:
The Th/To antibodies are present in 10-19% of patients with limited SSc, in 11% of patients with diffuse cutaneous SSc, and in 3% of patients with primary Raynaud's disease. Anti-Th/To antibody has been shown to be highly specific for patients with SSc.

Storage/Transport Temperature:
Frozen

Stability (from collection to initiation):
Room temperature: 7 days
Refrigerated: 14 days
Frozen: 60 days

Reported:
14-21 days

Thallium, 24 hour urine

MOLT

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
ICP/MS

Reported:
Test performed Tuesday-Saturday. Turnaround time: 3-6 days.

Additional Information:
To convert µg/L to nmol/L (SI units) multiply by 4.89

COLLECTION

Sample Type:
24 hour urine collection

Collect:
Acid Wash Container Required

Amount to Collect:
Entire 24 hour urine output

Preferred Volume:
7 mL urine

Minimum Volume:
3 mL urine

PROCESSING

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Follow the detailed processing instructions for Trace Metal Analysis. Refrigerate 7 mL aliquot. For 24 hour urine order Quest # 84723N.

Preferred Volume:
7 mL urine

Minimum Volume:
3 mL urine

RESULT INTERPRETATION

Units:
µg/L (mcg/L)

Reference Interval:
Normal: < 2 µg/L
Toxic: > 200 µg/L

Critical Values:
Quest Priority-1: >= 200 µg/L

Additional Information:
To convert µg/L to nmol/L (SI units) multiply by 4.89

ADMINISTRATIVE

CPT Codes:
83018-90

COMPLETE VIEW

Available Stat:
No

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Performing Lab:
Quest

Sendout:
Yes

Methodology:
ICP/MS

Collect:
Acid Wash Container Required

Amount to Collect:
Entire 24 hour urine output

Sample Type:
24 hour urine collection

Preferred Volume:
7 mL urine

Minimum Volume:
3 mL urine

Specimen Preparation:
Follow the detailed processing instructions for Trace Metal Analysis. Refrigerate 7 mL aliquot. For 24 hour urine order Quest # 84723N.

Units:
µg/L (mcg/L)

Reference Interval:
Normal: < 2 µg/L
Toxic: > 200 µg/L

Critical Values:
Quest Priority-1: >= 200 µg/L

Reported:
Test performed Tuesday-Saturday. Turnaround time: 3-6 days.

Additional Information:
To convert µg/L to nmol/L (SI units) multiply by 4.89

CPT Codes:
83018-90

Thallium, random urine

THALR

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Inductively-coupled Plasma Mass Spectroscopy

Reported:
Performed 5x per week. Turnaround 4-7 days.

COLLECTION

Sample Type:
Random urine (second AM void preferred)

Collect:
Urine cup

Amount to Collect:
7 mL urine

Preferred Volume:
7 mL urine

Minimum Volume:
3 mL urine

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 5 days, frozen at -20C 2 weeks.

PROCESSING

Test Code:
THALR

Test Group:
Thallium

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot into an acid-washed container. Refrigerate urine at 4C. Order Quest test # 57455P

Preferred Volume:
7 mL urine

Minimum Volume:
3 mL urine

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 5 days, frozen at -20C 2 weeks.

RESULT INTERPRETATION

Units:
µg/g creatinine

Reference Interval:
<= 0.4 µg/g creatinine

ADMINISTRATIVE

CPT Codes:
82570-90, 83018-90

LOINC Codes:
13469-2

COMPLETE VIEW

Available Stat:
No

Test Code:
THALR

Test Group:
Thallium

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Inductively-coupled Plasma Mass Spectroscopy

Collect:
Urine cup

Amount to Collect:
7 mL urine

Sample Type:
Random urine (second AM void preferred)

Preferred Volume:
7 mL urine

Minimum Volume:
3 mL urine

Specimen Preparation:
Aliquot into an acid-washed container. Refrigerate urine at 4C. Order Quest test # 57455P

Units:
µg/g creatinine

Reference Interval:
<= 0.4 µg/g creatinine

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 5 days, frozen at -20C 2 weeks.

Reported:
Performed 5x per week. Turnaround 4-7 days.

CPT Codes:
82570-90, 83018-90

LOINC Codes:
13469-2

THC Metabolite, Urine, Quantitative

THCQNT

ORDERING

Ordering Recommendations:
Use to obtain quantitative results or to follow up a presumptive result. For general screening, the preferred test is THC (Cannabinoids), Urine Screen with Reflex to Quantitation (2012270). This test does not distinguish between the delta-8 and delta-9 forms of THC or their metabolites.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Reported:
1-5 days

Synonyms:

- 9-Carboxy-THC
- Cannabinoids
- Cannabis
- Dronabinol
- Marijuana
- Marinol
- Pain Management
- Pain Management, Marijuana Metabolite, Quantitative, with medMATCH, Urine
- Pain Management, Marijuana Metabolite, with Confirmation with medMATCH, Urine
- THC

COLLECTION

Collect:
Random urine.

Stability (from collection to initiation):
Ambient: 1 week; Refrigerated: 1 month; Frozen: 1 Month

Storage/Transport Temperature:
Room temperature.

Unacceptable Conditions:
Specimens exposed to repeated freeze/thaw cycles.

PROCESSING

Test Code:
THCQNT

Test Group:
Cannabinoid

ARUP Test Code:
0090369

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transfer 1 mL urine with no additives or preservatives to an ARUP standard transport tube. (Min: 0.5 mL)

Unacceptable Conditions:
Specimens exposed to repeated freeze/thaw cycles.

Stability (from collection to initiation):
Ambient: 1 week; Refrigerated: 1 month; Frozen: 1 Month

Storage/Transport Temperature:
Room temperature.

RESULT INTERPRETATION

Reference Interval:
Effective November 18, 2019

Drugs Covered	Cutoff Concentrations
11-Nor-9-carboxy-THC	15 ng/mL

Interpretive Data:
Methodology: Liquid Chromatography-Tandem Mass Spectrometry

Positive cutoff: 15 ng/mL

For medical purposes only; not valid for forensic use.

The drug analyte detected in this assay, 9-carboxy THC, is a metabolite of delta-9-tetrahydrocannabinol (THC). Detection of 9-carboxy THC suggests use of, or exposure to, a product containing THC. This test cannot distinguish between prescribed or non-prescribed forms of THC, nor can it distinguish between active or passive use. The 9-carboxy THC metabolite can be detected in urine for several weeks. Normalization of results to creatinine concentration can help document elimination or suggest recent use, when specimens are collected at least one week apart.

ADMINISTRATIVE

CPT Codes:
80349 (Alt code: G0480)

LOINC:

- 3436-3

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Use to obtain quantitative results or to follow up a presumptive result. For general screening, the preferred test is THC (Cannabinoids), Urine Screen with Reflex to Quantitation (2012270). This test does not distinguish between the delta-8 and delta-9 forms of THC or their metabolites.

Test Code:
THCQNT

Test Group:
Cannabinoid

ARUP Test Code:
0090369

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative Liquid Chromatography-Tandem Mass Spectrometry

Collect:
Random urine.

Unacceptable Conditions:
Specimens exposed to repeated freeze/thaw cycles.

Specimen Preparation:
Transfer 1 mL urine with no additives or preservatives to an ARUP standard transport tube. (Min: 0.5 mL)

Reference Interval:
Effective November 18, 2019

Drugs Covered	Cutoff Concentrations
11-Nor-9-carboxy-THC	15 ng/mL

Interpretive Data:

Methodology: Liquid Chromatography-Tandem Mass Spectrometry

Positive cutoff: 15 ng/mL

For medical purposes only; not valid for forensic use.

The drug analyte detected in this assay, 9-carboxy THC, is a metabolite of delta-9-tetrahydrocannabinol (THC). Detection of 9-carboxy THC suggests use of, or exposure to, a product containing THC. This test cannot distinguish between prescribed or non-prescribed forms of THC, nor can it distinguish between active or passive use. The 9-carboxy THC metabolite can be detected in urine for several weeks. Normalization of results to creatinine concentration can help document elimination or suggest recent use, when specimens are collected at least one week apart.

Synonyms:

- 9-Carboxy-THC
- Cannabinoids
- Cannabis
- Dronabinol
- Marijuana
- Marinol
- Pain Management
- Pain Management, Marijuana Metabolite, Quantitative, with medMATCH, Urine
- Pain Management, Marijuana Metabolite, with Confirmation with medMATCH, Urine
- THC

Storage/Transport Temperature:

Room temperature.

Stability (from collection to initiation):

Ambient: 1 week; Refrigerated: 1 month; Frozen: 1 Month

Reported:

1-5 days

CPT Codes:

80349 (Alt code: G0480)

LOINC:

- 3436-3

Notes:

Compare to Pain Management, Marijuana Metabolite, Quantitative, with medMATCH, Urine; Pain Management, Marijuana Metabolite, with Confirmation with medMATCH, Urine.

Theophylline

THEO

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Homogeneous competitive enzyme immunoassay

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
According to the UpToDate guidelines (accessed July 29th , 2019) on "Theophylline use in asthma" by Hendeles and Weinberger, MD, "The efficacy and toxicity of theophylline are closely related to the PEAK serum concentration. In patients receiving theophylline monotherapy, doses providing a PEAK serum concentration of 10 to 20 mg/L (mcg/mL) are best documented to improve symptoms and reduce the need for rescue therapy. However, lower levels may be sufficient for some patients."

Note: The presence of human anti-mouse antibodies or heterophile antibodies may interfere with the theophylline assay in some cases. Testing for theophylline levels in parallel dilution studies and with a different assay may be useful in cases where interference by a monoclonal protein or abnormal immunoglobulin is suspected.

Synonyms:

- Theodur

COLLECTION

Sample Type:
Serum or plasma

Collect:
Gold top or Light Green top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Remarks:
Time to steady state: highly variable 3-4 days (adults) or 3 doses

Indicate date and time of draw on requisition.

Stability (from collection to initiation):
Refrigerated or frozen at -20C 3 months

PROCESSING

Test Code:
THEO

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Stability (from collection to initiation):
Refrigerated or frozen at -20C 3 months

RESULT INTERPRETATION

Units:
mg/L

Reference Interval:
Therapeutic peak: 5-20 mg/L

Critical Values:
> 30 mg/L

Additional Information:
According to the UpToDate guidelines (accessed July 29th , 2019) on "Theophylline use in asthma" by Hendeles and Weinberger, MD, "The efficacy and toxicity of theophylline are closely related to the PEAK serum concentration. In patients receiving theophylline monotherapy, doses providing a PEAK serum concentration of 10 to 20 mg/L (mcg/mL) are best documented to improve symptoms and reduce the need for rescue therapy. However, lower levels may be sufficient for some patients."

Note: The presence of human anti-mouse antibodies or heterophile antibodies may interfere with the theophylline assay in some cases. Testing for theophylline levels in parallel dilution studies and with a different assay may be useful in cases where interference by a monoclonal protein or abnormal immunoglobulin is suspected.

ADMINISTRATIVE

CPT Codes:
80198

LOINC Codes:
4049-3

COMPLETE VIEW

Available Stat:
Yes

Test Code:
THEO

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Homogeneous competitive enzyme immunoassay

Remarks:
Time to steady state: highly variable 3-4 days (adults) or 3 doses

Indicate date and time of draw on requisition.

Collect:
Gold top or Light Green top

Amount to Collect:
1 mL blood

Sample Type:
Serum or plasma

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Units:
mg/L

Reference Interval:
Therapeutic peak: 5-20 mg/L

Critical Values:
> 30 mg/L

Synonyms:

- Theodur

Stability (from collection to initiation):
Refrigerated or frozen at -20C 3 months

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:

According to the UpToDate guidelines (accessed July 29th , 2019) on "Theophylline use in asthma" by Hendeles and Weinberger, MD, "The efficacy and toxicity of theophylline are closely related to the PEAK serum concentration. In patients receiving theophylline monotherapy, doses providing a PEAK serum concentration of 10 to 20 mg/L (mcg/mL) are best documented to improve symptoms and reduce the need for rescue therapy. However, lower levels may be sufficient for some patients."

Note: The presence of human anti-mouse antibodies or heterophile antibodies may interfere with the theophylline assay in some cases. Testing for theophylline levels in parallel dilution studies and with a different assay may be useful in cases where interference by a monoclonal protein or abnormal immunoglobulin is suspected.

CPT Codes:

80198

LOINC Codes:

4049-3

Thermal Amplitude Test

BOLT

ORDERING

Approval Required:
Yes; Approval from the Clinical Hematology Consult Service is required before order is placed.

Available Stat:
No

Performing Lab:
American Red Cross (ARC) Immunohematology Reference Lab (Pomona, CA)

Performed:
Test set up Monday-Friday

Reported:
4-7 days

Additional Information:
The thermal amplitude test is performed to determine the reactivity of a cold autoantibody at varying temperatures. Cold autoantibodies that are reactive at temperatures equal to or greater than 30° C have the potential to be clinically significant. Cold antibodies that are reactive at < 30° C are not clinically significant.

COLLECTION

Sample Type:
Serum and EDTA anti-coagulated whole blood

Collect:
2 red and 2 lavender tops

Amount to Collect:
Red top: 2 x 6 mL
Lavender (EDTA) top: 2 x 7 mL

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample, or phlebotomist ID.

Storage/Transport Temperature:
Tubes need to be transported at ROOM TEMP.

Unacceptable Conditions:
Mislabeled or unlabeled sample, phlebotomist ID or name not documented on label.

PROCESSING

Test Code:
BOLT

Sendout:
Yes

Performing Lab:
American Red Cross (ARC) Immunohematology Reference Lab (Pomona, CA)

Specimen Preparation:
Send samples to blood bank to be shipped at ROOM TEMP to ARC Reference Lab. Do not separate plasma or serum.

Unacceptable Conditions:
Mislabeled or unlabeled sample, phlebotomist ID or name not documented on label.

Storage/Transport Temperature:
Tubes need to be transported at ROOM TEMP.

RESULT INTERPRETATION

Reference Interval:
Titer <= 64 at 4°C and 21°C; No agglutination at 30°C and 37°C phases of testing

Additional Information:
The thermal amplitude test is performed to determine the reactivity of a cold autoantibody at varying temperatures. Cold autoantibodies that are reactive at temperatures equal to or greater than 30° C have the potential to be clinically significant. Cold antibodies that are reactive at < 30° C are not clinically significant.

COMPLETE VIEW

Approval Required:
Yes; Approval from the Clinical Hematology Consult Service is required before order is placed.

Available Stat:
No

Test Code:
BOLT

Performing Lab:
American Red Cross (ARC) Immunohematology Reference Lab (Pomona, CA)

Sendout:
Yes

Performed:
Test set up Monday-Friday

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample, or phlebotomist ID.

Collect:
2 red and 2 lavender tops

Amount to Collect:
Red top: 2 x 6 mL
Lavender (EDTA) top: 2 x 7 mL

Sample Type:
Serum and EDTA anti-coagulated whole blood

Unacceptable Conditions:
Mislabeled or unlabeled sample, phlebotomist ID or name not documented on label.

Specimen Preparation:
Send samples to blood bank to be shipped at ROOM TEMP to ARC Reference Lab. Do not separate plasma or serum.

Reference Interval:
Titer <= 64 at 4°C and 21°C; No agglutination at 30°C and 37°C phases of testing

Storage/Transport Temperature:
Tubes need to be transported at ROOM TEMP.

Reported:
4-7 days

Additional Information:
The thermal amplitude test is performed to determine the reactivity of a cold autoantibody at varying temperatures. Cold autoantibodies that are reactive at temperatures equal to or greater than 30° C have the potential to be clinically significant. Cold antibodies that are reactive at < 30° C are not clinically significant.

Thiocyanate

SCN

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Colorimetric

Reported:
Test run Monday-Friday. Turnaround time: 1-4 days.

Additional Information:
To convert mg/dL to µmol/L (SI units) multiply by 172.

COLLECTION

Sample Type:
Serum

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Unacceptable Conditions:
Collected in Gold top

PROCESSING

Test Code:
SCN

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Separate serum immediately and freeze in a plastic transport vial at -20C. Order Quest # 879X

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Unacceptable Conditions:
Collected in Gold top

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:

Non-smokers	< 0.4 mg/dL
Smokers	< 2.0 mg/dL
Nitroprusside infusion	< 2.9 mg/dL
Toxic	> 10 mg/dL

Additional Information:
To convert mg/dL to µmol/L (SI units) multiply by 172.

ADMINISTRATIVE

CPT Codes:
84430-90

LOINC Codes:
3002-3

COMPLETE VIEW

Available Stat:
No

Test Code:
SCN

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Colorimetric

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
4 mL blood

Sample Type:
Serum

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Unacceptable Conditions:
Collected in Gold top

Specimen Preparation:
Separate serum immediately and freeze in a plastic transport vial at -20C. Order Quest # 879X

Units:
mg/dL

Reference Interval:

Non-smokers	< 0.4 mg/dL
Smokers	< 2.0 mg/dL
Nitroprusside infusion	< 2.9 mg/dL
Toxic	> 10 mg/dL

Reported:
Test run Monday-Friday. Turnaround time: 1-4 days.

Additional Information:
To convert mg/dL to µmol/L (SI units) multiply by 172.

CPT Codes:
84430-90

LOINC Codes:
3002-3

Thiopental

MOLT

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
GC

Reported:
Test performed daily. Turnaround time: 1-3 days

Additional Information:
Includes testing for metabolite Pentobarbital.

Because of readier availability of the assay for pentobarbital, and because release of thiopental from fat depots after the patient has been on continuous iv therapy cannot be controlled, pentobarbital is preferred for sustaining barbiturate coma (thiopental is partially metabolized to pentobarbital). In a patient receiving only thiopental therapy, a pentobarbital level which exceeds 2.0 mg/L indicates hepatic toxicity. If both pentobarbital and thiopental are being administered normal ranges for each apply

Synonyms:

- Pentothal

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Remarks:
Wrap the tube in aluminum foil to protect it from light.

PROCESSING

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate serum in a dark pour-off vial. Order Quest # 94403

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

RESULT INTERPRETATION

Units:
mg/L

Reference Interval:
Sedative: 1-5 mg/L
Toxic: > 10 mg/L
Anoxic Rx: 20-60 mg/L

Additional Information:
Includes testing for metabolite Pentobarbital.

Because of readier availability of the assay for pentobarbital, and because release of thiopental from fat depots after the patient has been on continuous iv therapy cannot be controlled, pentobarbital is preferred for sustaining barbiturate coma (thiopental is partially metabolized to pentobarbital). In a patient receiving only thiopental therapy, a pentobarbital level which exceeds 2.0 mg/L indicates hepatic toxicity. If both pentobarbital and thiopental are being administered normal ranges for each apply

ADMINISTRATIVE

CPT Codes:
82205-90 x2

COMPLETE VIEW

Available Stat:
No

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Performing Lab:
Quest

Sendout:
Yes

Methodology:
GC

Remarks:
Wrap the tube in aluminum foil to protect it from light.

Collect:
Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Specimen Preparation:
Refrigerate serum in a dark pour-off vial. Order Quest # 94403

Units:
mg/L

Reference Interval:
Sedative: 1-5 mg/L
Toxic: > 10 mg/L
Anoxic Rx: 20-60 mg/L

Synonyms:

- Pentothal

Reported:
Test performed daily. Turnaround time: 1-3 days

Additional Information:
Includes testing for metabolite Pentobarbital.

Because of readier availability of the assay for pentobarbital, and because release of thiopental from fat depots after the patient has been on continuous iv therapy cannot be controlled, pentobarbital is preferred for sustaining barbiturate coma (thiopental is partially metabolized to pentobarbital). In a patient receiving only thiopental therapy, a pentobarbital level which exceeds 2.0 mg/L indicates hepatic toxicity. If both pentobarbital and thiopental are being administered normal ranges for each apply

CPT Codes:
82205-90 x2

Thiopurine Metabolites

THM

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
LC/MS/MS

Synonyms:

- 6-Thioguanine
- 6-TG
- 6-MMP

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top (6 mL size)

Amount to Collect:
5 mL

Preferred Volume:
5 mL blood

Minimum Volume:
2.5 mL blood

Remarks:
Collect as a trough specimen 1 hour prior to next dose

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 5 days. Frozen samples are unacceptable.

Unacceptable Conditions:
Hemolyzed or clotted samples.

Rejection Criteria:
Frozen, hemolyzed or clotted samples.

PROCESSING

Test Code:
THM

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate sample, DO NOT aliquot. or freeze Transport to China Basin refrigerated. Quest order code is #91745

Preferred Volume:
5 mL blood

Minimum Volume:
2.5 mL blood

Unacceptable Conditions:
Hemolyzed or clotted samples.

Rejection Criteria:
Frozen, hemolyzed or clotted samples.

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 5 days. Frozen samples are unacceptable.

ADMINISTRATIVE

CPT Codes:
83789-90

LOINC Codes:
32660-3, 32654-6

COMPLETE VIEW

Available Stat:
No

Test Code:
THM

Performing Lab:
Quest

Sendout:
Yes

Methodology:
LC/MS/MS

Remarks:
Collect as a trough specimen 1 hour prior to next dose

Collect:
Lavender top (6 mL size)

Amount to Collect:
5 mL

Sample Type:
EDTA whole blood

Preferred Volume:
5 mL blood

Minimum Volume:
2.5 mL blood

Rejection Criteria:
Frozen, hemolyzed or clotted samples.

Unacceptable Conditions:
Hemolyzed or clotted samples.

Specimen Preparation:
Refrigerate sample, DO NOT aliquot. or freeze Transport to China Basin refrigerated. Quest order code is #91745

Synonyms:

- 6-Thioguanine
- 6-TG
- 6-MMP

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 5 days. Frozen samples are unacceptable.

CPT Codes:
83789-90

LOINC Codes:
32660-3, 32654-6

Thiopurine methyl transferase Genotyping

TPMTGN

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
PCR, Single nucleotide primer extension reaction

Reported:
Set up 2x per week. Turnaround 5-7 days

Synonyms:

- TPMT
- myelotoxicity

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top (6 mL size preferred)

Amount to Collect:
6 mL

Preferred Volume:
5 mL

Minimum Volume:
3 mL

Stability (from collection to initiation):
Room temperature 8 days, refrigerated 8 days

PROCESSING

Test Code:
TPMTGN

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Ship whole blood at room temperature to China basin for sendout to Quest. Order Quest test # 37742Z. DO NOT freeze sample.

Preferred Volume:
5 mL

Minimum Volume:
3 mL

Stability (from collection to initiation):
Room temperature 8 days, refrigerated 8 days

ADMINISTRATIVE

CPT Codes:
81335

COMPLETE VIEW

Available Stat:
No

Test Code:
TPMTGN

Performing Lab:
Quest

Sendout:
Yes

Methodology:
PCR, Single nucleotide primer extension reaction

Collect:
Lavender top (6 mL size preferred)

Amount to Collect:
6 mL

Sample Type:
EDTA whole blood

Preferred Volume:
5 mL

Minimum Volume:
3 mL

Specimen Preparation:
Ship whole blood at room temperature to China basin for sendout to Quest. Order Quest test # 37742Z. DO NOT freeze sample.

Synonyms:

- TPMT
- myelotoxicity

Stability (from collection to initiation):
Room temperature 8 days, refrigerated 8 days

Reported:
Set up 2x per week. Turnaround 5-7 days

CPT Codes:
81335

Thiopurine Methyltransferase Activity

TPMTA

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
LC/MS/MS

Additional Information:
Testing is used to prevent hepatotoxicity from thiopurine therapy. This test can identify individuals at increased risk of hepatotoxicity from thiopurine dose escalation.

Patients with a TMPT activity of 4-12 nmol 6-MMP/hr/mL RBC (heterozygote/low metabolizer) are at increased risk and may require a lower dose of thiopurine drug.

Synonyms:

- TMPT enzyme

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top x2

Amount to Collect:
8 ml blood

Preferred Volume:
8 mL blood (4 mL in EACH tube)

Minimum Volume:
4 mL blood (2 mL in EACH tube)

Remarks:
NOTE: Two (2) separate lavender top tubes are required for testing. Preferred to have 4 mL in each tube. Minimum sample volumewould be 2 mL in each tube.

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 6 days.

Unacceptable Conditions:
Clotted or hemolyzed samples.

Rejection Criteria:
Frozen samples. Clotted or hemolyzed samples

PROCESSING

Test Code:
TPMTA

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate samples (Do NOT freeze) and ship refrigerated to China Basin. Quest test order code is #18831

Preferred Volume:
8 mL blood (4 mL in EACH tube)

Minimum Volume:
4 mL blood (2 mL in EACH tube)

Unacceptable Conditions:
Clotted or hemolyzed samples.

Rejection Criteria:
Frozen samples. Clotted or hemolyzed samples

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 6 days.

RESULT INTERPRETATION

Units:
6 -MMP/hr/mL RBC

Additional Information:
Testing is used to prevent hepatotoxicity from thiopurine therapy. This test can identify individuals at increased risk of hepatotoxicity from thiopurine dose escalation.

Patients with a TMPT activity of 4-12 nmol 6-MMP/hr/mL RBC (heterozygote/low metabolizer) are at increased risk and may require a lower dose of thiopurine drug.

ADMINISTRATIVE

CPT Codes:
83789-90

LOINC Codes:
21563-2

COMPLETE VIEW

Available Stat:
No

Test Code:
TPMTA

Performing Lab:
Quest

Sendout:
Yes

Methodology:
LC/MS/MS

Remarks:
NOTE: Two (2) separate lavender top tubes are required for testing. Preferred to have 4 mL in each tube. Minimum sample volumewould be 2 mL in each tube.

Collect:
Lavender top x2

Amount to Collect:
8 ml blood

Sample Type:
EDTA whole blood

Preferred Volume:
8 mL blood (4 mL in EACH tube)

Minimum Volume:
4 mL blood (2 mL in EACH tube)

Rejection Criteria:
Frozen samples. Clotted or hemolyzed samples

Unacceptable Conditions:
Clotted or hemolyzed samples.

Specimen Preparation:
Refrigerate samples (Do NOT freeze) and ship refrigerated to China Basin. Quest test order code is #18831

Units:
6 -MMP/hr/mL RBC

Synonyms:

- TMPT enzyme

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 6 days.

Additional Information:
Testing is used to prevent hepatotoxicity from thiopurine therapy. This test can identify individuals at increased risk of hepatotoxicity from thiopurine dose escalation.

Patients with a TMPT activity of 4-12 nmol 6-MMP/hr/mL RBC (heterozygote/low metabolizer) are at increased risk and may require a lower dose of thiopurine drug.

CPT Codes:
83789-90

LOINC Codes:
21563-2

Thrombin Time

TT

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus Hematology

Performed:
STAT: 24 hours, 7 days a week
Routine: Daily, day shift

Reported:
Routine: 24 hours
STAT: 1 hour

Additional Information:
A prolonged thrombin time can be due to inhibitors of thrombin (for example, unfractionated heparin, direct thrombin inhibitors including argatroban and lepirudin, or paraneoplastic-associated heparinoid) or fibrinogen abnormalities (afibrinogenemia, hypofibrinogenemia, dysfibrinogenemia, anti-fibrinogen antibodies, or high fibrin split products).Correlation with fibrinogen level and clinical setting is suggested. Laboratory medicine resident can be reached by contacting the hematology lab at 353-1747.

Thrombin time is performed at Parnassus Hematology. Samples from Mission Bay or Mt. Zion that are ordered routine will be sent to Parnassus on a routine courier. Please contact Mission Bay or Mt. Zion Hematology lab if a STAT thrombin time is ordered so that a STAT courier can be requested for delivery to Parnassus.

Reflex Testing:
If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

COLLECTION

Sample Type:
Citrated plasma

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Preferred Volume:
1 mL plasma

Remarks:
Do not draw from heparin-containing lines.

1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

For patients with Hct's >= 55% please contact Hematology (For Parnassus patients call 3-1747, for Mission Bay patients call 6-0194) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

PROCESSING

Test Code:
TT

Performing Lab:
Parnassus Hematology

Specimen Preparation:
Test specimens within four hours of collection or freeze plasma in a plastic tube at -20C.

Preferred Volume:
1 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

RESULT INTERPRETATION

Units:
seconds

Reference Interval:
21.6-30.1 sec

Additional Information:
A prolonged thrombin time can be due to inhibitors of thrombin (for example, unfractionated heparin, direct thrombin inhibitors including argatroban and lepirudin, or paraneoplastic-associated heparinoid) or fibrinogen abnormalities (afibrinogenemia, hypofibrinogenemia, dysfibrinogenemia, anti-fibrinogen antibodies, or high fibrin split products).Correlation with fibrinogen level and clinical setting is suggested. Laboratory medicine resident can be reached by contacting the hematology lab at 353-1747.

Thrombin time is performed at Parnassus Hematology. Samples from Mission Bay or Mt. Zion that are ordered routine will be sent to Parnassus on a routine courier. Please contact Mission Bay or Mt. Zion Hematology lab if a STAT thrombin time is ordered so that a STAT courier can be requested for delivery to Parnassus.

ADMINISTRATIVE

CPT Codes:
85670

LOINC Codes:
3243-3

COMPLETE VIEW

Available Stat:
Yes

Test Code:
TT

Performing Lab:
Parnassus Hematology

Performed:
STAT: 24 hours, 7 days a week
Routine: Daily, day shift

Remarks:
Do not draw from heparin-containing lines.

1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

For patients with Hct's >= 55% please contact Hematology (For Parnassus patients call 3-1747, for Mission Bay patients call 6-0194) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Sample Type:
Citrated plasma

Preferred Volume:
1 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Specimen Preparation:
Test specimens within four hours of collection or freeze plasma in a plastic tube at -20C.

Units:
seconds

Reference Interval:
21.6-30.1 sec

Reported:

Routine: 24 hours
STAT: 1 hour

Reflex Testing:

If unusual findings are noted a pathologist review and interpretation may be performed and separately billed for.

Additional Information:

A prolonged thrombin time can be due to inhibitors of thrombin (for example, unfractionated heparin, direct thrombin inhibitors including argatroban and lepirudin, or paraneoplastic-associated heparinoid) or fibrinogen abnormalities (afibrinogenemia, hypofibrinogenemia, dysfibrinogenemia, anti-fibrinogen antibodies, or high fibrin split products).Correlation with fibrinogen level and clinical setting is suggested. Laboratory medicine resident can be reached by contacting the hematology lab at 353-1747.

Thrombin time is performed at Parnassus Hematology. Samples from Mission Bay or Mt. Zion that are ordered routine will be sent to Parnassus on a routine courier. Please contact Mission Bay or Mt. Zion Hematology lab if a STAT thrombin time is ordered so that a STAT courier can be requested for delivery to Parnassus.

CPT Codes:

85670

LOINC Codes:

3243-3

Thyroglobulin Antibodies

TGAB

ORDERING

Available Stat:
No

Performing Lab:
China Basin Chemistry

Performed:
Tuesday, Friday (day shift)

Methodology:
Chemiluminescent Microparticle Immunoassay-Abbott Architect i2000

Reported:
1-5 days

Additional Information:
This assay is automatically performed and reported whenever a thyroglobulin test is ordered. The presence of anti-thyroglobulin antibodies can variably interfere in thyroglobulin immunoassays and tend to falsely lower thyroglobulin results.

The reference range for the thyroglobulin antibody assay is based on the functional CV cutoff (20% CV cutoff) for the assay estimated by monitoring the CV in low end patient pools and samples tested over periods of 1 - 6 months. The coefficient of variation of this assay is approximately 20% at a level of 2.00 IU/mL and approximately 6% at a level of 4.11 IU/mL. Results below the functional CV cutoff of 2.00 (20% CV cutoff) are reported as <2.00. This functional CV cutoff is in accord with that reported by Pickett et al, Ann Clin Biochem, 49:463-467, 2012 for the Abbott Architect assay. Approximately 80% of healthy subjects with normal thyroid function tests and no thyroperoxidase antibodies will have an anti-TG antibody level < 2.00 IU/mL in this assay. The normal range cutoff has been set at the lower reporting limit of the assay (functional CV cutoff) in accordance with the view that any detectable level of anti-thyroglobulin antibody may be considered abnormal and might negatively interfere in the thyroglobulin assay.

Note: Assays for anti-thyroglobulin antibodies are not well standardized and results with this Abbott Architect assay should not be directly compared with the results of other anti-thyroglobulin antibody assays.

Synonyms:

- anti-Tg antibodies
- anti-TGLB antibodies
- abnti-Thyroglobulin antibodies

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room Temperature (15 to 30°C): no longer than 8 hours
Refrigerated (2 to 8°C): 7 days
Frozen (-20°C or colder): 30 days

PROCESSING

Test Code:
TGAB

Test Group:
Thyroid tests

Performing Lab:
China Basin Chemistry

Specimen Preparation:
Refrigerate serum.

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room Temperature (15 to 30°C): no longer than 8 hours
Refrigerated (2 to 8°C): 7 days
Frozen (-20°C or colder): 30 days

RESULT INTERPRETATION

Units:
IU/mL

Reference Interval:
< 2.00 IU/mL

Additional Information:
This assay is automatically performed and reported whenever a thyroglobulin test is ordered. The presence of anti-thyroglobulin antibodies can variably interfere in thyroglobulin immunoassays and tend to falsely lower thyroglobulin results.

The reference range for the thyroglobulin antibody assay is based on the functional CV cutoff (20% CV cutoff) for the assay estimated by monitoring the CV in low end patient pools and samples tested over periods of 1 - 6 months. The coefficient of variation of this assay is approximately 20% at a level of 2.00 IU/mL and approximately 6% at a level of 4.11 IU/mL. Results below the functional CV cutoff of 2.00 (20% CV cutoff) are reported as <2.00. This functional CV cutoff is in accord with that reported by Pickett et al, Ann Clin Biochem, 49:463-467, 2012 for the Abbott Architect assay. Approximately 80% of healthy subjects with normal thyroid function tests and no thyroperoxidase antibodies will have an anti-TG antibody level < 2.00 IU/mL in this assay. The normal range cutoff has been set at the lower reporting limit of the assay (functional CV cutoff) in accordance with the view that any detectable level of anti-thyroglobulin antibody may be considered abnormal and might negatively interfere in the thyroglobulin assay.

Note: Assays for anti-thyroglobulin antibodies are not well standardized and results with this Abbott Architect assay should not be directly compared with the results of other anti-thyroglobulin antibody assays.

ADMINISTRATIVE

CPT Codes:
86800

LOINC Codes:
8098-6

COMPLETE VIEW

Available Stat:
No

Test Code:
TGAB

Test Group:
Thyroid tests

Performing Lab:
China Basin Chemistry

Performed:
Tuesday, Friday (day shift)

Methodology:
Chemiluminescent Microparticle Immunoassay-Abbott Architect i2000

Collect:
Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Specimen Preparation:
Refrigerate serum.

Units:
IU/mL

Reference Interval:
< 2.00 IU/mL

Synonyms:

- anti-Tg antibodies
- anti-TGLB antibodies
- abnti-Thyroglobulin antibodies

Stability (from collection to initiation):
Room Temperature (15 to 30°C): no longer than 8 hours
Refrigerated (2 to 8°C): 7 days
Frozen (-20°C or colder): 30 days

Reported:
1-5 days

Additional Information:
This assay is automatically performed and reported whenever a thyroglobulin test is ordered. The presence of anti-thyroglobulin antibodies can variably interfere in thyroglobulin immunoassays and tend to falsely lower thyroglobulin results.

The reference range for the thyroglobulin antibody assay is based on the functional CV cutoff (20% CV cutoff) for the assay estimated by monitoring the CV in low end patient pools and samples tested over periods of 1 - 6 months. The coefficient of variation of this assay is approximately 20% at a level of 2.00 IU/mL and approximately 6% at a level of 4.11 IU/mL. Results below the functional CV cutoff of 2.00 (20% CV cutoff) are reported as <2.00. This functional CV cutoff is in accord with that reported by Pickett et al, Ann Clin Biochem, 49:463-467, 2012 for the Abbott Architect assay. Approximately 80% of healthy subjects with normal thyroid function tests and no thyroperoxidase antibodies will have an anti-TG antibody level < 2.00 IU/mL in this assay. The normal range cutoff has been set at the lower reporting limit of the assay (functional CV cutoff) in accordance with the view that any detectable level of anti-thyroglobulin antibody may be considered abnormal and might negatively interfere in the thyroglobulin assay.

Note: Assays for anti-thyroglobulin antibodies are not well standardized and results with this Abbott Architect assay should not be directly compared with the results of other anti-thyroglobulin antibody assays.

CPT Codes:
86800

LOINC Codes:
8098-6

Thyroglobulin, Body Fluid (FNA)

TGLBF

ORDERING

Ordering Recommendations:
Not a routinely available test. See 'Additional information'

Available Stat:
No

Performing Lab:
China Basin Chemistry

Performed:
Tuesday, Friday (day shift)

Methodology:
Immunochemiluminometric assay (ICMA) - Beckman Access assay on Access2

Reported:
1-5 days

Additional Information:
As normal samples are not available for validating the performance of this assay, the UCSF Clinical laboratory makes no claims with regard to the accuracy of the result.

All results will be appended with a disclaimer: “Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context."

Measurement of thyroglobulin in lymph node aspirates may be useful for diagnosis of metastatic differentiated thyroid cancer. In a study of 190 malignant lymph nodes, and 338 benign lymph nodes, the median FNA-Tg was 521.2 (3676.8) ng/mL in the malignant LNs, and 0.1 (0.2) ng/mL in the benign LNs. The optimal cutoff value of FNA-Tg in distinguishing malignant LNs from benign LNs was 1.0 ng/mL (sensitivity, 93.2%; specificity, 95.9%). Moon et al, J Clin Endo Metab, March 2013.

Note that the presence of anti-TG antibodies may tend to decrease results of TG measurements. The extent to which the presence of anti-TG antibodies interferes in the assessment of FNA-TG measurements is unclear. Some, but not all, investigators have suggested that FNA-TG results are still useful even in the presence of anti-TG antibodies. Cunha et al, European Journal of Endocrinology (2007) 157 101-107.

In this Beckman Access assay on the Access2 platform, the functional sensitivity defined as the lowest value that can be measured in thyroglobulin-negative antibody serum with a 20% coefficient of variation has been verified in house and in other laboratories to be < 0.1 µg/L (Malandrino et al, J ClinEndocrinolMetab 2011). Results below 0.1 µg/L are reported as < 0.1 µg/L.

Results for this test are generated by immunochemiluminometric assay (ICMA) using the Beckman Access assay on Access2 platform. Results for this test determined by assay methods from other manufacturers may not be comparable.

Synonyms:

- TGB
- TGLB
- Tg
- Thyroid cancer

COLLECTION

Sample Type:
Fine needle aspirate fluid or tissue aspirate

Collect:
Sterile tube (see collection instructions)

Amount to Collect:
1.0 mL (see collection instructions)

Preferred Volume:
1 mL fluid

Minimum Volume:
0.5 mL fluid

Remarks:

Submit fine needle aspiration (FNA) samples suspended in 1.0 mL (20 drops) of saline in a sterile tube. Each sample should be labeled with an identifier and the same information listed below to allow for proper identification of sample(s) on lab reports.

Deliver immediately to laboratory

Stability (from collection to initiation):

Room Temperature (15 to 30°C): no longer than 8 hours
Refrigerated (2 to 8°C): 7 days
Frozen (-20°C or colder): 30 days

PROCESSING

Test Code:

TGLBF

Test Group:

Thyroid tests

Performing Lab:

China Basin Chemistry

Specimen Preparation:

Centrifuge sample and refrigerate.

Preferred Volume:

1 mL fluid

Minimum Volume:

0.5 mL fluid

Stability (from collection to initiation):

Room Temperature (15 to 30°C): no longer than 8 hours
Refrigerated (2 to 8°C): 7 days
Frozen (-20°C or colder): 30 days

RESULT INTERPRETATION

Units:

µg/L

Additional Information:

As normal samples are not available for validating the performance of this assay, the UCSF Clinical laboratory makes no claims with regard to the accuracy of the result.

All results will be appended with a disclaimer: “Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context."

Measurement of thyroglobulin in lymph node aspirates may be useful for diagnosis of metastatic differentiated thyroid cancer. In a study of 190 malignant lymph nodes, and 338 benign lymph nodes, the median FNA-Tg was 521.2 (3676.8) ng/mL in the malignant LNs, and 0.1 (0.2) ng/mL in the benign LNs. The optimal cutoff value of FNA-Tg in distinguishing malignant LNs from benign LNs was 1.0 ng/mL (sensitivity, 93.2%; specificity, 95.9%). Moon et al, J Clin Endo Metab, March 2013.

Note that the presence of anti-TG antibodies may tend to decrease results of TG measurements. The extent to which the presence of anti-TG antibodies interferes in the assessment of FNA-TG measurements is unclear. Some, but not all, investigators have suggested that FNA-TG results are still useful even in the presence of anti-TG antibodies. Cunha et al, European Journal of Endocrinology (2007) 157 101-107.

In this Beckman Access assay on the Access2 platform, the functional sensitivity defined as the lowest value that can be measured in thyroglobulin-negative antibody serum with a 20% coefficient of variation has been verified in house and in other laboratories to be < 0.1 µg/L (Malandrino et al, J ClinEndocrinolMetab 2011). Results below 0.1 µg/L are reported as < 0.1 µg/L.

Results for this test are generated by immunochemiluminometric assay (ICMA) using the Beckman Access assay on Access2 platform. Results for this test determined by assay methods from other manufacturers may not be comparable.

ADMINISTRATIVE

CPT Codes:

84432

LDT or Modified FDA:

Yes

LOINC Codes:
53922-1

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Not a routinely available test. See 'Additional information'

Test Code:
TGLBF

Test Group:
Thyroid tests

Performing Lab:
China Basin Chemistry

Performed:
Tuesday, Friday (day shift)

Methodology:
Immunochemiluminometric assay (ICMA) - Beckman Access assay on Access2

Remarks:
Submit fine needle aspiration (FNA) samples suspended in 1.0 mL (20 drops) of saline in a sterile tube. Each sample should be labeled with an identifier and the same information listed below to allow for proper identification of sample(s) on lab reports.

Deliver immediately to laboratory

Collect:
Sterile tube (see collection instructions)

Amount to Collect:
1.0 mL (see collection instructions)

Sample Type:
Fine needle aspirate fluid or tissue aspirate

Preferred Volume:
1 mL fluid

Minimum Volume:
0.5 mL fluid

Specimen Preparation:
Centrifuge sample and refrigerate.

Units:
µg/L

Synonyms:

- TGB
- TGLB
- Tg
- Thyroid cancer

Stability (from collection to initiation):
Room Temperature (15 to 30°C): no longer than 8 hours
Refrigerated (2 to 8°C): 7 days
Frozen (-20°C or colder): 30 days

Reported:
1-5 days

Additional Information:

As normal samples are not available for validating the performance of this assay, the UCSF Clinical laboratory makes no claims with regard to the accuracy of the result.

All results will be appended with a disclaimer: “Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context."

Measurement of thyroglobulin in lymph node aspirates may be useful for diagnosis of metastatic differentiated thyroid cancer. In a study of 190 malignant lymph nodes, and 338 benign lymph nodes, the median FNA-Tg was 521.2 (3676.8) ng/mL in the malignant LNs, and 0.1 (0.2) ng/mL in the benign LNs. The optimal cutoff value of FNA-Tg in distinguishing malignant LNs from benign LNs was 1.0 ng/mL (sensitivity, 93.2%; specificity, 95.9%). Moon et al, J Clin Endo Metab, March 2013.

Note that the presence of anti-TG antibodies may tend to decrease results of TG measurements. The extent to which the presence of anti-TG antibodies interferes in the assessment of FNA-TG measurements is unclear. Some, but not all, investigators have suggested that FNA-TG results are still useful even in the presence of anti-TG antibodies. Cunha et al, European Journal of Endocrinology (2007) 157 101-107.

In this Beckman Access assay on the Access2 platform, the functional sensitivity defined as the lowest value that can be measured in thyroglobulin-negative antibody serum with a 20% coefficient of variation has been verified in house and in other laboratories to be < 0.1 µg/L (Malandrino et al, J ClinEndocrinolMetab 2011). Results below 0.1 µg/L are reported as < 0.1 µg/L.

Results for this test are generated by immunochemiluminometric assay (ICMA) using the Beckman Access assay on Access2 platform. Results for this test determined by assay methods from other manufacturers may not be comparable.

CPT Codes:

84432

LDT or Modified FDA:

Yes

LOINC Codes:

53922-1

Thyroglobulin, LC/MS-MS

MOLT

ORDERING

Ordering Recommendations:

This test is intended for patients with a known thyroglobulin or heterophile antibody that could interfere with our in-house ultrasensitive thyroglobulin immunoassays.

Note: Isolated LC/MS-MS testing is not listed in LabCorp's online test menu; this testing has been specifically arranged between LacCorp and UCSF.

Available Stat:

No

Performing Lab:

LabCorp

Performed:

Varies

Methodology:

LC/MS-MS

Reported:

Varies

Additional Information:

The functional sensitivity of this assay is 0.2 ng/mL.

COLLECTION

Sample Type:

Serum

Collect:

Gold-top or red-top tube

Amount to Collect:

3 mL blood

Preferred Volume:

1.5 mL serum

Minimum Volume:

1.5 mL serum

Stability (from collection to initiation):

Room temperature, refrigerated or frozen: 14 days
Freeze/thaw cycles: Stable x 3

Storage/Transport Temperature:

Room temperature, refrigerated or frozen

PROCESSING

Test Code:

MOLT

Sendout:

Yes

Performing Lab:

LabCorp

Specimen Preparation:

Transport to China Basin. LabCorp test code 070125.

Note: This test/test code is not independently listed in LabCorp's online test menu; this test is available through special agreement between UCSF and LabCorp.

Preferred Volume:

1.5 mL serum

Minimum Volume:

1.5 mL serum

Stability (from collection to initiation):

Room temperature, refrigerated or frozen: 14 days
Freeze/thaw cycles: Stable x 3

Storage/Transport Temperature:

Room temperature, refrigerated or frozen

RESULT INTERPRETATION

Units:
ng/mL

Additional Information:
The functional sensitivity of this assay is 0.2 ng/mL.

Interpretive Data:
Rare amino acid sequence mutations within Tg could potentially cause a false-low result in the Tg LC/MS-MS assay, if the sequence variation occurs within the tryptic peptide measured by the assay or eliminates the tryptic cleavage site. In the heterozygote state, the result would be an apparent reduction in Tg concentration by about 50%, while the homozygous state no TG would be detected.

ADMINISTRATIVE

CPT Codes:
84432

LOINC Codes:
3013-0

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
This test is intended for patients with a known thyroglobulin or heterophile antibody that could interfere with our in-house ultrasensitive thyroglobulin immunoassays.

Note: Isolated LC/MS-MS testing is not listed in LabCorp's online test menu; this testing has been specifically arranged between LacCorp and UCSF.

Test Code:
MOLT

Performing Lab:
LabCorp

Sendout:
Yes

Performed:
Varies

Methodology:
LC/MS-MS

Collect:
Gold-top or red-top tube

Amount to Collect:
3 mL blood

Sample Type:
Serum

Preferred Volume:
1.5 mL serum

Minimum Volume:
1.5 mL serum

Specimen Preparation:
Transport to China Basin. LabCorp test code 070125.

Note: This test/test code is not independently listed in LabCorp's online test menu; this test is available through special agreement between UCSF and LabCorp.

Units:
ng/mL

Interpretive Data:
Rare amino acid sequence mutations within Tg could potentially cause a false-low result in the Tg LC/MS-MS assay, if the sequence variation occurs within the tryptic peptide measured by the assay or eliminates the tryptic cleavage site. In the heterozygote state, the result would be an apparent reduction in Tg concentration by about 50%, while the homozygous state no TG would be detected.

Storage/Transport Temperature:
Room temperature, refrigerated or frozen

Stability (from collection to initiation):
Room temperature, refrigerated or frozen: 14 days
Freeze/thaw cycles: Stable x 3

Reported:
Varies

Additional Information:
The functional sensitivity of this assay is 0.2 ng/mL.

CPT Codes:
84432

LOINC Codes:
3013-0

Thyroglobulin, Ultrasensitive (Tumor Marker; includes anti-Tg Ab testing)

TGA

ORDERING

Available Stat:
No

Performing Lab:
China Basin Chemistry

Performed:
Tuesday, Friday (day shift)

Methodology:
Immunochemiluminometric assay (ICMA) - Beckman Access assay on Access2 (for Thyroglobulin)

Chemiluminescent Microparticle Immunoassay - Abbott Architect i2000 (for Thyroglobulin Ab)

Reported:
1-5 days

Additional Information:
Samples tested for thyroglobulin will automatically be screened for the presence of thyroglobulin antibodies using a sensitive assay for anti-thyroglobulin antibodies (see TGLB Antibodies, test code TGAB).

Note: The presence of anti-thyroglobulin antibodies can interfere in this thyroglobulin assay and may cause falsely decreased results. The presence of heterophile antibodies may cause falsely increased or decreased results.

Note: Samples containing up to 3,510 ng/mL of biotin were tested with this thyroglobulin assay and no significant (<=±10% difference of test from control) interference has been observed.

For cases in which an interference is suspected in the Beckman Access thyroglobulin assay (e.g., heterophile antibody interference, anti-thyroglobulin antibody interference, biotin interference), samples can be sent out for independent testing of the thyroglobulin level by mass spectrometry (Labcorp LC MS/MS assay with functional sensitivity of 0.2 micrograms/L) or by radioimmunoassay (USC Endocrine Laboratories with a functional sensitivity of 0.5 micrograms/L).

Thyroglobulin results obtained with this assay should not be compared to results generated with other thyroglobulin assays owing to differences in assay design and calibration. In this Beckman Access assay on the Access2 platform, the functional sensitivity defined as the lowest value that can be measured in thyroglobulin-negative antibody serum with a 20% coefficient of variation has been verified in house and in other laboratories to be < 0.1 µg/L (Malandrino et al, J Clin Endocrinol Metab 2011). Results below 0.1 µg/L are reported as < 0.1 µg/L.

Thyroglobulin levels are useful to assess the presence of residual differentiated thyroid carcinoma. Athyrotic individuals should have extremely low to undetectable levels of thyroglobulin. Increasing levels indicate possible recurrence or metastasis. Levels are not elevated in medullary or anaplastic thyroid carcinomas nor with small tumors, and are generally not useful as a routine screening test for thyroid cancer.

Normal reference ranges were adopted from the literature and verified in house by measuring thyroglobulin in serum from 138 healthy blood donors with normal TSH levels and negative for anti-thyroglobulin antibodies and anti-TPO antibodies (Giovanella et al. Clin Chem Lab Med, 2011).

The reference range for the thyroglobulin antibody assay is based on the functional CV cutoff (20% CV cutoff) for the assay estimated by monitoring the CV in low end patient pools and samples tested over periods of 1 - 6 months. The coefficient of variation of this assay is approximately 20% at a level of 2.00 IU/mL and approximately 6% at a level of 4.11 IU/mL. Results below the functional CV cutoff of 2.00 (20% CV cutoff) are reported as <2.00. This functional CV cutoff is in accord with that reported by Pickett et al, Ann Clin Biochem, 49:463-467, 2012 for the Abbott Architect assay. Approximately 80% of healthy subjects with normal thyroid function tests and no thyroperoxidase antibodies will have an anti-TG antibody level < 2.00 IU/mL in this assay. The normal range cutoff has been set at the lower reporting limit of the assay (functional CV cutoff) in accordance with the view that any detectable level of anti-thyroglobulin antibody may be considered abnormal and might negatively interfere in the thyroglobulin assay.

Note: Assays for anti-thyroglobulin antibodies are not well standardized and results with this Abbott Architect assay should not be directly compared with the results of other anti-thyroglobulin antibody assays.

Synonyms:

- Tg
- TGLB

COLLECTION

Sample Type:
Serum

Collect:
Red top or Gold top

Amount to Collect:
3 mL blood

Preferred Volume:
1.1 mL serum

Minimum Volume:
1.0 mL serum

Stability (from collection to initiation):
Room Temperature (15 to 30°C): no longer than 8 hours
Refrigerated (2 to 8°C): 7 days
Frozen (-20°C or colder): 30 days

PROCESSING

Test Code:
TGA

Test Group:
Thyroid tests

Performing Lab:
China Basin Chemistry

Specimen Preparation:
Refrigerate serum.

Preferred Volume:
1.1 mL serum

Minimum Volume:
1.0 mL serum

Stability (from collection to initiation):
Room Temperature (15 to 30°C): no longer than 8 hours
Refrigerated (2 to 8°C): 7 days
Frozen (-20°C or colder): 30 days

RESULT INTERPRETATION

Units:
Thyroglobulin Ab screen IU/mL Thyroglobulin µg/L

Reference Interval:
Thyroglobulin:
Male: 1.4-29.2 µg/L
Female: 1.5-38.5 µg/L

Thyroglobulin Ab: < 2.00 IU/mL

Additional Information:

Samples tested for thyroglobulin will automatically be screened for the presence of thyroglobulin antibodies using a sensitive assay for anti-thyroglobulin antibodies (see TGLB Antibodies, test code TGAB).

Note: The presence of anti-thyroglobulin antibodies can interfere in this thyroglobulin assay and may cause falsely decreased results. The presence of heterophile antibodies may cause falsely increased or decreased results.

Note: Samples containing up to 3,510 ng/mL of biotin were tested with this thyroglobulin assay and no significant (<=±10% difference of test from control) interference has been observed.

For cases in which an interference is suspected in the Beckman Access thyroglobulin assay (e.g., heterophile antibody interference, anti-thyroglobulin antibody interference, biotin interference), samples can be sent out for independent testing of the thyroglobulin level by mass spectrometry (Labcorp LC MS/MS assay with functional sensitivity of 0.2 micrograms/L) or by radioimmunoassay (USC Endocrine Laboratories with a functional sensitivity of 0.5 micrograms/L).

Thyroglobulin results obtained with this assay should not be compared to results generated with other thyroglobulin assays owing to differences in assay design and calibration. In this Beckman Access assay on the Access2 platform, the functional sensitivity defined as the lowest value that can be measured in thyroglobulin-negative antibody serum with a 20% coefficient of variation has been verified in house and in other laboratories to be < 0.1 µg/L (Malandrino et al, J Clin Endocrinol Metab 2011). Results below 0.1 µg/L are reported as < 0.1 µg/L.

Thyroglobulin levels are useful to assess the presence of residual differentiated thyroid carcinoma. Athyrotic individuals should have extremely low to undetectable levels of thyroglobulin. Increasing levels indicate possible recurrence or metastasis. Levels are not elevated in medullary or anaplastic thyroid carcinomas nor with small tumors, and are generally not useful as a routine screening test for thyroid cancer.

Normal reference ranges were adopted from the literature and verified in house by measuring thyroglobulin in serum from 138 healthy blood donors with normal TSH levels and negative for anti-thyroglobulin antibodies and anti-TPO antibodies (Giovanella et al. Clin Chem Lab Med, 2011).

The reference range for the thyroglobulin antibody assay is based on the functional CV cutoff (20% CV cutoff) for the assay estimated by monitoring the CV in low end patient pools and samples tested over periods of 1 - 6 months. The coefficient of variation of this assay is approximately 20% at a level of 2.00 IU/mL and approximately 6% at a level of 4.11 IU/mL. Results below the functional CV cutoff of 2.00 (20% CV cutoff) are reported as <2.00. This functional CV cutoff is in accord with that reported by Pickett et al, Ann Clin Biochem, 49:463-467, 2012 for the Abbott Architect assay. Approximately 80% of healthy subjects with normal thyroid function tests and no thyroperoxidase antibodies will have an anti-TG antibody level < 2.00 IU/mL in this assay. The normal range cutoff has been set at the lower reporting limit of the assay (functional CV cutoff) in accordance with the view that any detectable level of anti-thyroglobulin antibody may be considered abnormal and might negatively interfere in the thyroglobulin assay.

Note: Assays for anti-thyroglobulin antibodies are not well standardized and results with this Abbott Architect assay should not be directly compared with the results of other anti-thyroglobulin antibody assays.

ADMINISTRATIVE

CPT Codes:

Thyroglobulin Ab Screen: 86800-90
Thyroglobulin, Tumor Marker: 84432-90

LOINC Codes:

3013-0

COMPLETE VIEW

Available Stat:

No

Test Code:

TGA

Test Group:

Thyroid tests

Performing Lab:

China Basin Chemistry

Performed:

Tuesday, Friday (day shift)

Methodology:

Immunochemiluminometric assay (ICMA) - Beckman Access assay on Access2 (for Thyroglobulin)

Chemiluminescent Microparticle Immunoassay - Abbott Architect i2000 (for Thyroglobulin Ab)

Collect:

Red top or Gold top

Amount to Collect:
3 mL blood

Sample Type:
Serum

Preferred Volume:
1.1 mL serum

Minimum Volume:
1.0 mL serum

Specimen Preparation:
Refrigerate serum.

Units:
Thyroglobulin Ab screen IU/mL Thyroglobulin µg/L

Reference Interval:
Thyroglobulin:
Male: 1.4-29.2 µg/L
Female: 1.5-38.5 µg/L

Thyroglobulin Ab: < 2.00 IU/mL

Synonyms:

- Tg
- TGLB

Stability (from collection to initiation):
Room Temperature (15 to 30°C): no longer than 8 hours
Refrigerated (2 to 8°C): 7 days
Frozen (-20°C or colder): 30 days

Reported:
1-5 days

Additional Information:

Samples tested for thyroglobulin will automatically be screened for the presence of thyroglobulin antibodies using a sensitive assay for anti-thyroglobulin antibodies (see TGLB Antibodies, test code TGAB).

Note: The presence of anti-thyroglobulin antibodies can interfere in this thyroglobulin assay and may cause falsely decreased results. The presence of heterophile antibodies may cause falsely increased or decreased results.

Note: Samples containing up to 3,510 ng/mL of biotin were tested with this thyroglobulin assay and no significant (<=±10% difference of test from control) interference has been observed.

For cases in which an interference is suspected in the Beckman Access thyroglobulin assay (e.g., heterophile antibody interference, anti-thyroglobulin antibody interference, biotin interference), samples can be sent out for independent testing of the thyroglobulin level by mass spectrometry (Labcorp LC MS/MS assay with functional sensitivity of 0.2 micrograms/L) or by radioimmunoassay (USC Endocrine Laboratories with a functional sensitivity of 0.5 micrograms/L).

Thyroglobulin results obtained with this assay should not be compared to results generated with other thyroglobulin assays owing to differences in assay design and calibration. In this Beckman Access assay on the Access2 platform, the functional sensitivity defined as the lowest value that can be measured in thyroglobulin-negative antibody serum with a 20% coefficient of variation has been verified in house and in other laboratories to be < 0.1 µg/L (Malandrino et al, J Clin Endocrinol Metab 2011). Results below 0.1 µg/L are reported as < 0.1 µg/L.

Thyroglobulin levels are useful to assess the presence of residual differentiated thyroid carcinoma. Athyrotic individuals should have extremely low to undetectable levels of thyroglobulin. Increasing levels indicate possible recurrence or metastasis. Levels are not elevated in medullary or anaplastic thyroid carcinomas nor with small tumors, and are generally not useful as a routine screening test for thyroid cancer.

Normal reference ranges were adopted from the literature and verified in house by measuring thyroglobulin in serum from 138 healthy blood donors with normal TSH levels and negative for anti-thyroglobulin antibodies and anti-TPO antibodies (Giovanella et al. Clin Chem Lab Med, 2011).

The reference range for the thyroglobulin antibody assay is based on the functional CV cutoff (20% CV cutoff) for the assay estimated by monitoring the CV in low end patient pools and samples tested over periods of 1 - 6 months. The coefficient of variation of this assay is approximately 20% at a level of 2.00 IU/mL and approximately 6% at a level of 4.11 IU/mL. Results below the functional CV cutoff of 2.00 (20% CV cutoff) are reported as <2.00. This functional CV cutoff is in accord with that reported by Pickett et al, Ann Clin Biochem, 49:463-467, 2012 for the Abbott Architect assay. Approximately 80% of healthy subjects with normal thyroid function tests and no thyroperoxidase antibodies will have an anti-TG antibody level < 2.00 IU/mL in this assay. The normal range cutoff has been set at the lower reporting limit of the assay (functional CV cutoff) in accordance with the view that any detectable level of anti-thyroglobulin antibody may be considered abnormal and might negatively interfere in the thyroglobulin assay.

Note: Assays for anti-thyroglobulin antibodies are not well standardized and results with this Abbott Architect assay should not be directly compared with the results of other anti-thyroglobulin antibody assays.

CPT Codes:

Thyroglobulin Ab Screen: 86800-90
Thyroglobulin, Tumor Marker: 84432-90

LOINC Codes:

3013-0

Thyroid Stimulating Hormone

TSH

ORDERING

Available Stat:
No

Performing Lab:
Parnassus, Mission Bay and Mt Zion Chemistry

Performed:
Parnassus and Mission Bay: 24 hours per day, 7 days per week
Mt Zion: Monday - Friday

Methodology:
Chemiluminescent Microparticle Immunoassay (Abbott Architect i2000 and ci4100)

Reported:
0 -2 days

Additional Information:
According to the assay manufacturer the low end functional sensitivity (20% coefficient of variation cutoff) for this assay is 0.01 mIU/L.

Synonyms:

- TSH
- Thyrotropin

COLLECTION

Sample Type:
Heparinized plasma

Collect:
Light Green top

Amount to Collect:
1.6 mL blood

Preferred Volume:
0.6 mL heparinized plasma

Minimum Volume:
0.4 mL heparinized plasma

PROCESSING

Test Code:
TSH

Test Group:
Thyroid tests

Performing Lab:
Parnassus, Mission Bay and Mt Zion Chemistry

Specimen Preparation:
Refrigerate.

Gold top and red top tubes should not be rejected. Gold top and red top tubes are acceptable tube types as long as the tube has been allowed to sit for at least 30 minutes before centrifugation.

Preferred Volume:
0.6 mL heparinized plasma

Minimum Volume:
0.4 mL heparinized plasma

RESULT INTERPRETATION

Units:
mIU/L

Reference Interval:

Age	Reference range (mIU/L)
0 to 6 days	0.70-15.20
7 days to <2 months	0.72-11.00
2 months to <6 months	0.73-4.77
6 months to <12 years	0.67-4.44
12 years to <18 years	0.50-4.33
18 years and above	0.45-4.12

Reference ranges apply to non-pregnant individuals. In pregnant patients, the lower and upper limits of the TSH reference range in weeks 7 -12 of the first trimester are approximately 0.4 to 0.5 mIU/L lower than in non-pregnant patients and the reference interval is estimated to be 0.05 to 3.62 mIU/L in the UCSF assay. During the 2nd and 3rd trimesters, the TSH reference range gradually returns towards the reference range for non-pregnant patients (Alexander E et al. Guidelines of the American Thyroid Association for the Diagnosis and Management of Thyroid Disease During Pregnancy and the Postpartum. THYROID Volume 27, Number 3, 2017).

Pediatric reference ranges adopted from Roche Diagnostics Package Insert, Pediatric Reference Intervals seventh edition (Soldin, Steven J. et al) and the Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, Clinical Chemistry September 2013 vol. 59 no. 9 1393-1405.

Neonatal and cord blood levels are 2-4x higher than levels at = 2 weeks of age through adult life. Neonatal levels are also screened by the State program.

Adult reference ranges were adopted from NHANES III and verified in 63 adult blood donors (Hollowell JG et al. Serum TSH, T4, and thyroid antibodies in the United States population ,1988 to 1994: National Health and Nutrition Examination Survey , NHANES III. J Clin Endocrinol Metab 87:489-499, 2002. Garber JR et al. Clinical Practice Guidelines for Hypothyroidism in Adults: American Association of Clinical Endocrinologists and the American Thyroid Association, Thyroid 12:1200-1235, 2012).

Additional Information:

According to the assay manufacturer the low end functional sensitivity (20% coefficient of variation cutoff) for this assay is 0.01 mIU/L.

ADMINISTRATIVE

CPT Codes:
84443

LOINC Codes:
3016-3

COMPLETE VIEW

Available Stat:
No

Test Code:
TSH

Test Group:
Thyroid tests

Performing Lab:
Parnassus, Mission Bay and Mt Zion Chemistry

Performed:
Parnassus and Mission Bay: 24 hours per day, 7 days per week
Mt Zion: Monday - Friday

Methodology:
Chemiluminescent Microparticle Immunoassay (Abbott Architect i2000 and ci4100)

Collect:
Light Green top

Amount to Collect:
1.6 mL blood

Sample Type:
Heparinized plasma

Preferred Volume:
0.6 mL heparinized plasma

Minimum Volume:
0.4 mL heparinized plasma

Specimen Preparation:

Refrigerate.

Gold top and red top tubes should not be rejected. Gold top and red top tubes are acceptable tube types as long as the tube has been allowed to sit for at least 30 minutes before centrifugation.

Units:

mIU/L

Reference Interval:

Age	Reference range (mIU/L)
0 to 6 days	0.70-15.20
7 days to <2 months	0.72-11.00
2 months to <6 months	0.73-4.77
6 months to <12 years	0.67-4.44
12 years to <18 years	0.50-4.33
18 years and above	0.45-4.12

Reference ranges apply to non-pregnant individuals. In pregnant patients, the lower and upper limits of the TSH reference range in weeks 7 -12 of the first trimester are approximately 0.4 to 0.5 mIU/L lower than in non-pregnant patients and the reference interval is estimated to be 0.05 to 3.62 mIU/L in the UCSF assay. During the 2nd and 3rd trimesters, the TSH reference range gradually returns towards the reference range for non-pregnant patients (Alexander E et al. Guidelines of the American Thyroid Association for the Diagnosis and Management of Thyroid Disease During Pregnancy and the Postpartum. THYROID Volume 27, Number 3, 2017).

Pediatric reference ranges adopted from Roche Diagnostics Package Insert, Pediatric Reference Intervals seventh edition (Soldin, Steven J. et al) and the Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, Clinical Chemistry September 2013 vol. 59 no. 9 1393-1405.

Neonatal and cord blood levels are 2-4x higher than levels at = 2 weeks of age through adult life. Neonatal levels are also screened by the State program.

Adult reference ranges were adopted from NHANES III and verified in 63 adult blood donors (Hollowell JG et al. Serum TSH, T4, and thyroid antibodies in the United States population ,1988 to 1994: National Health and Nutrition Examination Survey , NHANES III. J Clin Endocrinol Metab 87:489-499, 2002. Garber JR et al. Clinical Practice Guidelines for Hypothyroidism in Adults: American Association of Clinical Endocrinologists and the American Thyroid Association, Thyroid 12:1200-1235, 2012).

Synonyms:

- TSH
- Thyrotropin

Reported:

0 -2 days

Additional Information:

According to the assay manufacturer the low end functional sensitivity (20% coefficient of variation cutoff) for this assay is 0.01 mIU/L.

CPT Codes:

84443

LOINC Codes:

3016-3

Thyroid Stimulating Immunoglobulin

TSI

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Immunoassay

Reported:
Set up 5 days per week. Turnaround 3-6 days

Additional Information:
A positive result is one in which the Specimen to Reference Ratio (%) (SSR%) is >140% of the Reference Control.

Thyroid stimulating immunoglobulins (TSI) can engage the TSH receptors resulting in hyperthyroidism in Graves' disease patients. TSI levels can be useful in monitoring the clinical outcome of Graves' disease as well as assessing the potential for hyperthyroidism from maternal-fetal transfer.

NOTE: A serum TSH level greater than 350 µIU/mL can interfere with the TSI bioassay and potentially give false positive results.

Synonyms:

- TSI
- TSH receptor antibodies
- Human Thyroid Stimulator (HTS)
- Long-Acting Thyroid Stimulator (LATS)
- Thyroid-Stimulating Antibody (TSAb)

COLLECTION

Sample Type:
Serum

Collect:
Gold top, Red top

Amount to Collect:
4 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Stability (from collection to initiation):
Refrigerated 3 weeks, frozen at -20C 2 months.

Unacceptable Conditions:
Gross hemolysis, gross lipemia, grossly icteric samples

Rejection Criteria:
Gross hemolysis, gross lipemia, grossly icteric samples

PROCESSING

Test Code:
TSI

Test Group:
Thyroid tests

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze at -20C. Order Quest # 30551

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Unacceptable Conditions:
Gross hemolysis, gross lipemia, grossly icteric samples

Rejection Criteria:
Gross hemolysis, gross lipemia, grossly icteric samples

Stability (from collection to initiation):
Refrigerated 3 weeks, frozen at -20C 2 months.

RESULT INTERPRETATION

Units:
% of baseline

Reference Interval:
Negative <140% of baseline (See Additional information)

Additional Information:
A positive result is one in which the Specimen to Reference Ratio (%) (SSR%) is >140% of the Reference Control.

Thyroid stimulating immunoglobulins (TSI) can engage the TSH receptors resulting in hyperthyroidism in Graves' disease patients. TSI levels can be useful in monitoring the clinical outcome of Graves' disease as well as assessing the potential for hyperthyroidism from maternal-fetal transfer.

NOTE: A serum TSH level greater than 350 µIU/mL can interfere with the TSI bioassay and potentially give false positive results.

ADMINISTRATIVE

CPT Codes:
84445-90

LOINC Codes:
30567-2

COMPLETE VIEW

Available Stat:
No

Test Code:
TSI

Test Group:
Thyroid tests

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Immunoassay

Collect:
Gold top, Red top

Amount to Collect:
4 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Rejection Criteria:
Gross hemolysis, gross lipemia, grossly icteric samples

Unacceptable Conditions:
Gross hemolysis, gross lipemia, grossly icteric samples

Specimen Preparation:
Freeze at -20C. Order Quest # 30551

Units:
% of baseline

Reference Interval:

Negative <140% of baseline (See Additional information)

Synonyms:

- TSI
- TSH receptor antibodies
- Human Thyroid Stimulator (HTS)
- Long-Acting Thyroid Stimulator (LATS)
- Thyroid-Stimulating Antibody (TSAb)

Stability (from collection to initiation):

Refrigerated 3 weeks, frozen at -20C 2 months.

Reported:

Set up 5 days per week. Turnaround 3-6 days

Additional Information:

A positive result is one in which the Specimen to Reference Ratio (%) (SSR%) is >140% of the Reference Control.

Thyroid stimulating immunoglobulins (TSI) can engage the TSH receptors resulting in hyperthyroidism in Graves' disease patients. TSI levels can be useful in monitoring the clinical outcome of Graves' disease as well as assessing the potential for hyperthyroidism from maternal-fetal transfer.

NOTE: A serum TSH level greater than 350 µIU/mL can interfere with the TSI bioassay and potentially give false positive results.

CPT Codes:

84445-90

LOINC Codes:

30567-2

Thyroperoxidase Antibodies

ATPO

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Thursday (day shift)

Methodology:
Enzyme-Linked Immunosorbent Assay (ELISA)

Reported:
1-8 days

Additional Information:
The results of this test should be used in conjunction with clinical findings and other laboratory data (such as TSH and thyroid hormone levels) to make a diagnosis of autoimmune thyroid disease (including Hashimoto's thyroiditis and Graves' Disease). Although anti-thyroperoxidase antibodies are a sensitive and specific indicator of autoimmune thyroid disease, a subset of normal individuals may have low level antibodies that may not have clinical significance resulting in a false positive test result. The Manufacturer's guidelines suggest that up to 4-5% of normal individuals may have a positive result with this assay.

The antibody reactivity previously ascribed to the thyroid microsomes is now recognized to be primarily directed against Thyroperoxidase, and is the antibody activity most commonly found in thyroid disease.

Synonyms:

- anti-TPO antibodies
- anti-microsomal antibodies

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Remarks:
Avoid hemolysis

Unacceptable Conditions:
Grossly hemolyzed, lipemic or icteric samaples

PROCESSING

Test Code:
ATPO

Test Group:
Thyroid tests

Performing Lab:
Immunology

Specimen Preparation:
Stored frozen at -20C.

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Grossly hemolyzed, lipemic or icteric samaples

RESULT INTERPRETATION

Units:
WHO units

Reference Interval:
Negative: <= 100 WHO units
Positive: > 100 WHO units

Additional Information:
The results of this test should be used in conjunction with clinical findings and other laboratory data (such as TSH and thyroid hormone levels) to make a diagnosis of autoimmune thyroid disease (including Hashimoto's thyroiditis and Graves' Disease). Although anti-thyroperoxidase antibodies are a sensitive and specific indicator of autoimmune thyroid disease, a subset of normal individuals may have low level antibodies that may not have clinical significance resulting in a false positive test result. The Manufacturer's guidelines suggest that up to 4-5% of normal individuals may have a positive result with this assay.

The antibody reactivity previously ascribed to the thyroid microsomes is now recognized to be primarily directed against Thyroperoxidase, and is the antibody activity most commonly found in thyroid disease.

ADMINISTRATIVE

CPT Codes:
86376

LOINC Codes:
8099-4

COMPLETE VIEW

Available Stat:
No

Test Code:
ATPO

Test Group:
Thyroid tests

Performing Lab:
Immunology

Performed:
Thursday (day shift)

Methodology:
Enzyme-Linked Immunosorbent Assay (ELISA)

Remarks:
Avoid hemolysis

Collect:
Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Grossly hemolyzed, lipemic or icteric samaples

Specimen Preparation:
Stored frozen at -20C.

Units:
WHO units

Reference Interval:
Negative: <= 100 WHO units
Positive: > 100 WHO units

Synonyms:

- anti-TPO antibodies
- anti-microsomal antibodies

Reported:

1-8 days

Additional Information:

The results of this test should be used in conjunction with clinical findings and other laboratory data (such as TSH and thyroid hormone levels) to make a diagnosis of autoimmune thyroid disease (including Hashimoto's thyroiditis and Graves' Disease). Although anti-thyroperoxidase antibodies are a sensitive and specific indicator of autoimmune thyroid disease, a subset of normal individuals may have low level antibodies that may not have clinical significance resulting in a false positive test result. The Manufacturer's guidelines suggest that up to 4-5% of normal individuals may have a positive result with this assay.

The antibody reactivity previously ascribed to the thyroid microsomes is now recognized to be primarily directed against Thyroperoxidase, and is the antibody activity most commonly found in thyroid disease.

CPT Codes:

86376

LOINC Codes:

8099-4

Thyrotropin Binding Inhibitory Immunoglobulin

TBII

ORDERING

Available Stat:
No

Performing Lab:
Quest

Performed:
Mon, Wed, Fri

Methodology:
Enzyme Linked Immunosorbent Assay (ELISA)

Reported:
3-5 days

Synonyms:

- TBII
- thyroid receptor antibody
- TSH receptor antibody
- TSH receptor blocking antibody
- Thyrotropin Binding

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature: 7 days
Refrigerated: 14 days
Frozen: 21 days

Storage/Transport Temperature:
Room temperature

Rejection Criteria:
Gross hemolysis

PROCESSING

Test Code:
TBII

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze sample. Order Quest # 38683 (TRAb - TSH Receptor Binding Antibody)

Additional Processing Instructions:
Allow serum to clot at room temperature and the serum should be separated from cells within 1 hour.

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Rejection Criteria:
Gross hemolysis

Stability (from collection to initiation):
Room temperature: 7 days
Refrigerated: 14 days
Frozen: 21 days

Storage/Transport Temperature:
Room temperature

RESULT INTERPRETATION

Units:
IU/L

Reference Interval:
<= 2.00 IU/L

ADMINISTRATIVE

CPT Codes:
83520-90

LOINC Codes:
40673-6

COMPLETE VIEW

Available Stat:
No

Test Code:
TBII

Performing Lab:
Quest

Sendout:
Yes

Performed:
Mon, Wed, Fri

Methodology:
Enzyme Linked Immunosorbent Assay (ELISA)

Collect:
Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Rejection Criteria:
Gross hemolysis

Specimen Preparation:
Freeze sample. Order Quest # 38683 (TRAb - TSH Receptor Binding Antibody)

Additional Processing Instructions:
Allow serum to clot at room temperature and the serum should be separated from cells within 1 hour.

Units:
IU/L

Reference Interval:
<= 2.00 IU/L

Synonyms:

- TBII
- thyroid receptor antibody
- TSH receptor antibody
- TSH receptor blocking antibody
- Thyrotropin Binding

Storage/Transport Temperature:
Room temperature

Stability (from collection to initiation):

Room temperature: 7 days
Refrigerated: 14 days
Frozen: 21 days

Reported:

3-5 days

CPT Codes:

83520-90

LOINC Codes:

40673-6

Thyroxine Binding Globulin

TBG

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Chemiluminescence

Reported:
Test performed Wednesday, Friday & Sunday. Turnaround time: 1-4 days.

Additional Information:
TBG binds T4 and T3 (T4 more tightly than T3), and carries 70% of the thyroid hormone in the blood. It is indirectly estimated with Thyroid Uptake. Direct measurement is useful only for rare conditions such as congenital deficiency or excess of TBG

Synonyms:

- TBG
- T4 binding globulin

COLLECTION

Sample Type:
Serum

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 1 week, frozen at -20C 1 month.

Unacceptable Conditions:
Collected in Gold top.

PROCESSING

Test Code:
TBG

Test Group:
Thyroid tests

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Freeze serum at -20°C. Order Quest # 30213P. For B&T patients order BTMOLT, LabCorp Test # 001735

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Collected in Gold top.

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 1 week, frozen at -20C 1 month.

RESULT INTERPRETATION

Units:
µg/mL (mcg/mL)

Reference Interval:

4-6 years	14.8-32.9 µg/mL
7-8 years	16.3-30.7 µg/mL
9-10 years	15.8-27.4 µg/mL
11 years	15.5-27.4 µg/mL
12 years	14.8-26.2 µg/mL
13 years	13.8-25.2 µg/mL
14 years	12.2-25.2 µg/mL
15 years	10.8-23.8 µg/mL
16 years	10.0-23.8 µg/mL
17 years	8.5-23.1 µg/mL

Tanner Stages	Males	Females
Stage I	13.5-28.4 µg/mL	14.2-28.5 µg/mL
Stage II	15.1-25.9 µg/mL	15.0-23.1 µg/mL
Stage III	14.0-26.3 µg/mL	13.7-23.0 µg/mL
Stage IV	13.2-25.0 µg/mL	12.0-22.8 µg/mL
Stage V	12.2-23.7 µg/mL	9.1-22.8 µg/mL

>= 18 year old females	13.5-30.9 µg/mL
>= 18 year old males	12.7-25.1 µg/mL

To convert to nmol/L, multiply the result by 18.5.

Additional Information:
TBG binds T4 and T3 (T4 more tightly than T3), and carries 70% of the thyroid hormone in the blood. It is indirectly estimated with Thyroid Uptake. Direct measurement is useful only for rare conditions such as congenital deficiency or excess of TBG

ADMINISTRATIVE

CPT Codes:
84442-90

LOINC Codes:
3021-3

COMPLETE VIEW

Available Stat:
No

Test Code:
TBG

Test Group:
Thyroid tests

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Chemiluminescence

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Collected in Gold top.

Specimen Preparation:
Freeze serum at -20°C. Order Quest # 30213P. For B&T patients order BTMOLT, LabCorp Test # 001735

Units:
µg/mL (mcg/mL)

Reference Interval:

4-6 years	14.8-32.9 µg/mL
7-8 years	16.3-30.7 µg/mL
9-10 years	15.8-27.4 µg/mL
11 years	15.5-27.4 µg/mL
12 years	14.8-26.2 µg/mL
13 years	13.8-25.2 µg/mL
14 years	12.2-25.2 µg/mL
15 years	10.8-23.8 µg/mL
16 years	10.0-23.8 µg/mL
17 years	8.5-23.1 µg/mL

Tanner Stages	Males	Females
Stage I	13.5-28.4 µg/mL	14.2-28.5 µg/mL
Stage II	15.1-25.9 µg/mL	15.0-23.1 µg/mL
Stage III	14.0-26.3 µg/mL	13.7-23.0 µg/mL
Stage IV	13.2-25.0 µg/mL	12.0-22.8 µg/mL
Stage V	12.2-23.7 µg/mL	9.1-22.8 µg/mL

>= 18 year old females	13.5-30.9 µg/mL
>= 18 year old males	12.7-25.1 µg/mL

To convert to nmol/L, multiply the result by 18.5.

Synonyms:

- TBG
- T4 binding globulin

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 1 week, frozen at -20C 1 month.

Reported:
Test performed Wednesday, Friday & Sunday. Turnaround time: 1-4 days.

Additional Information:
TBG binds T4 and T3 (T4 more tightly than T3), and carries 70% of the thyroid hormone in the blood. It is indirectly estimated with Thyroid Uptake. Direct measurement is useful only for rare conditions such as congenital deficiency or excess of TBG

CPT Codes:
84442-90

LOINC Codes:
3021-3

Tissue Immunofluorescence-IgA Antibody

UCSF

ORDERING

Available Stat:
No

Performing Lab:
IF Lab

Methodology:
Indirect Immmunoflorescence

Reported:
Test performed Monday. Turn-around time: 5-10 days

Additional Information:
Identifies the presence of serum antibodies against intercellular substance in squamous epithelium (pemphigus vulgaris) or basement membrane (bullous pemphigoid). Nuclear staining may be seen from sera of patients with systemic lupus or other connective tissue disorders. Antibodies are typically present during active disease. If positive it is advisable to perform direct immunofluorescent testing on biopsies of skin lesions. A two-fold drop in titer is indicative of effective therapy. For questions contact the UCSF Immunofluorescence Lab at 353-7546.

Supplemental Test Request Form Required:
Yes

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Remarks:
Samples should be received by the laboratory by Wednesday for next Monday signout.

Stability (from collection to initiation):
Sample is stable at RT.

PROCESSING

Test Code:
UCSF

Performing Lab:
IF Lab

Specimen Preparation:
Send sample and completed dermatopathology requisition to: UCSF Dermatopathology office, Mount Zion Campus 1701 Divisadero St. 3rd floor Room 350, San Francisco, CA 94115.

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Stability (from collection to initiation):
Sample is stable at RT.

RESULT INTERPRETATION

Units:
Titer

Reference Interval:
Negative Titer < 1:10

Additional Information:
Identifies the presence of serum antibodies against intercellular substance in squamous epithelium (pemphigus vulgaris) or basement membrane (bullous pemphigoid). Nuclear staining may be seen from sera of patients with systemic lupus or other connective tissue disorders. Antibodies are typically present during active disease. If positive it is advisable to perform direct immunofluorescent testing on biopsies of skin lesions. A two-fold drop in titer is indicative of effective therapy. For questions contact the UCSF Immunofluorescence Lab at 353-7546.

COMPLETE VIEW

Available Stat:
No

Test Code:
UCSF

Performing Lab:
IF Lab

Methodology:
Indirect Immmunoflorescence

Remarks:
Samples should be received by the laboratory by Wednesday for next Monday signout.

Collect:
Gold top

Amount to Collect:
4 mL blood

Sample Type:
Serum

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Specimen Preparation:
Send sample and completed dermatopathology requisition to: UCSF Dermatopathology office, Mount Zion Campus 1701 Divisadero St. 3rd floor Room 350, San Francisco, CA 94115.

Units:
Titer

Reference Interval:
Negative Titer < 1:10

Stability (from collection to initiation):
Sample is stable at RT.

Reported:
Test performed Monday. Turn-around time: 5-10 days

Additional Information:
Identifies the presence of serum antibodies against intercellular substance in squamous epithelium (pemphigus vulgaris) or basement membrane (bullous pemphigoid). Nuclear staining may be seen from sera of patients with systemic lupus or other connective tissue disorders. Antibodies are typically present during active disease. If positive it is advisable to perform direct immunofluorescent testing on biopsies of skin lesions. A two-fold drop in titer is indicative of effective therapy. For questions contact the UCSF Immunofluorescence Lab at 353-7546.

Supplemental Test Request Form Required:
Yes

Tissue Transglutaminase Antibody, IgA

TTGT

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Tuesday (day shift)

Methodology:
Chemiluminescent

Reported:
2-8 days

Additional Information:
This test may be useful in providing serologic support for a diagnosis of gluten-sensitive enteropathy (found in celiac disease and dermatitis herpetiformis). The European Society for Pediatric Gastroenterology and Nutrition (ESPGAN) revised criteria in 1990 for diagnosis of celiac disease in children to include serologic testing for IgA endomysial antibodies.

Tissue transglutaminase has been identified as the primary target for IgA endomysial antibodies. IgA tissue transglutaminase (TTG) antibodies are thought to be equally sensitive for celiac disease in comparison with anti-gliadin antibodies but with increased specificity. Results in the weak positive range are considered equivocal and may be repeated, if clinically indicated. IgA TTG antibodies most often disappear when patients adhere to a gluten-free diet, thus this test may be useful in monitoring patient adherence to diet. Since IgA-deficiency is not uncommon in patients with celiac disease, serum IgA levels may be ordered to confirm a negative result on this test.

Synonyms:

- Celiac disease

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Remarks:
Avoid hemolysis

Unacceptable Conditions:
Grossly hemolyzed, lipemic or icteric specimens

PROCESSING

Test Code:
TTGT

Performing Lab:
Immunology

Specimen Preparation:
Freeze serum at -20C.

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Grossly hemolyzed, lipemic or icteric specimens

RESULT INTERPRETATION

Units:
Chemiluminescent Units (CU)

Reference Interval:
Negative: < 20 CU
Weak Positive: 20 - 30 CU
Positive: > 30 CU

Additional Information:
This test may be useful in providing serologic support for a diagnosis of gluten-sensitive enteropathy (found in celiac disease and dermatitis herpetiformis). The European Society for Pediatric Gastroenterology and Nutrition (ESPGAN) revised criteria in 1990 for diagnosis of celiac disease in children to include serologic testing for IgA endomysial antibodies.

Tissue transglutaminase has been identified as the primary target for IgA endomysial antibodies. IgA tissue transglutaminase (TTG) antibodies are thought to be equally sensitive for celiac disease in comparison with anti-gliadin antibodies but with increased specificity. Results in the weak positive range are considered equivocal and may be repeated, if clinically indicated. IgA TTG antibodies most often disappear when patients adhere to a gluten-free diet, thus this test may be useful in monitoring patient adherence to diet. Since IgA-deficiency is not uncommon in patients with celiac disease, serum IgA levels may be ordered to confirm a negative result on this test.

ADMINISTRATIVE

CPT Codes:
86364

LOINC Codes:
31017-7

COMPLETE VIEW

Available Stat:
No

Test Code:
TTGT

Performing Lab:
Immunology

Performed:
Tuesday (day shift)

Methodology:
Chemiluminescent

Remarks:
Avoid hemolysis

Collect:
Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Grossly hemolyzed, lipemic or icteric specimens

Specimen Preparation:
Freeze serum at -20C.

Units:
Chemiluminescent Units (CU)

Reference Interval:
Negative: < 20 CU
Weak Positive: 20 - 30 CU
Positive: > 30 CU

Synonyms:

- Celiac disease

Reported:
2-8 days

Additional Information:

This test may be useful in providing serologic support for a diagnosis of gluten-sensitive enteropathy (found in celiac disease and dermatitis herpetiformis). The European Society for Pediatric Gastroenterology and Nutrition (ESPGAN) revised criteria in 1990 for diagnosis of celiac disease in children to include serologic testing for IgA endomysial antibodies.

Tissue transglutaminase has been identified as the primary target for IgA endomysial antibodies. IgA tissue transglutaminase (TTG) antibodies are thought to be equally sensitive for celiac disease in comparison with anti-gliadin antibodies but with increased specificity. Results in the weak positive range are considered equivocal and may be repeated, if clinically indicated. IgA TTG antibodies most often disappear when patients adhere to a gluten-free diet, thus this test may be useful in monitoring patient adherence to diet. Since IgA-deficiency is not uncommon in patients with celiac disease, serum IgA levels may be ordered to confirm a negative result on this test.

CPT Codes:

86364

LOINC Codes:

31017-7

Tissue Transglutaminase Antibody, IgG

TTGTGG

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Tuesday (day shift)

Methodology:
Chemiluminescent

Reported:
2-8 days

Additional Information:
This test may be useful in providing serologic support for a diagnosis of gluten-sensitive enteropathy (found in celiac disease and dermatitis herpetiformis). Results in the weak positive range are considered equivocal and may be repeated, if clinically indicated.

Synonyms:

- Celiac disease

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Remarks:
Avoid hemolysis

Unacceptable Conditions:
Gross Hemolyzed, lipemic or icteric samples

PROCESSING

Test Code:
TTGTGG

Performing Lab:
Immunology

Specimen Preparation:
Freeze serum at -20C

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Gross Hemolyzed, lipemic or icteric samples

RESULT INTERPRETATION

Units:
Chemiluminescent Units (CU)

Reference Interval:
Negative: < 20.0 CU
Weak Positive: 20.0-30.0 CU
Positive: > 30.0 CU

Additional Information:
This test may be useful in providing serologic support for a diagnosis of gluten-sensitive enteropathy (found in celiac disease and dermatitis herpetiformis). Results in the weak positive range are considered equivocal and may be repeated, if clinically indicated.

ADMINISTRATIVE

CPT Codes:
86364

COMPLETE VIEW

Available Stat:
No

Test Code:
TTGTGG

Performing Lab:
Immunology

Performed:
Tuesday (day shift)

Methodology:
Chemiluminescent

Remarks:
Avoid hemolysis

Collect:
Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Gross Hemolyzed, lipemic or icteric samples

Specimen Preparation:
Freeze serum at -20C

Units:
Chemiluminescent Units (CU)

Reference Interval:
Negative: < 20.0 CU
Weak Positive: 20.0-30.0 CU
Positive: > 30.0 CU

Synonyms:

- Celiac disease

Reported:
2-8 days

Additional Information:
This test may be useful in providing serologic support for a diagnosis of gluten-sensitive enteropathy (found in celiac disease and dermatitis herpetiformis). Results in the weak positive range are considered equivocal and may be repeated, if clinically indicated.

CPT Codes:
86364

Tobramycin

TOBPK, TOBTH, TOBRN

ORDERING

Available Stat:
No

Performing Lab:
Parnassus and Mission Bay Chemistry

Performed:
24 hours per day and 7 days per week

Methodology:
Particle enhanced turbidimetric inhibition immunoassay (PETINIA)

Reported:
1 day

Additional Information:
For desired peak and trough levels in special situations, Click here

Samples should be drawn just prior to a dose (trough level) to confirm that an adequate dose has been prescribed. Peak specimen should be drawn 30 minutes after 30 minute IV infusion.

Toxicity associated with trough levels > 2 mg/L or peak levels > 10-12 mg/L

COLLECTION

Sample Type:
Serum or plasma

Collect:
Gold top or Light Green top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Remarks:
Time to Steady State: 2-3 doses (1 dose for ICN extended interval dosing).

Collect trough samples 30 minutes prior to 3rd or 4th dose.

For patients on hemodialysis collect just prior to and/or 1 hour post dialysis.

For standard dosing draw peak samples 30 minutes after the end of infusion. For ICN extended interval dosing draw peak 30 minutes after end of 4th dose.

Note the exact time of collection on BOTH the sample and in Apex (or on any paper orders).

Bring to lab immediately for processing if patient also receiving carbenicillin or other high dose penicillin or cephalosporin because prolonged interactions with these drugs (8 hours or more) at room temperature can modify amino groups and interfere with aminoglycoside assay.

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 7 days, frozen at -20C 14 days

NOTE: Samples containing carbenicillin or piperacillin should be stored frozen if a delay in analysis of more than 8 hours is anticipated. Failure to freeze samples containing these antibiotics may result in falsely low tobramycin levels due to in vitro inactivation.

Unacceptable Conditions:
Collection time not indicated on sample

PROCESSING

Test Code:
TOBPK (Peak), TOBTH (Trough), TOBRN (Random)

Performing Lab:
Parnassus and Mission Bay Chemistry

Specimen Preparation:
Separate serum or plasma from cells within 2 hours of collection.

Mission Bay and Mount Zion: Refrigerate serum or plasma and send to Parnassus Chemistry

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Unacceptable Conditions:
Collection time not indicated on sample

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 7 days, frozen at -20C 14 days

NOTE: Samples containing carbenicillin or piperacillin should be stored frozen if a delay in analysis of more than 8 hours is anticipated. Failure to freeze samples containing these antibiotics may result in falsely low tobramycin levels due to in vitro inactivation.

RESULT INTERPRETATION

Units:
mg/L

Reference Interval:
Therapeutic Peak Levels:

Bacteremia, pneumonia, sepsis	8-10 mg/L
Urinary tract infection	4-8 mg/L

Trough Levels:

Standard dosing	< 2 mg/L (< 1 mg/L optimum)
Once daily, high dose	< 1 mg/L (< 0.3 mg/L optimum)

Toxicity associated with trough levels > 2 mg/L or peak levels > 10-12 mg/L.
Peak levels of <5 or >10 mg/L will be flagged as abnormal.
Trough levels > 2 mg/L will be flagged as abnormal.

Source of reference range: UCSF Medical Center Aminoglycoside Dosing and Monitoring Recommendations (https://idmp.ucsf.edu/content/tobramycin. Accessed November 2020).

Additional Information:
For desired peak and trough levels in special situations, Click here

Samples should be drawn just prior to a dose (trough level) to confirm that an adequate dose has been prescribed. Peak specimen should be drawn 30 minutes after 30 minute IV infusion.

Toxicity associated with trough levels > 2 mg/L or peak levels > 10-12 mg/L

ADMINISTRATIVE

CPT Codes:
80200

LOINC Codes:
35670-9

COMPLETE VIEW

Available Stat:
No

Test Code:
TOBPK (Peak), TOBTH (Trough), TOBRN (Random)

Performing Lab:
Parnassus and Mission Bay Chemistry

Performed:
24 hours per day and 7 days per week

Methodology:
Particle enhanced turbidimetric inhibition immunoassay (PETINIA)

Remarks:

Time to Steady State: 2-3 doses (1 dose for ICN extended interval dosing).

Collect trough samples 30 minutes prior to 3rd or 4th dose.

For patients on hemodialysis collect just prior to and/or 1 hour post dialysis.

For standard dosing draw peak samples 30 minutes after the end of infusion. For ICN extended interval dosing draw peak 30 minutes after end of 4th dose.

Note the exact time of collection on BOTH the sample and in Apex (or on any paper orders).

Bring to lab immediately for processing if patient also receiving carbenicillin or other high dose penicillin or cephalosporin because prolonged interactions with these drugs (8 hours or more) at room temperature can modify amino groups and interfere with aminoglycoside assay.

Collect:

Gold top or Light Green top

Amount to Collect:

1 mL blood

Sample Type:

Serum or plasma

Preferred Volume:

0.5 mL serum or plasma

Minimum Volume:

0.2 mL serum or plasma

Unacceptable Conditions:

Collection time not indicated on sample

Specimen Preparation:

Separate serum or plasma from cells within 2 hours of collection.

Mission Bay and Mount Zion: Refrigerate serum or plasma and send to Parnassus Chemistry

Units:

mg/L

Reference Interval:

Therapeutic Peak Levels:

Bacteremia, pneumonia, sepsis	8-10 mg/L
Urinary tract infection	4-8 mg/L

Trough Levels:

Standard dosing	< 2 mg/L (< 1 mg/L optimum)
Once daily, high dose	< 1 mg/L (< 0.3 mg/L optimum)

Toxicity associated with trough levels > 2 mg/L or peak levels > 10-12 mg/L.
Peak levels of <5 or >10 mg/L will be flagged as abnormal.
Trough levels > 2 mg/L will be flagged as abnormal.

Source of reference range: UCSF Medical Center Aminoglycoside Dosing and Monitoring Recommendations (https://idmp.ucsf.edu/content/tobramycin. Accessed November 2020).

Stability (from collection to initiation):

Room temperature 8 hours, refrigerated 7 days, frozen at -20C 14 days

NOTE: Samples containing carbenicillin or piperacillin should be stored frozen if a delay in analysis of more than 8 hours is anticipated. Failure to freeze samples containing these antibiotics may result in falsely low tobramycin levels due to in vitro inactivation.

Reported:

1 day

Additional Information:

For desired peak and trough levels in special situations, Click here

Samples should be drawn just prior to a dose (trough level) to confirm that an adequate dose has been prescribed. Peak specimen should be drawn 30 minutes after 30 minute IV infusion.

Toxicity associated with trough levels > 2 mg/L or peak levels > 10-12 mg/L

CPT Codes:

80200

LOINC Codes:
35670-9

Tocainide

MOLT

ORDERING

Available Stat:
No

Performing Lab:
MDTX via Quest

Methodology:
HPLC

Reported:
Test run daily. Turnaround time: 3-5 days.

Synonyms:

- Tonocard

COLLECTION

Sample Type:
Serum

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Sample collected in Gold top

PROCESSING

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Sendout:
Yes

Performing Lab:
MDTX via Quest

Specimen Preparation:
Refrigerate. Order Quest # 11787

Preferred Volume:
2 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Sample collected in Gold top

RESULT INTERPRETATION

Units:
mg/L

Reference Interval:
Therapeutic: 4-10 mg/L
Potentially toxic: > 10 mg/L

ADMINISTRATIVE

CPT Codes:
80299-90

COMPLETE VIEW

Available Stat:
No

Test Code:
MOLT (Order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Performing Lab:
MDTX via Quest

Sendout:
Yes

Methodology:
HPLC

Collect:
Red top (Gold top **NOT** acceptable)

Amount to Collect:
4 mL blood

Sample Type:
Serum

Preferred Volume:
2 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Sample collected in Gold top

Specimen Preparation:
Refrigerate. Order Quest # 11787

Units:
mg/L

Reference Interval:
Therapeutic: 4-10 mg/L
Potentially toxic: > 10 mg/L

Synonyms:

- Tonocard

Reported:
Test run daily. Turnaround time: 3-5 days.

CPT Codes:
80299-90

Toll-Like Receptor Function

TLR

ORDERING

Ordering Recommendations:

Aids in diagnosis of innate immunodeficiencies when genetic defects of the innate immune system are suspected in individuals negative for other immunodeficiencies (eg, no detectable abnormality of antibody function, complement activity, neutrophil function, or cell-mediated immunity). This test does not measure the function of toll-like receptor 3 (TLR3). Molecular testing is the preferred method for detection of defects in TLR3. For patients who are lymphopenic, collection of 10 mL of whole blood, rather than the minimum required volumes, is recommended to increase the likelihood that a sufficient number of lymphocytes can be isolated for testing.

Available Stat:

No

Performed:

Sun, Tue, Wed, Thu, Fri, Sat

Methodology:

Cell Culture/Quantitative Multiplex Bead Assay

Reported:

9-10 days

Synonyms:

- TLR Function

COLLECTION

Patient Preparation:

Collect control specimen from a healthy individual unrelated to patient at approximately the same time as and under similar conditions to the patient.

Sample Type:

Whole blood

Collect:

Green (sodium heparin) (patient) AND green (sodium heparin) (control). Also acceptable: Yellow (ACD solution A) (patient) AND yellow (ACD solution A) (control). Patient and control specimens must be collected within 48 hours of test performance.

Amount to Collect:

10 mL (patient) and 10 mL (control)

Preferred Volume:

10 mL (patient) and 10 mL (control)

Minimum Volume:

7 mL (patient) and 7 mL (control)

Infants: 3 mL (patient) and 7 mL (control)

Stability (from collection to initiation):

Ambient: 48 hours; Refrigerated: Unacceptable; Frozen: Unacceptable
New York State Clients: Ambient 24 hours; Refrigerated: Unacceptable; Frozen: Unacceptable

Storage/Transport Temperature:

CRITICAL ROOM TEMPERATURE.

Unacceptable Conditions:

Yellow (ACD solution B). Refrigerated or frozen specimens.

PROCESSING

Test Code:

TLR

ARUP Test Code:

0051589

Sendout:

Yes

Specimen Preparation:

Transport 10 mL whole blood (patient) AND 10 mL whole blood (control) in original collection tubes. (Min: 7 mL (patient) AND 7 mL (control)) Do not refrigerate or freeze. LIVE CELLS REQUIRED.

Infant Minimum: 3 mL whole blood (patient) AND 7 mL whole blood (control).

For patients who are lymphopenic, collection of 10 mL of whole blood, rather than the minimum required volumes, is recommended to increase the likelihood that a sufficient number of lymphocytes can be isolated for testing.

Preferred Volume:

10 mL (patient) and 10 mL (control)

Minimum Volume:

7 mL (patient) and 7 mL (control)

Infants: 3 mL (patient) and 7 mL (control)

Unacceptable Conditions:

Yellow (ACD solution B). Refrigerated or frozen specimens.

Stability (from collection to initiation):

Ambient: 48 hours; Refrigerated: Unacceptable; Frozen: Unacceptable
New York State Clients: Ambient 24 hours; Refrigerated: Unacceptable; Frozen: Unacceptable

Storage/Transport Temperature:

CRITICAL ROOM TEMPERATURE.

RESULT INTERPRETATION

Reference Interval:

By report

Interpretive Data:

Toll-like receptors (TLR) are tested independently by stimulation with TLR-specific ligands in a peripheral blood mononuclear cell (PBMC) culture. PBMC production of IL-1 beta, IL-6, and TNF alpha is determined by multiplex bead assay for TLR 1,2,4-8.

TLR-specific ligands include Pam3CSK4, a synthetic bacterial lipoprotein (TLR2-TLR1 ligand); zymosan cell wall particles from Saccharomyces cerevisiae (TLR6-TLR2 ligand); lipopolysaccharide (LPS) ultra-pure S. minnesota LPS (TLR4 ligand); flagellin purified from S. typhimurium (TLR5 ligand); and CL097 imidazoquinoline compound (TLR7-TLR8 ligand).

ADMINISTRATIVE

CPT Codes:

86353 x5; 83520 x2; 83529

COMPLETE VIEW

Available Stat:

No

Ordering Recommendations:

Aids in diagnosis of innate immunodeficiencies when genetic defects of the innate immune system are suspected in individuals negative for other immunodeficiencies (eg, no detectable abnormality of antibody function, complement activity, neutrophil function, or cell-mediated immunity). This test does not measure the function of toll-like receptor 3 (TLR3). Molecular testing is the preferred method for detection of defects in TLR3. For patients who are lymphopenic, collection of 10 mL of whole blood, rather than the minimum required volumes, is recommended to increase the likelihood that a sufficient number of lymphocytes can be isolated for testing.

Test Code:

TLR

ARUP Test Code:

0051589

Sendout:

Yes

Performed:

Sun, Tue, Wed, Thu, Fri, Sat

Methodology:

Cell Culture/Quantitative Multiplex Bead Assay

Patient Preparation:

Collect control specimen from a healthy individual unrelated to patient at approximately the same time as and under similar conditions to the patient.

Collect:
Green (sodium heparin) (patient) AND green (sodium heparin) (control). Also acceptable: Yellow (ACD solution A) (patient) AND yellow (ACD solution A) (control). Patient and control specimens must be collected within 48 hours of test performance.

Amount to Collect:
10 mL (patient) and 10 mL (control)

Sample Type:
Whole blood

Preferred Volume:
10 mL (patient) and 10 mL (control)

Minimum Volume:
7 mL (patient) and 7 mL (control)

Infants: 3 mL (patient) and 7 mL (control)

Unacceptable Conditions:
Yellow (ACD solution B). Refrigerated or frozen specimens.

Specimen Preparation:
Transport 10 mL whole blood (patient) AND 10 mL whole blood (control) in original collection tubes. (Min: 7 mL (patient) AND 7 mL (control)) Do not refrigerate or freeze. LIVE CELLS REQUIRED.

Infant Minimum: 3 mL whole blood (patient) AND 7 mL whole blood (control).

For patients who are lymphopenic, collection of 10 mL of whole blood, rather than the minimum required volumes, is recommended to increase the likelihood that a sufficient number of lymphocytes can be isolated for testing.

Reference Interval:
By report

Interpretive Data:
Toll-like receptors (TLR) are tested independently by stimulation with TLR-specific ligands in a peripheral blood mononuclear cell (PBMC) culture. PBMC production of IL-1 beta, IL-6, and TNF alpha is determined by multiplex bead assay for TLR 1,2,4-8.

TLR-specific ligands include Pam3CSK4, a synthetic bacterial lipoprotein (TLR2-TLR1 ligand); zymosan cell wall particles from Saccharomyces cerevisiae (TLR6-TLR2 ligand); lipopolysaccharide (LPS) ultra-pure S. minnesota LPS (TLR4 ligand); flagellin purified from S. typhimurium (TLR5 ligand); and CL097 imidazoquinoline compound (TLR7-TLR8 ligand).

Synonyms:

- TLR Function

Storage/Transport Temperature:
CRITICAL ROOM TEMPERATURE.

Stability (from collection to initiation):
Ambient: 48 hours; Refrigerated: Unacceptable; Frozen: Unacceptable
New York State Clients: Ambient 24 hours; Refrigerated: Unacceptable; Frozen: Unacceptable

Reported:
9-10 days

CPT Codes:
86353 x5; 83520 x2; 83529

Notes:
Results for TNF alpha, IL-1 beta, and IL-6 are reported as pg/mL. Interpretation comparing the patient results to the simultaneously collected client normal control and the laboratory normal control will be provided by an ARUP medical director.

Limitation: Defects in IRAK-4 and MyD88 result in compromised TLR signaling. Exception is endosomal TLR4, which is IRAK-4 and MyD88 independent.

Topiramate

TOPA

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Flourescent polarization immunoassay

Reported:
Performed 5x per week. Turnaround 4-8 days

Additional Information:
Topiramate is an antidepressant used as an adjunctive treatment of partial epilepsy and Lennox-Gastaut syndrome in children. Monitoring is useful to optimize dose and avoid toxicity.

Synonyms:

- Topamax

COLLECTION

Sample Type:
Serum (plasma acceptable)

Collect:
Red top preferred, Dark green top acceptable (Gold top **NOT** acceptable)

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.5 mL serum or plasma

Remarks:
Draw peak 2-4 hours after dose, trough 0.5-1 hour before dose when patient is at steady state. Avoid hemolysis

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen at -20C 1 month

Unacceptable Conditions:
Drawn in Gold top or Light green top vacutainer. Hemolysis, Lipemia

PROCESSING

Test Code:
TOPA

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Maintain sample at room temperature. Order Quest # 30965

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.5 mL serum or plasma

Unacceptable Conditions:
Drawn in Gold top or Light green top vacutainer. Hemolysis, Lipemia

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen at -20C 1 month

RESULT INTERPRETATION

Units:
µg/mL (mcg/mL)

Reference Interval:

Daily dose (mg)	Peak	Trough
100	6.5-9.2 µg/mL	4.5-6.6 µg/mL
200	12-16 µg/mL	8-12 µg/mL
400	20-30 µg/mL	14-20 µg/mL

Additional Information:
Topiramate is an antidepressant used as an adjunctive treatment of partial epilepsy and Lennox-Gastaut syndrome in children. Monitoring is useful to optimize dose and avoid toxicity.

ADMINISTRATIVE

CPT Codes:
80201-90

LOINC Codes:
17713-9

COMPLETE VIEW

Available Stat:
No

Test Code:
TOPA

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Flourescent polarization immunoassay

Remarks:
Draw peak 2-4 hours after dose, trough 0.5-1 hour before dose when patient is at steady state. Avoid hemolysis

Collect:
Red top preferred, Dark green top acceptable (Gold top **NOT** acceptable)

Amount to Collect:
2 mL blood

Sample Type:
Serum (plasma acceptable)

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.5 mL serum or plasma

Unacceptable Conditions:
Drawn in Gold top or Light green top vacutainer. Hemolysis, Lipemia

Specimen Preparation:
Maintain sample at room temperature. Order Quest # 30965

Units:
µg/mL (mcg/mL)

Reference Interval:

Daily dose (mg)	Peak	Trough
100	6.5-9.2 µg/mL	4.5-6.6 µg/mL
200	12-16 µg/mL	8-12 µg/mL
400	20-30 µg/mL	14-20 µg/mL

Synonyms:

- Topamax

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen at -20C 1 month

Reported:
Performed 5x per week. Turnaround 4-8 days

Additional Information:

Topiramate is an antidepressant used as an adjunctive treatment of partial epilepsy and Lennox-Gastaut syndrome in children. Monitoring is useful to optimize dose and avoid toxicity.

CPT Codes:

80201-90

LOINC Codes:

17713-9

Total Tryptase

TTRP

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Fluoroenzyme Immunoassay

Additional Information:
Tryptase concentrations are increased with immediate hypersensitivity (anaphylaxis), acute allergen challenge, and mastocytosis.

When it is necessary to distinguish mature tryptase from total tryptase, an order for a miscellaneous outside lab test (MOLT) can be sent requesting an assay for a tryptase level from the clinical laboratory at Virginia Commonwealth University which reports out both mature trypase and total tryptase in their assay.

http://www.catalog.pathology.vcu.edu/CatalogPage.aspx?ID=102621314#

phone (804) 828-9685.

COLLECTION

Sample Type:
Serum

Collect:
Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 5 days, frozen 1 month.

PROCESSING

Test Code:
TTRP

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot serum and freeze. Ship frozen to China Basin.

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 5 days, frozen 1 month.

RESULT INTERPRETATION

Units:
ng/mL

Reference Interval:
2-10 ng/mL

Additional Information:

Tryptase concentrations are increased with immediate hypersensitivity (anaphylaxis), acute allergen challenge, and mastocytosis.

When it is necessary to distinguish mature tryptase from total tryptase, an order for a miscellaneous outside lab test (MOLT) can be sent requesting an assay for a tryptase level from the clinical laboratory at Virginia Commonwealth University which reports out both mature trypase and total tryptase in their assay.

http://www.catalog.pathology.vcu.edu/CatalogPage.aspx?ID=102621314#

phone (804) 828-9685.

ADMINISTRATIVE

CPT Codes:
83520-90

COMPLETE VIEW

Available Stat:
No

Test Code:
TTRP

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Fluoroenzyme Immunoassay

Collect:
Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Specimen Preparation:
Aliquot serum and freeze. Ship frozen to China Basin.

Units:
ng/mL

Reference Interval:
2-10 ng/mL

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 5 days, frozen 1 month.

Additional Information:

Tryptase concentrations are increased with immediate hypersensitivity (anaphylaxis), acute allergen challenge, and mastocytosis.

When it is necessary to distinguish mature tryptase from total tryptase, an order for a miscellaneous outside lab test (MOLT) can be sent requesting an assay for a tryptase level from the clinical laboratory at Virginia Commonwealth University which reports out both mature trypase and total tryptase in their assay.

http://www.catalog.pathology.vcu.edu/CatalogPage.aspx?ID=102621314#

phone (804) 828-9685.

CPT Codes:
83520-90

Toxocara species Antibody

TOXOC

ORDERING

Available Stat:
No

Performing Lab:
Focus via Quest

Methodology:
ELISA

Reported:
3-4 weeks.

Additional Information:
75% of acute cases are identified using a titer of >= 32, which is found in 10% of normal individuals, probably due to subclinical infection. If titers < 32 are considered significant, the number of false-positive diagnoses increases.

Synonyms:

- Visceral larva migrans

COLLECTION

Sample Type:
Serum, Vitreous

Collect:
Red top or Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum or vitreous

Minimum Volume:
0.1 mL serum or 0.25 mL vitreous

PROCESSING

Test Code:
TOXOC (MOLT for vitreous samples)

For vitreous samples order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Sendout:
Yes

Performing Lab:
Focus via Quest

Specimen Preparation:
Serum: Send serum sample refrigerated to Quest, Order Quest # 53868P.

Vitreous: Send refrigerated fluid to Focus. Order test code 60945.

Preferred Volume:
1 mL serum or vitreous

Minimum Volume:
0.1 mL serum or 0.25 mL vitreous

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
75% of acute cases are identified using a titer of >= 32, which is found in 10% of normal individuals, probably due to subclinical infection. If titers < 32 are considered significant, the number of false-positive diagnoses increases.

ADMINISTRATIVE

CPT Codes:
86682-90

COMPLETE VIEW

Available Stat:
No

Test Code:
TOXOC (MOLT for vitreous samples)

For vitreous samples order in Apex as 'Miscellaneous Outside Lab Test' using the complete test name above)

Performing Lab:
Focus via Quest

Sendout:
Yes

Methodology:
ELISA

Collect:
Red top or Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum, Vitreous

Preferred Volume:
1 mL serum or vitreous

Minimum Volume:
0.1 mL serum or 0.25 mL vitreous

Specimen Preparation:
Serum: Send serum sample refrigerated to Quest, Order Quest # 53868P.

Vitreous: Send refrigerated fluid to Focus. Order test code 60945.

Reference Interval:
Negative

Synonyms:

- Visceral larva migrans

Reported:
3-4 weeks.

Additional Information:
75% of acute cases are identified using a titer of >= 32, which is found in 10% of normal individuals, probably due to subclinical infection. If titers < 32 are considered significant, the number of false-positive diagnoses increases.

CPT Codes:
86682-90

Toxoplasma gondii Antibody, IgG

TOXO

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift)

Methodology:
Chemiluminescent Immunoassay

Reported:
1-4 days

Synonyms:

- TORCH Antibodies

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Remarks:
Avoid Hemolysis

Unacceptable Conditions:
Grossly hemolyzed, lipemic or icteric samples

PROCESSING

Test Code:
TOXO

Test Group:
Toxoplasma

Performing Lab:
Immunology

Specimen Preparation:
Freeze at -20C

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Grossly hemolyzed, lipemic or icteric samples

RESULT INTERPRETATION

Reference Interval:
Negative

ADMINISTRATIVE

CPT Codes:
86777

LOINC Codes:
40677-7

COMPLETE VIEW

Available Stat:
No

Test Code:
TOXO

Test Group:
Toxoplasma

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift)

Methodology:
Chemiluminescent Immunoassay

Remarks:
Avoid Hemolysis

Collect:
Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Grossly hemolyzed, lipemic or icteric samples

Specimen Preparation:
Freeze at -20C

Reference Interval:
Negative

Synonyms:

- TORCH Antibodies

Reported:
1-4 days

CPT Codes:
86777

LOINC Codes:
40677-7

Toxoplasma gondii Antibody, IgG & IgM

TOGM

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift)

Methodology:
Chemiluminescent Immunoassay

Reported:
1-4 days

Additional Information:
The FDA recommends that IgM assays only be performed in conjunction with an IgG Antibody test. Equivocal results may be clarified by repeating the test after an additional week or more has passed. Because IgM antibody may persist for more than a year after acute infection, IgM assay is most reliable in excluding recent primary infection, except in the earliest stages or in rare neonates who do not have an early IgM response, in whom additional testing may be needed.

IgM is not usually elevated in disease due to reactivation of latent infection, such as chronic chorioretinitis or encephalitis in immunosuppressed patients with AIDS or lymphoma. The diagnosis of acute or recent Toxoplasma gondii infection should not be based on one IgM serology result. It is suggested that a positive result be confirmed by an alternate method.

Synonyms:

- TORCH Antibodies

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Remarks:
Avoid hemolysis

Unacceptable Conditions:
Grossly hemolyzed, lipemic or icteric samples

PROCESSING

Test Code:
TOGM

Performing Lab:
Immunology

Specimen Preparation:
Freeze at -20C

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Grossly hemolyzed, lipemic or icteric samples

RESULT INTERPRETATION

Reference Interval:
Toxoplasma IgM: Negative
Toxoplasma IgG: Negative

Additional Information:
The FDA recommends that IgM assays only be performed in conjunction with an IgG Antibody test. Equivocal results may be clarified by repeating the test after an additional week or more has passed. Because IgM antibody may persist for more than a year after acute infection, IgM assay is most reliable in excluding recent primary infection, except in the earliest stages or in rare neonates who do not have an early IgM response, in whom additional testing may be needed.

IgM is not usually elevated in disease due to reactivation of latent infection, such as chronic chorioretinitis or encephalitis in immunosuppressed patients with AIDS or lymphoma. The diagnosis of acute or recent Toxoplasma gondii infection should not be based on one IgM serology result. It is suggested that a positive result be confirmed by an alternate method.

ADMINISTRATIVE

CPT Codes:
86778, 86777

LOINC Codes:
40678-5; 40677-7

COMPLETE VIEW

Available Stat:
No

Test Code:
TOGM

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift)

Methodology:
Chemiluminescent Immunoassay

Remarks:
Avoid hemolysis

Collect:
Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Grossly hemolyzed, lipemic or icteric samples

Specimen Preparation:
Freeze at -20C

Reference Interval:
Toxoplasma IgM: Negative
Toxoplasma IgG: Negative

Synonyms:

- TORCH Antibodies

Reported:
1-4 days

Additional Information:
The FDA recommends that IgM assays only be performed in conjunction with an IgG Antibody test. Equivocal results may be clarified by repeating the test after an additional week or more has passed. Because IgM antibody may persist for more than a year after acute infection, IgM assay is most reliable in excluding recent primary infection, except in the earliest stages or in rare neonates who do not have an early IgM response, in whom additional testing may be needed.

IgM is not usually elevated in disease due to reactivation of latent infection, such as chronic chorioretinitis or encephalitis in immunosuppressed patients with AIDS or lymphoma. The diagnosis of acute or recent Toxoplasma gondii infection should not be based on one IgM serology result. It is suggested that a positive result be confirmed by an alternate method.

CPT Codes:
86778, 86777

LOINC Codes:
40678-5; 40677-7

Toxoplasma gondii Antibody, IgG, CSF

TXCG

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
EIA

Reported:
Test run Monday-Friday. Turnaround time: 2-4 days.

COLLECTION

Sample Type:
CSF

Collect:
CSF tube or sterile collection tube

Amount to Collect:
See preferred volume

Preferred Volume:
1 mL CSF

Minimum Volume:
0.1 mL CSF

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

PROCESSING

Test Code:
TXCG

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate. Order Quest test # 10666X

Preferred Volume:
1 mL CSF

Minimum Volume:
0.1 mL CSF

RESULT INTERPRETATION

Reference Interval:
Negative: < 0.90
Equivocal: 0.9-1.09
Positive: >= 1.10

ADMINISTRATIVE

CPT Codes:
86777-90

LOINC Codes:
30568-0

COMPLETE VIEW

Available Stat:
No

Test Code:
TXCG

Performing Lab:
Quest

Sendout:
Yes

Methodology:
EIA

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Collect:
CSF tube or sterile collection tube

Amount to Collect:
See preferred volume

Sample Type:
CSF

Preferred Volume:
1 mL CSF

Minimum Volume:
0.1 mL CSF

Specimen Preparation:
Refrigerate. Order Quest test # 10666X

Reference Interval:
Negative: < 0.90
Equivocal: 0.9-1.09
Positive: >= 1.10

Reported:
Test run Monday-Friday. Turnaround time: 2-4 days.

CPT Codes:
86777-90

LOINC Codes:
30568-0

Toxoplasma gondii Antibody, IgM, CSF

TXCM and TXCG

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
EIA

Reported:
Test run Monday-Friday. Turnaround time: 2-4 days.

Additional Information:
This test is always run in conjunction with a test for IgG Antibody.

The FDA recommends that IgM assays only be performed in conjunction with an IgG Antibody test. Equivocal results may be clarified by repeating the test after an additional week or more has passed. Because IgM antibody may persist for more than a year after acute infection, IgM assay is most reliable in excluding recent primary infection, except in the earliest stages or in rare neonates who do not have an early IgM response, in whom additional testing may be needed. IgM is not usually elevated in disease due to reactivation of latent infection, such as chronic chorioretinitis or encephalitis in immunosuppressed patients with AIDS or lymphoma. The diagnosis of acute or recent Toxoplasma gondii infection should not be based on one IgM serology result. It is suggested that a positive result be confirmed by an alternate method.

COLLECTION

Sample Type:
CSF

Collect:
CSF tube or sterile collection tube

Amount to Collect:
See preferred volume

Preferred Volume:
1 mL CSF

Minimum Volume:
0.1 mL CSF

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

PROCESSING

Test Code:
TXCM and TXCG

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate. Order Quest test # 10485X

Preferred Volume:
1 mL CSF

Minimum Volume:
0.1 mL CSF

RESULT INTERPRETATION

Reference Interval:
Negative: < 0.90
Equivocal: 0.9-1.09
Positive: >= 1.10

Additional Information:

This test is always run in conjunction with a test for IgG Antibody.

The FDA recommends that IgM assays only be performed in conjunction with an IgG Antibody test. Equivocal results may be clarified by repeating the test after an additional week or more has passed. Because IgM antibody may persist for more than a year after acute infection, IgM assay is most reliable in excluding recent primary infection, except in the earliest stages or in rare neonates who do not have an early IgM response, in whom additional testing may be needed. IgM is not usually elevated in disease due to reactivation of latent infection, such as chronic chorioretinitis or encephalitis in immunosuppressed patients with AIDS or lymphoma. The diagnosis of acute or recent Toxoplasma gondii infection should not be based on one IgM serology result. It is suggested that a positive result be confirmed by an alternate method.

ADMINISTRATIVE

CPT Codes:

86778-90, 86777-90

COMPLETE VIEW

Available Stat:

No

Test Code:

TXCM and TXCG

Performing Lab:

Quest

Sendout:

Yes

Methodology:

EIA

Remarks:

Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Collect:

CSF tube or sterile collection tube

Amount to Collect:

See preferred volume

Sample Type:

CSF

Preferred Volume:

1 mL CSF

Minimum Volume:

0.1 mL CSF

Specimen Preparation:

Refrigerate. Order Quest test # 10485X

Reference Interval:

Negative: < 0.90
Equivocal: 0.9-1.09
Positive: >= 1.10

Reported:

Test run Monday-Friday. Turnaround time: 2-4 days.

Additional Information:

This test is always run in conjunction with a test for IgG Antibody.

The FDA recommends that IgM assays only be performed in conjunction with an IgG Antibody test. Equivocal results may be clarified by repeating the test after an additional week or more has passed. Because IgM antibody may persist for more than a year after acute infection, IgM assay is most reliable in excluding recent primary infection, except in the earliest stages or in rare neonates who do not have an early IgM response, in whom additional testing may be needed. IgM is not usually elevated in disease due to reactivation of latent infection, such as chronic chorioretinitis or encephalitis in immunosuppressed patients with AIDS or lymphoma. The diagnosis of acute or recent Toxoplasma gondii infection should not be based on one IgM serology result. It is suggested that a positive result be confirmed by an alternate method.

CPT Codes:

86778-90, 86777-90

TOXOPLASMA GONDII PCR, AMNIOTIC FLUID

TOXAF

ORDERING

Ordering Recommendations:
Confirm toxoplasmosis infection in fetuses. May be used to confirm equivocal antibody testing.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Tue, Fri

Methodology:
Qualitative Polymerase Chain Reaction

Reported:
1-5 days

Synonyms:

- Coccidia
- T gondi DNA detection
- T. gondii PCR
- Toxoplasma gondii, Molecular Detection, PCR

COLLECTION

Sample Type:
Amniotic fluid

Collect:
Sterile container

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Stability (from collection to initiation):
Central Processing, please send/transport ALL amniotic fluid tubes (including tubes with sendout labels) at ROOM TEMPERATURE to China Basin Cytogenetics Lab immediately upon receiving. China Basin Processing will give Cytogenetics lab all tubes and Cytogenetics lab will bring all send out tests back to Sendout lab. Sendout department will then send the tubes out at frozen temperature.

Storage/Transport Temperature:
From Central processing to China Basin Central processing : Room Temperature
(send ALL amniotic fluid tubes (including tubes with sendout labels) at ROOM TEMPERATURE to China Basin Cytogenetics Lab immediately upon receiving)
From China Basin Central Processing to Cytogenetics: Room Temperature
From China Basin Central Processing to Send Out institution: Frozen

Unacceptable Conditions:
Heparinized specimens

PROCESSING

Test Code:
TOXAF

ARUP Test Code:
0055591

Sendout:
Yes

Performing Lab:
ARUP

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Unacceptable Conditions:
Heparinized specimens

Stability (from collection to initiation):
Central Processing, please send/transport ALL amniotic fluid tubes (including tubes with sendout labels) at ROOM TEMPERATURE to China Basin Cytogenetics Lab immediately upon receiving. China Basin Processing will give Cytogenetics lab all tubes and Cytogenetics lab will bring all send out tests back to Sendout lab. Sendout department will then send the tubes out at frozen temperature.

Storage/Transport Temperature:
From Central processing to China Basin Central processing : Room Temperature
(send ALL amniotic fluid tubes (including tubes with sendout labels) at ROOM TEMPERATURE to China Basin Cytogenetics Lab immediately upon receiving)
From China Basin Central Processing to Cytogenetics: Room Temperature
From China Basin Central Processing to Send Out institution: Frozen

RESULT INTERPRETATION

Interpretive Data:
This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:
87798

LOINC:

- 31208-2
- 29904-0

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Confirm toxoplasmosis infection in fetuses. May be used to confirm equivocal antibody testing.

Test Code:
TOXAF

ARUP Test Code:
0055591

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Tue, Fri

Methodology:
Qualitative Polymerase Chain Reaction

Collect:
Sterile container

Sample Type:
Amniotic fluid

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Unacceptable Conditions:
Heparinized specimens

Interpretive Data:
This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Synonyms:

- Coccidia
- T gondi DNA detection
- T. gondii PCR
- Toxoplasma gondii, Molecular Detection, PCR

Storage/Transport Temperature:

From Central processing to China Basin Central processing : Room Temperature
(send ALL amniotic fluid tubes (including tubes with sendout labels) at ROOM TEMPERATURE to China Basin Cytogenetics Lab immediately upon receiving)
From China Basin Central Processing to Cytogenetics: Room Temperature
From China Basin Central Processing to Send Out institution: Frozen

Stability (from collection to initiation):

Central Processing, please send/transport ALL amniotic fluid tubes (including tubes with sendout labels) at ROOM TEMPERATURE to China Basin Cytogenetics Lab immediately upon receiving. China Basin Processing will give Cytogenetics lab all tubes and Cytogenetics lab will bring all send out tests back to Sendout lab. Sendout department will then send the tubes out at frozen temperature.

Reported:

1-5 days

CPT Codes:

87798

LOINC:

- 31208-2
- 29904-0

Toxoplasma gondii stain

P403

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Monday-Friday, day shift

Methodology:
Giemsa stain

Reported:
1-3 days

COLLECTION

Sample Type:
Sputum

Collect:
Clean container

Remarks:
Only submit sputum to the clinical laboratory. Send other specimens for detecting the organism to Pathology.

Friday samples must be received by 1230 hours.

Stability (from collection to initiation):
Refrigerated 24 hours

PROCESSING

Test Code:
P403

Test Group:
Toxoplasma

Performing Lab:
Microbiology

Stability (from collection to initiation):
Refrigerated 24 hours

ADMINISTRATIVE

CPT Codes:
87207

COMPLETE VIEW

Available Stat:
No

Test Code:
P403

Test Group:
Toxoplasma

Performing Lab:
Microbiology

Performed:
Monday-Friday, day shift

Methodology:
Giemsa stain

Remarks:
Only submit sputum to the clinical laboratory. Send other specimens for detecting the organism to Pathology.

Friday samples must be received by 1230 hours.

Collect:
Clean container

Sample Type:
Sputum

Stability (from collection to initiation):
Refrigerated 24 hours

Reported:
1-3 days

CPT Codes:
87207

Toxoplasma gondii, DNA

TXPCR

ORDERING

Available Stat:
No

Performing Lab:
Viracor

Methodology:
Real time PCR

Additional Information:
Assay range: 100-1.0x10^8 copies/mL

COLLECTION

Sample Type:
EDTA whole blood, CSF, Amniotic fluid, BAL

Collect:
Lavender top, CSF tube or sterile collection tube

Amount to Collect:
3 mL blood

Preferred Volume:
3 mL blood or fluid

Minimum Volume:
2 mL blood or fluid

Unacceptable Conditions:
Improperly submitted samples

PROCESSING

Test Code:
TXPCR

Test Group:
Toxoplasma

Sendout:
Yes

Performing Lab:
Viracor

Specimen Preparation:
Keep non-CSF samples at room temperature and ship at room temperature. Samples should be received at Viracor within 96 hours of collection.

CSF must be frozen transported to China Basin and then shipped on dry ice to ViraCor.

Preferred Volume:
3 mL blood or fluid

Minimum Volume:
2 mL blood or fluid

Unacceptable Conditions:
Improperly submitted samples

RESULT INTERPRETATION

Units:
copies/mL

Reference Interval:
Not detected

Additional Information:
Assay range: 100-1.0x10^8 copies/mL

ADMINISTRATIVE

CPT Codes:
87799-90

LOINC Codes:
49448-4

COMPLETE VIEW

Available Stat:
No

Test Code:
TXPCR

Test Group:
Toxoplasma

Performing Lab:
Viracor

Sendout:
Yes

Methodology:
Real time PCR

Collect:
Lavender top, CSF tube or sterile collection tube

Amount to Collect:
3 mL blood

Sample Type:
EDTA whole blood, CSF, Amniotic fluid, BAL

Preferred Volume:
3 mL blood or fluid

Minimum Volume:
2 mL blood or fluid

Unacceptable Conditions:
Improperly submitted samples

Specimen Preparation:
Keep non-CSF samples at room temperature and ship at room temperature. Samples should be received at Viracor within 96 hours of collection.

CSF must be frozen transported to China Basin and then shipped on dry ice to ViraCor.

Units:
copies/mL

Reference Interval:
Not detected

Additional Information:
Assay range: 100-1.0x10^8 copies/mL

CPT Codes:
87799-90

LOINC Codes:
49448-4

Transferrin, beta-2-

B2TAU

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Performed:
Monday through Sunday

Methodology:
Nephelometry

Reported:
1 to 3 days

Synonyms:

- Tau-protein
- CSF leak
- Transferrin, B2
- B2 transferrin
- cerebrospinal fluid leakage
- Otorrhea, CSF
- Rhinorrhea, CSF

COLLECTION

Sample Type:
Body fluid

Collect:
Sterile container, syringe (with needle removed), test tube

Amount to Collect:
1 mL

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Remarks:

1. If submitting a syringe, remove needle. Add cap to end of syringe.

2. If preferred collection is not feasible, specimen may be collected using a plain cotton swab, pledget, or gauze.

    - For gauze: circle area on the gauze where specimen was collected.
    - Swab, pledget, or gauze: place in a small container (plain test tube or sterile container).

3. Do not collect specimen with a culture swab.

4. Do not add any additional liquid other than source to the swab or gauze.

5. Do not collect or send swab or gauze specimens in containers with additional liquids or additives.

Stability (from collection to initiation):
Refrigerated (preferred) 14 days
Frozen 30 days
Ambient 14 days

Storage/Transport Temperature:
Refrigerated

Unacceptable Conditions:
Gross hemolysis, Additives

PROCESSING

Test Code:
B2TAU

Sendout:
Yes

Performing Lab:
Mayo

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Unacceptable Conditions:
Gross hemolysis, Additives

Stability (from collection to initiation):
Refrigerated (preferred) 14 days
Frozen 30 days
Ambient 14 days

Storage/Transport Temperature:
Refrigerated

RESULT INTERPRETATION

Units:
mg/L

Reference Interval:
Beta-trace protein <5 mg/L are negative for cerebrospinal fluid

Beta-trace protein concentrations of 5-7 mg/L are indeterminate for presence of cerebrospinal fluid

Beta-trace protein >7 mg/L are consistent with the presence of cerebrospinal fluid

Interpretive Data:
Beta-trace protein is produced within the cerebrospinal fluid (CSF) and typically has a greater than 10-fold higher concentration in the CSF versus blood plasma.

Beta-trace protein concentrations above 7 mg/L are 84% sensitive and 97% specific for the presence of CSF.

ADMINISTRATIVE

CPT Codes:
83883

LOINC Codes:
57733-8

COMPLETE VIEW

Available Stat:
No

Test Code:
B2TAU

Performing Lab:
Mayo

Sendout:
Yes

Performed:
Monday through Sunday

Methodology:
Nephelometry

Remarks:
1. If submitting a syringe, remove needle. Add cap to end of syringe.

2. If preferred collection is not feasible, specimen may be collected using a plain cotton swab, pledget, or gauze.

   - For gauze: circle area on the gauze where specimen was collected.
   - Swab, pledget, or gauze: place in a small container (plain test tube or sterile container).

3. Do not collect specimen with a culture swab.

4. Do not add any additional liquid other than source to the swab or gauze.

5. Do not collect or send swab or gauze specimens in containers with additional liquids or additives.

Collect:
Sterile container, syringe (with needle removed), test tube

Amount to Collect:
1 mL

Sample Type:
Body fluid

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Unacceptable Conditions:
Gross hemolysis, Additives

Units:
mg/L

Reference Interval:
Beta-trace protein <5 mg/L are negative for cerebrospinal fluid

Beta-trace protein concentrations of 5-7 mg/L are indeterminate for presence of cerebrospinal fluid

Beta-trace protein >7 mg/L are consistent with the presence of cerebrospinal fluid

Interpretive Data:
Beta-trace protein is produced within the cerebrospinal fluid (CSF) and typically has a greater than 10-fold higher concentration in the CSF versus blood plasma.

Beta-trace protein concentrations above 7 mg/L are 84% sensitive and 97% specific for the presence of CSF.

Synonyms:

- Tau-protein
- CSF leak
- Transferrin, B2
- B2 transferrin
- cerebrospinal fluid leakage
- Otorrhea, CSF
- Rhinorrhea, CSF

Storage/Transport Temperature:
Refrigerated

Stability (from collection to initiation):
Refrigerated (preferred) 14 days
Frozen 30 days
Ambient 14 days

Reported:
1 to 3 days

CPT Codes:
83883

LOINC Codes:
57733-8

Transferrin, Serum / Plasma

TRFN

ORDERING

Available Stat:
No

Performing Lab:
Mission Bay, Parnassus, and Mt Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Immunoturbidimetric Assay (Abbott Architect c8000 or c4000)

Reported:
1 day

Additional Information:
May be used to follow nutritional status, however, interpret results with caution, as transferrin is also an acute-phase reactant. See also entry for Iron, % saturation and transferrin or TIBC, plasma/serum

Samples containing paraproteins (monoclonal proteins) and other factors affecting sample turbidity may interfere in the transferrin assay.

If a sample is found to have a lipemic/turbidity index of >=200, append ETC "TURUNK" (specimen grossly turbid, effect on most assay results unknown).

Synonyms:

- Transferrin beta-1-
- beta-1-Transferrin
- Transferrin

COLLECTION

Sample Type:
Heparinized plasma (preferred) or Serum

Collect:
Light green top preferred. Gold top acceptable.

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

Stability (from collection to initiation):
Room temperature (20 to 25°C): 3 days
Refrigerated (2 to 8°C): 3 days
Freezer (-20°C): 6 months

PROCESSING

Test Code:
TRFN

Test Group:
Transferrin

Performing Lab:
Mission Bay, Parnassus, and Mt Zion Chemistry

Specimen Preparation:
Refrigerate sample

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

Stability (from collection to initiation):
Room temperature (20 to 25°C): 3 days
Refrigerated (2 to 8°C): 3 days
Freezer (-20°C): 6 months

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:

AGE	mg/dL
0 - < 9 weeks	104-224
9 weeks to < 1 year	107-324
>= 1 year to < 19 years	220-337
>=19 years	182-360

Adult reference interval adopted from the previous transferrin reference interval from the China Basin Immunology Immage methodology following a method comparison study and a reference interval study performed between the Architect and the Immage.
Pediatric reference intervals adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, http://caliper.research.sickkids.ca/#/search.

Additional Information:
May be used to follow nutritional status, however, interpret results with caution, as transferrin is also an acute-phase reactant. See also entry for Iron, % saturation and transferrin or TIBC, plasma/serum

Samples containing paraproteins (monoclonal proteins) and other factors affecting sample turbidity may interfere in the transferrin assay.

If a sample is found to have a lipemic/turbidity index of >=200, append ETC "TURUNK" (specimen grossly turbid, effect on most assay results unknown).

Interpretive Data:
May be used to follow nutritional status, however, interpret results with caution, as transferrin is also an acute-phase reactant. See also entry for Iron, % saturation and transferrin or TIBC, plasma/serum.

Samples containing paraproteins (monoclonal proteins) and other factors affecting sample turbidity may interfere in the transferrin assay.

If a sample is found to have a lipemic/turbidity index of >=200, append ETC "TURUNK" (specimen grossly turbid, effect on most assay results unknown).

ADMINISTRATIVE

CPT Codes:
84466

COMPLETE VIEW

Available Stat:
No

Test Code:
TRFN

Test Group:
Transferrin

Performing Lab:
Mission Bay, Parnassus, and Mt Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Immunoturbidimetric Assay (Abbott Archtect c8000 or c4000)

Collect:
Light green top preferred. Gold top acceptable.

Amount to Collect:
1 mL blood

Sample Type:
Heparinized plasma (preferred) or Serum

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.3 mL serum or plasma

Specimen Preparation:
Refrigerate sample

Units:
mg/dL

Reference Interval:

AGE	mg/dL
0 - < 9 weeks	104-224
9 weeks to < 1 year	107-324
>= 1 year to < 19 years	220-337
>=19 years	182-360

Adult reference interval adopted from the previous transferrin reference interval from the China Basin Immunology Immage methodology following a method comparison study and a reference interval study performed between the Architect and the Immage.
Pediatric reference intervals adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, http://caliper.research.sickkids.ca/#/search.

Interpretive Data:
May be used to follow nutritional status, however, interpret results with caution, as transferrin is also an acute-phase reactant. See also entry for Iron, % saturation and transferrin or TIBC, plasma/serum.

Samples containing paraproteins (monoclonal proteins) and other factors affecting sample turbidity may interfere in the transferrin assay.

If a sample is found to have a lipemic/turbidity index of >=200, append ETC "TURUNK" (specimen grossly turbid, effect on most assay results unknown).

Synonyms:

- Transferrin beta-1-
- beta-1-Transferrin
- Transferrin

Stability (from collection to initiation):
Room temperature (20 to 25°C): 3 days
Refrigerated (2 to 8°C): 3 days
Freezer (-20°C): 6 months

Reported:
1 day

Additional Information:
May be used to follow nutritional status, however, interpret results with caution, as transferrin is also an acute-phase reactant. See also entry for Iron, % saturation and transferrin or TIBC, plasma/serum

Samples containing paraproteins (monoclonal proteins) and other factors affecting sample turbidity may interfere in the transferrin assay.

If a sample is found to have a lipemic/turbidity index of >=200, append ETC "TURUNK" (specimen grossly turbid, effect on most assay results unknown).

CPT Codes:
84466

Translocation KMT2A/MLLT10

MLMT10, BMMT10

ORDERING

Available Stat:
No

Performing Lab:
Cytogenetics

Performed:
Mon - Fri, 9AM - 5PM

Methodology:
FISH

Reported:
7-14 days

Synonyms:

- Translocation (10;11)(p12;q23)
- MLMT10
- BMMT10
- t(10;11)(p12;q23)/KMT2A::MLLT10
- t(10;11)(p12;q23)
- KMT2A::MLLT10

COLLECTION

Sample Type:
Bone marrow, Blood, Bone Core

Collect:
Blood or bone marrow aspirate: Dark green top
Bone marrow core: Sterile container with medium

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Room Temperature

Unacceptable Conditions:
Clotted samples, samples received refrigerated or frozen.

PROCESSING

Test Code:
Blood: BMMT10
Non-blood: MLMT10

Performing Lab:
Cytogenetics

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Clotted samples, samples received refrigerated or frozen.

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Room Temperature

ADMINISTRATIVE

CPT Codes:
88271x2,88275x1

COMPLETE VIEW

Available Stat:
No

Test Code:
Blood: BMMT10
Non-blood: MLMT10

Performing Lab:
Cytogenetics

Performed:
Mon - Fri, 9AM - 5PM

Methodology:
FISH

Collect:
Blood or bone marrow aspirate: Dark green top
Bone marrow core: Sterile container with medium

Sample Type:
Bone marrow, Blood, Bone Core

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Clotted samples, samples received refrigerated or frozen.

Synonyms:

- Translocation (10;11)(p12;q23)
- MLMT10
- BMMT10
- t(10;11)(p12;q23)/KMT2A::MLLT10
- t(10;11)(p12;q23)
- KMT2A::MLLT10

Storage/Transport Temperature:
Room Temperature

Stability (from collection to initiation):
2 days

Reported:
7-14 days

CPT Codes:
88271x2,88275x1

Translocation PICALM/MLLT10

PIMT10, BPMT10

ORDERING

Available Stat:
No

Performing Lab:
Cytogenetics

Performed:
Mon - Fri, 9AM - 5PM

Methodology:
FISH

Reported:
7-14 days

Synonyms:

- Translocation (10;11)(p12;q21)
- PIMT10
- BPMT10
- t(10;11)(p12;q21)/PICALM::MLLT10
- t(10;11)(p12;q21)
- PICALM::MLLT10

COLLECTION

Sample Type:
Bone Marrow, Blood, Bone Core

Collect:
Blood or bone marrow aspirate: Dark green top
Bone marrow core: Sterile container with medium

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Room temperature

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen

PROCESSING

Test Code:
Blood: BPMT10
Non-blood: PIMT10

Performing Lab:
Cytogenetics

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Room temperature

ADMINISTRATIVE

CPT Codes:
88271x2, 88275x1

COMPLETE VIEW

Available Stat:
No

Test Code:
Blood: BPMT10
Non-blood: PIMT10

Performing Lab:
Cytogenetics

Performed:
Mon - Fri, 9AM - 5PM

Methodology:
FISH

Collect:
Blood or bone marrow aspirate: Dark green top
Bone marrow core: Sterile container with medium

Sample Type:
Bone Marrow, Blood, Bone Core

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen

Synonyms:

- Translocation (10;11)(p12;q21)
- PIMT10
- BPMT10
- t(10;11)(p12;q21)/PICALM::MLLT10
- t(10;11)(p12;q21)
- PICALM::MLLT10

Storage/Transport Temperature:
Room temperature

Stability (from collection to initiation):
2 days

Reported:
7-14 days

CPT Codes:
88271x2, 88275x1

Translocation 11 / 14 FISH

TR1114, BT1114

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Set up daily Monday - Friday

Methodology:
Fluorescent In-situ hybridization (FISH)

Reported:
1-2 weeks

Synonyms:

- IGH/CCND1 Translocation
- T1114
- T11:14
- TR1114
- BT1114

COLLECTION

Sample Type:
Heparinized whole blood or bone marrow. Bone marrow biopsy

Collect:
Dark green top (Sodium heparin)

Amount to Collect:
See preferred volume.

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow biopsy: 1 cm

Remarks:
Mix blood and marrow aspirate samples well after collection. Keep at room temperature

Stability (from collection to initiation):
Room temperature 2 days

Unacceptable Conditions:
Frozen, leaking or unlabeled samples

PROCESSING

Test Code:
BT1114: Blood
TR1114: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Specimen Preparation:
Keep at room temperature, do not centrifuge

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow biopsy: 1 cm

Unacceptable Conditions:
Frozen, leaking or unlabeled samples

Stability (from collection to initiation):
Room temperature 2 days

RESULT INTERPRETATION

Reference Interval:
Absent

ADMINISTRATIVE

CPT Codes:
88271 x2, 88275

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BT1114: Blood
TR1114: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Set up daily Monday - Friday

Methodology:
Fluorescent In-situ hybridization (FISH)

Remarks:
Mix blood and marrow aspirate samples well after collection. Keep at room temperature

Collect:
Dark green top (Sodium heparin)

Amount to Collect:
See preferred volume.

Sample Type:
Heparinized whole blood or bone marrow. Bone marrow biopsy

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow biopsy: 1 cm

Unacceptable Conditions:
Frozen, leaking or unlabeled samples

Specimen Preparation:
Keep at room temperature, do not centrifuge

Reference Interval:
Absent

Synonyms:

- IGH/CCND1 Translocation
- T1114
- T11:14
- TR1114
- BT1114

Stability (from collection to initiation):
Room temperature 2 days

Reported:
1-2 weeks

CPT Codes:
88271 x2, 88275

LDT or Modified FDA:

Yes

Translocation 12/21 FISH

BT1221, TR1221

ORDERING

Available Stat:
No

Performing Lab:
Molecular Genetics - Cytogenetics

Performed:
Monday - Friday 0900-1700

Methodology:
FISH

Reported:
1-2 weeks

Synonyms:

- TEL/AML1 translocation FISH, ETV6/RUNX1 translocation FISH

COLLECTION

Sample Type:
Heparinized whole blood or bone marrow, Bone marrow core biopsy

Collect:
Dark green top

Amount to Collect:
See preferred volume.

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow biopsy: 1 cm

Remarks:
Mix sample well with anticoagulant. keep at room temperature

Stability (from collection to initiation):
Room temperature 2 days

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

PROCESSING

Test Code:
BT1221: Blood
TR1221: Bone marrow

Performing Lab:
Molecular Genetics - Cytogenetics

Specimen Preparation:
Do not centrifuge, refrigerate or freeze samples.

Transport to China Basin Cytogenetics asap.

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow biopsy: 1 cm

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

Stability (from collection to initiation):
Room temperature 2 days

ADMINISTRATIVE

CPT Codes:
88271 x2, 88275

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BT1221: Blood
TR1221: Bone marrow

Performing Lab:
Molecular Genetics - Cytogenetics

Performed:
Monday - Friday 0900-1700

Methodology:
FISH

Remarks:
Mix sample well with anticoagulant. keep at room temperature

Collect:
Dark green top

Amount to Collect:
See preferred volume.

Sample Type:
Heparinized whole blood or bone marrow, Bone marrow core biopsy

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow biopsy: 1 cm

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen.

Specimen Preparation:
Do not centrifuge, refrigerate or freeze samples.

Transport to China Basin Cytogenetics asap.

Synonyms:

- TEL/AML1 translocation FISH, ETV6/RUNX1 translocation FISH

Stability (from collection to initiation):
Room temperature 2 days

Reported:
1-2 weeks

CPT Codes:
88271 x2, 88275

LDT or Modified FDA:
Yes

Translocation 14 / 16 FISH

TR1416, BT1416

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Set up daily Monday - Friday

Methodology:
Fluorescent In-situ hybridization (FISH)

Reported:
1-2 weeks

Synonyms:

- IGH/MAF Translocation
- TR1416
- BT1416

COLLECTION

Sample Type:
Heparinized whole blood or bone marrow. Bone marrow biopsy

Collect:
Dark green top (Sodium heparin)

Amount to Collect:
See preferred volume.

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow biopsy: 1 cm

Remarks:
Mix blood and marrow aspirate samples well after collection. Keep at room temperature

Stability (from collection to initiation):
Room temperature 2 days

Unacceptable Conditions:
Frozen, leaking or unlabeled samples

PROCESSING

Test Code:
BT1416: Blood
TR1416: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Specimen Preparation:
Keep at room temperature, do not centrifuge

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow biopsy: 1 cm

Unacceptable Conditions:
Frozen, leaking or unlabeled samples

Stability (from collection to initiation):
Room temperature 2 days

RESULT INTERPRETATION

Reference Interval:
Absent

ADMINISTRATIVE

CPT Codes:
88271 x2, 88275

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BT1416: Blood
TR1416: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Set up daily Monday - Friday

Methodology:
Fluorescent In-situ hybridization (FISH)

Remarks:
Mix blood and marrow aspirate samples well after collection. Keep at room temperature

Collect:
Dark green top (Sodium heparin)

Amount to Collect:
See preferred volume.

Sample Type:
Heparinized whole blood or bone marrow. Bone marrow biopsy

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow biopsy: 1 cm

Unacceptable Conditions:
Frozen, leaking or unlabeled samples

Specimen Preparation:
Keep at room temperature, do not centrifuge

Reference Interval:
Absent

Synonyms:

- IGH/MAF Translocation
- TR1416
- BT1416

Stability (from collection to initiation):
Room temperature 2 days

Reported:
1-2 weeks

CPT Codes:
88271 x2, 88275

LDT or Modified FDA:
Yes

Translocation 14/18 FISH

TR1418, BT1418

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Fluorescent in-situ hybridization (FISH)

Reported:
7-14 days

Synonyms:

- IGH/BCL2
- Follicular DLBCL FISH
- TR1418
- BT1418

COLLECTION

Sample Type:
Heparinized whole blood, bone marrow, bone core

Collect:
Dark Green top

Amount to Collect:
See preferred volume.

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow biopsy: 1 cm

Remarks:
Mix sample well by gentle inversion.

Stability (from collection to initiation):
48 hours

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

PROCESSING

Test Code:
BT1418: Blood
TR1418: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Specimen Preparation:
Maintain sample at room temperature. Transport to CB Cytogenetics within 24 hours

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow biopsy: 1 cm

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

Stability (from collection to initiation):
48 hours

RESULT INTERPRETATION

Reference Interval:
Not detected

ADMINISTRATIVE

CPT Codes:
88271 x2, 88275 x1

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BT1418: Blood
TR1418: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Fluorescent in-situ hybridization (FISH)

Remarks:
Mix sample well by gentle inversion.

Collect:
Dark Green top

Amount to Collect:
See preferred volume.

Sample Type:
Heparinized whole blood, bone marrow, bone core

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow biopsy: 1 cm

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

Specimen Preparation:
Maintain sample at room temperature. Transport to CB Cytogenetics within 24 hours

Reference Interval:
Not detected

Synonyms:

- IGH/BCL2
- Follicular DLBCL FISH
- TR1418
- BT1418

Stability (from collection to initiation):
48 hours

Reported:
7-14 days

CPT Codes:
88271 x2, 88275 x1

LDT or Modified FDA:
Yes

Translocation 14/20 IGH/MAFB FISH

BT1420, TR1420

ORDERING

Available Stat:
No

Performing Lab:
Cytogenetics

Performed:
Mon - Fri 9am to 5pm

Methodology:
FISH

Reported:
7~14 days

Synonyms:

- IGH/MAFB rearrangement FISH, IGH/MAFB Dual Fusion Rearrangement FISH

COLLECTION

Sample Type:
Dark Green top Sodium Heparin tube

Collect:
Dark Green top Sodium Heparin tube for bone marrow, sterile container with medium for bone core.

Amount to Collect:
2ml

Preferred Volume:
2ml

Minimum Volume:
1ml

Remarks:
Mix well, do not spin, keep at room temperature.

Stability (from collection to initiation):
48 hours

Unacceptable Conditions:
Leaking, frozen and unlabeled samples.

PROCESSING

Test Code:
BT1420: Blood
TR1420: Non-blood

Test Group:
Cytogenetics

Performing Lab:
Cytogenetics

Specimen Preparation:
Do not refrigerate or freeze sample, call lab before sample rejection.

Preferred Volume:
2ml

Minimum Volume:
1ml

Unacceptable Conditions:
Leaking, frozen and unlabeled samples.

Stability (from collection to initiation):
48 hours

ADMINISTRATIVE

CPT Codes:
88271x1, 88271x1, 88275x1

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BT1420: Blood
TR1420: Non-blood

Test Group:
Cytogenetics

Performing Lab:
Cytogenetics

Performed:
Mon - Fri 9am to 5pm

Methodology:
FISH

Remarks:
Mix well, do not spin, keep at room temperature.

Collect:
Dark Green top Sodium Heparin tube for bone marrow, sterile container with medium for bone core.

Amount to Collect:
2ml

Sample Type:
Dark Green top Sodium Heparin tube

Preferred Volume:
2ml

Minimum Volume:
1ml

Unacceptable Conditions:
Leaking, frozen and unlabeled samples.

Specimen Preparation:
Do not refrigerate or freeze sample, call lab before sample rejection.

Synonyms:

- IGH/MAFB rearrangement FISH, IGH/MAFB Dual Fusion Rearrangement FISH

Stability (from collection to initiation):
48 hours

Reported:
7~14 days

CPT Codes:
88271x1, 88271x1, 88275x1

LDT or Modified FDA:
Yes

Translocation 1q/19p FISH

TR119, BT119

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Fluorescent in-Situ Hybridization

Reported:
1-2 weeks

Synonyms:

- Translocation PBX1/TCF3FISH
- TR119

COLLECTION

Sample Type:
Heparinized blood or bone marrow aspirate
Bone biopsy

Collect:
Blood or marrow aspirate: Dark Green top

Amount to Collect:
See preferred volume.

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow biopsy: 1 cm

Remarks:
Mix blood and marrow aspirates well

Stability (from collection to initiation):
2 days at room temperature

Unacceptable Conditions:
Insufficient sample or not collected in heparin

PROCESSING

Test Code:
BT119: Blood
TR119: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Specimen Preparation:
Maintain sample at room temperature; Do Not Refrigerate or freeze. Do Not centrifuge.

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow biopsy: 1 cm

Unacceptable Conditions:
Insufficient sample or not collected in heparin

Stability (from collection to initiation):
2 days at room temperature

ADMINISTRATIVE

CPT Codes:
88271 x2, 88275

LDT or Modified FDA:
Yes

LOINC Codes:
59050-5, 29308-4

COMPLETE VIEW

Available Stat:
No

Test Code:
BT119: Blood
TR119: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Fluorescent in-Situ Hybridization

Remarks:
Mix blood and marrow aspirates well

Collect:
Blood or marrow aspirate: Dark Green top

Amount to Collect:
See preferred volume.

Sample Type:
Heparinized blood or bone marrow aspirate
Bone biopsy

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow biopsy: 1 cm

Unacceptable Conditions:
Insufficient sample or not collected in heparin

Specimen Preparation:
Maintain sample at room temperature; Do Not Refrigerate or freeze. Do Not centrifuge.

Synonyms:

- Translocation PBX1/TCF3FISH
- TR119

Stability (from collection to initiation):
2 days at room temperature

Reported:
1-2 weeks

CPT Codes:
88271 x2, 88275

LDT or Modified FDA:
Yes

LOINC Codes:
59050-5, 29308-4

Translocation 4 / 14 FISH

TR414, BT414

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Set up daily Monday - Friday

Methodology:
Fluorescent In-situ hybridization (FISH)

Reported:
1-2 weeks

Synonyms:

- IGH/FGNR3 Translocation
- T414
- T4:14
- TR414
- BT414

COLLECTION

Sample Type:
Heparinized whole blood or bone marrow
Bone marrow biopsy

Collect:
Dark green top (Sodium heparin)

Amount to Collect:
See preferred volume.

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow biopsy: 1 cm

Remarks:
Mix blood and marrow aspirate samples well after collection. Keep at room temperature

Stability (from collection to initiation):
Room temperature 2 days

Unacceptable Conditions:
Frozen, leaking or unlabeled samples

PROCESSING

Test Code:
BT414: Blood
TR414: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Specimen Preparation:
Keep at room temperature, do not centrifuge

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow biopsy: 1 cm

Unacceptable Conditions:
Frozen, leaking or unlabeled samples

Stability (from collection to initiation):
Room temperature 2 days

RESULT INTERPRETATION

Reference Interval:
Absent

ADMINISTRATIVE

CPT Codes:
88271 x2, 88275

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BT414: Blood
TR414: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Set up daily Monday - Friday

Methodology:
Fluorescent In-situ hybridization (FISH)

Remarks:
Mix blood and marrow aspirate samples well after collection. Keep at room temperature

Collect:
Dark green top (Sodium heparin)

Amount to Collect:
See preferred volume.

Sample Type:
Heparinized whole blood or bone marrow
Bone marrow biopsy

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow biopsy: 1 cm

Unacceptable Conditions:
Frozen, leaking or unlabeled samples

Specimen Preparation:
Keep at room temperature, do not centrifuge

Reference Interval:
Absent

Synonyms:

- IGH/FGNR3 Translocation
- T414
- T4:14
- TR414
- BT414

Stability (from collection to initiation):
Room temperature 2 days

Reported:
1-2 weeks

CPT Codes:
88271 x2, 88275

LDT or Modified FDA:
Yes

Translocation 6/14 CCND3/IGH FISH

TR614, BT614

ORDERING

Available Stat:
No

Performing Lab:
Cytogenetics

Performed:
Mon - Fri 9 am to 5 pm

Methodology:
FISH

Reported:
7~14 days

Synonyms:

- IGH/CCND3 Translocation, Dual Fusion FISH,

COLLECTION

Sample Type:
Dark Green top Sodium Heparin tube

Collect:
Dark Green top Sodium Heparin tube for bone marrow, sterile container with medium for bone core.

Amount to Collect:
2ml

Preferred Volume:
2ml

Minimum Volume:
1ml

Remarks:
Mix well, do not spin, keep at room temperature.

Stability (from collection to initiation):
48 hours

Unacceptable Conditions:
Leaking, frozen and unlabeled samples.

PROCESSING

Test Code:
TR614: Non-Blood
BT614: Blood

Test Group:
Cytogenetics

Performing Lab:
Cytogenetics

Specimen Preparation:
Do not refrigerate or freeze sample, call lab before sample rejection.

Preferred Volume:
2ml

Minimum Volume:
1ml

Unacceptable Conditions:
Leaking, frozen and unlabeled samples.

Stability (from collection to initiation):
48 hours

ADMINISTRATIVE

CPT Codes:
88271x1, 88271x1, 88275x1

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
TR614: Non-Blood
BT614: Blood

Test Group:
Cytogenetics

Performing Lab:
Cytogenetics

Performed:
Mon - Fri 9 am to 5 pm

Methodology:
FISH

Remarks:
Mix well, do not spin, keep at room temperature.

Collect:
Dark Green top Sodium Heparin tube for bone marrow, sterile container with medium for bone core.

Amount to Collect:
2ml

Sample Type:
Dark Green top Sodium Heparin tube

Preferred Volume:
2ml

Minimum Volume:
1ml

Unacceptable Conditions:
Leaking, frozen and unlabeled samples.

Specimen Preparation:
Do not refrigerate or freeze sample, call lab before sample rejection.

Synonyms:

- IGH/CCND3 Translocation, Dual Fusion FISH,

Stability (from collection to initiation):
48 hours

Reported:
7~14 days

CPT Codes:
88271x1, 88271x1, 88275x1

LDT or Modified FDA:
Yes

Translocation 6/9 FISH

BT69, TR69

ORDERING

Available Stat:
No

Performing Lab:
Cytogenetics

Performed:
Mon - Fri 9 am to 5 pm

Methodology:
FISH

Reported:
7~14 days

Synonyms:

- BT69
- DEK NUP214 Dual Fusion Translocation FISH
- TR69

COLLECTION

Sample Type:
Blood, bone marrow aspirate, bone marrow core

Collect:
Blood: Dark Green top Sodium Heparin Tube
Bone marrow: Dark Green top Sodium Heparin tube for Bone Marrow, sterile container with media for bone core

Amount to Collect:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Room temperature

Unacceptable Conditions:
Clotted samples, samples received refrigerated or frozen

PROCESSING

Test Code:
Blood: BT69
Bone marrow: TR69

Performing Lab:
Cytogenetics

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Clotted samples, samples received refrigerated or frozen

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Room temperature

ADMINISTRATIVE

CPT Codes:
88271x2, 88275x1

COMPLETE VIEW

Available Stat:
No

Test Code:
Blood: BT69
Bone marrow: TR69

Performing Lab:
Cytogenetics

Performed:
Mon - Fri 9 am to 5 pm

Methodology:
FISH

Collect:
Blood: Dark Green top Sodium Heparin Tube
Bone marrow: Dark Green top Sodium Heparin tube for Bone Marrow, sterile container with media for bone core

Amount to Collect:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Sample Type:
Blood, bone marrow aspirate, bone marrow core

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Clotted samples, samples received refrigerated or frozen

Synonyms:

- BT69
- DEK NUP214 Dual Fusion Translocation FISH
- TR69

Storage/Transport Temperature:
Room temperature

Stability (from collection to initiation):
2 days

Reported:
7~14 days

CPT Codes:
88271x2, 88275x1

Translocation 8/14 FISH

TR814, BT814

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Fluorescent in-situ hybridization (FISH)

Reported:
7-14 days

Synonyms:

- IGH/MYC Burkitt Lymphoma FISH
- TR814
- BT814

COLLECTION

Sample Type:
Heparinized whole blood, bone marrow, bone core

Collect:
Dark Green top

Amount to Collect:
See preferred volume.

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow biopsy: 1 cm

Remarks:
Mix sample well by gentle inversion.

Stability (from collection to initiation):
48 hours

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

PROCESSING

Test Code:
BT814: Blood
TR814: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Specimen Preparation:
Maintain sample at room temperature. Transport to CB Cytogenetics within 24 hours

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow biopsy: 1 cm

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

Stability (from collection to initiation):
48 hours

RESULT INTERPRETATION

Reference Interval:
Not detected

ADMINISTRATIVE

CPT Codes:
88271 x2, 88275 x1

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BT814: Blood
TR814: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Fluorescent in-situ hybridization (FISH)

Remarks:
Mix sample well by gentle inversion.

Collect:
Dark Green top

Amount to Collect:
See preferred volume.

Sample Type:
Heparinized whole blood, bone marrow, bone core

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow biopsy: 1 cm

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

Specimen Preparation:
Maintain sample at room temperature. Transport to CB Cytogenetics within 24 hours

Reference Interval:
Not detected

Synonyms:

- IGH/MYC Burkitt Lymphoma FISH
- TR814
- BT814

Stability (from collection to initiation):
48 hours

Reported:
7-14 days

CPT Codes:
88271 x2, 88275 x1

LDT or Modified FDA:
Yes

Translocation 8/9 FISH

BT89, TR89

ORDERING

Available Stat:
No

Performing Lab:
Cytogenetics

Performed:
Mon - Fri 9 am to 5 pm

Methodology:
FISH

Reported:
7~14 days

Synonyms:

- PCM1 JAK2 Dual Fusion Translocation FISH
- BT89
- TR89

COLLECTION

Sample Type:
Blood, bone marrow aspirate, bone marrow core

Collect:
Blood: Dark Green top Sodium Heparin tube
Bone marrow: Dark Green top Sodium Heparin tube for bone marrow, sterile container with media for bone core.

Amount to Collect:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Room temperature

Unacceptable Conditions:
Clotted samples, samples received refrigerated or frozen.

PROCESSING

Test Code:
Blood: BT89
Bone marrow: TR89

Performing Lab:
Cytogenetics

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Clotted samples, samples received refrigerated or frozen.

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Room temperature

ADMINISTRATIVE

CPT Codes:
88271x2, 88275x1

COMPLETE VIEW

Available Stat:
No

Test Code:
Blood: BT89
Bone marrow: TR89

Performing Lab:
Cytogenetics

Performed:
Mon - Fri 9 am to 5 pm

Methodology:
FISH

Collect:
Blood: Dark Green top Sodium Heparin tube
Bone marrow: Dark Green top Sodium Heparin tube for bone marrow, sterile container with media for bone core.

Amount to Collect:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Sample Type:
Blood, bone marrow aspirate, bone marrow core

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Clotted samples, samples received refrigerated or frozen.

Synonyms:

- PCM1 JAK2 Dual Fusion Translocation FISH
- BT89
- TR89

Storage/Transport Temperature:
Room temperature

Stability (from collection to initiation):
2 days

Reported:
7~14 days

CPT Codes:
88271x2, 88275x1

Translocation 8:21 FISH

TR821, BT821

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Fluorescent in-situ hybridization

Reported:
1-2 weeks

Synonyms:

- Translocation 8/21
- TR821
- BT821

COLLECTION

Sample Type:
Heparinized whole blood, bone marrow, bone core

Collect:
Dark green top (Na-heparin)

Amount to Collect:
See preferred volume.

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow biopsy: 1 cm

Remarks:
Mix sample well, keep at room temperature.

Stability (from collection to initiation):
Room temperature 2 days

PROCESSING

Test Code:
BT821: Blood
TR821: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow biopsy: 1 cm

Stability (from collection to initiation):
Room temperature 2 days

RESULT INTERPRETATION

Reference Interval:
No translocation

ADMINISTRATIVE

CPT Codes:
88271, 88271, 88275

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BT821: Blood
TR821: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Fluorescent in-situ hybridization

Remarks:
Mix sample well, keep at room temperature.

Collect:
Dark green top (Na-heparin)

Amount to Collect:
See preferred volume.

Sample Type:
Heparinized whole blood, bone marrow, bone core

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow biopsy: 1 cm

Reference Interval:
No translocation

Synonyms:

- Translocation 8/21
- TR821
- BT821

Stability (from collection to initiation):
Room temperature 2 days

Reported:
1-2 weeks

CPT Codes:
88271, 88271, 88275

LDT or Modified FDA:
Yes

Translocation CBFB/MYH11 FISH

TRCBFB, BTCBFB

ORDERING

Available Stat:
No

Performing Lab:
Cytogenetics

Performed:
Mon - Fri, 9AM - 5PM

Methodology:
FISH

Reported:
7-14 days

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Synonyms:

- BTCBFB
- TRCBFB
- CBFB/MYH11 DCDF FISH

COLLECTION

Sample Type:
Blood or bone marrow

Collect:
Blood or bone marrow aspirate: Dark green top
Bone marrow core: Sterile container with medium

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Stability (from collection to initiation):
Room temperature: 2 days

Unacceptable Conditions:
Clotted samples, samples received refrigerated or frozen.

PROCESSING

Test Code:
Blood: BTRCBFB
Bone marrow: TRCBFB

Performing Lab:
Cytogenetics

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Clotted samples, samples received refrigerated or frozen.

Stability (from collection to initiation):
Room temperature: 2 days

ADMINISTRATIVE

CPT Codes:
88271x2,88275x1

COMPLETE VIEW

Available Stat:
No

Test Code:
Blood: BTRCBFB
Bone marrow: TRCBFB

Performing Lab:
Cytogenetics

Performed:
Mon - Fri, 9AM - 5PM

Methodology:
FISH

Collect:
Blood or bone marrow aspirate: Dark green top
Bone marrow core: Sterile container with medium

Sample Type:
Blood or bone marrow

Preferred Volume:
Blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm

Minimum Volume:
Blood: 1 mL
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm

Unacceptable Conditions:
Clotted samples, samples received refrigerated or frozen.

Synonyms:

- BTCBFB
- TRCBFB
- CBFB/MYH11 DCDF FISH

Stability (from collection to initiation):
Room temperature: 2 days

Reported:
7-14 days

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

CPT Codes:
88271x2,88275x1

Translocation GLIS2/ CBFA2T3

GLCBF, BGLCBF

ORDERING

Performing Lab:
Cytogenetics

Performed:
Monday - Friday, 9AM to 5PM

Methodology:
FISH

Reported:
7-14 days

Synonyms:

- GLCBF
- BGLCBF
- 16p13.3 and 16q24.3 fusion probe

COLLECTION

Sample Type:
Bone marrow aspirate, Bone marrow core, Blood

Collect:
Bone marrow: Dark Green Top Sodium Heparin tube
Bone Core : Sterile container with medium
Blood: Dark Green Top Sodium Heparin tub

Preferred Volume:
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm
Blood: 2 mL

Minimum Volume:
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm
Blood: 1 mL

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Room temperature

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen

PROCESSING

Test Code:
GLCBF: Non-blood/bone marrow
BGLCBF: Blood

Performing Lab:
Cytogenetics

Preferred Volume:
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm
Blood: 2 mL

Minimum Volume:
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm
Blood: 1 mL

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen

Stability (from collection to initiation):
2 days

Storage/Transport Temperature:
Room temperature

ADMINISTRATIVE

CPT Codes:
88271x2, 88275x1

COMPLETE VIEW

Test Code:
GLCBF: Non-blood/bone marrow
BGLCBF: Blood

Performing Lab:
Cytogenetics

Performed:
Monday - Friday, 9AM to 5PM

Methodology:
FISH

Collect:
Bone marrow: Dark Green Top Sodium Heparin tube
Bone Core : Sterile container with medium
Blood: Dark Green Top Sodium Heparin tub

Sample Type:
Bone marrow aspirate, Bone marrow core, Blood

Preferred Volume:
Bone marrow aspirate: 2 mL
Bone marrow core: 2 cm
Blood: 2 mL

Minimum Volume:
Bone marrow aspirate: 1 mL
Bone marrow core: 1 cm
Blood: 1 mL

Unacceptable Conditions:
Clotted samples. Samples received refrigerated or frozen

Synonyms:

- GLCBF
- BGLCBF
- 16p13.3 and 16q24.3 fusion probe

Storage/Transport Temperature:
Room temperature

Stability (from collection to initiation):
2 days

Reported:
7-14 days

CPT Codes:
88271x2, 88275x1

Transplant DONOR ID Screen+NAT

PTXID

ORDERING

Available Stat:
No

Performing Lab:
Viracor-VRL Eurofins & Immunology

Reported:
Donor infectious disease testing is sent out to Viracor-VRL Eurofins, results are available 48-72 hours after samples are sent out.

Additional Information:
This test package should be ordered for stem cell, tissue and organ donors. This package includes the infectious disease screening assays mandated for donor screening plus Cytomegalovirus antibody (Total), Hepatitis B Surface Antibody, antibodies to Trypanosoma cruzi and nucleic acid testing for Hepatitis B (HBV).

This test package should NOT be ordered on recipients. The BMID panel should be ordered instead.

The FDA mandates that blood, tissue, stem cell and organ donors are tested using the PTXID panel including the nucleic acid tests (NAT) for HIV, HCV and WNV. These NAT tests are performed on pooled samples as for blood donors and will be tested individually should the pooled result becomes positive.

Mandated panel (as of December 2005) includes: HBsAg, antibodies to HBcore, HCV, HIV-1/2, HTLV-I/II, Syphilis (RPR), and nucleic acid tests for HIV,HCV,and WNV.

The assays in the Pre-Transplant Infectious Disease Screening are those which are mandated by the FDA and AABB for donor screening. If additional tests are required, they must be ordered in addition to these panels and would be billed separately.

For information about this test call the Send Out lab at 353-4840 or Processing lab at 353-1667.

Reflex Testing:
Yes. If screening positive for Hepatitis B Surface Antigen, Human T-Lymphotropic Virus I/II or Syphilis, confirmation test will be performed at additional charge.

Synonyms:

- NAT
- nucleic acid testing
- Pre-transplant infectious disease screening panel
- PTXID

COLLECTION

Sample Type:
EDTA whole blood plus serum

Collect:
Lavender top 6 mL x 2, AND Red top 6 mL x 2 AND Gold top 5 mL

Amount to Collect:
12 mL blood Lavender top **AND**
12 mL blood Red top **AND**
5 ml blood Gold top

Preferred Volume:
12 mL blood Lavender top **AND**
6 mL serum Red top **AND**
3 mL serum Gold top

Minimum Volume:
6 mL blood Lavender top **AND**
6 mL serum Red top **AND**
3 mL serum Gold top

Please note: Minimum volume may not be sufficient for confirmatory, reflex or verification testing.

Remarks:

Note that the large 6.0 mL lavender top tubes MUST be used for collection of samples. The smaller 3.0 mL lavender tubes are NOT acceptable.

Do not draw samples for this screening panel on weekends and holidays. Samples drawn on Fridays and the day before holidays must be received in the lab by 11am.

Note: the collection tubes and amounts listed are for this set of screening tests only. Additional tests cannot be performed on these samples. If additional tests are requested at the same time then additional samples must be collected for them separately.

Stability (from collection to initiation):

Samples must be received by Viracor-VRL Eurofins within 72 hours of collection for donor infectious disease testing.

Unacceptable Conditions:

Samples > 72 hours old on receipt by Viracor-VRL Eurofins.

PROCESSING

Test Code:

PTXID

Test Group:

Pre-transplant testing

Sendout:

Yes

Performing Lab:

Viracor-VRL Eurofins & Immunology

Specimen Preparation:

Samples are sent out to Viracor-VRL Eurofins Monday to Friday afternoon by the Send-out Processing Department at China Basin for Donor infectious disease testing. Do not draw samples for PTXID on weekends and holidays. Samples drawn on Fridays and the day before holidays must be received at the hospital lab by 11am to get on 11:45am courier to China Basin to be in time for shipment to reference lab.

Do not centrifuge EDTA tubes. Refrigerate all samples and transport at 4C.

Preferred Volume:

12 mL blood Lavender top **AND**
6 mL serum Red top **AND**
3 mL serum Gold top

Minimum Volume:

6 mL blood Lavender top **AND**
6 mL serum Red top **AND**
3 mL serum Gold top

Please note: Minimum volume may not be sufficient for confirmatory, reflex or verification testing.

Unacceptable Conditions:

Samples > 72 hours old on receipt by Viracor-VRL Eurofins.

Stability (from collection to initiation):

Samples must be received by Viracor-VRL Eurofins within 72 hours of collection for donor infectious disease testing.

RESULT INTERPRETATION

Additional Information:

This test package should be ordered for stem cell, tissue and organ donors. This package includes the infectious disease screening assays mandated for donor screening plus Cytomegalovirus antibody (Total), Hepatitis B Surface Antibody, antibodies to Trypanosoma cruzi and nucleic acid testing for Hepatitis B (HBV).

This test package should NOT be ordered on recipients. The BMID panel should be ordered instead.

The FDA mandates that blood, tissue, stem cell and organ donors are tested using the PTXID panel including the nucleic acid tests (NAT) for HIV, HCV and WNV. These NAT tests are performed on pooled samples as for blood donors and will be tested individually should the pooled result becomes positive.

Mandated panel (as of December 2005) includes: HBsAg, antibodies to HBcore, HCV, HIV-1/2, HTLV-I/II, Syphilis (RPR), and nucleic acid tests for HIV,HCV,and WNV.

The assays in the Pre-Transplant Infectious Disease Screening are those which are mandated by the FDA and AABB for donor screening. If additional tests are required, they must be ordered in addition to these panels and would be billed separately.

For information about this test call the Send Out lab at 353-4840 or Processing lab at 353-1667.

ADMINISTRATIVE

CPT Codes:
86753, 86403, 87340, 86704, 86803, 86703, 86687, 86688, 86592, 87516, 87521, 87535, 87797

Reflex testing: 87341, 86790, 86592

COMPLETE VIEW

Available Stat:
No

Test Code:
PTXID

Test Group:
Pre-transplant testing

Performing Lab:
Viracor-VRL Eurofins & Immunology

Sendout:
Yes

Remarks:
Note that the large 6.0 mL lavender top tubes MUST be used for collection of samples. The smaller 3.0 mL lavender tubes are NOT acceptable.

Do not draw samples for this screening panel on weekends and holidays. Samples drawn on Fridays and the day before holidays must be received in the lab by 11am.

Note: the collection tubes and amounts listed are for this set of screening tests only. Additional tests cannot be performed on these samples. If additional tests are requested at the same time then additional samples must be collected for them separately.

Collect:
Lavender top 6 mL x 2, AND Red top 6 mL x 2 AND Gold top 5 mL

Amount to Collect:
12 mL blood Lavender top **AND**
12 mL blood Red top **AND**
5 ml blood Gold top

Sample Type:
EDTA whole blood plus serum

Preferred Volume:
12 mL blood Lavender top **AND**
6 mL serum Red top **AND**
3 mL serum Gold top

Minimum Volume:
6 mL blood Lavender top **AND**
6 mL serum Red top **AND**
3 mL serum Gold top

Please note: Minimum volume may not be sufficient for confirmatory, reflex or verification testing.

Unacceptable Conditions:
Samples > 72 hours old on receipt by Viracor-VRL Eurofins.

Specimen Preparation:
Samples are sent out to Viracor-VRL Eurofins Monday to Friday afternoon by the Send-out Processing Department at China Basin for Donor infectious disease testing. Do not draw samples for PTXID on weekends and holidays. Samples drawn on Fridays and the day before holidays must be received at the hospital lab by 11am to get on 11:45am courier to China Basin to be in time for shipment to reference lab.

Do not centrifuge EDTA tubes. Refrigerate all samples and transport at 4C.

Synonyms:

- NAT
- nucleic acid testing
- Pre-transplant infectious disease screening panel
- PTXID

Stability (from collection to initiation):
Samples must be received by Viracor-VRL Eurofins within 72 hours of collection for donor infectious disease testing.

Reported:

Donor infectious disease testing is sent out to Viracor-VRL Eurofins, results are available 48-72 hours after samples are sent out.

Reflex Testing:

Yes. If screening positive for Hepatitis B Surface Antigen, Human T-Lymphotropic Virus I/II or Syphilis, confirmation test will be performed at additional charge.

Additional Information:

This test package should be ordered for stem cell, tissue and organ donors. This package includes the infectious disease screening assays mandated for donor screening plus Cytomegalovirus antibody (Total), Hepatitis B Surface Antibody, antibodies to Trypanosoma cruzi and nucleic acid testing for Hepatitis B (HBV).

This test package should NOT be ordered on recipients. The BMID panel should be ordered instead.

The FDA mandates that blood, tissue, stem cell and organ donors are tested using the PTXID panel including the nucleic acid tests (NAT) for HIV, HCV and WNV. These NAT tests are performed on pooled samples as for blood donors and will be tested individually should the pooled result becomes positive.

Mandated panel (as of December 2005) includes: HBsAg, antibodies to HBcore, HCV, HIV-1/2, HTLV-I/II, Syphilis (RPR), and nucleic acid tests for HIV,HCV,and WNV.

The assays in the Pre-Transplant Infectious Disease Screening are those which are mandated by the FDA and AABB for donor screening. If additional tests are required, they must be ordered in addition to these panels and would be billed separately.

For information about this test call the Send Out lab at 353-4840 or Processing lab at 353-1667.

CPT Codes:

86753, 86403, 87340, 86704, 86803, 86703, 86687, 86688, 86592, 87516, 87521, 87535, 87797

Reflex testing: 87341, 86790, 86592

Transplant RECIPIENT ID Screen

BMID

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Additional Information:
Panel contains the following tests: Hepatitis B surface Ag, Hepatitis B core Ab, Hepatitis C Ab, HIV Ab/Ag, Syphilis Screening, CMV Ab, and Hepatitis B Ab

The minimum amount of serum for serologic screening may be insufficient for confirmation of a positive test.

Synonyms:

- BMID

COLLECTION

Sample Type:
Serum

Collect:
Gold top, Red top

Amount to Collect:
5 mL blood (Gold top)
6 mL blood (Red top)

Preferred Volume:
3 mL serum

Minimum Volume:
1 mL serum

PROCESSING

Test Code:
BMID

Test Group:
Pre-transplant testing

Performing Lab:
Immunology

Specimen Preparation:
Contains the following test codes: HBAG, CORE, HCV, HIVAA, RPR, CMVAB, HBAB

Preferred Volume:
3 mL serum

Minimum Volume:
1 mL serum

RESULT INTERPRETATION

Additional Information:
Panel contains the following tests: Hepatitis B surface Ag, Hepatitis B core Ab, Hepatitis C Ab, HIV Ab/Ag, Syphilis Screening, CMV Ab, and Hepatitis B Ab

The minimum amount of serum for serologic screening may be insufficient for confirmation of a positive test.

COMPLETE VIEW

Available Stat:
No

Test Code:
BMID

Test Group:
Pre-transplant testing

Performing Lab:
Immunology

Collect:
Gold top, Red top

Amount to Collect:
5 mL blood (Gold top)
6 mL blood (Red top)

Sample Type:
Serum

Preferred Volume:
3 mL serum

Minimum Volume:
1 mL serum

Specimen Preparation:
Contains the following test codes: HBAG, CORE, HCV, HIVAA, RPR, CMVAB, HBAB

Synonyms:

- BMID

Additional Information:
Panel contains the following tests: Hepatitis B surface Ag, Hepatitis B core Ab, Hepatitis C Ab, HIV Ab/Ag, Syphilis Screening, CMV Ab, and Hepatitis B Ab

The minimum amount of serum for serologic screening may be insufficient for confirmation of a positive test.

Trazodone

TRAZ

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
HPLC

Reported:
Test run Thursday AM only. Turnaround time: 3-10 days.

Additional Information:
Some patients respond to substantially lower levels.

Synonyms:

- Desyrel

COLLECTION

Sample Type:
Serum or EDTA plasma

Collect:
Red top or Lavender top (Gold top **NOT** acceptable),

Amount to Collect:
3 mL blood

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.5 mL serum or plasma

Remarks:
Do not collect in serum separator tube (SST; Gold top)

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen at -20C 2 months

Unacceptable Conditions:
Collected in Gold top.

PROCESSING

Test Code:
TRAZ

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Refrigerate serum. Order Quest # 4732X. For B&T patients order LabCorp test #071688

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.5 mL serum or plasma

Unacceptable Conditions:
Collected in Gold top.

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen at -20C 2 months

RESULT INTERPRETATION

Units:
ng/mL

Reference Interval:
Therapeutic: 800-1600 ng/mL

Additional Information:
Some patients respond to substantially lower levels.

ADMINISTRATIVE

CPT Codes:
80299-90

LOINC Codes:
4064-2

COMPLETE VIEW

Available Stat:
No

Test Code:
TRAZ

Performing Lab:
Quest

Sendout:
Yes

Methodology:
HPLC

Remarks:
Do not collect in serum separator tube (SST; Gold top)

Collect:
Red top or Lavender top (Gold top **NOT** acceptable),

Amount to Collect:
3 mL blood

Sample Type:
Serum or EDTA plasma

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.5 mL serum or plasma

Unacceptable Conditions:
Collected in Gold top.

Specimen Preparation:
Refrigerate serum. Order Quest # 4732X. For B&T patients order LabCorp test #071688

Units:
ng/mL

Reference Interval:
Therapeutic: 800-1600 ng/mL

Synonyms:

- Desyrel

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen at -20C 2 months

Reported:
Test run Thursday AM only. Turnaround time: 3-10 days.

Additional Information:
Some patients respond to substantially lower levels.

CPT Codes:
80299-90

LOINC Codes:
4064-2

Treponemal Antibody Only

TREPAB

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Weekdays (day shift)

Methodology:
Microparticle Chemiluminescent Immunoassay

Reported:
1-5 days

Additional Information:
This test is a treponemal antibody test performed by chemiluminescent immunoassay. Following syphilis infection, this test stays positive even after successful treatment. False positive results can occur, particularly in patients with autoimmune disease, and cross-reactivity may occur with non-syphilis treponemal infections.

To screen for syphilis in patients with unknown status, please order RPRSCR - Syphilis Screen by RPR w/ Reflex to Treponemal Ab.

Synonyms:

- MHA-TP
- FTA-Abs
- T. pallidum
- MHATP
- Syphilis
- Treponema pallidum

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Remarks:
Avoid hemolysis, transport to laboratory as soon as possible. If transport is delayed refrigerate the sample.

Stability (from collection to initiation):
Refrigerated: 7 days
Frozen, -20 C or colder: > 7 days

Rejection Criteria:
Grossly lipemic, hemolysed or contaminated samples.

PROCESSING

Test Code:
TREPAB

Test Group:
Syphilis

Performing Lab:
Immunology

Specimen Preparation:
Freeze sample and transport to CB frozen

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Rejection Criteria:
Grossly lipemic, hemolysed or contaminated samples.

Stability (from collection to initiation):
Refrigerated: 7 days
Frozen, -20 C or colder: > 7 days

RESULT INTERPRETATION

Reference Interval:
Non-reactive

Additional Information:
This test is a treponemal antibody test performed by chemiluminescent immunoassay. Following syphilis infection, this test stays positive even after successful treatment. False positive results can occur, particularly in patients with autoimmune disease, and cross-reactivity may occur with non-syphilis treponemal infections.

To screen for syphilis in patients with unknown status, please order RPRSCR - Syphilis Screen by RPR w/ Reflex to Treponemal Ab.

ADMINISTRATIVE

CPT Codes:
86780

LOINC Codes:
24110-9

COMPLETE VIEW

Available Stat:
No

Test Code:
TREPAB

Test Group:
Syphilis

Performing Lab:
Immunology

Performed:
Weekdays (day shift)

Methodology:
Microparticle Chemiluminescent Immunoassay

Remarks:
Avoid hemolysis, transport to laboratory as soon as possible. If transport is delayed refrigerate the sample.

Collect:
Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Rejection Criteria:
Grossly lipemic, hemolysed or contaminated samples.

Specimen Preparation:
Freeze sample and transport to CB frozen

Reference Interval:
Non-reactive

Synonyms:

- MHA-TP
- FTA-Abs
- T. pallidum
- MHATP
- Syphilis
- Treponema pallidum

Stability (from collection to initiation):

Refrigerated: 7 days
Frozen, -20 C or colder: > 7 days

Reported:

1-5 days

Additional Information:

This test is a treponemal antibody test performed by chemiluminescent immunoassay. Following syphilis infection, this test stays positive even after successful treatment. False positive results can occur, particularly in patients with autoimmune disease, and cross-reactivity may occur with non-syphilis treponemal infections.

To screen for syphilis in patients with unknown status, please order RPRSCR - Syphilis Screen by RPR w/ Reflex to Treponemal Ab.

CPT Codes:

86780

LOINC Codes:

24110-9

TRH Stimulation Test

ORDERING

Available Stat:
No

Performing Lab:
China Basin Chemistry

Performed:
Daily (day shift)

Methodology:
Post-TRH measurement of TSH

Reported:
1 day

Additional Information:
TRH (Thyroliberin) stimulation is useful only if results of the standard tests (TSH, Free T4) are equivocal. Responses are exaggerated in primary hypothyroidism, decreased in hyperthyroidism (natural or factitious) and in TSH deficiency.

After IV administration of TRH, TSH normally rises 2- to 4-fold over baseline values. In subclinical hyperthyroidism and in hypothyroidism secondary to pituitary failure TSH levels do not rise normally; in primary hypothyroidism the response to TRH is exaggerated. TRH Stimulation was previously helpful when results of the T4 Index and TSH were equivocal, but with the advent of sensitive and accurate assays for TSH and Free T4, it has fallen into disuse.

Also see Prolactin-TRH Stimulation.

Synonyms:

- TSH releasing Hormone

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Remarks:
Collect specimens at 0 and 15 or 30 minutes after giving 500 µg of TRH iv, and submit them for assay of TSH. Be sure to note the time directly on each of the two samples

PROCESSING

Test Group:
Thyroid tests

Performing Lab:
China Basin Chemistry

Preferred Volume:
1 mL serum

RESULT INTERPRETATION

Units:
mIU/L

Reference Interval:
TSH 2-4x basal and > 10 mIU/L 15-30 min post-TRH

Additional Information:

TRH (Thyroliberin) stimulation is useful only if results of the standard tests (TSH, Free T4) are equivocal. Responses are exaggerated in primary hypothyroidism, decreased in hyperthyroidism (natural or factitious) and in TSH deficiency.

After IV administration of TRH, TSH normally rises 2- to 4-fold over baseline values. In subclinical hyperthyroidism and in hypothyroidism secondary to pituitary failure TSH levels do not rise normally; in primary hypothyroidism the response to TRH is exaggerated. TRH Stimulation was previously helpful when results of the T4 Index and TSH were equivocal, but with the advent of sensitive and accurate assays for TSH and Free T4, it has fallen into disuse.

Also see Prolactin-TRH Stimulation.

COMPLETE VIEW

Available Stat:
No

Test Group:
Thyroid tests

Performing Lab:
China Basin Chemistry

Performed:
Daily (day shift)

Methodology:
Post-TRH measurement of TSH

Remarks:
Collect specimens at 0 and 15 or 30 minutes after giving 500 µg of TRH iv, and submit them for assay of TSH. Be sure to note the time directly on each of the two samples

Collect:
Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Units:
mIU/L

Reference Interval:
TSH 2-4x basal and > 10 mIU/L 15-30 min post-TRH

Synonyms:

- TSH releasing Hormone

Reported:
1 day

Additional Information:

TRH (Thyroliberin) stimulation is useful only if results of the standard tests (TSH, Free T4) are equivocal. Responses are exaggerated in primary hypothyroidism, decreased in hyperthyroidism (natural or factitious) and in TSH deficiency.

After IV administration of TRH, TSH normally rises 2- to 4-fold over baseline values. In subclinical hyperthyroidism and in hypothyroidism secondary to pituitary failure TSH levels do not rise normally; in primary hypothyroidism the response to TRH is exaggerated. TRH Stimulation was previously helpful when results of the T4 Index and TSH were equivocal, but with the advent of sensitive and accurate assays for TSH and Free T4, it has fallen into disuse.

Also see Prolactin-TRH Stimulation.

Trichinella spiralis Antibody, IgG

TRICG

ORDERING

Available Stat:
No

Performing Lab:
Focus via Quest

Methodology:
ELISA

Reported:
Run once per week. Turnaround 2-8 days

Additional Information:
The Trichinella IgG ELISA employs an excretory-secretory antigen to reduce nonspecific reactivity; however, crossreactivity with other parasite antigens (e.g., strongyloides, filarial, malaria) may occure. The assay should be considered a screening test for Trichinella exposure; diagnosis of trichinosis requires a compatible patient history and supporting pathologic findings.

For examination of biopsy samples contact Anatomic pathology.

Synonyms:

- Trichinosis

COLLECTION

Sample Type:
Serum

Collect:
Gold top, Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen 1 month.

PROCESSING

Test Code:
TRICG

Sendout:
Yes

Performing Lab:
Focus via Quest

Specimen Preparation:
Order Quest # 34321X

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen 1 month.

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:

The Trichinella IgG ELISA employs an excretory-secretory antigen to reduce nonspecific reactivity; however, crossreactivity with other parasite antigens (e.g., strongyloides, filarial, malaria) may occure. The assay should be considered a screening test for Trichinella exposure; diagnosis of trichinosis requires a compatible patient history and supporting pathologic findings.

For examination of biopsy samples contact Anatomic pathology.

ADMINISTRATIVE

CPT Codes:
86784-90

LOINC Codes:
32768-4

COMPLETE VIEW

Available Stat:
No

Test Code:
TRICG

Performing Lab:
Focus via Quest

Sendout:
Yes

Methodology:
ELISA

Collect:
Gold top, Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Specimen Preparation:
Order Quest # 34321X

Reference Interval:
Negative

Synonyms:

- Trichinosis

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen 1 month.

Reported:
Run once per week. Turnaround 2-8 days

Additional Information:

The Trichinella IgG ELISA employs an excretory-secretory antigen to reduce nonspecific reactivity; however, crossreactivity with other parasite antigens (e.g., strongyloides, filarial, malaria) may occure. The assay should be considered a screening test for Trichinella exposure; diagnosis of trichinosis requires a compatible patient history and supporting pathologic findings.

For examination of biopsy samples contact Anatomic pathology.

CPT Codes:
86784-90

LOINC Codes:
32768-4

Trichomonas vaginalis RNA

P715

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Test performed 3 times per week

Methodology:
Transcription Mediated Amplification

Reported:
1-3 days

Synonyms:

- Trichomonas

COLLECTION

Sample Type:

- Swab: Gen-Probe Aptima Multitest kit (orange label, pink swab):
  - endocervical
  - vaginal
  - male urethral (test performed at reference lab)

- Urine: Urine cup or Hologic Urine Specimen Collection Kit

Amount to Collect:
One swab; If C. trachomatis/N. gonorrhoeae testing also ordered, single swab may be sent for both CT/CG and Trichomonas testing

Stability (from collection to initiation):
Hologic Aptima transport media: Room temperature or refrigerated 60 days
Urine must be placed in Hologic Urine Specimen Kit within 24 hours of collection

Unacceptable Conditions:
Specimen received >60 days after collection, no swab in fluid, no fluid in tube

PROCESSING

Test Code:
P715

Performing Lab:
Microbiology

Specimen Preparation:
2 mL of urine specimen must be transferred into the Aptima® Urine Transport Medium within 24 hours of collection. Level in the urine transport tube must fall within the clear pane of the tube label.

Unacceptable Conditions:
Specimen received >60 days after collection, no swab in fluid, no fluid in tube

Stability (from collection to initiation):
Hologic Aptima transport media: Room temperature or refrigerated 60 days
Urine must be placed in Hologic Urine Specimen Kit within 24 hours of collection

RESULT INTERPRETATION

Reference Interval:
Not detected

ADMINISTRATIVE

CPT Codes:
87661

LOINC Codes:
46154-1

COMPLETE VIEW

Available Stat:
No

Test Code:
P715

Performing Lab:
Microbiology

Performed:
Test performed 3 times per week

Methodology:
Transcription Mediated Amplification

Amount to Collect:
One swab; If C. trachomatis/N. gonorrhoeae testing also ordered, single swab may be sent for both CT/CG and Trichomonas testing

Sample Type:

- Swab: Gen-Probe Aptima Multitest kit (orange label, pink swab):
  - endocervical
  - vaginal
  - male urethral (test performed at reference lab)

- Urine: Urine cup or Hologic Urine Specimen Collection Kit

Unacceptable Conditions:
Specimen received >60 days after collection, no swab in fluid, no fluid in tube

Specimen Preparation:
2 mL of urine specimen must be transferred into the Aptima® Urine Transport Medium within 24 hours of collection. Level in the urine transport tube must fall within the clear pane of the tube label.

Reference Interval:
Not detected

Synonyms:

- Trichomonas

Stability (from collection to initiation):
Hologic Aptima transport media: Room temperature or refrigerated 60 days
Urine must be placed in Hologic Urine Specimen Kit within 24 hours of collection

Reported:
1-3 days

CPT Codes:
87661

LOINC Codes:
46154-1

Triglycerides, Body fluid

TGBF

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus and Mission Bay Chemistry

Performed:
24 hours per day 7 days per week

Methodology:
Spectrophotometric (glycerophosphate oxidase)

Reported:
4 hours

Additional Information:
Turbid samples, including watery stools, will be centrifuged and the test run on the supernatant.

To convert mg/dL to mmol/L (SI units) multiply by 0.0113.

A pleural fluid triglyceride concentration greater than 110 mg/dL or presence of chylomicrons is consistent with a diagnosis of chylothorax whereas a triglyceride level less than 50 mg/dL makes the diagnosis less likely. A ratio of pleural fluid cholesterol to triglyceride of less than 1 is also considered diagnostic (Chest. 2008 PMID: 18339791).

Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context.

Interpretive information on this testing can be found at https://aruplab.com/bodyfluids

COLLECTION

Sample Type:
Body fluid

Collect:
Clean, empty container OR red top (no additives)
Note: Do NOT collect in red top with clot activator (silicone coated).

Amount to Collect:
5 mL fluid

Preferred Volume:
1 mL fluid

Minimum Volume:
0.2 mL fluid

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 2 days, frozen at -20C 1 week

PROCESSING

Test Code:
TGBF

Test Group:
Triglycerides

Performing Lab:
Parnassus and Mission Bay Chemistry

Preferred Volume:
1 mL fluid

Minimum Volume:
0.2 mL fluid

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 2 days, frozen at -20C 1 week

RESULT INTERPRETATION

Units:
mg/dL

Additional Information:

Turbid samples, including watery stools, will be centrifuged and the test run on the supernatant.

To convert mg/dL to mmol/L (SI units) multiply by 0.0113.

A pleural fluid triglyceride concentration greater than 110 mg/dL or presence of chylomicrons is consistent with a diagnosis of chylothorax whereas a triglyceride level less than 50 mg/dL makes the diagnosis less likely. A ratio of pleural fluid cholesterol to triglyceride of less than 1 is also considered diagnostic (Chest. 2008 PMID: 18339791).

Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context.

Interpretive information on this testing can be found at https://aruplab.com/bodyfluids

ADMINISTRATIVE

CPT Codes:
84432

COMPLETE VIEW

Available Stat:
Yes

Test Code:
TGBF

Test Group:
Triglycerides

Performing Lab:
Parnassus and Mission Bay Chemistry

Performed:
24 hours per day 7 days per week

Methodology:
Spectrophotometric (glycerophosphate oxidase)

Collect:
Clean, empty container OR red top (no additives)
Note: Do NOT collect in red top with clot activator (silicone coated).

Amount to Collect:
5 mL fluid

Sample Type:
Body fluid

Preferred Volume:
1 mL fluid

Minimum Volume:
0.2 mL fluid

Units:
mg/dL

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 2 days, frozen at -20C 1 week

Reported:
4 hours

Additional Information:

Turbid samples, including watery stools, will be centrifuged and the test run on the supernatant.

To convert mg/dL to mmol/L (SI units) multiply by 0.0113.

A pleural fluid triglyceride concentration greater than 110 mg/dL or presence of chylomicrons is consistent with a diagnosis of chylothorax whereas a triglyceride level less than 50 mg/dL makes the diagnosis less likely. A ratio of pleural fluid cholesterol to triglyceride of less than 1 is also considered diagnostic (Chest. 2008 PMID: 18339791).

Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context.

Interpretive information on this testing can be found at https://aruplab.com/bodyfluids

CPT Codes:
84432

Triglycerides, serum

TRIG

ORDERING

Available Stat:
No

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Spectrophotometric (glycerophosphate oxidase)

Reported:
4 hours

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by 0.0113.

Patients with levels > 1000 mg/dL (> 11.3 mmol/L) are prone to develop pancreatitis. Values above 2000 mg/dL will be phoned the same day Monday-Friday 0800-1500 or next weekday.

COLLECTION

Sample Type:
Serum or plasma

Collect:
Gold top or Light Green top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 7 days, frozen at -20C 1 year

PROCESSING

Test Code:
TRIG

Test Group:
Triglycerides

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 7 days, frozen at -20C 1 year

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:

Adults (>=20 years old):

Desirable (if fasting sample)	< 150 mg/dL
Desirable (if not fasting sample)	< 200 mg/dL

If non-fasting sample is 200 mg/dL or more, testing on fasting sample is recommended

Children and Adolescents (< 20 years old):

0 to 9 years	Acceptable	<75 mg/dL
	Borderline high	75-99 mg/dL
	High	>99 mg/dL
10 to <20 years	Acceptable	<90 mg/dL
	Borderline high	90-129 mg/dL
	High	>129 mg/dL

Risk classifications based on combination of NCEP-ATPIII guidelines and American College of Cardiology/American Heart Association Guidelines, 2013

Risk classifications for pediatrics based on The NHLBI Expert Panel on Integrated Guidelines for Cardiovascular Health and Risk Reduction in Children and Adolescents: Pediatrics 2011; 128: S213.

Additional Information:

To convert mg/dL to mmol/L (SI units) multiply by 0.0113.

Patients with levels > 1000 mg/dL (> 11.3 mmol/L) are prone to develop pancreatitis. Values above 2000 mg/dL will be phoned the same day Monday-Friday 0800-1500 or next weekday.

ADMINISTRATIVE

CPT Codes:
84478

LOINC Codes:
2571-8

COMPLETE VIEW

Available Stat:
No

Test Code:
TRIG

Test Group:
Triglycerides

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Spectrophotometric (glycerophosphate oxidase)

Collect:
Gold top or Light Green top

Amount to Collect:
1 mL blood

Sample Type:
Serum or plasma

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Units:
mg/dL

Reference Interval:

Adults (>=20 years old):

Desirable (if fasting sample)	< 150 mg/dL
Desirable (if not fasting sample)	< 200 mg/dL

If non-fasting sample is 200 mg/dL or more, testing on fasting sample is recommended

Children and Adolescents (< 20 years old):

0 to 9 years	Acceptable	<75 mg/dL
	Borderline high	75-99 mg/dL
	High	>99 mg/dL
10 to <20 years	Acceptable	<90 mg/dL
	Borderline high	90-129 mg/dL
	High	>129 mg/dL

Risk classifications based on combination of NCEP-ATPIII guidelines and American College of Cardiology/American Heart Association Guidelines, 2013

Risk classifications for pediatrics based on The NHLBI Expert Panel on Integrated Guidelines for Cardiovascular Health and Risk Reduction in Children and Adolescents: Pediatrics 2011; 128: S213.

Stability (from collection to initiation):

Room temperature 2 days, refrigerated 7 days, frozen at -20C 1 year

Reported:

4 hours

Additional Information:

To convert mg/dL to mmol/L (SI units) multiply by 0.0113.

Patients with levels > 1000 mg/dL (> 11.3 mmol/L) are prone to develop pancreatitis. Values above 2000 mg/dL will be phoned the same day Monday-Friday 0800-1500 or next weekday.

CPT Codes:

84478

LOINC Codes:

2571-8

Trisomy 12 FISH

TRIS12, BTRI12

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Set up daily Monday - Friday

Methodology:
Fluorescent In-situ hybridization (FISH)

Reported:
1-2 weeks

Synonyms:

- TRIS12
- BTRI12

COLLECTION

Sample Type:
Heparinized whole blood or bone marrow. Bone marrow biopsy

Collect:
Dark green top (Sodium heparin)

Amount to Collect:
See preferred volume.

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow biopsy: 1 cm

Remarks:
Mix blood and marrow aspirate samples well after collection. Keep at room temperature

Stability (from collection to initiation):
Room temperature 2 days

Unacceptable Conditions:
Frozen, leaking or unlabeled samples

PROCESSING

Test Code:
BTRI12: Blood
TRIS12: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Specimen Preparation:
Keep at room temperature, do not centrifuge

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow biopsy: 1 cm

Unacceptable Conditions:
Frozen, leaking or unlabeled samples

Stability (from collection to initiation):
Room temperature 2 days

RESULT INTERPRETATION

Reference Interval:
Absent

ADMINISTRATIVE

CPT Codes:
88271, 88275

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BTRI12: Blood
TRIS12: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Performed:
Set up daily Monday - Friday

Methodology:
Fluorescent In-situ hybridization (FISH)

Remarks:
Mix blood and marrow aspirate samples well after collection. Keep at room temperature

Collect:
Dark green top (Sodium heparin)

Amount to Collect:
See preferred volume.

Sample Type:
Heparinized whole blood or bone marrow. Bone marrow biopsy

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow biopsy: 1 cm

Unacceptable Conditions:
Frozen, leaking or unlabeled samples

Specimen Preparation:
Keep at room temperature, do not centrifuge

Reference Interval:
Absent

Synonyms:

- TRIS12
- BTRI12

Stability (from collection to initiation):
Room temperature 2 days

Reported:
1-2 weeks

CPT Codes:
88271, 88275

LDT or Modified FDA:
Yes

Trisomy 8 FISH

TRIS8, BTRI8

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Fluorescent in-situ hybridization

Reported:
7-14 days

Synonyms:

- +8
- Cytogenetic analysis
- Karyotype
- Karyotyping
- TRIS8
- BTRI8

COLLECTION

Sample Type:
Heparinized whole blood, bone marrow, bone core

Collect:
Blood & bone marrow aspirate: 15 mL centrifuge tube with transport media (RPMI, FBS, L-Glutamine, Sodium Heparin and PenStrep). Available from Cytogenetics. Dark Green top also acceptable

Bone marrow core: 15 mL centrifuge tube with transport media (RPMI, FBS, L-Glutamine, Sodium Heparin and PenStrep). Available from Cytogenetics.

Amount to Collect:
See preferred volume.

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow biopsy: 1 cm

Remarks:
Bone marrow is the preferred specimen, but heparinized peripheral blood may be submitted if a large number of malignant cells are present.

Collect bone marrow in a syringe, transfer to Dark Green top vacutainer and gently invert the tube several times for good mixing.

If a dry tap is obtained, consult the Laboratory Medicine resident in Hematology regarding the possible submission of a green top tube of
peripheral blood.

Contact Hematology if the specimen is more than 24 hours old.

Stability (from collection to initiation):
48 hours

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

PROCESSING

Test Code:
BTRI8: Blood
TRIS8: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Specimen Preparation:
Maintain sample at room temperature. Transport to CB Cytogenetics within 24 hours

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow biopsy: 1 cm

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

Stability (from collection to initiation):
48 hours

RESULT INTERPRETATION

Reference Interval:
Not detected

ADMINISTRATIVE

CPT Codes:
88275, 88271

LDT or Modified FDA:
Yes

LOINC Codes:
21773-7

COMPLETE VIEW

Available Stat:
No

Test Code:
BTRI8: Blood
TRIS8: Bone marrow

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Fluorescent in-situ hybridization

Remarks:
Bone marrow is the preferred specimen, but heparinized peripheral blood may be submitted if a large number of malignant cells are present.

Collect bone marrow in a syringe, transfer to Dark Green top vacutainer and gently invert the tube several times for good mixing.

If a dry tap is obtained, consult the Laboratory Medicine resident in Hematology regarding the possible submission of a green top tube of
peripheral blood.

Contact Hematology if the specimen is more than 24 hours old.

Collect:
Blood & bone marrow aspirate: 15 mL centrifuge tube with transport media (RPMI, FBS, L-Glutamine, Sodium Heparin and PenStrep). Available from Cytogenetics. Dark Green top also acceptable

Bone marrow core: 15 mL centrifuge tube with transport media (RPMI, FBS, L-Glutamine, Sodium Heparin and PenStrep). Available from Cytogenetics.

Amount to Collect:
See preferred volume.

Sample Type:
Heparinized whole blood, bone marrow, bone core

Preferred Volume:
Whole blood: 2 mL
Bone marrow aspirate: 2 mL
?Bone marrow biopsy: 2 cm

Minimum Volume:
Whole blood: 1 mL
Bone marrow aspirate: 1 mL
?Bone marrow biopsy: 1 cm

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

Specimen Preparation:
Maintain sample at room temperature. Transport to CB Cytogenetics within 24 hours

Reference Interval:
Not detected

Synonyms:

- +8
- Cytogenetic analysis
- Karyotype
- Karyotyping
- TRIS8
- BTRI8

Stability (from collection to initiation):
48 hours

Reported:
7-14 days

CPT Codes:
88275, 88271

LDT or Modified FDA:
Yes

LOINC Codes:
21773-7

Tropheryma whipplei PCR

WHIPP

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
PCR

Reported:
3-5 days

Additional Information:
A positive result strongly suggests a diagnosis of Whipple disease.

A negative result does not negate the presence of the organism or active disease, as false-negative results may occur due to inhibition of PCR, sequence variability underlying the primers and/or probes, or the presence of Tropheryma whipplei in quantities less than the limit of detection of the assay.

Synonyms:

- Whipple PCR

COLLECTION

Sample Type:
Whole blood or CSF

Collect:
Lavender top tube or sterile container

Amount to Collect:
1.0 mL whole blood/0.5 CSF

Preferred Volume:
1.0 mL blood/0.5 mL CSF

Minimum Volume:
1.0 mL blood/0.5 mL CSF

Stability (from collection to initiation):
7 days ambient/refrigerated

PROCESSING

Test Code:
WHIPP

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Aliquot specimen (CSF) or send original tube (blood) to CB refrigerated. Order Mayo test code TWRP (for CSF) or WHIPB (for blood). Send to Mayo refrigerated (either sample type).

Preferred Volume:
1.0 mL blood/0.5 mL CSF

Minimum Volume:
1.0 mL blood/0.5 mL CSF

Stability (from collection to initiation):
7 days ambient/refrigerated

RESULT INTERPRETATION

Additional Information:
A positive result strongly suggests a diagnosis of Whipple disease.

A negative result does not negate the presence of the organism or active disease, as false-negative results may occur due to inhibition of PCR, sequence variability underlying the primers and/or probes, or the presence of Tropheryma whipplei in quantities less than the limit of detection of the assay.

ADMINISTRATIVE

CPT Codes:
87798-90

LOINC Codes:
42602-3

COMPLETE VIEW

Available Stat:
No

Test Code:
WHIPP

Performing Lab:
Mayo

Sendout:
Yes

Methodology:
PCR

Collect:
Lavender top tube or sterile container

Amount to Collect:
1.0 mL whole blood/0.5 CSF

Sample Type:
Whole blood or CSF

Preferred Volume:
1.0 mL blood/0.5 mL CSF

Minimum Volume:
1.0 mL blood/0.5 mL CSF

Specimen Preparation:
Aliquot specimen (CSF) or send original tube (blood) to CB refrigerated. Order Mayo test code TWRP (for CSF) or WHIPB (for blood). Send to Mayo refrigerated (either sample type).

Synonyms:

- Whipple PCR

Stability (from collection to initiation):
7 days ambient/refrigerated

Reported:
3-5 days

Additional Information:
A positive result strongly suggests a diagnosis of Whipple disease.

A negative result does not negate the presence of the organism or active disease, as false-negative results may occur due to inhibition of PCR, sequence variability underlying the primers and/or probes, or the presence of Tropheryma whipplei in quantities less than the limit of detection of the assay.

CPT Codes:
87798-90

LOINC Codes:
42602-3

Troponin I

TRPI

ORDERING

Available Stat:
Yes

Performing Lab:
Mt Zion, Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Chemiluminescent microparticle immunoassay (CMIA)

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
The troponin I method is performed on the Abbott Architect i2000 or ci4100 platform. In the Abbott Architect assay, the 99th percentile in normals has been reported to be in the range of 0.013 to 0.04 micrograms/L (La'ulu S et al. Clinica Chimica Acta 411:1095-1101, 2010 and Cardinael S et al, Clinical Chemistry Laboratory Medicine 50:791-806, 2012). All troponin I results that exceed 0.04 micrograms/L in this assay are flagged as abnormal. The coefficient of variation of this troponin assay at a level of 0.04 micrograms/L is ~ 20% as confirmed by in house testing. The coefficient of variation at levels of 0.2 micrograms/L or more is < 5%. The clinical performance characteristics of the threshold cutoff of 0.04 micrograms/L in patients with suspected acute coronary syndrome has been described by Mills et al (JAMA 305:1210-1216, 2011).

This assay is not considered a high sensitivity troponin assay and is not capable of measuring the extremely low levels of troponin that circulate in most normal subjects. Serial sampling is recommended to help guide interpretation of troponin results and detect the temporal rise and fall of troponin levels characteristic of acute cardiac injury. Technical artifacts should be suspected in patients in whom an increased troponin level abruptly falls to normal much more quickly than would be expected, or in whom serial troponin levels are chronically elevated. Questionable results should be checked by repeating the assay after the sample has been carefully examined or respun as necessary to insure absence of possible fibrin strains or particulate material that could interfere in the assay. Repeat testing with a different troponin assay may be useful in cases where interference by heterophile antibodies or other immunoglobulins is suspected.

Troponin I is believed to be predominantly cleared by non-renal mechanisms and increased troponin I levels in renal failure patients may signify underlying cardiac damage (Ann Clin Biochem 2007; 44: 285-289). Renal failure patients with increased troponin I levels have been reported to be at greater cardiovascular risk than those with normal levels of troponin I (Ann Clin Biochem 2007; 44: 285-289).

Note: Spurious increases in troponin I can occur in samples that contain microclots/fibrin strands. Collection of a heparinized blood specimen is recommended to minimize the chance of microclot formation. Heterophile antibodies or other abnormal immunoglobulins may cause falsely increased or falsely decreased results; falsely low results may occur in patients with autoantibodies against cardiac troponins. Technical artifacts should be suspected in patients in whom an increased troponin level abruptly falls to normal much more quickly than would be expected, or in whom serial troponin levels are chronically elevated. If a spurious result is suspected, the laboratory can be notified to repeat the result using the same assay and/or a different troponin assay for confirmatory purposes.

COLLECTION

Sample Type:
Heparinized plasma or serum

Collect:
Light Green top preferred; Red top or Gold top acceptable

Note: Plasma and serum samples should not be used interchangeably in the same patient

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL plasma or serum

Minimum Volume:
0.5 mL plasma or serum

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 3 days hours, frozen 30 days

PROCESSING

Test Code:
TRPI

Test Group:
Troponin

Performing Lab:
Mt Zion, Parnassus & Mission Bay Chemistry

Specimen Preparation:
Refrigerate plasma or serum

Preferred Volume:
1 mL plasma or serum

Minimum Volume:
0.5 mL plasma or serum

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 3 days hours, frozen 30 days

RESULT INTERPRETATION

Units:
µg/L

Reference Interval:
< 0.05 µg/L

Critical Values:
>= 0.05 µg/L.

Note: The first elevated troponin for a patient will be called. Subsequent elevated Troponin levels for the same patient in the next 72 hours after the initial report will not be called.

Additional Information:
The troponin I method is performed on the Abbott Architect i2000 or ci4100 platform. In the Abbott Architect assay, the 99th percentile in normals has been reported to be in the range of 0.013 to 0.04 micrograms/L (La'ulu S et al. Clinica Chimica Acta 411:1095-1101, 2010 and Cardinael S et al, Clinical Chemistry Laboratory Medicine 50:791-806, 2012). All troponin I results that exceed 0.04 micrograms/L in this assay are flagged as abnormal. The coefficient of variation of this troponin assay at a level of 0.04 micrograms/L is ~ 20% as confirmed by in house testing. The coefficient of variation at levels of 0.2 micrograms/L or more is < 5%. The clinical performance characteristics of the threshold cutoff of 0.04 micrograms/L in patients with suspected acute coronary syndrome has been described by Mills et al (JAMA 305:1210-1216, 2011).

This assay is not considered a high sensitivity troponin assay and is not capable of measuring the extremely low levels of troponin that circulate in most normal subjects. Serial sampling is recommended to help guide interpretation of troponin results and detect the temporal rise and fall of troponin levels characteristic of acute cardiac injury. Technical artifacts should be suspected in patients in whom an increased troponin level abruptly falls to normal much more quickly than would be expected, or in whom serial troponin levels are chronically elevated. Questionable results should be checked by repeating the assay after the sample has been carefully examined or respun as necessary to insure absence of possible fibrin strains or particulate material that could interfere in the assay. Repeat testing with a different troponin assay may be useful in cases where interference by heterophile antibodies or other immunoglobulins is suspected.

Troponin I is believed to be predominantly cleared by non-renal mechanisms and increased troponin I levels in renal failure patients may signify underlying cardiac damage (Ann Clin Biochem 2007; 44: 285-289). Renal failure patients with increased troponin I levels have been reported to be at greater cardiovascular risk than those with normal levels of troponin I (Ann Clin Biochem 2007; 44: 285-289).

Note: Spurious increases in troponin I can occur in samples that contain microclots/fibrin strands. Collection of a heparinized blood specimen is recommended to minimize the chance of microclot formation. Heterophile antibodies or other abnormal immunoglobulins may cause falsely increased or falsely decreased results; falsely low results may occur in patients with autoantibodies against cardiac troponins. Technical artifacts should be suspected in patients in whom an increased troponin level abruptly falls to normal much more quickly than would be expected, or in whom serial troponin levels are chronically elevated. If a spurious result is suspected, the laboratory can be notified to repeat the result using the same assay and/or a different troponin assay for confirmatory purposes.

ADMINISTRATIVE

CPT Codes:
84484

LOINC Codes:
42757-5

COMPLETE VIEW

Available Stat:
Yes

Test Code:
TRPI

Test Group:
Troponin

Performing Lab:
Mt Zion, Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Chemiluminescent microparticle immunoassay (CMIA)

Collect:
Light Green top preferred; Red top or Gold top acceptable

Note: Plasma and serum samples should not be used interchangeably in the same patient

Amount to Collect:
2 mL blood

Sample Type:
Heparinized plasma or serum

Preferred Volume:
1 mL plasma or serum

Minimum Volume:
0.5 mL plasma or serum

Specimen Preparation:
Refrigerate plasma or serum

Units:
µg/L

Reference Interval:
< 0.05 µg/L

Critical Values:
>= 0.05 µg/L.

Note: The first elevated troponin for a patient will be called. Subsequent elevated Troponin levels for the same patient in the next 72 hours after the initial report will not be called.

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 3 days hours, frozen 30 days

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
The troponin I method is performed on the Abbott Architect i2000 or ci4100 platform. In the Abbott Architect assay, the 99th percentile in normals has been reported to be in the range of 0.013 to 0.04 micrograms/L (La'ulu S et al. Clinica Chimica Acta 411:1095-1101, 2010 and Cardinael S et al, Clinical Chemistry Laboratory Medicine 50:791-806, 2012). All troponin I results that exceed 0.04 micrograms/L in this assay are flagged as abnormal. The coefficient of variation of this troponin assay at a level of 0.04 micrograms/L is ~ 20% as confirmed by in house testing. The coefficient of variation at levels of 0.2 micrograms/L or more is < 5%. The clinical performance characteristics of the threshold cutoff of 0.04 micrograms/L in patients with suspected acute coronary syndrome has been described by Mills et al (JAMA 305:1210-1216, 2011).

This assay is not considered a high sensitivity troponin assay and is not capable of measuring the extremely low levels of troponin that circulate in most normal subjects. Serial sampling is recommended to help guide interpretation of troponin results and detect the temporal rise and fall of troponin levels characteristic of acute cardiac injury. Technical artifacts should be suspected in patients in whom an increased troponin level abruptly falls to normal much more quickly than would be expected, or in whom serial troponin levels are chronically elevated. Questionable results should be checked by repeating the assay after the sample has been carefully examined or respun as necessary to insure absence of possible fibrin strains or particulate material that could interfere in the assay. Repeat testing with a different troponin assay may be useful in cases where interference by heterophile antibodies or other immunoglobulins is suspected.

Troponin I is believed to be predominantly cleared by non-renal mechanisms and increased troponin I levels in renal failure patients may signify underlying cardiac damage (Ann Clin Biochem 2007; 44: 285-289). Renal failure patients with increased troponin I levels have been reported to be at greater cardiovascular risk than those with normal levels of troponin I (Ann Clin Biochem 2007; 44: 285-289).

Note: Spurious increases in troponin I can occur in samples that contain microclots/fibrin strands. Collection of a heparinized blood specimen is recommended to minimize the chance of microclot formation. Heterophile antibodies or other abnormal immunoglobulins may cause falsely increased or falsely decreased results; falsely low results may occur in patients with autoantibodies against cardiac troponins. Technical artifacts should be suspected in patients in whom an increased troponin level abruptly falls to normal much more quickly than would be expected, or in whom serial troponin levels are chronically elevated. If a spurious result is suspected, the laboratory can be notified to repeat the result using the same assay and/or a different troponin assay for confirmatory purposes.

CPT Codes:
84484

LOINC Codes:
42757-5

Trypanosoma cruzi PCR

P319

ORDERING

Ordering Recommendations:
This assay is used in clinically indicated situations such as acute or congenital infections, post-transplant from a donor with confirmed T. cruzi infection, or risk of reactivation due to immunocompromise in patients with chronic Chagas disease. Serological testing is the preferred method to diagnose chronic infection in patients.

Approval Required:
CDC pre-approval is required for patients without a history of positive serology.

Available Stat:
No

Performing Lab:
CDC

Methodology:
Real-time Polymerase Chain Reaction (PCR)

Reported:
2 weeks

Additional Information:
Refer to Chagas Disease Molecular Detection at https://www.cdc.gov/laboratory/specimen-submission/list.html

Synonyms:

- Chagas

COLLECTION

Sample Type:
EDTA-treated whole blood, unpreserved heart tissue, CSF

Collect:
Blood in EDTA (lavender top) tube, CSF or tissue in sterile container

Minimum Volume:
Blood: 2.2ml (infant 0.2 mL)
CSF: 0.2mL

Remarks:
Formalin-fixed specimens are not suitable for this test order. Please see Test Order CDC-10365 (Pathologic Evaluation of Tissues for Possible Infectious Etiologies) and contact pathology@cdc.gov regarding testing of formalin-fixed specimens.

Storage/Transport Temperature:
Refrigerated

Unacceptable Conditions:
Samples received at CDC at room temperature.

PROCESSING

Test Code:
P319

Sendout:
Yes

Performing Lab:
CDC

Specimen Preparation:
Ship samples Monday - Thursday, avoiding holidays, in Styrofoam container with cold packs. CDC form 50.34 must be included (download from CDC laboratory web page). All samples must be shipped in accordance with all applicable local, state and federal regulations.

Minimum Volume:
Blood: 2.2ml (infant 0.2 mL)
CSF: 0.2mL

Unacceptable Conditions:
Samples received at CDC at room temperature.

Storage/Transport Temperature:
Refrigerated

RESULT INTERPRETATION

Additional Information:
Refer to Chagas Disease Molecular Detection at https://www.cdc.gov/laboratory/specimen-submission/list.html

COMPLETE VIEW

Approval Required:
CDC pre-approval is required for patients without a history of positive serology.

Available Stat:
No

Ordering Recommendations:
This assay is used in clinically indicated situations such as acute or congenital infections, post-transplant from a donor with confirmed T. cruzi infection, or risk of reactivation due to immunocompromise in patients with chronic Chagas disease. Serological testing is the preferred method to diagnose chronic infection in patients.

Test Code:
P319

Performing Lab:
CDC

Sendout:
Yes

Methodology:
Real-time Polymerase Chain Reaction (PCR)

Remarks:
Formalin-fixed specimens are not suitable for this test order. Please see Test Order CDC-10365 (Pathologic Evaluation of Tissues for Possible Infectious Etiologies) and contact pathology@cdc.gov regarding testing of formalin-fixed specimens.

Collect:
Blood in EDTA (lavender top) tube, CSF or tissue in sterile container

Sample Type:
EDTA-treated whole blood, unpreserved heart tissue, CSF

Minimum Volume:
Blood: 2.2ml (infant 0.2 mL)
CSF: 0.2mL

Unacceptable Conditions:
Samples received at CDC at room temperature.

Specimen Preparation:
Ship samples Monday - Thursday, avoiding holidays, in Styrofoam container with cold packs. CDC form 50.34 must be included (download from CDC laboratory web page). All samples must be shipped in accordance with all applicable local, state and federal regulations.

Synonyms:

- Chagas

Storage/Transport Temperature:
Refrigerated

Reported:
2 weeks

Additional Information:
Refer to Chagas Disease Molecular Detection at https://www.cdc.gov/laboratory/specimen-submission/list.html

Trypanosome Exam

P409

ORDERING

Approval Required:
No approval required for microscopic exam.

For T. cruzi PCR to be sent to CDC: Approval from CDC is required if no serologic testing has been performed. Use test code P319 Microbiology Test Not Listed.

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Monday - Friday, dayshift only. Samples for T. cruzi PCR that are received after noon on Thursday will be sent to CDC the following Monday.

Methodology:
Microscopy (Giema stain of thick and thin smears)

Reported:
1-3 days

Additional Information:
This test is offered for the causitive agent of Chagas disease. Sensitivity of direct smear is limited to severe acute stage, reactivation, or detection in recipients of organs from donors with chronic Chagas disease.

Physician may also request Microbiology to send sample to CDC for T. cruzi PCR

For African trypanosomiasis (sleeping sickness), thick and thin smears of blood, CSF, or aspirates of lymph node and trypanosomal chancres can be examined.

CDC offers clinical consultation, but not testing, for suspect African trypanosomiasis.

Synonyms:

- Trypanosoma cruzi, Chagas disease

Supplemental Test Request Form Required:
Yes (PCR to CDC only)

COLLECTION

Sample Type:
EDTA whole blood, CSF
Heart biopsy in sterile saline or FFPE

Collect:
Blood: Lavender or Dark Green top
CSF: CSF tube or sterile collection tube
Heart biopsy for CDC PCR Testing: Sterile collection tube with saline or FFPE material

Amount to Collect:
See preferred volume.

Preferred Volume:
Blood: 3 mL
CSF: 1 mL
Heart biopsy for CDC PCR Testing: 3 cubic mm (fresh or from FFPE material)

Minimum Volume:
Blood (Adult): 2.5 mL
Blood (Pediatric): 0.5 mL
CSF: 0.5 mL
Heart biopsy for CDC PCR Testing: 2.5 cubic mm (fresh or from FFPE material)

Remarks:

Collect blood prior to anti-parasitic therapy.

Contact parasitologist in Microbiology (x31268) prior to collection to discuss appropriate sample type and collection instructions.

Collect and deliver the specimen directly to the laboratory within 30 minutes of collection Monday-Thursday before 12:30 pm.

Include travel/residence history on requisition.

Stability (from collection to initiation):

24 hours (samples >24 hours should not be rejected for PCR sendout)

Storage/Transport Temperature:

Refrigerated

PROCESSING

Test Code:

P409

Test Group:

Trypanosoma

Sendout:

Physician may request sample to be sent to CDC for T. cruzi PCR testing. Use test code P319 Microbiology Test Not Listed. Approval required if no serologic testing has been performed.

Performing Lab:

Microbiology

Specimen Preparation:

Store samples in refrigerator. Send to Microbiology refrigerated

For PCR to CDC: Ship Monday-Thursday, overnight to avoid weekend deliveries. Ship sample on cold packs, except ship paraffin embedded tissue at ambient temperature.

Request provider to complete page 2 of CDC Specimen Submission Form 50.34, which is available at http://www.cdc.gov/laboratory/specimen-submission/form.html

Preferred Volume:

Blood: 3 mL
CSF: 1 mL
Heart biopsy for CDC PCR Testing: 3 cubic mm (fresh or from FFPE material)

Minimum Volume:

Blood (Adult): 2.5 mL
Blood (Pediatric): 0.5 mL
CSF: 0.5 mL
Heart biopsy for CDC PCR Testing: 2.5 cubic mm (fresh or from FFPE material)

Stability (from collection to initiation):

24 hours (samples >24 hours should not be rejected for PCR sendout)

Storage/Transport Temperature:

Refrigerated

RESULT INTERPRETATION

Reference Interval:

No Trypanosoma species seen/detected

Critical Values:

Positive result from normally sterile sites

Additional Information:

This test is offered for the causitive agent of Chagas disease. Sensitivity of direct smear is limited to severe acute stage, reactivation, or detection in recipients of organs from donors with chronic Chagas disease.

Physician may also request Microbiology to send sample to CDC for T. cruzi PCR

For African trypanosomiasis (sleeping sickness), thick and thin smears of blood, CSF, or aspirates of lymph node and trypanosomal chancres can be examined.

CDC offers clinical consultation, but not testing, for suspect African trypanosomiasis.

ADMINISTRATIVE

CPT Codes:
87207

COMPLETE VIEW

Approval Required:
No approval required for microscopic exam.

For T. cruzi PCR to be sent to CDC: Approval from CDC is required if no serologic testing has been performed. Use test code P319 Microbiology Test Not Listed.

Available Stat:
No

Test Code:
P409

Test Group:
Trypanosoma

Performing Lab:
Microbiology

Sendout:
Physician may request sample to be sent to CDC for T. cruzi PCR testing. Use test code P319 Microbiology Test Not Listed. Approval required if no serologic testing has been performed.

Performed:
Monday - Friday, dayshift only. Samples for T. cruzi PCR that are received after noon on Thursday will be sent to CDC the following Monday.

Methodology:
Microscopy (Giema stain of thick and thin smears)

Remarks:
Collect blood prior to anti-parasitic therapy.

Contact parasitologist in Microbiology (x31268) prior to collection to discuss appropriate sample type and collection instructions.

Collect and deliver the specimen directly to the laboratory within 30 minutes of collection Monday-Thursday before 12:30 pm.

Include travel/residence history on requisition.

Collect:
Blood: Lavender or Dark Green top
CSF: CSF tube or sterile collection tube
Heart biopsy for CDC PCR Testing: Sterile collection tube with saline or FFPE material

Amount to Collect:
See preferred volume.

Sample Type:
EDTA whole blood, CSF
Heart biopsy in sterile saline or FFPE

Preferred Volume:
Blood: 3 mL
CSF: 1 mL
Heart biopsy for CDC PCR Testing: 3 cubic mm (fresh or from FFPE material)

Minimum Volume:
Blood (Adult): 2.5 mL
Blood (Pediatric): 0.5 mL
CSF: 0.5 mL
Heart biopsy for CDC PCR Testing: 2.5 cubic mm (fresh or from FFPE material)

Specimen Preparation:
Store samples in refrigerator. Send to Microbiology refrigerated

For PCR to CDC: Ship Monday-Thursday, overnight to avoid weekend deliveries. Ship sample on cold packs, except ship paraffin embedded tissue at ambient temperature.

Request provider to complete page 2 of CDC Specimen Submission Form 50.34, which is available at http://www.cdc.gov/laboratory/specimen-submission/form.html

Reference Interval:
No Trypanosoma species seen/detected

Critical Values:
Positive result from normally sterile sites

Synonyms:

- Trypanosoma cruzi, Chagas disease

Storage/Transport Temperature:
Refrigerated

Stability (from collection to initiation):
24 hours (samples >24 hours should not be rejected for PCR sendout)

Reported:
1-3 days

Additional Information:
This test is offered for the causitive agent of Chagas disease. Sensitivity of direct smear is limited to severe acute stage, reactivation, or detection in recipients of organs from donors with chronic Chagas disease.

Physician may also request Microbiology to send sample to CDC for T. cruzi PCR

For African trypanosomiasis (sleeping sickness), thick and thin smears of blood, CSF, or aspirates of lymph node and trypanosomal chancres can be examined.

CDC offers clinical consultation, but not testing, for suspect African trypanosomiasis.

CPT Codes:
87207

Supplemental Test Request Form Required:
Yes (PCR to CDC only)

Tularemia Agglutinins

TULA

ORDERING

Available Stat:
No

Performing Lab:
Focus via Quest

Methodology:
Direct Agglutination

Reported:
Test performed daily. Turnaround time: 3-5 days.

Additional Information:
Tularemia antibody titers >= 1:20 are of diagnostic significance. However, titers in this range may also indicate previous infection. Antibody begins to appear 2-3 weeks post-onset and generally peaks at approximately 5 weeks into the disease. Based on the antibody production pattern, a second specimen will usually demonstrate a diagnostic four fold rise for patients with active disease.

Synonyms:

- Francisella
- Tularemia antibodies

COLLECTION

Sample Type:
Serum

Collect:
Red top (Gold top acceptable)

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Refrigerated 2 days, frozen at -20C 1 week

PROCESSING

Test Code:
TULA

Sendout:
Yes

Performing Lab:
Focus via Quest

Specimen Preparation:
Freeze sample at -20C. Order Quest # 35176X

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Refrigerated 2 days, frozen at -20C 1 week

RESULT INTERPRETATION

Units:
Titer

Reference Interval:
Negative titer < 20 Equivocal titer 20-80 Positive titer > 80

Additional Information:
Tularemia antibody titers >= 1:20 are of diagnostic significance. However, titers in this range may also indicate previous infection. Antibody begins to appear 2-3 weeks post-onset and generally peaks at approximately 5 weeks into the disease. Based on the antibody production pattern, a second specimen will usually demonstrate a diagnostic four fold rise for patients with active disease.

ADMINISTRATIVE

CPT Codes:
86000-90

LOINC Codes:
23125-8

COMPLETE VIEW

Available Stat:
No

Test Code:
TULA

Performing Lab:
Focus via Quest

Sendout:
Yes

Methodology:
Direct Agglutination

Collect:
Red top (Gold top acceptable)

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Specimen Preparation:
Freeze sample at -20C. Order Quest # 35176X

Units:
Titer

Reference Interval:
Negative titer < 20 Equivocal titer 20-80 Positive titer > 80

Synonyms:

- Francisella
- Tularemia antibodies

Stability (from collection to initiation):
Refrigerated 2 days, frozen at -20C 1 week

Reported:
Test performed daily. Turnaround time: 3-5 days.

Additional Information:
Tularemia antibody titers >= 1:20 are of diagnostic significance. However, titers in this range may also indicate previous infection. Antibody begins to appear 2-3 weeks post-onset and generally peaks at approximately 5 weeks into the disease. Based on the antibody production pattern, a second specimen will usually demonstrate a diagnostic four fold rise for patients with active disease.

CPT Codes:
86000-90

LOINC Codes:
23125-8

Type and Screen
TYSC

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay and Mt. Zion Blood Banks

Performed:
Test available 24 hours per day 7 days per week

Reported:
STAT 1 hour, ASAP 2 hours, Routine 4 hours

Additional Information:
See also: ABO, Rh, and Antibody Screen.

Reflex Testing:
If antibodies potentially capable of causing Hemolytic Disease of the Newborn are found on the Prenatal screen, these will automatically be titered at an additional charge.

Blood type confirmation (a one-time requirement) is required before blood products can be set up. To minimize delays in product availability, if the provider mistakenly places an order for a duplicate Type and Screen test, the Blood Bank will reflexively convert that order to a blood type confirmation test (test code CHEK).

Synonyms:

- Prenatal screening

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top (6 mL size preferred)

Amount to Collect:
See info for Preferred and Minimum sample volumes

Preferred Volume:

Patient Age	EDTA (Purple top) Volume
< 4 mo	Full Microtainer (0.8 mL)
4 mo - 1 year	3 mL
1 -18 years.	3-6 mL (3 mL OK for small children)
> 18 years	6 mL

Minimum Volume:

Patient Age	EDTA (Purple top) Volume
< 4 mo	Full Microtainer (0.8 mL)
4 mo-1 year	1 mL
1-18 years	3 mL
>18 years	5 mL

Remarks:
Use BLOOD BANK requisition. Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Unacceptable Conditions:
Unsigned, mislabeled, unlabeled or hemolyzed sample.

PROCESSING

Test Code:
TYSC

Performing Lab:
Parnassus, Mission Bay and Mt. Zion Blood Banks

Preferred Volume:

Patient Age	EDTA (Purple top) Volume
< 4 mo	Full Microtainer (0.8 mL)
4 mo - 1 year	3 mL
1 -18 years.	3-6 mL (3 mL OK for small children)
> 18 years	6 mL

Minimum Volume:

Patient Age	EDTA (Purple top) Volume
< 4 mo	Full Microtainer (0.8 mL)
4 mo-1 year	1 mL
1-18 years	3 mL
>18 years	5 mL

Unacceptable Conditions:
Unsigned, mislabeled, unlabeled or hemolyzed sample.

RESULT INTERPRETATION

Additional Information:
See also: ABO, Rh, and Antibody Screen.

ADMINISTRATIVE

CPT Codes:
86900, 86901, 86850

COMPLETE VIEW

Available Stat:
Yes

Test Code:
TYSC

Performing Lab:
Parnassus, Mission Bay and Mt. Zion Blood Banks

Performed:
Test available 24 hours per day 7 days per week

Remarks:
Use BLOOD BANK requisition. Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Collect:
Lavender top (6 mL size preferred)

Amount to Collect:
See info for Preferred and Minimum sample volumes

Sample Type:
EDTA whole blood

Preferred Volume:

Patient Age	EDTA (Purple top) Volume
< 4 mo	Full Microtainer (0.8 mL)
4 mo - 1 year	3 mL
1 -18 years.	3-6 mL (3 mL OK for small children)
> 18 years	6 mL

Minimum Volume:

Patient Age	EDTA (Purple top) Volume
< 4 mo	Full Microtainer (0.8 mL)
4 mo-1 year	1 mL
1-18 years	3 mL
>18 years	5 mL

Unacceptable Conditions:
Unsigned, mislabeled, unlabeled or hemolyzed sample.

Synonyms:

- Prenatal screening

Reported:
STAT 1 hour, ASAP 2 hours, Routine 4 hours

Reflex Testing:
If antibodies potentially capable of causing Hemolytic Disease of the Newborn are found on the Prenatal screen, these will automatically be titered at an additional charge.

Blood type confirmation (a one-time requirement) is required before blood products can be set up. To minimize delays in product availability, if the provider mistakenly places an order for a duplicate Type and Screen test, the Blood Bank will reflexively convert that order to a blood type confirmation test (test code CHEK).

Additional Information:
See also: ABO, Rh, and Antibody Screen.

CPT Codes:
86900, 86901, 86850

Type and Screen, Non-patient

TSNP

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Blood Banks

Performed:
Test available 24 hours per day 7 days per week

Reported:
STAT 1 hour, ASAP 2 hours, Routine 4 hours

Additional Information:
Test is for use in neonatal transfusion only.

Typing and screening of blood for transfusion. If antibodies potentially capable of causing Hemolytic Disease of the Newborn are found on the Prenatal screen, these will automatically be titered at an additional charge.

See also: ABO, Rh, and Antibody Screen.

Reflex Testing:
Blood Type confirmation (a one-time requirement) is required before blood products can be set up. To minimize delays in product availability, if the provider mistakenly places an order for a duplicate Type and Screen test, the Blood Bank will reflexively convert that order to a Blood Type confirmation test (test code CHEK).

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top (6 mL size preferred)

Amount to Collect:
6 mL blood

Preferred Volume:
6 mL blood

Minimum Volume:
2 mL blood

Remarks:
Use BLOOD BANK requisition

Unacceptable Conditions:
Unsigned, mislabeled, unlabeled or hemolyzed sample.

PROCESSING

Test Code:
TSNP

Performing Lab:
Parnassus & Mission Bay Blood Banks

Preferred Volume:
6 mL blood

Minimum Volume:
2 mL blood

Unacceptable Conditions:
Unsigned, mislabeled, unlabeled or hemolyzed sample.

RESULT INTERPRETATION

Additional Information:
Test is for use in neonatal transfusion only.

Typing and screening of blood for transfusion. If antibodies potentially capable of causing Hemolytic Disease of the Newborn are found on the Prenatal screen, these will automatically be titered at an additional charge.

See also: ABO, Rh, and Antibody Screen.

ADMINISTRATIVE

CPT Codes:
86900, 86901, 86850

COMPLETE VIEW

Available Stat:
Yes

Test Code:
TSNP

Performing Lab:
Parnassus & Mission Bay Blood Banks

Performed:
Test available 24 hours per day 7 days per week

Remarks:
Use BLOOD BANK requisition

Collect:
Lavender top (6 mL size preferred)

Amount to Collect:
6 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
6 mL blood

Minimum Volume:
2 mL blood

Unacceptable Conditions:
Unsigned, mislabeled, unlabeled or hemolyzed sample.

Reported:
STAT 1 hour, ASAP 2 hours, Routine 4 hours

Reflex Testing:
Blood Type confirmation (a one-time requirement) is required before blood products can be set up. To minimize delays in product availability, if the provider mistakenly places an order for a duplicate Type and Screen test, the Blood Bank will reflexively convert that order to a Blood Type confirmation test (test code CHEK).

Additional Information:
Test is for use in neonatal transfusion only.

Typing and screening of blood for transfusion. If antibodies potentially capable of causing Hemolytic Disease of the Newborn are found on the Prenatal screen, these will automatically be titered at an additional charge.

See also: ABO, Rh, and Antibody Screen.

CPT Codes:
86900, 86901, 86850

Type and Screen, Prenatal

ABPR

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Blood Banks

Performed:
Test available 24 hours per day 7 days per week

Reported:
STAT 1 hour, ASAP 2 hours, Routine 4 hours

Additional Information:
Typing and screening of blood for transfusion. If antibodies potentially capable of causing Hemolytic Disease of the Newborn are found on the Prenatal screen, these will automatically be titered at an additional charge.

See also: ABO, Rh, and Antibody Screen.

Reflex Testing:
Blood Type confirmation (a one-time requirement) is required before blood products can be set up. To minimize delays in product availability, if the provider mistakenly places an order for a duplicate Type and Screen test, the Blood Bank will reflexively convert that order to a Blood Type confirmation test (test code CHEK).

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top (6 mL size preferred)

Amount to Collect:
6 mL blood

Preferred Volume:
6 mL blood

Minimum Volume:
2 mL blood

Remarks:
Use BLOOD BANK requisition. Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Unacceptable Conditions:
Unsigned, mislabeled, unlabeled or hemolyzed sample.

PROCESSING

Test Code:
ABPR

Performing Lab:
Parnassus & Mission Bay Blood Banks

Preferred Volume:
6 mL blood

Minimum Volume:
2 mL blood

Unacceptable Conditions:
Unsigned, mislabeled, unlabeled or hemolyzed sample.

RESULT INTERPRETATION

Additional Information:
Typing and screening of blood for transfusion. If antibodies potentially capable of causing Hemolytic Disease of the Newborn are found on the Prenatal screen, these will automatically be titered at an additional charge.

See also: ABO, Rh, and Antibody Screen.

ADMINISTRATIVE

CPT Codes:
86900

COMPLETE VIEW

Available Stat:
Yes

Test Code:
ABPR

Performing Lab:
Parnassus & Mission Bay Blood Banks

Performed:
Test available 24 hours per day 7 days per week

Remarks:
Use BLOOD BANK requisition. Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Collect:
Lavender top (6 mL size preferred)

Amount to Collect:
6 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
6 mL blood

Minimum Volume:
2 mL blood

Unacceptable Conditions:
Unsigned, mislabeled, unlabeled or hemolyzed sample.

Reported:
STAT 1 hour, ASAP 2 hours, Routine 4 hours

Reflex Testing:
Blood Type confirmation (a one-time requirement) is required before blood products can be set up. To minimize delays in product availability, if the provider mistakenly places an order for a duplicate Type and Screen test, the Blood Bank will reflexively convert that order to a Blood Type confirmation test (test code CHEK).

Additional Information:
Typing and screening of blood for transfusion. If antibodies potentially capable of causing Hemolytic Disease of the Newborn are found on the Prenatal screen, these will automatically be titered at an additional charge.

See also: ABO, Rh, and Antibody Screen.

CPT Codes:
86900

Tyrosine, plasma

TYRO

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
LCMS

Reported:
Set up at least 3x weekly. Turnaround time: 3-5 days.

COLLECTION

Patient Preparation:
Collect specimen after an overnight fast (or at least 4 hours after a meal) if possible. Non-fasting samples are acceptable for pediatric patients

Sample Type:
Heparinized plasma

Collect:
Dark Green top

Amount to Collect:
1 mL blood

Preferred Volume:
0.4 mL plasma

Minimum Volume:
0.2 mL plasma

Remarks:
Provide the patient's age and sex, a brief clinical history and tentative diagnosis, and a description of drug, infant formula or dietary therapy or X-rays in the previous three days.

Stability (from collection to initiation):
Room temperature unacceptable, refrigerated 7 days, frozen at -20C 30 days

PROCESSING

Test Code:
TYRO

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Separate and immediately freeze plasma at -20C. Order Quest # 30791P

Preferred Volume:
0.4 mL plasma

Minimum Volume:
0.2 mL plasma

Stability (from collection to initiation):
Room temperature unacceptable, refrigerated 7 days, frozen at -20C 30 days

RESULT INTERPRETATION

Units:
µmol/L

Reference Interval:
0-30 days: 33-160 µmol/L
31 days-23 months: 24-125 µmol/L
2-17 years: 31-108 µmol/L
>= 18 years: 38-96 µmol/L

ADMINISTRATIVE

CPT Codes:
84510-90

LOINC Codes:
20660-7

COMPLETE VIEW

Available Stat:
No

Test Code:
TYRO

Performing Lab:
Quest

Sendout:
Yes

Methodology:
LCMS

Patient Preparation:
Collect specimen after an overnight fast (or at least 4 hours after a meal) if possible. Non-fasting samples are acceptable for pediatric patients

Remarks:
Provide the patient's age and sex, a brief clinical history and tentative diagnosis, and a description of drug, infant formula or dietary therapy or X-rays in the previous three days.

Collect:
Dark Green top

Amount to Collect:
1 mL blood

Sample Type:
Heparinized plasma

Preferred Volume:
0.4 mL plasma

Minimum Volume:
0.2 mL plasma

Specimen Preparation:
Separate and immediately freeze plasma at -20C. Order Quest # 30791P

Units:
µmol/L

Reference Interval:
0-30 days: 33-160 µmol/L
31 days-23 months: 24-125 µmol/L
2-17 years: 31-108 µmol/L
>= 18 years: 38-96 µmol/L

Stability (from collection to initiation):
Room temperature unacceptable, refrigerated 7 days, frozen at -20C 30 days

Reported:
Set up at least 3x weekly. Turnaround time: 3-5 days.

CPT Codes:
84510-90

LOINC Codes:
20660-7

UCSF Genomics Blood Draw

GMLEXP

ORDERING

Available Stat:
No

Performing Lab:
UCSF Genomic Medicine Lab

Additional Information:
Specimen sent to GML @ Mt Zion

Synonyms:

- GML Peripheral blood draw
- PGx blood
- Pharmacogenomics blood

COLLECTION

Sample Type:
Blood

Collect:
EDTA (lavender top)

Amount to Collect:
3 mL

Preferred Volume:
3 mL

Minimum Volume:
1 mL

Stability (from collection to initiation):
Blood is stable refrigerated for 1 week. Please refrigerate samples over the weekend or holidays at 4°C for next business day pick up.

PROCESSING

Test Code:
GMLEXP

Performing Lab:
UCSF Genomic Medicine Lab

Specimen Preparation:
Blood sent on the courier to Central Processing Mt Zion.

Upon receipt, place samples in refrigerator in refrigerated cooler attention to CCGL @ Mount Zion.

Preferred Volume:
3 mL

Minimum Volume:
1 mL

Stability (from collection to initiation):
Blood is stable refrigerated for 1 week. Please refrigerate samples over the weekend or holidays at 4°C for next business day pick up.

RESULT INTERPRETATION

Additional Information:
Specimen sent to GML @ Mt Zion

ADMINISTRATIVE

CPT Codes:
36415

COMPLETE VIEW

Available Stat:
No

Test Code:
GMLEXP

Performing Lab:
UCSF Genomic Medicine Lab

Collect:
EDTA (lavender top)

Amount to Collect:
3 mL

Sample Type:
Blood

Preferred Volume:
3 mL

Minimum Volume:
1 mL

Specimen Preparation:
Blood sent on the courier to Central Processing Mt Zion.

Upon receipt, place samples in refrigerator in refrigerated cooler attention to CCGL @ Mount Zion.

Synonyms:

- GML Peripheral blood draw
- PGx blood
- Pharmacogenomics blood

Stability (from collection to initiation):
Blood is stable refrigerated for 1 week. Please refrigerate samples over the weekend or holidays at 4°C for next business day pick up.

Additional Information:
Specimen sent to GML @ Mt Zion

CPT Codes:
36415

UCSF Platelet Refractory Testing Orders

ILPRA1

ORDERING

Approval Required:
Yes. Please contact Blood Bank.

Available Stat:
YES; Monday-Friday, provided sample is collected before 6 AM. Please order as STAT. TAT is <= 3 business days.

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Luminex-based

Reported:
Test run Monday - Friday. TAT for STAT order is <= 3 business days.

Additional Information:
This is an order set used to work up patients who are refractory to platelet transfusions. The order set includes the HLA antibody testing - Class I PRA test (https://www.testmenu.com/UCSFClinLab/Tests/812056), with one difference; this test is performed STAT (not batched) when ordered for patients with suspected platelet refractoriness secondary to HLA alloimmunization. For detailed information on evaluating refractoriness to platelet transfusion, as well as how and when to utilize this order set, please refer to the UCSF Transfusion Guidelines' section on HLA-matched/Cross Matched Platelets for Platelet Refractoriness (https://clinlab.ucsf.edu/transfusion-medicine-guide#Platelets).

COLLECTION

Sample Type:
Serum

Collect:
One full red top tube for antibody testing and one full ACD tube for HLA typing.

Amount to Collect:
12 ml whole blood

Preferred Volume:
6 ml whole blood

Minimum Volume:
1.25 ml whole blood

Remarks:
This order set should be ordered directly through the APEX order set Platelet Refractory Testing Orders' Please refer to the UCSF Transfusion Guidelines' section on HLA-matched/Cross Matched Platelets for Platelet Refractoriness for information on how to utilize this order set (https://clinlab.ucsf.edu/transfusion-medicine-guide#Platelets).

The order set is composed of the following tests:
- HLA Class I Typing - Intermediate Resolution
- HLA Class I Typing - Intermediate Resolution (Blood Draw ONLY)
- HLA Antibody - Class I Single Antigen
- HLA Antibody - Class I Single Antigen (Blood Draw ONLY)

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours.

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

PROCESSING

Test Code:
ILPRA1

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Specimen Preparation:
Keep sample at room temperature. Do not refrigerate or centrifuge

Preferred Volume:
6 ml whole blood

Minimum Volume:
1.25 ml whole blood

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours.

RESULT INTERPRETATION

Additional Information:
This is an order set used to work up patients who are refractory to platelet transfusions. The order set includes the HLA antibody testing - Class I PRA test (https://www.testmenu.com/UCSFClinLab/Tests/812056), with one difference; this test is performed STAT (not batched) when ordered for patients with suspected platelet refractoriness secondary to HLA alloimmunization. For detailed information on evaluating refractoriness to platelet transfusion, as well as how and when to utilize this order set, please refer to the UCSF Transfusion Guidelines' section on HLA-matched/Cross Matched Platelets for Platelet Refractoriness (https://clinlab.ucsf.edu/transfusion-medicine-guide#Platelets).

COMPLETE VIEW

Approval Required:
Yes. Please contact Blood Bank.

Available Stat:
YES; Monday-Friday, provided sample is collected before 6 AM. Please order as STAT. TAT is <= 3 business days.

Test Code:
ILPRA1

Performing Lab:
Immunogenetics & Transplantation Laboratory (ITL)

Methodology:
Luminex-based

Remarks:
This order set should be ordered directly through the APEX order set Platelet Refractory Testing Orders' Please refer to the UCSF Transfusion Guidelines' section on HLA-matched/Cross Matched Platelets for Platelet Refractoriness for information on how to utilize this order set (https://clinlab.ucsf.edu/transfusion-medicine-guide#Platelets).

The order set is composed of the following tests:
- HLA Class I Typing - Intermediate Resolution
- HLA Class I Typing - Intermediate Resolution (Blood Draw ONLY)
- HLA Antibody - Class I Single Antigen
- HLA Antibody - Class I Single Antigen (Blood Draw ONLY)

Collect:
One full red top tube for antibody testing and one full ACD tube for HLA typing.

Amount to Collect:
12 ml whole blood

Sample Type:
Serum

Preferred Volume:
6 ml whole blood

Minimum Volume:
1.25 ml whole blood

Unacceptable Conditions:
Hemolyzed sample and or presence of substances that can interfere with the assay (high background).

Specimen Preparation:
Keep sample at room temperature. Do not refrigerate or centrifuge

Stability (from collection to initiation):
If kept at ambient temperature, can be good for up to 72 hours.

Reported:
Test run Monday - Friday. TAT for STAT order is <= 3 business days.

Additional Information:
This is an order set used to work up patients who are refractory to platelet transfusions. The order set includes the HLA antibody testing - Class I PRA test (https://www.testmenu.com/UCSFClinLab/Tests/812056), with one difference; this test is performed STAT (not batched) when ordered for patients with suspected platelet refractoriness secondary to HLA alloimmunization. For detailed information on evaluating refractoriness to platelet transfusion, as well as how and when to utilize this order set, please refer to the UCSF Transfusion Guidelines' section on HLA-matched/Cross Matched Platelets for Platelet Refractoriness (https://clinlab.ucsf.edu/transfusion-medicine-guide#Platelets).

UCSF500 Gene Panel Ordering Information

ORDERING

Available Stat:
No

Performing Lab:
UCSF Clinical Cancer Genomics Lab (CCGL)

Performed:
Run twice per week, day shift only

Methodology:
Targeted next-generation sequencing (NovaSeq)

Reported:
14 - 21 days

Additional Information:
The test was validated by the UCSF Clinical Cancer Genomics Laboratory (CCGL) to confirm performance characteristics, in compliance with current guidelines for clinical implementation.

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Synonyms:

- U500, UCSF500, UCSF 500 Cancer Gene Panel

COLLECTION

Collect:
Blood or bone marrow in EDTA (lavender top, 3 cc preferred)Formalin-fixed paraffin embedded tissue (5-10 unstained slides at 10 µm thickness, or FFPE tissue block)Buccal swabsFresh skin biopsy (1-2 mm punch)

Remarks:
UCSF Clinicians — Inpatient and Ambulatory Providers are now able to place orders electronically in APeX. Order panels UC500 Solid Tumor Testing and UC500 Leukemia Testing have been created with detailed instructions on ordering guidelines. APeX will allow you to order TUMOR only, as well as paired TUMOR:NORMAL tests. Blood draws can be ordered through APeX - Peripheral blood draw for CCGL (PBCGL).

Non UCSF Clinicians - use the UCSF500 paper requisition form, contact ccgl@ucsf.edu or 415-502-3252.

For any questions related to the ordering process, please contact ccgl@ucsf.edu or 415-502-3252.

PROCESSING

Performing Lab:
UCSF Clinical Cancer Genomics Lab (CCGL)

Specimen Preparation:
Do not freeze blood or bone marrow samples. Ship samples to CCGL at Mt Zion as soon as possible.

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
The test was validated by the UCSF Clinical Cancer Genomics Laboratory (CCGL) to confirm performance characteristics, in compliance with current guidelines for clinical implementation.

ADMINISTRATIVE

CPT Codes:
81455

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Performing Lab:
UCSF Clinical Cancer Genomics Lab (CCGL)

Performed:
Run twice per week, day shift only

Methodology:
Targeted next-generation sequencing (NovaSeq)

Remarks:
UCSF Clinicians — Inpatient and Ambulatory Providers are now able to place orders electronically in APeX. Order panels UC500 Solid Tumor Testing and UC500 Leukemia Testing have been created with detailed instructions on ordering guidelines. APeX will allow you to order TUMOR only, as well as paired TUMOR:NORMAL tests. Blood draws can be ordered through APeX - Peripheral blood draw for CCGL (PBCGL).

Non UCSF Clinicians - use the UCSF500 paper requisition form, contact ccgl@ucsf.edu or 415-502-3252.

For any questions related to the ordering process, please contact ccgl@ucsf.edu or 415-502-3252.

Collect:
Blood or bone marrow in EDTA (lavender top, 3 cc preferred)Formalin-fixed paraffin embedded tissue (5-10 unstained slides at 10 µm thickness, or FFPE tissue block)Buccal swabsFresh skin biopsy (1-2 mm punch)

Specimen Preparation:
Do not freeze blood or bone marrow samples. Ship samples to CCGL at Mt Zion as soon as possible.

Reference Interval:
Negative

Synonyms:

- U500, UCSF500, UCSF 500 Cancer Gene Panel

Reported:
14 - 21 days

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Additional Information:
The test was validated by the UCSF Clinical Cancer Genomics Laboratory (CCGL) to confirm performance characteristics, in compliance with current guidelines for clinical implementation.

CPT Codes:
81455

LDT or Modified FDA:
Yes

UDP Glucuronosyltransferase 1A1

UGT1A1

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Molecular Diagnostics

Performed:
Batched assay performed once every 2 weeks

Methodology:
PCR and Fragment analysis

Reported:
10-14 days

Additional Information:
Irinotecan is used for the treatment of metastatic carcinoma of the colon or rectum. It causes severe neutropenia and diarrhea in 20-35% of patients undergoing chemotherapy. The ability to predict toxicity in treated patients is an important consideration.

UGT1A1 catalyzes the inactivation of SN-38, the active and toxic metabolite of irinotecan. The 7TA repeat length polymorphism (termed *28 allele) in the UGT1A1 promoter is associated with decreased UGT1A1 gene expression levels, resulting in lower than normal UGT1A1 enzymatic activity and accumulation of SN-38, the active irinotecan metabolite.

About 15% of North Americans are homozygous for the *28/*28 genotype and thus cancer patients carrying this variant exhibit irinotecan related toxicity and would require lower doses of irinotecan than patients carrying the 6 TA repeat (*1 allele). The clinical significance of the rare 5 and 8 TA repeats, termed *36 and *37 allele, respectively, in predicting irinotecan toxicities is not well established.

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Synonyms:

- Irenotecan
- UGT1A1
- UGT 1A1

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top

Amount to Collect:
3 mL

Preferred Volume:
3 mL

Minimum Volume:
1 mL

Remarks:
Avoid hemolysis. Due to stability issues these samples should only be collected at UCSF Monday through noon Friday.

Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Stability (from collection to initiation):
Refrigerated, 1 month.

Unacceptable Conditions:
Insufficient sample received.

Rejection Criteria:
Insufficient sample received. Serum, citrated or heparinized plasma received. Samples > 5 days old when received

PROCESSING

Test Code:
UGT1A1

Performing Lab:
Medical Genomics - Molecular Diagnostics

Specimen Preparation:
Do not freeze blood. Refrigerate sample if storage is required.

Ship to China Basin Molecular Diagnostics

Preferred Volume:
3 mL

Minimum Volume:
1 mL

Unacceptable Conditions:
Insufficient sample received.

Rejection Criteria:
Insufficient sample received. Serum, citrated or heparinized plasma received. Samples > 5 days old when received

Stability (from collection to initiation):
Refrigerated, 1 month.

RESULT INTERPRETATION

Reference Interval:
Wildtype *1/*1

Most common normal allele is 6 repeats (= *1)

Additional Information:
Irinotecan is used for the treatment of metastatic carcinoma of the colon or rectum. It causes severe neutropenia and diarrhea in 20-35% of patients undergoing chemotherapy. The ability to predict toxicity in treated patients is an important consideration.

UGT1A1 catalyzes the inactivation of SN-38, the active and toxic metabolite of irinotecan. The 7TA repeat length polymorphism (termed *28 allele) in the UGT1A1 promoter is associated with decreased UGT1A1 gene expression levels, resulting in lower than normal UGT1A1 enzymatic activity and accumulation of SN-38, the active irinotecan metabolite.

About 15% of North Americans are homozygous for the *28/*28 genotype and thus cancer patients carrying this variant exhibit irinotecan related toxicity and would require lower doses of irinotecan than patients carrying the 6 TA repeat (*1 allele). The clinical significance of the rare 5 and 8 TA repeats, termed *36 and *37 allele, respectively, in predicting irinotecan toxicities is not well established.

ADMINISTRATIVE

CPT Codes:
81350

LDT or Modified FDA:
Yes

LOINC Codes:
51951-2

COMPLETE VIEW

Available Stat:
No

Test Code:
UGT1A1

Performing Lab:
Medical Genomics - Molecular Diagnostics

Performed:
Batched assay performed once every 2 weeks

Methodology:
PCR and Fragment analysis

Remarks:
Avoid hemolysis. Due to stability issues these samples should only be collected at UCSF Monday through noon Friday.

Do not collect sample in heparin. Keep sample refrigerated for overnight or longer storage.

Collect:
Lavender top

Amount to Collect:
3 mL

Sample Type:
EDTA whole blood

Preferred Volume:
3 mL

Minimum Volume:
1 mL

Rejection Criteria:
Insufficient sample received. Serum, citrated or heparinized plasma received. Samples > 5 days old when received

Unacceptable Conditions:
Insufficient sample received.

Specimen Preparation:
Do not freeze blood. Refrigerate sample if storage is required.

Ship to China Basin Molecular Diagnostics

Reference Interval:
Wildtype *1/*1

Most common normal allele is 6 repeats (= *1)

Synonyms:

- Irenotecan
- UGT1A1
- UGT 1A1

Stability (from collection to initiation):
Refrigerated, 1 month.

Reported:
10-14 days

Reflex Testing:
An interpretation of this test by a laboratory physician will automatically be performed and billed for separately.

Additional Information:
Irinotecan is used for the treatment of metastatic carcinoma of the colon or rectum. It causes severe neutropenia and diarrhea in 20-35% of patients undergoing chemotherapy. The ability to predict toxicity in treated patients is an important consideration.

UGT1A1 catalyzes the inactivation of SN-38, the active and toxic metabolite of irinotecan. The 7TA repeat length polymorphism (termed *28 allele) in the UGT1A1 promoter is associated with decreased UGT1A1 gene expression levels, resulting in lower than normal UGT1A1 enzymatic activity and accumulation of SN-38, the active irinotecan metabolite.

About 15% of North Americans are homozygous for the *28/*28 genotype and thus cancer patients carrying this variant exhibit irinotecan related toxicity and would require lower doses of irinotecan than patients carrying the 6 TA repeat (*1 allele). The clinical significance of the rare 5 and 8 TA repeats, termed *36 and *37 allele, respectively, in predicting irinotecan toxicities is not well established.

CPT Codes:
81350

LDT or Modified FDA:
Yes

LOINC Codes:
51951-2

Universal Microbial DNA

P390

ORDERING

Approval Required:
Infectious Disease consult recommended.
CSF samples will be tested via metagenomics Next Generation Sequencing.
BAL samples may be sent for Universal Fungal PCR.
Sterile tissues and fluids may be sent for Universal Bacterial, Fungal, and/or AFB PCR.
All other sample types should obtain approval by lab medicine.

Available Stat:
No

Performing Lab:
Univ. of Washington

Methodology:
PCR

Additional Information:
Universal microbial PCR can be used to detect infectious agents in sterile tissues and fluids. Specific PCR targets vary by pathogen type as listed: Universal bacterial PCR: 16S ribosomal DNA. Universal fungal PCR: 18S ribosomal DNA, Universal AFB PCR: rpoB and hsp65.

Identification of pathogens is typically successful when organisms are seen on stains, but cultures are negative due to prior antibiotic use or fastidious organisms. Testing of fresh tissue showing no organisms on stain but significant amount of inflammation / granulomas detects pathogens in fewer than 25% of cases. Formalin-fixed tissue should generally be sent only when organisms are seen on stains. Testing of tissue or fluids that do not show inflammation is not indicated.

Synonyms:

- Universal microbial PCR

COLLECTION

Sample Type:
Fresh sterile tissue, or fluid (preferred), formalin-fixed paraffin embedded tissue

Collect:
Sterile tube

Amount to Collect:
Tissue: 5 cubic mm
Fluid: 1 mL

Preferred Volume:
Tissue: 5 cubic mm
Fluid: 1 mL

Minimum Volume:
Tissue: 3 cubic mm
Fluid: 0.5 mL

Remarks:
Fresh sterile tissue or fluid should be submitted to the microbiology laboratory in a separate container, along with specimens for culture (bacterial, fungal and AFB). Test sensitivity is much lower for formalin-fixed paraffin-embedded tissues.

Stability (from collection to initiation):
Frozen 1 month

Rejection Criteria:
Anticoagulated fluids

PROCESSING

Test Code:
P390

Sendout:
Yes

Performing Lab:
Univ. of Washington

Specimen Preparation:
Freeze fresh tissue and fluid at -70C and ship frozen (on dry ice).

Ship formalin fixed paraffin embedded tissue at room temperature.

Preferred Volume:
Tissue: 5 cubic mm
Fluid: 1 mL

Minimum Volume:
Tissue: 3 cubic mm
Fluid: 0.5 mL

Rejection Criteria:
Anticoagulated fluids

Stability (from collection to initiation):
Frozen 1 month

RESULT INTERPRETATION

Reference Interval:
Microbial DNA not detected

Additional Information:
Universal microbial PCR can be used to detect infectious agents in sterile tissues and fluids. Specific PCR targets vary by pathogen type as listed: Universal bacterial PCR: 16S ribosomal DNA. Universal fungal PCR: 18S ribosomal DNA, Universal AFB PCR: rpoB and hsp65.

Identification of pathogens is typically successful when organisms are seen on stains, but cultures are negative due to prior antibiotic use or fastidious organisms. Testing of fresh tissue showing no organisms on stain but significant amount of inflammation / granulomas detects pathogens in fewer than 25% of cases. Formalin-fixed tissue should generally be sent only when organisms are seen on stains. Testing of tissue or fluids that do not show inflammation is not indicated.

COMPLETE VIEW

Approval Required:
Infectious Disease consult recommended.
CSF samples will be tested via metagenomics Next Generation Sequencing.
BAL samples may be sent for Universal Fungal PCR.
Sterile tissues and fluids may be sent for Universal Bacterial, Fungal, and/or AFB PCR.
All other sample types should obtain approval by lab medicine.

Available Stat:
No

Test Code:
P390

Performing Lab:
Univ. of Washington

Sendout:
Yes

Methodology:
PCR

Remarks:
Fresh sterile tissue or fluid should be submitted to the microbiology laboratory in a separate container, along with specimens for culture (bacterial, fungal and AFB). Test sensitivity is much lower for formalin-fixed paraffin-embedded tissues.

Collect:
Sterile tube

Amount to Collect:
Tissue: 5 cubic mm
Fluid: 1 mL

Sample Type:
Fresh sterile tissue, or fluid (preferred), formalin-fixed paraffin embedded tissue

Preferred Volume:
Tissue: 5 cubic mm
Fluid: 1 mL

Minimum Volume:
Tissue: 3 cubic mm
Fluid: 0.5 mL

Rejection Criteria:
Anticoagulated fluids

Specimen Preparation:

Freeze fresh tissue and fluid at -70C and ship frozen (on dry ice).

Ship formalin fixed paraffin embedded tissue at room temperature.

Reference Interval:

Microbial DNA not detected

Synonyms:

- Universal microbial PCR

Stability (from collection to initiation):

Frozen 1 month

Additional Information:

Universal microbial PCR can be used to detect infectious agents in sterile tissues and fluids. Specific PCR targets vary by pathogen type as listed: Universal bacterial PCR: 16S ribosomal DNA. Universal fungal PCR: 18S ribosomal DNA, Universal AFB PCR: rpoB and hsp65.

Identification of pathogens is typically successful when organisms are seen on stains, but cultures are negative due to prior antibiotic use or fastidious organisms. Testing of fresh tissue showing no organisms on stain but significant amount of inflammation / granulomas detects pathogens in fewer than 25% of cases. Formalin-fixed tissue should generally be sent only when organisms are seen on stains. Testing of tissue or fluids that do not show inflammation is not indicated.

Unstable Hemoglobin, Isopropanol screen

UHGBI

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Isopropanol precipitation

Reported:
Same day or next weekday

Synonyms:

- Isopropanol stability
- unstable hemoglobin

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top

Amount to Collect:
8 mL blood

Preferred Volume:
8 mL blood

Minimum Volume:
3 mL blood

Remarks:
Draw only between 0800-1200 hours Monday-Friday

Stability (from collection to initiation):
Refrigerated 1 week.

Rejection Criteria:
Frozen sample.

PROCESSING

Test Code:
UHGBI

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Keep sample refrigerated. Sample needs to be at China Basin for 4 PM Quest pick-up the same day it is collected.

Preferred Volume:
8 mL blood

Minimum Volume:
3 mL blood

Rejection Criteria:
Frozen sample.

Stability (from collection to initiation):
Refrigerated 1 week.

RESULT INTERPRETATION

Reference Interval:
None detected

ADMINISTRATIVE

CPT Codes:
83068-90

LOINC Codes:
41619-8

COMPLETE VIEW

Available Stat:
No

Test Code:
UHGBI

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Isopropanol precipitation

Remarks:
Draw only between 0800-1200 hours Monday-Friday

Collect:
Lavender top

Amount to Collect:
8 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
8 mL blood

Minimum Volume:
3 mL blood

Rejection Criteria:
Frozen sample.

Specimen Preparation:
Keep sample refrigerated. Sample needs to be at China Basin for 4 PM Quest pick-up the same day it is collected.

Reference Interval:
None detected

Synonyms:

- Isopropanol stability
- unstable hemoglobin

Stability (from collection to initiation):
Refrigerated 1 week.

Reported:
Same day or next weekday

CPT Codes:
83068-90

LOINC Codes:
41619-8

Urea Clearance

URCL

ORDERING

Available Stat:
No

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 7 days per week from 8:00 AM to midnight only.

Methodology:
Urease, Spectrophotometric

Reported:
4 hours

Additional Information:
In normal individuals, urea clearance ranges between 35% - 65% of the GFR depending on hydration status (Diseases of the Kidney and Urinary Tract, R.W Schrier, 8th edition, 2007).

Note: Clearances are often inaccurate because of incomplete urine collection. A 4- or 6-hour collection is likely to be more complete than the classic 24 hour test, but extrapolation of results from shortened collections may not be accurate.

An order for Urea Clearance includes the following parameters:

a. Urine Urea Nitrogen: (Urine urea nitrogen mg/dL x Total Vol in mL x 24) / (100,000 x hours of collection) = g/d

Note: Only Urine Urea Nitrogen will be reported if no serum sample is received.

b. Urea Clearance Uncorrected: (Urine urea nitrogen mg/dL x Total Volume mL) / (60 x hours of collection x serum urea nitrogen) = mL/min

c. Corrected Urea Clearance: (Total Vol. in mL x urine urea nitrogen mg/dL x 1.73) / (60 x hours of collection x serum urea nitrogen x surface area) = mL/min/1.73 m2

COLLECTION

Sample Type:
24 hour urine **AND** serum

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container

AND Gold top

Amount to Collect:
Entire 24 hour urine output
2 ml blood

Preferred Volume:
Urine: Complete collection
Serum: 1 mL

Minimum Volume:
Urine: Complete collection
Serum: 0.2 mL

Remarks:
Refrigerate the collection container during the collection period.

Submit serum (Gold top) drawn within 24 hours of urine collection-preferably within the interval of collection.

Include the patient's weight in kg and height in cm on the requisition if a corrected clearance is needed.

Stability (from collection to initiation):
Refrigerated 2 days.

Unacceptable Conditions:
Container not refrigerated during collection.

PROCESSING

Test Code:
URCL

Test Group:
Urea

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
Urine: Complete collection
Serum: 1 mL

Minimum Volume:
Urine: Complete collection
Serum: 0.2 mL

Unacceptable Conditions:
Container not refrigerated during collection.

Stability (from collection to initiation):
Refrigerated 2 days.

RESULT INTERPRETATION

Units:
mL/min/1.73 m^2

Reference Interval:
See additional information

Additional Information:
In normal individuals, urea clearance ranges between 35% - 65% of the GFR depending on hydration status (Diseases of the Kidney and Urinary Tract, R.W Schrier, 8th edition, 2007).

Note: Clearances are often inaccurate because of incomplete urine collection. A 4- or 6-hour collection is likely to be more complete than the classic 24 hour test, but extrapolation of results from shortened collections may not be accurate.

An order for Urea Clearance includes the following parameters:

a. Urine Urea Nitrogen: (Urine urea nitrogen mg/dL x Total Vol in mL x 24) / (100,000 x hours of collection) = g/d

Note: Only Urine Urea Nitrogen will be reported if no serum sample is received.

b. Urea Clearance Uncorrected: (Urine urea nitrogen mg/dL x Total Volume mL) / (60 x hours of collection x serum urea nitrogen) = mL/min

c. Corrected Urea Clearance: (Total Vol. in mL x urine urea nitrogen mg/dL x 1.73) / (60 x hours of collection x serum urea nitrogen x surface area) = mL/min/1.73 m2

COMPLETE VIEW

Available Stat:
No

Test Code:
URCL

Test Group:
Urea

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 7 days per week from 8:00 AM to midnight only.

Methodology:
Urease, Spectrophotometric

Remarks:
Refrigerate the collection container during the collection period.

Submit serum (Gold top) drawn within 24 hours of urine collection-preferably within the interval of collection.

Include the patient's weight in kg and height in cm on the requisition if a corrected clearance is needed.

Collect:

Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container

AND Gold top

Amount to Collect:

Entire 24 hour urine output
2 ml blood

Sample Type:

24 hour urine **AND** serum

Preferred Volume:

Urine: Complete collection
Serum: 1 mL

Minimum Volume:

Urine: Complete collection
Serum: 0.2 mL

Unacceptable Conditions:

Container not refrigerated during collection.

Units:

mL/min/1.73 m^2

Reference Interval:

See additional information

Stability (from collection to initiation):

Refrigerated 2 days.

Reported:

4 hours

Additional Information:

In normal individuals, urea clearance ranges between 35% - 65% of the GFR depending on hydration status (Diseases of the Kidney and Urinary Tract, R.W Schrier, 8th edition, 2007).

Note: Clearances are often inaccurate because of incomplete urine collection. A 4- or 6-hour collection is likely to be more complete than the classic 24 hour test, but extrapolation of results from shortened collections may not be accurate.

An order for Urea Clearance includes the following parameters:

a. Urine Urea Nitrogen: (Urine urea nitrogen mg/dL x Total Vol in mL x 24) / (100,000 x hours of collection) = g/d

Note: Only Urine Urea Nitrogen will be reported if no serum sample is received.

b. Urea Clearance Uncorrected: (Urine urea nitrogen mg/dL x Total Volume mL) / (60 x hours of collection x serum urea nitrogen) = mL/min

c. Corrected Urea Clearance: (Total Vol. in mL x urine urea nitrogen mg/dL x 1.73) / (60 x hours of collection x serum urea nitrogen x surface area) = mL/min/1.73 m2

Urea Nitrogen, 24 hour (or timed) urine

UNU

ORDERING

Available Stat:
No

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 7 days per week from 8:00 AM to midnight only.

Methodology:
Urease, Spectrophotometric

Reported:
Same or next day

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by 0.357.

Output varies with diet.

Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

Synonyms:

- UUN

COLLECTION

Sample Type:
Timed urine collection

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container

Amount to Collect:
Entire urine output for collection period

Preferred Volume:
1 mL urine

Minimum Volume:
0.2 mL urine

Remarks:
Refrigerate the container during the period of the collection.

Note that the minimum acceptable time period for a 'timed' collection is 6 hours.

Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 7 days, frozen at -20C 1 month

Unacceptable Conditions:
Container not refrigerated during collection.

PROCESSING

Test Code:
UNU

Test Group:
Urea

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
1 mL urine

Minimum Volume:
0.2 mL urine

Unacceptable Conditions:
Container not refrigerated during collection.

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 7 days, frozen at -20C 1 month

RESULT INTERPRETATION

Units:
g/D

Reference Interval:
12-20 g/day

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by 0.357.

Output varies with diet.

Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

ADMINISTRATIVE

CPT Codes:
84540

COMPLETE VIEW

Available Stat:
No

Test Code:
UNU

Test Group:
Urea

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 7 days per week from 8:00 AM to midnight only.

Methodology:
Urease, Spectrophotometric

Remarks:
Refrigerate the container during the period of the collection.

Note that the minimum acceptable time period for a 'timed' collection is 6 hours.

Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

Collect:
Preferred: Plain Container

Acceptable: Amber Container, Acid Wash Container

Amount to Collect:
Entire urine output for collection period

Sample Type:
Timed urine collection

Preferred Volume:
1 mL urine

Minimum Volume:
0.2 mL urine

Unacceptable Conditions:
Container not refrigerated during collection.

Units:
g/D

Reference Interval:
12-20 g/day

Synonyms:

- UUN

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 7 days, frozen at -20C 1 month

Reported:
Same or next day

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by 0.357.

Output varies with diet.

Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

CPT Codes:
84540

Urea Nitrogen, Body Fluid

UNB

ORDERING

Available Stat:
No

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Urease, Spectrophotometric

Reported:
4 hours

Additional Information:
Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context.

COLLECTION

Sample Type:
Body Fluid

Collect:
Clean, empty container OR red top (no additives)
Note: Do NOT collect in red top with clot activator (silicone coated).

Amount to Collect:
5 mL fluid

Preferred Volume:
1 mL fluid

Minimum Volume:
0.2 mL fluid

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Stability (from collection to initiation):
Room temperature 24 hours, refrigerated 5 days, frozen at -20C 1 year

PROCESSING

Test Code:
UNB

Test Group:
Urea

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
1 mL fluid

Minimum Volume:
0.2 mL fluid

Stability (from collection to initiation):
Room temperature 24 hours, refrigerated 5 days, frozen at -20C 1 year

RESULT INTERPRETATION

Units:
mg/dL

Additional Information:
Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context.

ADMINISTRATIVE

CPT Codes:
84520

LOINC Codes:
3093-2

COMPLETE VIEW

Available Stat:
No

Test Code:
UNB

Test Group:
Urea

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Urease, Spectrophotometric

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Collect:
Clean, empty container OR red top (no additives)
Note: Do NOT collect in red top with clot activator (silicone coated).

Amount to Collect:
5 mL fluid

Sample Type:
Body Fluid

Preferred Volume:
1 mL fluid

Minimum Volume:
0.2 mL fluid

Units:
mg/dL

Stability (from collection to initiation):
Room temperature 24 hours, refrigerated 5 days, frozen at -20C 1 year

Reported:
4 hours

Additional Information:
Reference ranges for this assay have not been established in body fluids. Results should be interpreted in comparison to the concentration in blood or urine as appropriate and in conjunction with clinical context.

CPT Codes:
84520

LOINC Codes:
3093-2

Urea Nitrogen, Plasma / Serum

BUN

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Chemistry: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center (Mon-Fri 0800-1630)

Methodology:
Parnassus, Mission Bay & Mt. Zion Chemistry: Urease, Spectrophotometric on Abbott Architect
Berkeley Outpatient Center: Urease, Spectrophotometric on Roche cobas c311

Reported:
STAT 1 hour, Routine 4 hours

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by 0.357.

Synonyms:

- BUN
- SUN

COLLECTION

Sample Type:
Plasma or serum

Collect:
Light green top preferred, Gold top acceptable

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Parnassus, Mission Bay, Mt. Zion, and Berkeley Outpatient Center
Room temperature 7 days, refrigerated 7 days, frozen at -20C 1 year

PROCESSING

Test Code:
BUN

Test Group:
Urea

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Parnassus, Mission Bay, Mt. Zion, and Berkeley Outpatient Center
Room temperature 7 days, refrigerated 7 days, frozen at -20C 1 year

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:

Parnassus, Mission Bay & Mt. Zion Chemistry

Age	mg/dL
0 to 14 days	3-23
15 days to <1 year	3-17
1 to <10 years	9-22
10 to <18 years	7-21
>=18 years	7-25

Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, https://caliper.research.sickkids.ca/#/

UCSF Clinical Labs verified the adult reference range stated in the Abbott Urea Nitrogen package insert (March 2017) by running 20 male and 20 female lab volunteers.

Berkeley Outpatient Center

Age	mg/dL
>= 19 years	6-23

UCSF Clinical Labs at Berkeley Outpatient Center verified the adult reference range (>= 19 years) stated in the Roche UREAL package insert by running 20 male and 20 female lab volunteers.

Additional Information:

To convert mg/dL to mmol/L (SI units) multiply by 0.357.

ADMINISTRATIVE

CPT Codes:

84520

LOINC Codes:

3094-0

COMPLETE VIEW

Available Stat:

Yes

Test Code:

BUN

Test Group:

Urea

Performing Lab:

Parnassus, Mission Bay & Mt. Zion Chemistry
Berkeley Outpatient Center

Performed:

Parnassus, Mission Bay & Mt. Zion Chemistry: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center (Mon-Fri 0800-1630)

Methodology:

Parnassus, Mission Bay & Mt. Zion Chemistry: Urease, Spectrophotometric on Abbott Architect
Berkeley Outpatient Center: Urease, Spectrophotometric on Roche cobas c311

Collect:

Light green top preferred, Gold top acceptable

Amount to Collect:

1 mL blood

Sample Type:

Plasma or serum

Preferred Volume:

0.5 mL plasma or serum

Minimum Volume:

0.2 mL plasma or serum

Units:

mg/dL

Reference Interval:

Parnassus, Mission Bay & Mt. Zion Chemistry

Age	mg/dL
0 to 14 days	3-23
15 days to <1 year	3-17
1 to <10 years	9-22
10 to <18 years	7-21
>=18 years	7-25

Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, https://caliper.research.sickkids.ca/#/

UCSF Clinical Labs verified the adult reference range stated in the Abbott Urea Nitrogen package insert (March 2017) by running 20 male and 20 female lab volunteers.

Berkeley Outpatient Center

Age	mg/dL
>= 19 years	6-23

UCSF Clinical Labs at Berkeley Outpatient Center verified the adult reference range (>= 19 years) stated in the Roche UREAL package insert by running 20 male and 20 female lab volunteers.

Synonyms:

- BUN
- SUN

Stability (from collection to initiation):

Parnassus, Mission Bay, Mt. Zion, and Berkeley Outpatient Center
Room temperature 7 days, refrigerated 7 days, frozen at -20C 1 year

Reported:

STAT 1 hour, Routine 4 hours

Additional Information:

To convert mg/dL to mmol/L (SI units) multiply by 0.357.

CPT Codes:

84520

LOINC Codes:

3094-0

Urea Nitrogen, random urine

UNUR

ORDERING

Available Stat:
No

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Urease, Spectrophotometric

Reported:
Same or next day

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by 0.357.

Output varies with diet.

Synonyms:

- UUN

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
20 mL urine

Preferred Volume:
1 mL urine

Minimum Volume:
0.2 mL urine

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 7 days, frozen at -20C 1 month

PROCESSING

Test Code:
UNUR

Test Group:
Urea

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
1 mL urine

Minimum Volume:
0.2 mL urine

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 7 days, frozen at -20C 1 month

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:
See Additional Information

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by 0.357.

Output varies with diet.

ADMINISTRATIVE

CPT Codes:
84540

LOINC Codes:
3095-7

COMPLETE VIEW

Available Stat:
No

Test Code:
UNUR

Test Group:
Urea

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Urease, Spectrophotometric

Collect:
Urine cup

Amount to Collect:
20 mL urine

Sample Type:
Random urine

Preferred Volume:
1 mL urine

Minimum Volume:
0.2 mL urine

Units:
mg/dL

Reference Interval:
See Additional Information

Synonyms:

- UUN

Stability (from collection to initiation):
Room temperature 2 days, refrigerated 7 days, frozen at -20C 1 month

Reported:
Same or next day

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by 0.357.

Output varies with diet.

CPT Codes:
84540

LOINC Codes:
3095-7

Urea Reduction Ratio

URR

ORDERING

Available Stat:
No

Performing Lab:
Parnassus, Mission Bay and Mt Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Urease, Spectrophotometric

Reported:
4 hours

Additional Information:
Urea Reduction Ratio orders include the following parameters:

a. Post Dialysis BUN (mg/dL)
b. Urea Reduction Ratio: (Pre-dialysis BUN - Post-dialysis BUN) x 100 / Pre-dialysis BUN = %
c. Quick Kt/V (Jindal): [0.04 x (Pre-dialysis BUN - Post-dialysis BUN) - 1.2] / (Pre-dialysis BUN x 100)

Quick Kt/V correlates with full Kt/V within the range 0.6 to 1.8

Synonyms:

- URR

COLLECTION

Sample Type:
Serum or plasma

Collect:
Gold top or Light green top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 2 days, frozen at -20C 1 week.

PROCESSING

Test Code:
URR

Test Group:
Urea

Performing Lab:
Parnassus, Mission Bay and Mt Zion Chemistry

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 2 days, frozen at -20C 1 week.

RESULT INTERPRETATION

Units:
%

Additional Information:

Urea Reduction Ratio orders include the following parameters:

a. Post Dialysis BUN (mg/dL)
b. Urea Reduction Ratio: (Pre-dialysis BUN - Post-dialysis BUN) x 100 / Pre-dialysis BUN = %
c. Quick Kt/V (Jindal): [0.04 x (Pre-dialysis BUN - Post-dialysis BUN) - 1.2] / (Pre-dialysis BUN x 100)

Quick Kt/V correlates with full Kt/V within the range 0.6 to 1.8

ADMINISTRATIVE

CPT Codes:

84520

COMPLETE VIEW

Available Stat:

No

Test Code:

URR

Test Group:

Urea

Performing Lab:

Parnassus, Mission Bay and Mt Zion Chemistry

Performed:

Test available 24 hours per day 7 days per week

Methodology:

Urease, Spectrophotometric

Collect:

Gold top or Light green top

Amount to Collect:

1 mL blood

Sample Type:

Serum or plasma

Preferred Volume:

0.5 mL serum or plasma

Minimum Volume:

0.2 mL serum or plasma

Units:

%

Synonyms:

- URR

Stability (from collection to initiation):

Room temperature 8 hours, refrigerated 2 days, frozen at -20C 1 week.

Reported:

4 hours

Additional Information:

Urea Reduction Ratio orders include the following parameters:

a. Post Dialysis BUN (mg/dL)
b. Urea Reduction Ratio: (Pre-dialysis BUN - Post-dialysis BUN) x 100 / Pre-dialysis BUN = %
c. Quick Kt/V (Jindal): [0.04 x (Pre-dialysis BUN - Post-dialysis BUN) - 1.2] / (Pre-dialysis BUN x 100)

Quick Kt/V correlates with full Kt/V within the range 0.6 to 1.8

CPT Codes:

84520

Ureaplasma / mycoplasma hominis culture

P319

ORDERING

Approval Required:
Yes, contact Microbiology at x3-1268 for non-genital samples.

Available Stat:
No

Performing Lab:
Quest

Reported:
10-15 days

Synonyms:

- Mycoplasma culture

COLLECTION

Sample Type:
Cervical, vaginal or urethral swab; Urine; Sterile body fluids; Tissue; Wounds (swab); Respiratory (sputum, bronchial washing, tracheal aspirate, bronchial alveolar lavage, nasopharyngeal or throat swabs);

Collect swabs in UTM. Refer to Specimen Preparation for other sample types.

Collect:
Special medium (see collection instructions)

Remarks:
Specimens should be collected Monday through Friday only so that culture can be set up within 24 hours.

Collection kits, containing swabs and UTM medium, can be obtained from Moffitt-Long Microbiology Laboratory or Mount Zion Virology Laboratory.

All specimen types must be submitted in this medium. If a swab specimen is to be collected, use swab in this kit for specimen collection and bend or break swab to fit inside tube of UTM medium.

Stability (from collection to initiation):
Refrigerated 2 days, frozen 1 month

Unacceptable Conditions:
Swabs not submitted in UTM
Urines not placed in UTM within 24 hours of collection

PROCESSING

Test Code:
P319

Test Group:
Mycoplasma

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
At T319 prompt, enter code MYCUL

Centrifuge urine at 3000 rpm for 15 minutes. Suspend sediment in UTM. If the specimen is not centrifuged, submit a 1:1 volume of urine in UTM

Submit a 1:1 volume of sterile body fluids, tissue, respiratory (sputum, bronchial washing, tracheal aspirate, bronchial alveolar lavage) in UTM.

Respiratory samples are only acceptable from children under 1 year old.

Unacceptable Conditions:
Swabs not submitted in UTM
Urines not placed in UTM within 24 hours of collection

Stability (from collection to initiation):
Refrigerated 2 days, frozen 1 month

RESULT INTERPRETATION

Reference Interval:
Negative

ADMINISTRATIVE

CPT Codes:
87109-90

LOINC Codes:
29257-3

COMPLETE VIEW

Approval Required:
Yes, contact Microbiology at x3-1268 for non-genital samples.

Available Stat:
No

Test Code:
P319

Test Group:
Mycoplasma

Performing Lab:
Quest

Sendout:
Yes

Remarks:
Specimens should be collected Monday through Friday only so that culture can be set up within 24 hours.

Collection kits, containing swabs and UTM medium, can be obtained from Moffitt-Long Microbiology Laboratory or Mount Zion Virology Laboratory.

All specimen types must be submitted in this medium. If a swab specimen is to be collected, use swab in this kit for specimen collection and bend or break swab to fit inside tube of UTM medium.

Collect:
Special medium (see collection instructions)

Sample Type:
Cervical, vaginal or urethral swab; Urine; Sterile body fluids; Tissue; Wounds (swab); Respiratory (sputum, bronchial washing, tracheal aspirate, bronchial alveolar lavage, nasopharyngeal or throat swabs);

Collect swabs in UTM. Refer to Specimen Preparation for other sample types.

Unacceptable Conditions:
Swabs not submitted in UTM
Urines not placed in UTM within 24 hours of collection

Specimen Preparation:
At T319 prompt, enter code MYCUL

Centrifuge urine at 3000 rpm for 15 minutes. Suspend sediment in UTM. If the specimen is not centrifuged, submit a 1:1 volume of urine in UTM

Submit a 1:1 volume of sterile body fluids, tissue, respiratory (sputum, bronchial washing, tracheal aspirate, bronchial alveolar lavage) in UTM.

Respiratory samples are only acceptable from children under 1 year old.

Reference Interval:
Negative

Synonyms:

- Mycoplasma culture

Stability (from collection to initiation):
Refrigerated 2 days, frozen 1 month

Reported:
10-15 days

CPT Codes:
87109-90

LOINC Codes:
29257-3

Ureaplasma/Mycoplasma PCR

P319

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
PCR

Reported:
5 days

Synonyms:

- M.hominis
- M.genitalium
- U.parvum
- U.urealyticum

COLLECTION

Sample Type:
Vaginal swab (Aptima multitest transport media)
Urethral swab (Aptima multitest or unisex transport media)
Urine (Aptima urine transport media)

Collect:
Aptima transport media

Amount to Collect:
2mL urine

Stability (from collection to initiation):
14 days room tem, 14 days refrigerated, 30 days frozen

Storage/Transport Temperature:
Room temp

PROCESSING

Test Code:
P319

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Transfer 2mL urine to appropriate Aptima transport tube
Quest test code: 91477

Specimens in universal transport media (UTM) may be sent to ARUP using test code 2011172 (Urine minimum volume 1mL). ARUP also accepts rectal and upper respiratory swabs in UTM, as well as BAL, Sputum, or ETA in sterile container. Ship frozen.

Stability (from collection to initiation):
14 days room tem, 14 days refrigerated, 30 days frozen

Storage/Transport Temperature:
Room temp

RESULT INTERPRETATION

Reference Interval:
Not detected

ADMINISTRATIVE

CPT Codes:
ARUP: 87798 x 4
Quest: 87798 x 5

LOINC Codes:
ARUP: 31208-2, 69933-0, 51988-4, 68546-1, 69935-5
Quest: 68546-1, 69935-5, 69933-0, 51988-4

COMPLETE VIEW

Available Stat:
No

Test Code:
P319

Performing Lab:
Quest

Sendout:
Yes

Methodology:
PCR

Collect:
Aptima transport media

Amount to Collect:
2mL urine

Sample Type:
Vaginal swab (Aptima multitest transport media)
Urethral swab (Aptima multitest or unisex transport media)
Urine (Aptima urine transport media)

Specimen Preparation:
Transfer 2mL urine to appropriate Aptima transport tube
Quest test code: 91477

Specimens in universal transport media (UTM) may be sent to ARUP using test code 2011172 (Urine minimum volume 1mL). ARUP also accepts rectal and upper respiratory swabs in UTM, as well as BAL, Sputum, or ETA in sterile container. Ship frozen.

Reference Interval:
Not detected

Synonyms:

- M.hominis
- M.genitalium
- U.parvum
- U.urealyticum

Storage/Transport Temperature:
Room temp

Stability (from collection to initiation):
14 days room tem, 14 days refrigerated, 30 days frozen

Reported:
5 days

CPT Codes:
ARUP: 87798 x 4
Quest: 87798 x 5

LOINC Codes:
ARUP: 31208-2, 69933-0, 51988-4, 68546-1, 69935-5
Quest: 68546-1, 69935-5, 69933-0, 51988-4

Uric Acid, 24 hour (or timed) urine

UCAU

ORDERING

Available Stat:
No

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 7 days per week from 8:00 AM to midnight only.

Methodology:
Spectrophotometric (uricase)

Reported:
Same or next day

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by 0.059.

To convert from mg/day to mmol/day, multiply mg/day by 0.0059.

Output varies with diet.

Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

COLLECTION

Sample Type:
Timed urine collection

Collect:
Preferred: Plain Container

Acceptable: Amber Container

Amount to Collect:
Entire urine output during collection period

Preferred Volume:
1 mL urine

Minimum Volume:
0.25 mL urine

Remarks:
Keep collection container at room temperature during the period of collection.

Note that the minimum acceptable time period for a 'timed' collection is 6 hours.

Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

Stability (from collection to initiation):
Room temperature 4 days at pH >8, refrigerated 4 days, frozen at -20C 2 weeks

PROCESSING

Test Code:
UCAU

Test Group:
Uric acid

Performing Lab:
Parnassus & Mission Bay Chemistry

Specimen Preparation:
Mix 24-hour urine sample well and aliquot 1 mL.

Check pH of specimen using a pH test strip. Adjust specimen to pH > 8.0 by dropwise addition of sodium hydroxide (1M NaOH).

Preferred Volume:
1 mL urine

Minimum Volume:
0.25 mL urine

Stability (from collection to initiation):
Room temperature 4 days at pH >8, refrigerated 4 days, frozen at -20C 2 weeks

RESULT INTERPRETATION

Units:
mg/day

Reference Interval:
250-750 mg/D

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by 0.059.

To convert from mg/day to mmol/day, multiply mg/day by 0.0059.

Output varies with diet.

Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

ADMINISTRATIVE

CPT Codes:
84560

COMPLETE VIEW

Available Stat:
No

Test Code:
UCAU

Test Group:
Uric acid

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 7 days per week from 8:00 AM to midnight only.

Methodology:
Spectrophotometric (uricase)

Remarks:
Keep collection container at room temperature during the period of collection.

Note that the minimum acceptable time period for a 'timed' collection is 6 hours.

Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

Collect:
Preferred: Plain Container

Acceptable: Amber Container

Amount to Collect:
Entire urine output during collection period

Sample Type:
Timed urine collection

Preferred Volume:
1 mL urine

Minimum Volume:
0.25 mL urine

Specimen Preparation:

Mix 24-hour urine sample well and aliquot 1 mL.

Check pH of specimen using a pH test strip. Adjust specimen to pH > 8.0 by dropwise addition of sodium hydroxide (1M NaOH).

Units:

mg/day

Reference Interval:

250-750 mg/D

Stability (from collection to initiation):

Room temperature 4 days at pH >8, refrigerated 4 days, frozen at -20C 2 weeks

Reported:

Same or next day

Additional Information:

To convert mg/dL to mmol/L (SI units) multiply by 0.059.

To convert from mg/day to mmol/day, multiply mg/day by 0.0059.

Output varies with diet.

Results of collections of less than 24 hour duration will be adjusted to reflect a '24 hour collection'. The limited time of collection as well as the need to adjust the values to be comparable to the '24 hour' normal ranges will inherently affect the accuracy of the results.

CPT Codes:

84560

Uric Acid, Plasma / Serum

URIC

ORDERING

Available Stat:
No

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Spectrophotometric (uricase)

Reported:
4 hours

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by 0.059

For patients on rasburicase therapy, it is recommended that Uric Acid, Rasburicase Therapy" (URICR) be ordered and samples be sent to the laboratory on ice and maintained at 4C until analysis to minimize in vitro degradation of uric acid that can occur due to sample transport (Lim E, Bennett P, Beilby J, Clinical Chemistry 2003;49:1417-1419). Uric acid samples in patients on rasburicase therapy should also be centrifuged cold and be kept refrigerated at 4C until testing. It is recommended that this sample handling procedure for uric acid be followed for up to 4 days after the last dose of rasburicase is administered.

According to some sources, "Although serum uric acid (SU) levels < 8 mg/dl are generally considered to be normal, serum levels > 6.8 mg/dl are above saturation level and may allow deposition of gouty crystals. A SU level of approximately 6.8 mg/dl is the concentration at which monosodium urate crystals begin to precipitate." Based on these considerations, some authorities recommend that that a normal SU should be considered below 6.8 mg/dL (Schlesinger et al .J Rheumatol 2009;36:1287-9). During an acute gouty attack, as many as 14% of patients may have a SU <= 6 mg/dL and 32% may have SU of <= 8 mg/dL. Thus, a "normal" SU by either definition does not exclude an acute gouty attack.

In patients receiving catecholamine infusions (e.g., dopamine, dobutamine, norepinephrine, or epinephrine), falsely low serum/plasma uric acid results can occur with this uric acid assay when blood is sampled through an indwelling catheter. In these cases, accurate measurements of uric acid can be obtained by testing blood samples obtained by venipuncture instead of through an indwelling catheter (based on in-house studies and Saenger AK, Clinical Chemistry 2009, vol 55:9 1732-1736).

COLLECTION

Sample Type:
Plasma or serum

Collect:
Light green top preferred, Gold top acceptable (on ice if patient receiving Rasburicase)

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Remarks:
Collection after overnight fast preferred.

For patients on **rasburicase** therapy, it is recommended that the test "Uric Acid, Rasburicase Therapy" (URICR) be ordered.

It is recommended that this sample handling procedure for uric acid be followed for up to 4 days after the last dose of rasburicase is administered.

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 7 days, frozen at -20C 6 months

PROCESSING

Test Code:
URIC

Test Group:
Uric acid

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Specimen Preparation:
If **RASBURICASE THERAPY** is indicated on the requisition the sample must be centrifuged cold and be kept refrigerated at 4C until testing. Deliver spun sample on ice to Chemistry asap.

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 7 days, frozen at -20C 6 months

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:
Parnassus, Mission Bay, and Mt. Zion:

Age	Male (mg/dL)	Female (mg/dL)
0 to 14 days	2.8-12.7	2.8-12.7
15 days to <1 year	1.6-6.3	1.6-6.3
1 to 11 years	1.8-4.9	1.8-4.9
12 to 18 years	2.6-7.6	2.6-5.9
>18 years	3.9-8.2	2.9-6.6

Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, https://caliper.research.sickkids.ca/#/search

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by 0.059

For patients on rasburicase therapy, it is recommended that Uric Acid, Rasburicase Therapy" (URICR) be ordered and samples be sent to the laboratory on ice and maintained at 4C until analysis to minimize in vitro degradation of uric acid that can occur due to sample transport (Lim E, Bennett P, Beilby J, Clinical Chemistry 2003;49:1417-1419). Uric acid samples in patients on rasburicase therapy should also be centrifuged cold and be kept refrigerated at 4C until testing. It is recommended that this sample handling procedure for uric acid be followed for up to 4 days after the last dose of rasburicase is administered.

According to some sources, "Although serum uric acid (SU) levels < 8 mg/dl are generally considered to be normal, serum levels > 6.8 mg/dl are above saturation level and may allow deposition of gouty crystals. A SU level of approximately 6.8 mg/dl is the concentration at which monosodium urate crystals begin to precipitate." Based on these considerations, some authorities recommend that that a normal SU should be considered below 6.8 mg/dL (Schlesinger et al .J Rheumatol 2009;36:1287-9). During an acute gouty attack, as many as 14% of patients may have a SU <= 6 mg/dL and 32% may have SU of <= 8 mg/dL. Thus, a "normal" SU by either definition does not exclude an acute gouty attack.

In patients receiving catecholamine infusions (e.g., dopamine, dobutamine, norepinephrine, or epinephrine), falsely low serum/plasma uric acid results can occur with this uric acid assay when blood is sampled through an indwelling catheter. In these cases, accurate measurements of uric acid can be obtained by testing blood samples obtained by venipuncture instead of through an indwelling catheter (based on in-house studies and Saenger AK, Clinical Chemistry 2009, vol 55:9 1732-1736).

ADMINISTRATIVE

CPT Codes:
84550

LOINC Codes:
3084-1

COMPLETE VIEW

Available Stat:
No

Test Code:
URIC

Test Group:
Uric acid

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Spectrophotometric (uricase)

Remarks:
Collection after overnight fast preferred.

For patients on **rasburicase** therapy, it is recommended that the test "Uric Acid, Rasburicase Therapy" (URICR) be ordered.

It is recommended that this sample handling procedure for uric acid be followed for up to 4 days after the last dose of rasburicase is administered.

Collect:
Light green top preferred, Gold top acceptable (on ice if patient receiving Rasburicase)

Amount to Collect:
1 mL blood

Sample Type:
Plasma or serum

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Specimen Preparation:
If **RASBURICASE THERAPY** is indicated on the requisition the sample must be centrifuged cold and be kept refrigerated at 4C until testing. Deliver spun sample on ice to Chemistry asap.

Units:
mg/dL

Reference Interval:
Parnassus, Mission Bay, and Mt. Zion:

Age	Male (mg/dL)	Female (mg/dL)
0 to 14 days	2.8-12.7	2.8-12.7
15 days to <1 year	1.6-6.3	1.6-6.3
1 to 11 years	1.8-4.9	1.8-4.9
12 to 18 years	2.6-7.6	2.6-5.9
>18 years	3.9-8.2	2.9-6.6

Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, https://caliper.research.sickkids.ca/#/search

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 7 days, frozen at -20C 6 months

Reported:
4 hours

Additional Information:

To convert mg/dL to mmol/L (SI units) multiply by 0.059

For patients on rasburicase therapy, it is recommended that Uric Acid, Rasburicase Therapy" (URICR) be ordered and samples be sent to the laboratory on ice and maintained at 4C until analysis to minimize in vitro degradation of uric acid that can occur due to sample transport (Lim E, Bennett P, Beilby J, Clinical Chemistry 2003;49:1417-1419). Uric acid samples in patients on rasburicase therapy should also be centrifuged cold and be kept refrigerated at 4C until testing. It is recommended that this sample handling procedure for uric acid be followed for up to 4 days after the last dose of rasburicase is administered.

According to some sources, "Although serum uric acid (SU) levels < 8 mg/dl are generally considered to be normal, serum levels > 6.8 mg/dl are above saturation level and may allow deposition of gouty crystals. A SU level of approximately 6.8 mg/dl is the concentration at which monosodium urate crystals begin to precipitate." Based on these considerations, some authorities recommend that that a normal SU should be considered below 6.8 mg/dL (Schlesinger et al .J Rheumatol 2009;36:1287-9). During an acute gouty attack, as many as 14% of patients may have a SU <= 6 mg/dL and 32% may have SU of <= 8 mg/dL. Thus, a "normal" SU by either definition does not exclude an acute gouty attack.

In patients receiving catecholamine infusions (e.g., dopamine, dobutamine, norepinephrine, or epinephrine), falsely low serum/plasma uric acid results can occur with this uric acid assay when blood is sampled through an indwelling catheter. In these cases, accurate measurements of uric acid can be obtained by testing blood samples obtained by venipuncture instead of through an indwelling catheter (based on in-house studies and Saenger AK, Clinical Chemistry 2009, vol 55:9 1732-1736).

CPT Codes:

84550

LOINC Codes:

3084-1

Uric Acid, Plasma / Serum, Rasburicase Therapy

URICR

ORDERING

Available Stat:
No

Performing Lab:
Parnassus, Mission Bay & Mount Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Spectrophotometric (Uricase)

Reported:
4 hours

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by 0.059

For patients on rasburicase therapy, it is recommended that samples be sent to the laboratory on ice and maintained at 4C until analysis to minimize in vitro degradation of uric acid that can occur due to sample transport (Lim E, Bennett P, Beilby J, Clinical Chemistry 2003;49:1417-1419). Uric acid samples in patients on rasburicase therapy should also be centrifuged cold and be kept refrigerated at 4C until testing. It is recommended that this sample handling procedure for uric acid be followed for up to 4 days after the last dose of rasburicase is administered.

According to some sources, "Although serum urate (SU) levels < 8 mg/dl are generally considered to be normal, serum levels > 6.8 mg/dl are above saturation level and may allow deposition of gouty crystals. A SU level of approximately 6.8 mg/dl is the concentration at which monosodium urate crystals begin to precipitate." Based on these considerations, some authorities recommend that that a normal SU should be considered below 6.8 mg/dL (Schlesinger et al .J Rheumatol 2009;36:1287-9). During an acute gouty attack, as many as 14% of patients may have a SU <= 6 mg/dlL and 32% may have SU of <= 8 mg/dL. Thus, a "normal" SU by either definition does not exclude an acute gouty attack.

In patients receiving catecholamine infusions (e.g., dopamine, dobutamine, norepinephrine, or epinephrine), falsely low serum/plasma uric acid results can occur with this uric acid assay when blood is sampled through an indwelling catheter. In these cases, accurate measurements of uric acid can be obtained by testing blood samples obtained by venipuncture instead of through an indwelling catheter (based on in-house studies and Saenger AK, Clinical Chemistry 2009, vol 55:9 1732-1736).

Synonyms:

- Urate
- Gout

COLLECTION

Sample Type:
Plasma or serum

Collect:
Light green top (on ice) preferred, Gold top (on ice) acceptable.

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Remarks:
Deliver to lab immediately on ICE

It is recommended that this sample handling procedure for uric acid be followed for up to 4 days after the last dose of rasburicase is administered.

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 7 days, frozen at -20C 6 months

PROCESSING

Test Code:
URICR

Performing Lab:
Parnassus, Mission Bay & Mount Zion Chemistry

Specimen Preparation:
Provide immediately to Chemistry at Parnassus, Mission Bay or Mt Zion who will centrifuge and assay sample.

If specimen cannot be run at either site centrifuge immediately. Aliquot and freeze the plasma (-20C) immediately and send immediately to other site for testing

If sample is NOT delivered on ice, immediately transport sample to the testing section and inform them the specimen was NOT received on ice.

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 7 days, frozen at -20C 6 months

RESULT INTERPRETATION

Reference Interval:

Age	Male (mg/dL)	Female (mg/dL)
0 to 14 days	2.8-12.7	2.8-12.7
15 days to <1 year	1.6-6.3	1.6-6.3
1 to 11 years	1.8-4.9	1.8-4.9
12 to 18 years	2.6-7.6	2.6-5.9
>18 years	3.9-8.2	2.9-6.6

Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, https://caliper.research.sickkids.ca/#/search

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by 0.059

For patients on rasburicase therapy, it is recommended that samples be sent to the laboratory on ice and maintained at 4C until analysis to minimize in vitro degradation of uric acid that can occur due to sample transport (Lim E, Bennett P, Beilby J, Clinical Chemistry 2003;49:1417-1419). Uric acid samples in patients on rasburicase therapy should also be centrifuged cold and be kept refrigerated at 4C until testing. It is recommended that this sample handling procedure for uric acid be followed for up to 4 days after the last dose of rasburicase is administered.

According to some sources, "Although serum urate (SU) levels < 8 mg/dl are generally considered to be normal, serum levels > 6.8 mg/dl are above saturation level and may allow deposition of gouty crystals. A SU level of approximately 6.8 mg/dl is the concentration at which monosodium urate crystals begin to precipitate." Based on these considerations, some authorities recommend that that a normal SU should be considered below 6.8 mg/dL (Schlesinger et al .J Rheumatol 2009;36:1287-9). During an acute gouty attack, as many as 14% of patients may have a SU <= 6 mg/dlL and 32% may have SU of <= 8 mg/dL. Thus, a "normal" SU by either definition does not exclude an acute gouty attack.

In patients receiving catecholamine infusions (e.g., dopamine, dobutamine, norepinephrine, or epinephrine), falsely low serum/plasma uric acid results can occur with this uric acid assay when blood is sampled through an indwelling catheter. In these cases, accurate measurements of uric acid can be obtained by testing blood samples obtained by venipuncture instead of through an indwelling catheter (based on in-house studies and Saenger AK, Clinical Chemistry 2009, vol 55:9 1732-1736).

ADMINISTRATIVE

CPT Codes:
84550

LOINC Codes:
3084-1

COMPLETE VIEW

Available Stat:
No

Test Code:
URICR

Performing Lab:
Parnassus, Mission Bay & Mount Zion Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Spectrophotometric (Uricase)

Remarks:
Deliver to lab immediately on ICE

It is recommended that this sample handling procedure for uric acid be followed for up to 4 days after the last dose of rasburicase is administered.

Collect:
Light green top (on ice) preferred, Gold top (on ice) acceptable.

Amount to Collect:
1 mL blood

Sample Type:
Plasma or serum

Preferred Volume:
0.5 mL plasma or serum

Minimum Volume:
0.2 mL plasma or serum

Specimen Preparation:
Provide immediately to Chemistry at Parnassus, Mission Bay or Mt Zion who will centrifuge and assay sample.

If specimen cannot be run at either site centrifuge immediately. Aliquot and freeze the plasma (-20C) immediately and send immediately to other site for testing

If sample is NOT delivered on ice, immediately transport sample to the testing section and inform them the specimen was NOT received on ice.

Reference Interval:

Age	Male (mg/dL)	Female (mg/dL)
0 to 14 days	2.8-12.7	2.8-12.7
15 days to <1 year	1.6-6.3	1.6-6.3
1 to 11 years	1.8-4.9	1.8-4.9
12 to 18 years	2.6-7.6	2.6-5.9
>18 years	3.9-8.2	2.9-6.6

Pediatric ranges adopted from Canadian Laboratory Initiative on Reference Interval Database (CALIPER) study, https://caliper.research.sickkids.ca/#/search

Synonyms:

- Urate
- Gout

Stability (from collection to initiation):
Room temperature 3 days, refrigerated 7 days, frozen at -20C 6 months

Reported:
4 hours

Additional Information:

To convert mg/dL to mmol/L (SI units) multiply by 0.059

For patients on rasburicase therapy, it is recommended that samples be sent to the laboratory on ice and maintained at 4C until analysis to minimize in vitro degradation of uric acid that can occur due to sample transport (Lim E, Bennett P, Beilby J, Clinical Chemistry 2003;49:1417-1419). Uric acid samples in patients on rasburicase therapy should also be centrifuged cold and be kept refrigerated at 4C until testing. It is recommended that this sample handling procedure for uric acid be followed for up to 4 days after the last dose of rasburicase is administered.

According to some sources, "Although serum urate (SU) levels < 8 mg/dl are generally considered to be normal, serum levels > 6.8 mg/dl are above saturation level and may allow deposition of gouty crystals. A SU level of approximately 6.8 mg/dl is the concentration at which monosodium urate crystals begin to precipitate." Based on these considerations, some authorities recommend that that a normal SU should be considered below 6.8 mg/dL (Schlesinger et al .J Rheumatol 2009;36:1287-9). During an acute gouty attack, as many as 14% of patients may have a SU <= 6 mg/dlL and 32% may have SU of <= 8 mg/dL. Thus, a "normal" SU by either definition does not exclude an acute gouty attack.

In patients receiving catecholamine infusions (e.g., dopamine, dobutamine, norepinephrine, or epinephrine), falsely low serum/plasma uric acid results can occur with this uric acid assay when blood is sampled through an indwelling catheter. In these cases, accurate measurements of uric acid can be obtained by testing blood samples obtained by venipuncture instead of through an indwelling catheter (based on in-house studies and Saenger AK, Clinical Chemistry 2009, vol 55:9 1732-1736).

CPT Codes:

84550

LOINC Codes:

3084-1

Uric Acid, random urine

UAUR

ORDERING

Available Stat:
No

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Spectrophotometric (uricase)

Reported:
Same or next day

Additional Information:
To convert mg/dL to mmol/L (SI units) multiply by 0.059.

To convert results from mg/day to mmol/day, multiply mg/day by 0.0059

Output varies with diet.

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup

Amount to Collect:
20 mL urine

Preferred Volume:
1 mL urine

Minimum Volume:
0.25 mL urine

Stability (from collection to initiation):
Room temperature 4 days at pH >8, refrigerated 4 days, frozen at -20C 2 weeks

PROCESSING

Test Code:
UAUR

Test Group:
Uric acid

Performing Lab:
Parnassus & Mission Bay Chemistry

Specimen Preparation:
Check pH of specimen using a pH test strip. Adjust specimen to pH > 8.0 by dropwise addition of sodium hydroxide (1M NaOH).

Preferred Volume:
1 mL urine

Minimum Volume:
0.25 mL urine

Stability (from collection to initiation):
Room temperature 4 days at pH >8, refrigerated 4 days, frozen at -20C 2 weeks

RESULT INTERPRETATION

Units:
mg/dL

Reference Interval:

Output varies with diet.

Random urine collections normalized to urinary creatinine may be of clinical use.

Pediatric Reference Ranges of Uric Acid/Creatinine:

Age (years)	5th Percentile (mg/mg)	95th Percentile (mg/mg)
0-0.5	>1.189	<2.378
0.5-1	>1.040	<2.229
1-2	>0.743	<2.080
2-3	>0.698	<1.932
3-5	>0.594	<1.635
5-7	>0.446	<1.189
7-10	>0.386	<0.832
10-14	>0.297	<0.654
14-17	>0.297	<0.594

Matos V, Van Melle G, Werner D et al: Urinary oxalate and urate to creatinine ratios in a healthy pediatric population. Am J Kidney Dis 1999; Aug;34(2):e1

Additional Information:

To convert mg/dL to mmol/L (SI units) multiply by 0.059.

To convert results from mg/day to mmol/day, multiply mg/day by 0.0059

Output varies with diet.

ADMINISTRATIVE

CPT Codes:

84560

LOINC Codes:

3086-6

COMPLETE VIEW

Available Stat:

No

Test Code:

UAUR

Test Group:

Uric acid

Performing Lab:

Parnassus & Mission Bay Chemistry

Performed:

Test available 24 hours per day 7 days per week

Methodology:

Spectrophotometric (uricase)

Collect:

Urine cup

Amount to Collect:

20 mL urine

Sample Type:

Random urine

Preferred Volume:

1 mL urine

Minimum Volume:

0.25 mL urine

Specimen Preparation:

Check pH of specimen using a pH test strip. Adjust specimen to pH > 8.0 by dropwise addition of sodium hydroxide (1M NaOH).

Units:

mg/dL

Reference Interval:

Output varies with diet.

Random urine collections normalized to urinary creatinine may be of clinical use.

Pediatric Reference Ranges of Uric Acid/Creatinine:

Age (years)	5th Percentile (mg/mg)	95th Percentile (mg/mg)
0-0.5	>1.189	<2.378
0.5-1	>1.040	<2.229
1-2	>0.743	<2.080
2-3	>0.698	<1.932
3-5	>0.594	<1.635
5-7	>0.446	<1.189
7-10	>0.386	<0.832
10-14	>0.297	<0.654
14-17	>0.297	<0.594

Matos V, Van Melle G, Werner D et al: Urinary oxalate and urate to creatinine ratios in a healthy pediatric population. Am J Kidney Dis 1999; Aug;34(2):e1

Stability (from collection to initiation):

Room temperature 4 days at pH >8, refrigerated 4 days, frozen at -20C 2 weeks

Reported:

Same or next day

Additional Information:

To convert mg/dL to mmol/L (SI units) multiply by 0.059.

To convert results from mg/day to mmol/day, multiply mg/day by 0.0059

Output varies with diet.

CPT Codes:

84560

LOINC Codes:

3086-6

Urinalysis with microscopy

UAWM, UMI, UAXC

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Hematology: 24-hours per day, 7-days per week
Berkeley Outpatient Center: Test available Mon-Fri (0800-1630)

Methodology:
Dipstick and microscopy

Reported:
2 hours

Additional Information:
Urinalysis samples should be delivered as soon as possible after collection. Delayed transport of an unpreserved urine may lead to loss of red cell casts and other formed elements Refrigeration of urine inhibits bacterial growth, but does not prevent the lytic effects of low specific gravity or alkaline pH. Urine crystal formation may be induced by refrigeration.

Crystals are reported as "present", if found, other formed elements (e.g., casts) are semi-quantitated and reported as 1-5, 5-10 or > 10 per Low Power Field (LPF).

Microscopy will automatically be canceled if the dipstick test does not detect at least trace amounts of protein, esterase or hemoglobin.

On a UAXC order, culture proceeds under the following conditions:
There must be a positive urinalysis with microscopy
criteria met:
1. Microscopy is added when either the protein, blood, and/or WBC
esterase" is positive.
2. Culture is reflexed when the WBC is >10/hpf.

Synonyms:

- UA
- Urine sediment examination
- UAWM
- UMI
- UAXC

COLLECTION

Sample Type:
Random urine

Collect:
Urine cup
BD Preservative Tube (Ref 365017)
BD Preservative Conical Tube (Ref 364992)

Amount to Collect:
See preferred volume

Preferred Volume:
20 mL urine

Minimum Volume:
3 mL urine
UAXC: 4 mL

Remarks:
First AM void preferred. Deliver sample to lab asap. Refrigerate samples if delivery is delayed. Testing is optimal when done within 1-2 hours of collection.

Stability (from collection to initiation):
2 hours at room temperature; 4 hours if refrigerated; 24 hours room temperature if in an acceptable BD preservative tube. For optimum results, the urine sample must be tested within 1-2 hours of collection, regardless of storage method.

Unacceptable Conditions:
Samples received beyond appropriate stability time

PROCESSING

Test Code:
UAWM (Urinalysis with Microscopy)
UMI (for add on microscopic examination)
UAXC (Urinalysis with microscopy Reflex to Culture)

Test Group:
Urinalysis

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center

Specimen Preparation:
Deliver all urinalysis samples to Hematology as soon as possible after receipt. If collection time is unknown, use receipt time for stability. Sample suitability from 2-4 hours is decided in Hematology

Preferred Volume:
20 mL urine

Minimum Volume:
3 mL urine
UAXC: 4 mL

Unacceptable Conditions:
Samples received beyond appropriate stability time

Stability (from collection to initiation):
2 hours at room temperature; 4 hours if refrigerated; 24 hours room temperature if in an acceptable BD preservative tube. For optimum results, the urine sample must be tested within 1-2 hours of collection, regardless of storage method.

RESULT INTERPRETATION

Reference Interval:
See Urinalysis, Macroscopic for dipstick testing normal ranges.

Microscopy normal ranges:

< 5 WBC/HPF
< 3 RBC/HPF

Data based on minimum sample size of 10 mL and may not be applicable to samples of less than 10 mL.

Additional Information:
Urinalysis samples should be delivered as soon as possible after collection. Delayed transport of an unpreserved urine may lead to loss of red cell casts and other formed elements Refrigeration of urine inhibits bacterial growth, but does not prevent the lytic effects of low specific gravity or alkaline pH. Urine crystal formation may be induced by refrigeration.

Crystals are reported as "present", if found, other formed elements (e.g., casts) are semi-quantitated and reported as 1-5, 5-10 or > 10 per Low Power Field (LPF).

Microscopy will automatically be canceled if the dipstick test does not detect at least trace amounts of protein, esterase or hemoglobin.

On a UAXC order, culture proceeds under the following conditions:
There must be a positive urinalysis with microscopy
criteria met:
1. Microscopy is added when either the protein, blood, and/or WBC
esterase" is positive.
2. Culture is reflexed when the WBC is >10/hpf.

Interpretive Data:
On a UAXC order, culture proceeds under the following conditions:
There must be a positive urinalysis with microscopy
criteria met:
1. Microscopy is added when either the protein, blood, and/or WBC
esterase" is positive.
2. Culture is reflexed when the WBC is >10/hpf.

ADMINISTRATIVE

CPT Codes:
81001 (UA w/micro)

COMPLETE VIEW

Available Stat:
Yes

Test Code:
UAWM (Urinalysis with Microscopy)
UMI (for add on microscopic examination)
UAXC (Urinalysis with microscopy Reflex to Culture)

Test Group:
Urinalysis

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Hematology: 24-hours per day, 7-days per week
Berkeley Outpatient Center: Test available Mon-Fri (0800-1630)

Methodology:
Dipstick and microscopy

Remarks:
First AM void preferred. Deliver sample to lab asap. Refrigerate samples if delivery is delayed. Testing is optimal when done within 1-2 hours of collection.

Collect:
Urine cup
BD Preservative Tube (Ref 365017)
BD Preservative Conical Tube (Ref 364992)

Amount to Collect:
See preferred volume

Sample Type:
Random urine

Preferred Volume:
20 mL urine

Minimum Volume:
3 mL urine
UAXC: 4 mL

Unacceptable Conditions:
Samples received beyond appropriate stability time

Specimen Preparation:
Deliver all urinalysis samples to Hematology as soon as possible after receipt. If collection time is unknown, use receipt time for stability. Sample suitability from 2-4 hours is decided in Hematology

Reference Interval:
See Urinalysis, Macroscopic for dipstick testing normal ranges.

Microscopy normal ranges:

< 5 WBC/HPF
< 3 RBC/HPF

Data based on minimum sample size of 10 mL and may not be applicable to samples of less than 10 mL.

Interpretive Data:
On a UAXC order, culture proceeds under the following conditions:
There must be a positive urinalysis with microscopy
criteria met:
1. Microscopy is added when either the protein, blood, and/or WBC
esterase" is positive.
2. Culture is reflexed when the WBC is >10/hpf.

Synonyms:

- UA
- Urine sediment examination
- UAWM
- UMI
- UAXC

Stability (from collection to initiation):
2 hours at room temperature; 4 hours if refrigerated; 24 hours room temperature if in an acceptable BD preservative tube. For optimum results, the urine sample must be tested within 1-2 hours of collection, regardless of storage method.

Reported:
2 hours

Additional Information:

Urinalysis samples should be delivered as soon as possible after collection. Delayed transport of an unpreserved urine may lead to loss of red cell casts and other formed elements Refrigeration of urine inhibits bacterial growth, but does not prevent the lytic effects of low specific gravity or alkaline pH. Urine crystal formation may be induced by refrigeration.

Crystals are reported as "present", if found, other formed elements (e.g., casts) are semi-quantitated and reported as 1-5, 5-10 or > 10 per Low Power Field (LPF).

Microscopy will automatically be canceled if the dipstick test does not detect at least trace amounts of protein, esterase or hemoglobin.

On a UAXC order, culture proceeds under the following conditions:
There must be a positive urinalysis with microscopy
criteria met:
1. Microscopy is added when either the protein, blood, and/or WBC
esterase" is positive.
2. Culture is reflexed when the WBC is >10/hpf.

CPT Codes:

81001 (UA w/micro)

Urinalysis, Macroscopic

UA, UAWM, UAXC

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center

Performed:
Parnassus, Mission Bay & Mt. Zion Hematology: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center: Test available Mon-Fri (0800-1630)

Methodology:
Parnassus, Mission Bay & Mt. Zion Hematology: Dipstick with automated reader
Berkeley Outpatient Center: Manual Dipstick

Reported:
STAT 1 hour, Routine 2 hours

Additional Information:
Urinalysis samples should be delivered as soon as possible after collection. Delayed transport of an unpreserved urine may lead to loss of red cell casts and other formed elements Refrigeration of urine inhibits bacterial growth, but does not prevent the lytic effects of low specific gravity or alkaline pH. Urine crystal formation may be induced by refrigeration.

Note: Routine urinalysis in pediatric patients does not include testing for reducing substances, such as sugars galactose, lactose, fructose and maltose. If clinically indicated, this screening test for reducing substances may be ordered. Testing for congenital galactosemia is included in newborn screening programs in all 50 states in the U.S.

Specific Gravity: Reported as <= 1.005 to >= 1.030; the level found depends upon water intake; a fixed level around 1.010 which does not vary with the state of the patient's hydration suggests renal damage.

pH: Reported over the range of 5.0 to >= 9.0 and is diet-dependent; a level > 9.0 suggests infection with a urea-splitting organism.

Bilirubin: Because false-positive results for bilirubin may occur due to the intrinsic coloration of urine, positive results are confirmed by a chemical method.

Hemoglobin: Dipstick testing does not distinguish between hemoglobin and myoglobin; if no RBCs are seen in a freshly collected specimen, the possibility of myoglobinuria due to rhabdomyolysis can be evaluated by measuring serum CK, which will be markedly elevated. Captopril may reduce the test sensitivity.
Note: Ascorbic acid in urine may cause a false negative hemoglobin result on the macroscopic urinalysis. If ascorbic acid is detected and the hemoglobin is negative, a microscopic urinalysis examination will be performed. If only a macroscopic examinition (UA) was ordered on such samples the microscopic analysis will be reflexively ordered and separately charged for.

Nitrite: A positive urinary nitrite test is highly suggestive of a urinary infection, but in a low risk population may detect as few as 50% of infections found on culture, particularly if urinary frequency is high, the diet is low in nitrate substrate or, of course, if the organisms are not nitrite-producers.

Comparison of dipstick protein reading to 'scale' reading:

Scale	Approx. Concentration
Neg	Neg
Trace	< 30 mg/dL
1+	30 mg/dL
2+	100 mg/dL
3+	300 mg/dL
4+	>= 2000 mg/dL

See also discussion of qualitative testing for preeclamptic patients under Protein, Total. Normal ranges for pH and Specific gravity from: Tietz Textbook of Clinical Chemistry, 4th ed., WB Saunders 2005

Urine ketones are not offered as a separate test. See Amino Acid, Quantitative, Urine

Reflex Testing:

Samples submitted with orders for Urinalysis with microscopic examination (UAWM) that are negative for Protein, Hemoglobin, Leukocyte esterase AND Ascorbic acid (Vit. C) will not be evaluated microscopically. The UAWM will be canceled and just the Macrocsopic urinalysis (UA) will be charged.

Samples submitted with orders for Urine macroscopic only (UA) that are positive for ascorbic acid (Vit. C) but negative for hemoglobin will be evaluated microscopically to rule out the presence of red cells. The UA will be canceled and a Urinalysis with microscopic examination will be ordered and billed (See additional information)

For samples with submitted orders for Urinalysis with Microscopy Reflex to Culture, for a culture to proceed, there must be a positive urinalysis with microscopy
criteria met:
1. Microscopy is added when either the “protein, blood, and/or WBC
esterase" is positive.
2. Culture is reflexed when the WBC is >10/hpf.

Synonyms:

- Urine dipstick
- Urine pH
- Specific gravity, urine
- Urine hemoglobin
- Urine protein
- Urine glucose
- Urine nitrate
- Urine Leukocyte esterase
- Urine ketones
- Urine bilirubin
- Qualitative sugar, urine
- Urobilinogen
- UAXC
- UA
- UAWM

COLLECTION

Sample Type:

Random urine

Collect:

Urine cup
BD Preservative Tube (Ref 365017)
BD Preservative Conical Tube (Ref 364992)

Amount to Collect:

See preferred volume

Preferred Volume:

20 mL urine

Minimum Volume:

Macroscopic alone (UA): 2 mL urine
With Microscopic (UAWM): 3 mL urine
UAXC: 4 mL

Remarks:

First AM void preferred. Deliver sample to lab asap. Refrigerate samples if delivery is delayed. Testing is optimal when done within 1-2 hours of collection.

Stability (from collection to initiation):

2 hours at room temperature; 4 hours if refrigerated; 24 hours room temperature if in an acceptable BD preservative tube. For optimum results, the urine sample must be tested within 1-2 hours of collection, regardless of storage method.

Unacceptable Conditions:

Samples received beyond appropriate stability time.

PROCESSING

Test Code:

UA (macroscopic alone) or UAWM (with microscopy)
UAXC, (Urinalysis with Microscopy Reflex to Culture)

Test Group:

Urinalysis

Performing Lab:

Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center

Specimen Preparation:

Deliver all urinalysis samples to Hematology as soon as possible after receipt. If collection time is unknown, use receipt time for stability. Sample suitability from 2-4 hours is decided in Hematology

Preferred Volume:

20 mL urine

Minimum Volume:

Macroscopic alone (UA): 2 mL urine
With Microscopic (UAWM): 3 mL urine
UAXC: 4 mL

Unacceptable Conditions:

Samples received beyond appropriate stability time.

Stability (from collection to initiation):

2 hours at room temperature; 4 hours if refrigerated; 24 hours room temperature if in an acceptable BD preservative tube. For optimum results, the urine sample must be tested within 1-2 hours of collection, regardless of storage method.

RESULT INTERPRETATION

Units:

Protein: mg/dL
Glucose: mg/dL
Ketones: mg/dL
Urobilinogen: mg/dL (EU/dL)

Reference Interval:

Protein	Negative
Glucose	Negative
Ketones	Negative
Bilirubin	Negative
Hemoglobin (Myoglobin)	Negative
Nitrite	Negative
Leukocyte Esterase	Negative
Urobilinogen	Negative
pH	4.5-8.0
Specific Gravity	1.002-1.030

Additional Information:

Urinalysis samples should be delivered as soon as possible after collection. Delayed transport of an unpreserved urine may lead to loss of red cell casts and other formed elements Refrigeration of urine inhibits bacterial growth, but does not prevent the lytic effects of low specific gravity or alkaline pH. Urine crystal formation may be induced by refrigeration.

Note: Routine urinalysis in pediatric patients does not include testing for reducing substances, such as sugars galactose, lactose, fructose and maltose. If clinically indicated, this screening test for reducing substances may be ordered. Testing for congenital galactosemia is included in newborn screening programs in all 50 states in the U.S.

Specific Gravity: Reported as <= 1.005 to >= 1.030; the level found depends upon water intake; a fixed level around 1.010 which does not vary with the state of the patient's hydration suggests renal damage.

pH: Reported over the range of 5.0 to >= 9.0 and is diet-dependent; a level > 9.0 suggests infection with a urea-splitting organism.

Bilirubin: Because false-positive results for bilirubin may occur due to the intrinsic coloration of urine, positive results are confirmed by a chemical method.

Hemoglobin: Dipstick testing does not distinguish between hemoglobin and myoglobin; if no RBCs are seen in a freshly collected specimen, the possibility of myoglobinuria due to rhabdomyolysis can be evaluated by measuring serum CK, which will be markedly elevated. Captopril may reduce the test sensitivity.
Note: Ascorbic acid in urine may cause a false negative hemoglobin result on the macroscopic urinalysis. If ascorbic acid is detected and the hemoglobin is negative, a microscopic urinalysis examination will be performed. If only a macroscopic examinition (UA) was ordered on such samples the microscopic analysis will be reflexively ordered and separately charged for.

Nitrite: A positive urinary nitrite test is highly suggestive of a urinary infection, but in a low risk population may detect as few as 50% of infections found on culture, particularly if urinary frequency is high, the diet is low in nitrate substrate or, of course, if the organisms are not nitrite-producers.

Comparison of dipstick protein reading to 'scale' reading:

Scale	Approx. Concentration
Neg	Neg
Trace	< 30 mg/dL
1+	30 mg/dL
2+	100 mg/dL
3+	300 mg/dL
4+	>= 2000 mg/dL

See also discussion of qualitative testing for preeclamptic patients under Protein, Total. Normal ranges for pH and Specific gravity from: Tietz Textbook of Clinical Chemistry, 4th ed., WB Saunders 2005

Urine ketones are not offered as a separate test. See Amino Acid, Quantitative, Urine

COMPLETE VIEW

Available Stat:

Yes

Test Code:

UA (macroscopic alone) or UAWM (with microscopy)
UAXC, (Urinalysis with Microscopy Reflex to Culture)

Test Group:

Urinalysis

Performing Lab:

Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center

Performed:

Parnassus, Mission Bay & Mt. Zion Hematology: Test available 24 hours per day 7 days per week
Berkeley Outpatient Center: Test available Mon-Fri (0800-1630)

Methodology:

Parnassus, Mission Bay & Mt. Zion Hematology: Dipstick with automated reader
Berkeley Outpatient Center: Manual Dipstick

Remarks:

First AM void preferred. Deliver sample to lab asap. Refrigerate samples if delivery is delayed. Testing is optimal when done within 1-2 hours of collection.

Collect:
Urine cup
BD Preservative Tube (Ref 365017)
BD Preservative Conical Tube (Ref 364992)

Amount to Collect:
See preferred volume

Sample Type:
Random urine

Preferred Volume:
20 mL urine

Minimum Volume:
Macroscopic alone (UA): 2 mL urine
With Microscopic (UAWM): 3 mL urine
UAXC: 4 mL

Unacceptable Conditions:
Samples received beyond appropriate stability time.

Specimen Preparation:
Deliver all urinalysis samples to Hematology as soon as possible after receipt. If collection time is unknown, use receipt time for stability. Sample suitability from 2-4 hours is decided in Hematology

Units:
Protein: mg/dL
Glucose: mg/dL
Ketones: mg/dL
Urobilinogen: mg/dL (EU/dL)

Reference Interval:

Protein	Negative
Glucose	Negative
Ketones	Negative
Bilirubin	Negative
Hemoglobin (Myoglobin)	Negative
Nitrite	Negative
Leukocyte Esterase	Negative
Urobilinogen	Negative
pH	4.5-8.0
Specific Gravity	1.002-1.030

Synonyms:

- Urine dipstick
- Urine pH
- Specific gravity, urine
- Urine hemoglobin
- Urine protein
- Urine glucose
- Urine nitrate
- Urine Leukocyte esterase
- Urine ketones
- Urine bilirubin
- Qualitative sugar, urine
- Urobilinogen
- UAXC
- UA
- UAWM

Stability (from collection to initiation):
2 hours at room temperature; 4 hours if refrigerated; 24 hours room temperature if in an acceptable BD preservative tube. For optimum results, the urine sample must be tested within 1-2 hours of collection, regardless of storage method.

Reported:
STAT 1 hour, Routine 2 hours

Reflex Testing:

Samples submitted with orders for Urinalysis with microscopic examination (UAWM) that are negative for Protein, Hemoglobin, Leukocyte esterase AND Ascorbic acid (Vit. C) will not be evaluated microscopically. The UAWM will be canceled and just the Macrocsopic urinalysis (UA) will be charged.

Samples submitted with orders for Urine macroscopic only (UA) that are positive for ascorbic acid (Vit. C) but negative for hemoglobin will be evaluated microscopically to rule out the presence of red cells. The UA will be canceled and a Urinalysis with microscopic examination will be ordered and billed (See additional information)

For samples with submitted orders for Urinalysis with Microscopy Reflex to Culture, for a culture to proceed, there must be a positive urinalysis with microscopy
criteria met:
1. Microscopy is added when either the “protein, blood, and/or WBC
esterase" is positive.
2. Culture is reflexed when the WBC is >10/hpf.

Additional Information:

Urinalysis samples should be delivered as soon as possible after collection. Delayed transport of an unpreserved urine may lead to loss of red cell casts and other formed elements Refrigeration of urine inhibits bacterial growth, but does not prevent the lytic effects of low specific gravity or alkaline pH. Urine crystal formation may be induced by refrigeration.

Note: Routine urinalysis in pediatric patients does not include testing for reducing substances, such as sugars galactose, lactose, fructose and maltose. If clinically indicated, this screening test for reducing substances may be ordered. Testing for congenital galactosemia is included in newborn screening programs in all 50 states in the U.S.

Specific Gravity: Reported as <= 1.005 to >= 1.030; the level found depends upon water intake; a fixed level around 1.010 which does not vary with the state of the patient's hydration suggests renal damage.

pH: Reported over the range of 5.0 to >= 9.0 and is diet-dependent; a level > 9.0 suggests infection with a urea-splitting organism.

Bilirubin: Because false-positive results for bilirubin may occur due to the intrinsic coloration of urine, positive results are confirmed by a chemical method.

Hemoglobin: Dipstick testing does not distinguish between hemoglobin and myoglobin; if no RBCs are seen in a freshly collected specimen, the possibility of myoglobinuria due to rhabdomyolysis can be evaluated by measuring serum CK, which will be markedly elevated. Captopril may reduce the test sensitivity.
Note: Ascorbic acid in urine may cause a false negative hemoglobin result on the macroscopic urinalysis. If ascorbic acid is detected and the hemoglobin is negative, a microscopic urinalysis examination will be performed. If only a macroscopic examinition (UA) was ordered on such samples the microscopic analysis will be reflexively ordered and separately charged for.

Nitrite: A positive urinary nitrite test is highly suggestive of a urinary infection, but in a low risk population may detect as few as 50% of infections found on culture, particularly if urinary frequency is high, the diet is low in nitrate substrate or, of course, if the organisms are not nitrite-producers.

Comparison of dipstick protein reading to 'scale' reading:

Scale	Approx. Concentration
Neg	Neg
Trace	< 30 mg/dL
1+	30 mg/dL
2+	100 mg/dL
3+	300 mg/dL
4+	>= 2000 mg/dL

See also discussion of qualitative testing for preeclamptic patients under Protein, Total. Normal ranges for pH and Specific gravity from: Tietz Textbook of Clinical Chemistry, 4th ed., WB Saunders 2005

Urine ketones are not offered as a separate test. See Amino Acid, Quantitative, Urine

Urine Culture

P059

ORDERING

Ordering Recommendations:

Order Urinalysis with reflex urin culture for most patients. The urine sample will be analyzed by urinalysis and set up for urine culture only if WBC > 4. Order Urine Culture with option for urinalysis restricted to high risk populations for patients meeting the following exception criteria:

Pregnant women
Positive point of care urinalysis
Children < 24 months of age
Neutropenic with ANC < 500 or anticipated to drop to < 500 in 24 hours
Renal transplant within 3 months or needing augmented immunosuppression
Inability to have inflammatory response in urinary tract due to immunocompromised state
Patients undergoing urologic procedures in which mucosal bleeding is expected
Suspected complete urinary tract obstruction
Urine collected surgically

Stat Gram Stain can be performed for urines collected surgically as indicated by the order.

Available Stat:

No

Performing Lab:

Microbiology

Performed:

Set up daily, day and evening shifts

Methodology:

Aerobic culture

Additional Information:

Colony counts are estimated based on the use of a calibrated 10 µl loop used to inoculate plates; each resultant colony represents approximately 100 CFU/mL. Therefore, an estimated colony count of 500 = 50,000 CFU/mL. It is important to note that the enumeration of colonies is only an estimate, particularly when the number of colonies on the plate exceeds 100 (10,000 CFU/mL).

Urine cultures showing positive results are retained for one week, should identification and/or susceptibility testing be desired.

Reflex Testing:

If bacteria are detected that are not normal mixed flora they are automatically identified and susceptibility testing is performed.

Full ID and/or susceptibility testing may be omitted upon request when sample is submitted for testing.

COLLECTION

Sample Type:

Random urine

Collect:

Preferred: Vacutainer tube with Boric Acid preservative (PMM# 138260)
Urine cup (clean catch)

Amount to Collect:

See preferred volume

Preferred Volume:

10 mL urine

Remarks:

Submit voided urine in a cup with a screw-on lid. Use a boric acid vacutainer to collect culture specimens from bladder catheter. Urines collected surgically can have stat Gram Stain performed as indicated by the order.

Stability (from collection to initiation):

Refrigerated 24 hours

Unacceptable Conditions:

More than one midstream or indwelling catheter urine in 48 hours
Urines received in Red Top Serum vacutainer

PROCESSING

Test Code:
P059

Test Group:
Bacterial Culture

Performing Lab:
Microbiology

Preferred Volume:
10 mL urine

Unacceptable Conditions:
More than one midstream or indwelling catheter urine in 48 hours
Urines received in Red Top Serum vacutainer

Stability (from collection to initiation):
Refrigerated 24 hours

RESULT INTERPRETATION

Additional Information:
Colony counts are estimated based on the use of a calibrated 10 µl loop used to inoculate plates; each resultant colony represents approximately 100 CFU/mL. Therefore, an estimated colony count of 500 = 50,000 CFU/mL. It is important to note that the enumeration of colonies is only an estimate, particularly when the number of colonies on the plate exceeds 100 (10,000 CFU/mL).

Urine cultures showing positive results are retained for one week, should identification and/or susceptibility testing be desired.

ADMINISTRATIVE

CPT Codes:
87086 (culture & colony count), 87088 (Culture, Colony count, ID)

LOINC Codes:
630-4

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Order Urinalysis with reflex urin culture for most patients. The urine sample will be analyzed by urinalysis and set up for urine culture only if WBC > 4. Order Urine Culture with option for urinalysis restricted to high risk populations for patients meeting the following exception criteria:

Pregnant women
Positive point of care urinalysis
Children < 24 months of age
Neutropenic with ANC < 500 or anticipated to drop to < 500 in 24 hours
Renal transplant within 3 months or needing augmented immunosuppression
Inability to have inflammatory response in urinary tract due to immunocompromised state
Patients undergoing urologic procedures in which mucosal bleeding is expected
Suspected complete urinary tract obstruction
Urine collected surgically

Stat Gram Stain can be performed for urines collected surgically as indicated by the order.

Test Code:
P059

Test Group:
Bacterial Culture

Performing Lab:
Microbiology

Performed:
Set up daily, day and evening shifts

Methodology:
Aerobic culture

Remarks:
Submit voided urine in a cup with a screw-on lid. Use a boric acid vacutainer to collect culture specimens from bladder catheter. Urines collected surgically can have stat Gram Stain performed as indicated by the order.

Collect:
Preferred: Vacutainer tube with Boric Acid preservative (PMM# 138260)
Urine cup (clean catch)

Amount to Collect:
See preferred volume

Sample Type:
Random urine

Preferred Volume:
10 mL urine

Unacceptable Conditions:
More than one midstream or indwelling catheter urine in 48 hours
Urines received in Red Top Serum vacutainer

Stability (from collection to initiation):
Refrigerated 24 hours

Reflex Testing:
If bacteria are detected that are not normal mixed flora they are automatically identified and susceptibility testing is performed.

Full ID and/or susceptibility testing may be omitted upon request when sample is submitted for testing.

Additional Information:
Colony counts are estimated based on the use of a calibrated 10 µl loop used to inoculate plates; each resultant colony represents approximately 100 CFU/mL. Therefore, an estimated colony count of 500 = 50,000 CFU/mL. It is important to note that the enumeration of colonies is only an estimate, particularly when the number of colonies on the plate exceeds 100 (10,000 CFU/mL).

Urine cultures showing positive results are retained for one week, should identification and/or susceptibility testing be desired.

CPT Codes:
87086 (culture & colony count), 87088 (Culture, Colony count, ID)

LOINC Codes:
630-4

Urine Culture and Gram stain (restricted to surgical collection)

P059S

ORDERING

Ordering Recommendations:

Urine collected surgically and Gram stain may be used to modify treatment (intra-op / post-op administration of antibiotics).

Urine Culture and Gram Stain is restricted to surgical collection, other patients should have Urinalysis with reflex to urine culture ordered. See separate lab manual entry for Urine Culture.

Available Stat:

No (gram stain may be requested stat)

Performing Lab:

Microbiology

Performed:

Set up daily, day and evening shifts

Methodology:

Aerobic culture

Additional Information:

Colony counts are estimated based on the use of a calibrated 10 µl loop used to inoculate plates; each resultant colony represents approximately 100 CFU/mL. Therefore, an estimated colony count of 500 = 50,000 CFU/mL. It is important to note that the enumeration of colonies is only an estimate, particularly when the number of colonies on the plate exceeds 100 (10,000 CFU/mL).

Urine cultures showing positive results are retained for one week, should identification and/or susceptibility testing be desired.

Reflex Testing:

If bacteria are detected that are not normal mixed flora they are automatically identified and susceptibility testing is performed.

Full ID and/or susceptibility testing may be omitted upon request when sample is submitted for testing.

COLLECTION

Sample Type:

Random urine

Collect:

Preferred: Vacutainer tube with Boric Acid preservative (PMM# 138260)
Urine cup (clean catch)

Amount to Collect:

See preferred volume

Preferred Volume:

10 mL urine

Remarks:

Submit voided urine in a cup with a screw-on lid. Use a boric acid vacutainer to collect culture specimens from bladder catheter. Urines collected surgically can have stat Gram Stain performed as indicated by the order.

Stability (from collection to initiation):

Unpreserved: Refrigerated 24 hours
Preserved: Room temperature 48 hours

Unacceptable Conditions:

More than one midstream or indwelling catheter urine in 48 hours
Urines received in Red Top Serum vacutainer

PROCESSING

Test Code:

P059S

Test Group:

Bacterial Culture

Performing Lab:

Microbiology

Preferred Volume:

10 mL urine

Unacceptable Conditions:
More than one midstream or indwelling catheter urine in 48 hours
Urines received in Red Top Serum vacutainer

Stability (from collection to initiation):
Unpreserved: Refrigerated 24 hours
Preserved: Room temperature 48 hours

RESULT INTERPRETATION

Reference Interval:
See Additional Information

Additional Information:
Colony counts are estimated based on the use of a calibrated 10 µl loop used to inoculate plates; each resultant colony represents approximately 100 CFU/mL. Therefore, an estimated colony count of 500 = 50,000 CFU/mL. It is important to note that the enumeration of colonies is only an estimate, particularly when the number of colonies on the plate exceeds 100 (10,000 CFU/mL).

Urine cultures showing positive results are retained for one week, should identification and/or susceptibility testing be desired.

ADMINISTRATIVE

CPT Codes:
87205; 87088

COMPLETE VIEW

Available Stat:
No (gram stain may be requested stat)

Ordering Recommendations:
Urine collected surgically and Gram stain may be used to modify treatment (intra-op / post-op administration of antibiotics).

Urine Culture and Gram Stain is restricted to surgical collection, other patients should have Urinalysis with reflex to urine culture ordered. See separate lab manual entry for Urine Culture.

Test Code:
P059S

Test Group:
Bacterial Culture

Performing Lab:
Microbiology

Performed:
Set up daily, day and evening shifts

Methodology:
Aerobic culture

Remarks:
Submit voided urine in a cup with a screw-on lid. Use a boric acid vacutainer to collect culture specimens from bladder catheter. Urines collected surgically can have stat Gram Stain performed as indicated by the order.

Collect:
Preferred: Vacutainer tube with Boric Acid preservative (PMM# 138260)
Urine cup (clean catch)

Amount to Collect:
See preferred volume

Sample Type:
Random urine

Preferred Volume:
10 mL urine

Unacceptable Conditions:
More than one midstream or indwelling catheter urine in 48 hours
Urines received in Red Top Serum vacutainer

Reference Interval:
See Additional Information

Stability (from collection to initiation):
Unpreserved: Refrigerated 24 hours
Preserved: Room temperature 48 hours

Reflex Testing:

If bacteria are detected that are not normal mixed flora they are automatically identified and susceptibility testing is performed.

Full ID and/or susceptibility testing may be omitted upon request when sample is submitted for testing.

Additional Information:

Colony counts are estimated based on the use of a calibrated 10 µl loop used to inoculate plates; each resultant colony represents approximately 100 CFU/mL. Therefore, an estimated colony count of 500 = 50,000 CFU/mL. It is important to note that the enumeration of colonies is only an estimate, particularly when the number of colonies on the plate exceeds 100 (10,000 CFU/mL).

Urine cultures showing positive results are retained for one week, should identification and/or susceptibility testing be desired.

CPT Codes:

87205; 87088

Urine culture from screening Urinalysis

P049

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Set up daily, day and evening shifts

Methodology:
Aerobic culture

Additional Information:
Urine samples will be tested by urinalysis with microscopy, and those not meeting criteria will have the urine culture canceled. Providers can indicate on the test order whether the patient meets exception from screening urinalysis (immunocompromised or pediatric patients), or if the urine is invasively collected. In these situations, urine culture will be performed without urinalysis, which must be ordered separately.

Screening Urinalysis criteria for setting up Urine Culture:
Urine sample contains at least trace amounts of protein, esterase or hemoglobin AND Urine sample is positive for > 10 WBC per hpf on microscopy

Colony counts are estimated based on the use of a calibrated 10 µl loop used to inoculate plates; each resultant colony represents approximately 100 CFU/mL. Therefore, an estimated colony count of 500 = 50,000 CFU/mL. It is important to note that the enumeration of colonies is only an estimate, particularly when the number of colonies on the plate exceeds 100 (10,000 CFU/mL).

Urine cultures showing positive results are retained for one week, should identification and/or susceptibility testing be desired.

Reflex Testing:
If bacteria are detected that are not normal mixed flora they are automatically identified and susceptibility testing is performed.Full ID and/or susceptibility testing may be omitted upon request when sample is submitted for testing.

COLLECTION

Collect:
Preferred: Vacutainer tube with Boric Acid preservative (PMM# 138260)
Urine cup (clean catch)

Remarks:
Submit voided urine in a cup with a screw-on lid. Use a Boric Acid vacutainer to collect culture specimens from bladder catheter.

Stability (from collection to initiation):
Unpreserved: Refrigerated 24 hours
Preserved: Room temperature 48 hours

Unacceptable Conditions:
More than one midstream or indwelling catheter urine in 48 hours
Urines received in Red Top Serum vacutainer

PROCESSING

Test Code:
P049

Test Group:
Bacterial culture

Performing Lab:
Microbiology

Unacceptable Conditions:
More than one midstream or indwelling catheter urine in 48 hours
Urines received in Red Top Serum vacutainer

Stability (from collection to initiation):
Unpreserved: Refrigerated 24 hours
Preserved: Room temperature 48 hours

RESULT INTERPRETATION

Additional Information:

Urine samples will be tested by urinalysis with microscopy, and those not meeting criteria will have the urine culture canceled. Providers can indicate on the test order whether the patient meets exception from screening urinalysis (immunocompromised or pediatric patients), or if the urine is invasively collected. In these situations, urine culture will be performed without urinalysis, which must be ordered separately.

Screening Urinalysis criteria for setting up Urine Culture:
Urine sample contains at least trace amounts of protein, esterase or hemoglobin AND Urine sample is positive for > 10 WBC per hpf on microscopy

Colony counts are estimated based on the use of a calibrated 10 µl loop used to inoculate plates; each resultant colony represents approximately 100 CFU/mL. Therefore, an estimated colony count of 500 = 50,000 CFU/mL. It is important to note that the enumeration of colonies is only an estimate, particularly when the number of colonies on the plate exceeds 100 (10,000 CFU/mL).

Urine cultures showing positive results are retained for one week, should identification and/or susceptibility testing be desired.

ADMINISTRATIVE

CPT Codes:
87086 (culture & colony count), 87088 (Culture, Colony count, ID)

LOINC Codes:
630-4

COMPLETE VIEW

Available Stat:
No

Test Code:
P049

Test Group:
Bacterial culture

Performing Lab:
Microbiology

Performed:
Set up daily, day and evening shifts

Methodology:
Aerobic culture

Remarks:
Submit voided urine in a cup with a screw-on lid. Use a Boric Acid vacutainer to collect culture specimens from bladder catheter.

Collect:
Preferred: Vacutainer tube with Boric Acid preservative (PMM# 138260)
Urine cup (clean catch)

Unacceptable Conditions:
More than one midstream or indwelling catheter urine in 48 hours
Urines received in Red Top Serum vacutainer

Stability (from collection to initiation):
Unpreserved: Refrigerated 24 hours
Preserved: Room temperature 48 hours

Reflex Testing:
If bacteria are detected that are not normal mixed flora they are automatically identified and susceptibility testing is performed.Full ID and/or susceptibility testing may be omitted upon request when sample is submitted for testing.

Additional Information:

Urine samples will be tested by urinalysis with microscopy, and those not meeting criteria will have the urine culture canceled. Providers can indicate on the test order whether the patient meets exception from screening urinalysis (immunocompromised or pediatric patients), or if the urine is invasively collected. In these situations, urine culture will be performed without urinalysis, which must be ordered separately.

Screening Urinalysis criteria for setting up Urine Culture:
Urine sample contains at least trace amounts of protein, esterase or hemoglobin AND Urine sample is positive for > 10 WBC per hpf on microscopy

Colony counts are estimated based on the use of a calibrated 10 µl loop used to inoculate plates; each resultant colony represents approximately 100 CFU/mL. Therefore, an estimated colony count of 500 = 50,000 CFU/mL. It is important to note that the enumeration of colonies is only an estimate, particularly when the number of colonies on the plate exceeds 100 (10,000 CFU/mL).

Urine cultures showing positive results are retained for one week, should identification and/or susceptibility testing be desired.

CPT Codes:

87086 (culture & colony count), 87088 (Culture, Colony count, ID)

LOINC Codes:

630-4

Ustekinumab and Anti-Ustekinumab Antibody

USTK

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
ECLIA

Reported:
11-15 days

Synonyms:

- Stelara

COLLECTION

Sample Type:
Blood

Collect:
Red top or gold top

Amount to Collect:
6 mL blood

Preferred Volume:
3 mL serum

Minimum Volume:
1 mL serum

Stability (from collection to initiation):
Frozen: 14 days

Storage/Transport Temperature:
Frozen

Unacceptable Conditions:
Gross lipemia or hemolysis

PROCESSING

Test Code:
USTK

Sendout:
Yes

Performing Lab:
Mayo

Preferred Volume:
3 mL serum

Minimum Volume:
1 mL serum

Unacceptable Conditions:
Gross lipemia or hemolysis

Stability (from collection to initiation):
Frozen: 14 days

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Reference Interval:

Ustekinumab:

Quantitation Limit: <0.1 ug/mL

Results of 0.1 ug/mL or higher indicate detection of ustekinumab

In the presence of anti-ustekinumab antibodies, the ustekinumab drug level reflects the free, antibody-unbound fraction of ustekinumab in serum

Anti-Ustekinumab Antibody:

Quantitation Limit: <40 ng/mL

Results of 40 ng/mL or higher indicate detection of anti-ustekinumab antibodies.

Interpretive Data:

Provides ustekinumab drug concentration and anti-ustekinumab antibodies in order to optimize treatment and facilitate clinical decision-making.

This assay may be helpful in any patients on ustekinumab therapy for Crohn's disease, psoriasis, or other autoimmune conditions.

ADMINISTRATIVE

CPT Codes:

80299, 82397

COMPLETE VIEW

Available Stat:

No

Test Code:

USTK

Performing Lab:

Mayo

Sendout:

Yes

Methodology:

ECLIA

Collect:

Red top or gold top

Amount to Collect:

6 mL blood

Sample Type:

Blood

Preferred Volume:

3 mL serum

Minimum Volume:

1 mL serum

Unacceptable Conditions:

Gross lipemia or hemolysis

Reference Interval:

Ustekinumab:

Quantitation Limit: <0.1 ug/mL

Results of 0.1 ug/mL or higher indicate detection of ustekinumab

In the presence of anti-ustekinumab antibodies, the ustekinumab drug level reflects the free, antibody-unbound fraction of ustekinumab in serum

Anti-Ustekinumab Antibody:

Quantitation Limit: <40 ng/mL

Results of 40 ng/mL or higher indicate detection of anti-ustekinumab antibodies.

Interpretive Data:

Provides ustekinumab drug concentration and anti-ustekinumab antibodies in order to optimize treatment and facilitate clinical decision-making.

This assay may be helpful in any patients on ustekinumab therapy for Crohn's disease, psoriasis, or other autoimmune conditions.

Synonyms:

- Stelara

Storage/Transport Temperature:

Frozen

Stability (from collection to initiation):

Frozen: 14 days

Reported:

11-15 days

CPT Codes:

80299, 82397

Vaginal smear for Bacterial vaginosis/yeast

P058

ORDERING

Available Stat:
No

Performing Lab:
Mirobiology

Performed:
Daily, day and evening shifts only

Methodology:
Gram stain and microscopy

Reported:
Same or next day

Additional Information:
Use of a scored Gram stain (Nugent score) to demonstrate whether there has been a shift in the vaginal flora from predominantly gram-positive Lactobacillus to a gram-negative flora is recommended for diagnosis of BV, rather than culture for Gardnerella vaginalis or other organism(s).

The primary reason for performing a Gram stain on vaginal secretions is to diagnose bacterial vaginosis, therefore, this test will be performed if a Gram stain is ordered.

The presence or absence of yeast, presence or absence of Clue cells, and Nugent score is reported.

Nugent score >= 7, or Clue cells with Nugent score >= 4,is consistent with the clinical diagnosis of bacterial vaginosis.

Synonyms:

- BV
- clue cells
- G. vaginalis
- Gardnerella vaginalis

COLLECTION

Sample Type:
Vaginal discharge

Collect:
E-swab (liquid Amies elution medium) or Amies transport medium with charcoal. Amies Gel and Amies/Stuart Liquid Swab Transport Systems are also acceptable.

Amount to Collect:
Single swab

Preferred Volume:
Single swab

Stability (from collection to initiation):
Swabs: Room temperature 12 hours

PROCESSING

Test Code:
P058

Performing Lab:
Mirobiology

Preferred Volume:
Single swab

Stability (from collection to initiation):
Swabs: Room temperature 12 hours

RESULT INTERPRETATION

Units:
Nugent score

Reference Interval:
Nugent score < 7 without Clue cells or Nugent score < 4 if Clue cells present

Additional Information:

Use of a scored Gram stain (Nugent score) to demonstrate whether there has been a shift in the vaginal flora from predominantly gram-positive Lactobacillus to a gram-negative flora is recommended for diagnosis of BV, rather than culture for Gardnerella vaginalis or other organism(s).

The primary reason for performing a Gram stain on vaginal secretions is to diagnose bacterial vaginosis, therefore, this test will be performed if a Gram stain is ordered.

The presence or absence of yeast, presence or absence of Clue cells, and Nugent score is reported.

Nugent score >= 7, or Clue cells with Nugent score >= 4,is consistent with the clinical diagnosis of bacterial vaginosis.

ADMINISTRATIVE

CPT Codes:

87205

COMPLETE VIEW

Available Stat:

No

Test Code:

P058

Performing Lab:

Mirobiology

Performed:

Daily, day and evening shifts only

Methodology:

Gram stain and microscopy

Collect:

E-swab (liquid Amies elution medium) or Amies transport medium with charcoal. Amies Gel and Amies/Stuart Liquid Swab Transport Systems are also acceptable.

Amount to Collect:

Single swab

Sample Type:

Vaginal discharge

Preferred Volume:

Single swab

Units:

Nugent score

Reference Interval:

Nugent score < 7 without Clue cells or Nugent score < 4 if Clue cells present

Synonyms:

- BV
- clue cells
- G. vaginalis
- Gardnerella vaginalis

Stability (from collection to initiation):

Swabs: Room temperature 12 hours

Reported:

Same or next day

Additional Information:

Use of a scored Gram stain (Nugent score) to demonstrate whether there has been a shift in the vaginal flora from predominantly gram-positive Lactobacillus to a gram-negative flora is recommended for diagnosis of BV, rather than culture for Gardnerella vaginalis or other organism(s).

The primary reason for performing a Gram stain on vaginal secretions is to diagnose bacterial vaginosis, therefore, this test will be performed if a Gram stain is ordered.

The presence or absence of yeast, presence or absence of Clue cells, and Nugent score is reported.

Nugent score >= 7, or Clue cells with Nugent score >= 4,is consistent with the clinical diagnosis of bacterial vaginosis.

CPT Codes:

87205

Valproic acid

VALP

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Particle-enhanced turbidimetric inhibition immunoassay (PETINIA)

Reported:
Stat 1 hour, Routine 4 hours

Synonyms:

- Depakene
- Valproate
- Depakote

COLLECTION

Sample Type:
Serum or plasma

Collect:
Gold top or Light Green top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Remarks:
Time to steady state: 2-3 days.

Collect trough samples 30 minutes before next dose.

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 2 days, frozen at -20C 1 week

PROCESSING

Test Code:
VALP

Performing Lab:
Parnassus & Mission Bay Chemistry

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 2 days, frozen at -20C 1 week

RESULT INTERPRETATION

Units:
mg/L

Reference Interval:
Therapeutic: 50-125 mg/L

VPA therapeutic range of 50 - 125 mg/L was set based on recommendations in the literature and consultations with UCSF pharmacists and neurologists.

Critical Values:
> 150 mg/L

ADMINISTRATIVE

CPT Codes:
80164

LOINC Codes:
4086-5

COMPLETE VIEW

Available Stat:
Yes

Test Code:
VALP

Performing Lab:
Parnassus & Mission Bay Chemistry

Performed:
Test available 24 hours per day 7 days per week

Methodology:
Particle-enhanced turbidimetric inhibition immunoassay (PETINIA)

Remarks:
Time to steady state: 2-3 days.

Collect trough samples 30 minutes before next dose.

Collect:
Gold top or Light Green top

Amount to Collect:
1 mL blood

Sample Type:
Serum or plasma

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Units:
mg/L

Reference Interval:
Therapeutic: 50-125 mg/L

VPA therapeutic range of 50 - 125 mg/L was set based on recommendations in the literature and consultations with UCSF pharmacists and neurologists.

Critical Values:
> 150 mg/L

Synonyms:

- Depakene
- Valproate
- Depakote

Stability (from collection to initiation):
Room temperature 8 hours, refrigerated 2 days, frozen at -20C 1 week

Reported:
Stat 1 hour, Routine 4 hours

CPT Codes:
80164

LOINC Codes:
4086-5

Vancomycin
VANC

ORDERING

Available Stat:
No

Performing Lab:
Parnassus, Mission Bay and Mount Zion Chemistry

Performed:
Test available 24 hours per day 7 days a week

Methodology:
Particle-enhance tubidimetric inhibition immunoassay (PETINIA)

Reported:
1 day

Additional Information:

VANCOMYCIN TROUGH MONITORING

Vancomycin troughs are not recommended in patients in whom anticipated duration of therapy is short (<= 3 days)

Only trough levels should be obtained. Vancomycin peaks have no clinical significance. Trough levels should be obtained within 30 minutes before 4th dose of a new regimen or dosage change.

INDICATIONS FOR VANCOMYCIN TROUGHS

Patients with unstable renal function or when serum Cr may not accurately reflect GFR i.e. patients > 70, reduced muscle mass (e.g. malnutrition, prolonged hospitalization, amputees, etc.)

Patients on continuous or intermittent hemodialysis (for intermittent HD draw a pre-dialysis level)

Patients with severely altered volumes of distribution (e.g. morbid obesity, significant edema, burns)

Initial and definitive therapy of suspected central nervous system infections, endocarditis, ventilator-associated pneumonia, bacteremia or osteomyelitis caused by MRSA.

FREQUENCY OF VANCOMYCIN TROUGHS

Once weekly monitoring is reasonable in patients with stable renal function. (Data supporting safety of prolonged troughs of 15-20 mcg/ml is limited.)

Only a trough sample is recommended. If a peak level is deemed necessary, obtain the sample 60 min. after the end of the infusion.

Peak levels in the range of 30 - 40 mg/L may be expected with usual dosing. Toxicity may occur with vancomycin levels > 80 mg/L.

Therapeutic trough 10-20 mg/L recommended typically. However, for patients with serious MRSA infections (central nervous system infections, endocarditis, ventilator-associated pneumonia, bacteremia or osteomyelitis) trough levels of 15-20 mg/mL and ID consult are recommended.

Note: some monoclonal proteins may cause falsely low vancomycin results. The presence of human anti-mouse antibodies or heterophile antibodies may also interfere with the vancomycin assay in some cases. Testing for vancomycin levels in parallel dilution studies and with a different assay may be useful in cases where interference by a monoclonal protein or abnormal immunoglobulin is suspected. See the lab manual's "A Guide on Drug Level Monitoring" (in the Chemistry Guide) for additional information.

Synonyms:

- Vancocin

COLLECTION

Sample Type:
Serum or plasma

Collect:
Preferred: Light green top
Acceptable: Gold or red top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Remarks:
Time to steady state: 3 doses

Collect trough samples = 30 minutes prior to 4th or subsequent dose. For patients on hemodialysis collect prior to dialysis.

Note exact time of collection on requisition AND sample.

Stability (from collection to initiation):
Refrigerated 7 days, frozen at -20C 14 days

PROCESSING

Test Code:
VANC

Performing Lab:
Parnassus, Mission Bay and Mount Zion Chemistry

Specimen Preparation:
Refrigerate serum.

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Stability (from collection to initiation):
Refrigerated 7 days, frozen at -20C 14 days

RESULT INTERPRETATION

Units:
mg/L

Reference Interval:
Therapeutic trough, standard cases: 10-20 mg/L
Therapeutic trough, exceptional cases: 15-20 mg/L

Source of reference range: UCSF Medical Center Adult Vancomycin Dosing and Monitoring Recommendations.

Additional Information:

VANCOMYCIN TROUGH MONITORING

Vancomycin troughs are not recommended in patients in whom anticipated duration of therapy is short (<= 3 days)

Only trough levels should be obtained. Vancomycin peaks have no clinical significance. Trough levels should be obtained within 30 minutes before 4th dose of a new regimen or dosage change.

INDICATIONS FOR VANCOMYCIN TROUGHS

Patients with unstable renal function or when serum Cr may not accurately reflect GFR i.e. patients > 70, reduced muscle mass (e.g. malnutrition, prolonged hospitalization, amputees, etc.)

Patients on continuous or intermittent hemodialysis (for intermittent HD draw a pre-dialysis level)

Patients with severely altered volumes of distribution (e.g. morbid obesity, significant edema, burns)

Initial and definitive therapy of suspected central nervous system infections, endocarditis, ventilator-associated pneumonia, bacteremia or osteomyelitis caused by MRSA.

FREQUENCY OF VANCOMYCIN TROUGHS

Once weekly monitoring is reasonable in patients with stable renal function. (Data supporting safety of prolonged troughs of 15-20 mcg/ml is limited.)

Only a trough sample is recommended. If a peak level is deemed necessary, obtain the sample 60 min. after the end of the infusion.

Peak levels in the range of 30 - 40 mg/L may be expected with usual dosing. Toxicity may occur with vancomycin levels > 80 mg/L.

Therapeutic trough 10-20 mg/L recommended typically. However, for patients with serious MRSA infections (central nervous system infections, endocarditis, ventilator-associated pneumonia, bacteremia or osteomyelitis) trough levels of 15-20 mg/mL and ID consult are recommended.

Note: some monoclonal proteins may cause falsely low vancomycin results. The presence of human anti-mouse antibodies or heterophile antibodies may also interfere with the vancomycin assay in some cases. Testing for vancomycin levels in parallel dilution studies and with a different assay may be useful in cases where interference by a monoclonal protein or abnormal immunoglobulin is suspected. See the lab manual's "A Guide on Drug Level Monitoring" (in the Chemistry Guide) for additional information.

ADMINISTRATIVE

CPT Codes:
80202

LOINC Codes:
4092-3

COMPLETE VIEW

Available Stat:
No

Test Code:
VANC

Performing Lab:
Parnassus, Mission Bay and Mount Zion Chemistry

Performed:
Test available 24 hours per day 7 days a week

Methodology:
Particle-enhance tubidimetric inhibition immunoassay (PETINIA)

Remarks:
Time to steady state: 3 doses

Collect trough samples = 30 minutes prior to 4th or subsequent dose. For patients on hemodialysis collect prior to dialysis.

Note exact time of collection on requisition AND sample.

Collect:
Preferred: Light green top
Acceptable: Gold or red top

Amount to Collect:
1 mL blood

Sample Type:
Serum or plasma

Preferred Volume:
0.5 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Specimen Preparation:
Refrigerate serum.

Units:
mg/L

Reference Interval:
Therapeutic trough, standard cases: 10-20 mg/L
Therapeutic trough, exceptional cases: 15-20 mg/L

Source of reference range: UCSF Medical Center Adult Vancomycin Dosing and Monitoring Recommendations.

Synonyms:

- Vancocin

Stability (from collection to initiation):
Refrigerated 7 days, frozen at -20C 14 days

Reported:
1 day

Additional Information:

VANCOMYCIN TROUGH MONITORING

Vancomycin troughs are not recommended in patients in whom anticipated duration of therapy is short (<= 3 days)

Only trough levels should be obtained. Vancomycin peaks have no clinical significance. Trough levels should be obtained within 30 minutes before 4th dose of a new regimen or dosage change.

INDICATIONS FOR VANCOMYCIN TROUGHS

Patients with unstable renal function or when serum Cr may not accurately reflect GFR i.e. patients > 70, reduced muscle mass (e.g. malnutrition, prolonged hospitalization, amputees, etc.)

Patients on continuous or intermittent hemodialysis (for intermittent HD draw a pre-dialysis level)

Patients with severely altered volumes of distribution (e.g. morbid obesity, significant edema, burns)

Initial and definitive therapy of suspected central nervous system infections, endocarditis, ventilator-associated pneumonia, bacteremia or osteomyelitis caused by MRSA.

FREQUENCY OF VANCOMYCIN TROUGHS

Once weekly monitoring is reasonable in patients with stable renal function. (Data supporting safety of prolonged troughs of 15-20 mcg/ml is limited.)

Only a trough sample is recommended. If a peak level is deemed necessary, obtain the sample 60 min. after the end of the infusion.

Peak levels in the range of 30 - 40 mg/L may be expected with usual dosing. Toxicity may occur with vancomycin levels > 80 mg/L.

Therapeutic trough 10-20 mg/L recommended typically. However, for patients with serious MRSA infections (central nervous system infections, endocarditis, ventilator-associated pneumonia, bacteremia or osteomyelitis) trough levels of 15-20 mg/mL and ID consult are recommended.

Note: some monoclonal proteins may cause falsely low vancomycin results. The presence of human anti-mouse antibodies or heterophile antibodies may also interfere with the vancomycin assay in some cases. Testing for vancomycin levels in parallel dilution studies and with a different assay may be useful in cases where interference by a monoclonal protein or abnormal immunoglobulin is suspected. See the lab manual's "A Guide on Drug Level Monitoring" (in the Chemistry Guide) for additional information.

CPT Codes:
80202

LOINC Codes:
4092-3

Vanillylmandelic Acid (VMA), Urine

VMA

ORDERING

Ordering Recommendations:
Initial test for the diagnosis and monitoring of neuroblastoma. Should be ordered concurrently with Homovanillic Acid (HVA), Urine (0080422).

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun, Tue, Wed, Thu, Fri, Sat

Methodology:
Quantitative High Performance Liquid Chromatography-Tandem Mass Spectrometry

Reported:
1-5 days

Synonyms:

- 3-Methoxy-4-Hydroxy-Mandelic Acid
- 3-Methoxy-4-Hydroxymandelic Acid
- 4-Hydroxy-3-Methoxymandelic Acid
- VMA

COLLECTION

Patient Preparation:
Abstain from medications for 72 hours prior to collection.

Sample Type:
Urine

Collect:
24-hour or random urine. Refrigerate 24-hour specimens during collection.

Preferred Volume:
4 mL

Minimum Volume:
1 mL

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 1 week; Frozen: 2 weeks

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Specimen types other than urine.

PROCESSING

Test Code:
VMA

ARUP Test Code:
0080421

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transfer 4 mL aliquot from a well-mixed 24-hour or random collection to an ARUP Standard Transport Tube. (Min: 1 mL) Record total volume and collection time interval on transport tube and test request form.

Preferred Volume:
4 mL

Minimum Volume:
1 mL

Unacceptable Conditions:
Specimen types other than urine.

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 1 week; Frozen: 2 weeks

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:

Components	Reference Interval
Creatinine, Urine - per 24h	

Age	Male (mg/d)	Female (mg/d)
3-8 years	140-700	140-700
9-12 years	300-1300	300-1300
13-17 years	500-2300	400-1600
18-50 years	1000-2500	700-1600
51-80 years	800-2100	500-1400
81 years and older	600-2000	400-1300

Vanillylmandelic Acid - per 24h	18 years and older: 0.0-7.0 mg/d
Vanillylmandelic Acid - ratio to CRT	

Age	mg/g CRT
0-2 years	0-27
3-5 years	0-13
6-17 years	0-9
18 years and older	0-6

Interpretive Data:
Vanillylmandelic acid (VMA) results are expressed as a ratio to creatinine excretion (mg/g CRT). No reference interval is available for results reported in units of mg/L. Slight or moderate increases in catecholamine metabolites may be due to extreme anxiety, essential hypertension, intense physical exercise, or drug interactions. Significant increase of one or more catecholamine metabolites (several times the upper reference limit) is associated with an increased probability of a secreting neuroendocrine tumor.

Per 24h calculations are provided to aid interpretation for collections with a duration of 24 hours and an average daily urine volume. For specimens with notable deviations in collection time or volume, ratios of analytes to a corresponding urine creatinine concentration may assist in result interpretation.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:
84585

LOINC:

- 30571-4
- 2162-6
- 19153-6
- 50948-9
- 2161-8
- 9624-8
- 3122-9
- 30211-7

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Initial test for the diagnosis and monitoring of neuroblastoma. Should be ordered concurrently with Homovanillic Acid (HVA), Urine (0080422).

Test Code:
VMA

ARUP Test Code:
0080421

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun, Tue, Wed, Thu, Fri, Sat

Methodology:
Quantitative High Performance Liquid Chromatography-Tandem Mass Spectrometry

Patient Preparation:
Abstain from medications for 72 hours prior to collection.

Collect:
24-hour or random urine. Refrigerate 24-hour specimens during collection.

Sample Type:
Urine

Preferred Volume:
4 mL

Minimum Volume:
1 mL

Unacceptable Conditions:
Specimen types other than urine.

Specimen Preparation:
Transfer 4 mL aliquot from a well-mixed 24-hour or random collection to an ARUP Standard Transport Tube. (Min: 1 mL) Record total volume and collection time interval on transport tube and test request form.

Reference Interval:

<table>
<tr><th>Components</th><th>Reference Interval</th></tr>
<tr><td>Creatinine, Urine - per 24h</td><td>
<table>
<tr><th>Age</th><th>Male (mg/d)</th><th>Female (mg/d)</th></tr>
<tr><td>3-8 years</td><td>140-700</td><td>140-700</td></tr>
<tr><td>9-12 years</td><td>300-1300</td><td>300-1300</td></tr>
<tr><td>13-17 years</td><td>500-2300</td><td>400-1600</td></tr>
<tr><td>18-50 years</td><td>1000-2500</td><td>700-1600</td></tr>
<tr><td>51-80 years</td><td>800-2100</td><td>500-1400</td></tr>
<tr><td>81 years and older</td><td>600-2000</td><td>400-1300</td></tr>
</table>
</td></tr>
<tr><td>Vanillylmandelic Acid - per 24h</td><td>18 years and older: 0.0-7.0 mg/d</td></tr>
<tr><td>Vanillylmandelic Acid - ratio to CRT</td><td>
<table>
<tr><th>Age</th><th>mg/g CRT</th></tr>
<tr><td>0-2 years</td><td>0-27</td></tr>
<tr><td>3-5 years</td><td>0-13</td></tr>
<tr><td>6-17 years</td><td>0-9</td></tr>
<tr><td>18 years and older</td><td>0-6</td></tr>
</table>
</td></tr>
</table>

Interpretive Data:

Vanillylmandelic acid (VMA) results are expressed as a ratio to creatinine excretion (mg/g CRT). No reference interval is available for results reported in units of mg/L. Slight or moderate increases in catecholamine metabolites may be due to extreme anxiety, essential hypertension, intense physical exercise, or drug interactions. Significant increase of one or more catecholamine metabolites (several times the upper reference limit) is associated with an increased probability of a secreting neuroendocrine tumor.

Per 24h calculations are provided to aid interpretation for collections with a duration of 24 hours and an average daily urine volume. For specimens with notable deviations in collection time or volume, ratios of analytes to a corresponding urine creatinine concentration may assist in result interpretation.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Synonyms:

- 3-Methoxy-4-Hydroxy-Mandelic Acid
- 3-Methoxy-4-Hydroxymandelic Acid
- 4-Hydroxy-3-Methoxymandelic Acid
- VMA

Storage/Transport Temperature:

Refrigerated.

Stability (from collection to initiation):

Ambient: Unacceptable; Refrigerated: 1 week; Frozen: 2 weeks

Reported:

1-5 days

CPT Codes:

84585

LOINC:

- 30571-4
- 2162-6
- 19153-6
- 50948-9
- 2161-8
- 9624-8
- 3122-9
- 30211-7

Notes:

Moderately elevated VMA (vanillylmandelic acid) can be caused by a variety of factors such as essential hypertension, intense anxiety, intense physical exercise, and numerous drug interactions (including some over-the-counter medications and herbal products).

Medications that may interfere with catecholamines and their metabolites include amphetamines and amphetamine-like compounds, appetite suppressants, bromocriptine, buspirone, caffeine, chlorpromazine, clonidine, disulfiram, diuretics (in doses sufficient to deplete sodium), epinephrine, glucagon, guanethidine, histamine, hydrazine derivatives, imipramine, levodopa (L-dopa, Sinemet®), lithium, MAO inhibitors, melatonin, methyldopa (Aldomet®), morphine, nitroglycerin, nose drops, propafenone (Rythmol), radiographic agents, rauwolfia alkaloids (Reserpine), tricyclic antidepressants, and vasodilators. The effects of some drugs on catecholamine metabolite results may not be predictable.

Varicella zoster virus Antibody, IgG serum

VZI

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift)

Methodology:
Chemiluminescent Immunoassay

Reported:
1-4 days

Additional Information:
Results are reported as Negative/Not Immune: < 1.00 S/CO or Positive/Immune: >= 1.00 S/CO

Note: Treatment with Zoster immune globulin will result in a positive test result that will not reflect the patient's own immune reaction.

See also entries for Viral Culture and Viral Serology.

Synonyms:

- VZ
- VZV

COLLECTION

Sample Type:
Serum

Collect:
Gold Top or Red Top

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Remarks:
Contact the laboratory (415-353-1712) if results are needed urgently to determine VZIG therapy of immunocompromised or pregnant patients.

Unacceptable Conditions:
Grossly hemolyzed, lipemic or icteric samples

PROCESSING

Test Code:
VZI

Test Group:
Varicella-zoster

Performing Lab:
Immunology

Specimen Preparation:
Freeze sample at -20 C

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Unacceptable Conditions:
Grossly hemolyzed, lipemic or icteric samples

RESULT INTERPRETATION

Units:
S/CO

Reference Interval:
Negative/Not Immune: < 1.00
Positive/Immune: >= 1.00

Additional Information:
Results are reported as Negative/Not Immune: < 1.00 S/CO or Positive/Immune: >= 1.00 S/CO

Note: Treatment with Zoster immune globulin will result in a positive test result that will not reflect the patient's own immune reaction.

See also entries for Viral Culture and Viral Serology.

ADMINISTRATIVE

CPT Codes:
86787

LOINC Codes:
15410-4

COMPLETE VIEW

Available Stat:
No

Test Code:
VZI

Test Group:
Varicella-zoster

Performing Lab:
Immunology

Performed:
Monday-Friday (day shift)

Methodology:
Chemiluminescent Immunoassay

Remarks:
Contact the laboratory (415-353-1712) if results are needed urgently to determine VZIG therapy of immunocompromised or pregnant patients.

Collect:
Gold Top or Red Top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.2 mL serum

Unacceptable Conditions:
Grossly hemolyzed, lipemic or icteric samples

Specimen Preparation:
Freeze sample at -20 C

Units:
S/CO

Reference Interval:
Negative/Not Immune: < 1.00
Positive/Immune: >= 1.00

Synonyms:

- VZ
- VZV

Reported:
1-4 days

Additional Information:

Results are reported as Negative/Not Immune: < 1.00 S/CO or Positive/Immune: >= 1.00 S/CO

Note: Treatment with Zoster immune globulin will result in a positive test result that will not reflect the patient's own immune reaction.

See also entries for Viral Culture and Viral Serology.

CPT Codes:

86787

LOINC Codes:

15410-4

Varicella zoster virus DNA

P339

ORDERING

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Daily

Methodology:
Nucleic acid amplification

Reported:
1 day

Additional Information:
Nucleic acid detection (PCR) is the method of choice for VZV detection in clinical samples.

Synonyms:

- VZV PCR
- VZ
- VZV

COLLECTION

Sample Type:
Swab in UTM (from lesion, vesicle, wound, eye), plasma, CSF

Collect:
Collect: Flocked swab in Universal Transport Medium (UTM) or Viral Holding Media (VTM), preferred. Lavender top (blood), sterile tube (CSF)

Amount to Collect:
1 flocked swab, 1mL blood, 1mL CSF

Preferred Volume:
0.5 mL

Minimum Volume:
0.25 mL

Remarks:
Unroof lesion and swab fluid of vesicle and base of lesion to obtain cells. Immediately place swab in UTM.

Storage/Transport Temperature:
Refrigerate 2-8 deg C up to 7 days, freeze -20 deg C up to 30 days

PROCESSING

Test Code:
P339

Test Group:
Varicella-zoster

Performing Lab:
Microbiology

Specimen Preparation:
Other source types (not plasma, CSF or swab in UTM) will be sent out to a reference lab for testing. Order should be kept as P339.

Preferred Volume:
0.5 mL

Minimum Volume:
0.25 mL

Storage/Transport Temperature:
Refrigerate 2-8 deg C up to 7 days, freeze -20 deg C up to 30 days

RESULT INTERPRETATION

Reference Interval:
Not detected

Critical Values:
VZV detected in CSF

Additional Information:
Nucleic acid detection (PCR) is the method of choice for VZV detection in clinical samples.

ADMINISTRATIVE

CPT Codes:
87798

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
P339

Test Group:
Varicella-zoster

Performing Lab:
Microbiology

Performed:
Daily

Methodology:
Nucleic acid amplification

Remarks:
Unroof lesion and swab fluid of vesicle and base of lesion to obtain cells. Immediately place swab in UTM.

Collect:
Collect: Flocked swab in Universal Transport Medium (UTM) or Viral Holding Media (VTM), preferred. Lavender top (blood), sterile tube (CSF)

Amount to Collect:
1 flocked swab, 1mL blood, 1mL CSF

Sample Type:
Swab in UTM (from lesion, vesicle, wound, eye), plasma, CSF

Preferred Volume:
0.5 mL

Minimum Volume:
0.25 mL

Specimen Preparation:
Other source types (not plasma, CSF or swab in UTM) will be sent out to a reference lab for testing. Order should be kept as P339.

Reference Interval:
Not detected

Critical Values:
VZV detected in CSF

Synonyms:

- VZV PCR
- VZ
- VZV

Storage/Transport Temperature:
Refrigerate 2-8 deg C up to 7 days, freeze -20 deg C up to 30 days

Reported:
1 day

Additional Information:
Nucleic acid detection (PCR) is the method of choice for VZV detection in clinical samples.

CPT Codes:
87798

LDT or Modified FDA:
Yes

Varicella-Zoster Virus Antibody, IgG, CSF

VZGC

ORDERING

Ordering Recommendations:
Generally not recommended for the diagnosis of acute disease/encephalitis. May aid in diagnosing varicella-zoster virus vasculopathy.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Semi-Quantitative Chemiluminescent Immunoassay

Reported:
Within 24 hours

Synonyms:

- CSF VZV
- Herpes Zoster Antibodies CSF
- Varicella-Zoster Antibody CSF
- Varicella-zoster IgG CSF
- VZ AB IgG CSF
- VZ Ab, CSF

COLLECTION

Collect:
CSF.

Stability (from collection to initiation):
Ambient: 8 hours; Refrigerated: 2 weeks; Frozen: 1 year

Storage/Transport Temperature:
Refrigerated. Also acceptable: Frozen.

Unacceptable Conditions:
Contaminated, heat-inactivated, hemolyzed, or xanthochromic specimens.

PROCESSING

Test Code:
VZGC

ARUP Test Code:
0054444

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transfer 0.5 mL CSF to an ARUP standard transport tube. (Min: 0.3 mL)

Unacceptable Conditions:
Contaminated, heat-inactivated, hemolyzed, or xanthochromic specimens.

Stability (from collection to initiation):
Ambient: 8 hours; Refrigerated: 2 weeks; Frozen: 1 year

Storage/Transport Temperature:
Refrigerated. Also acceptable: Frozen.

RESULT INTERPRETATION

Reference Interval:

Effective October 7, 2024

<1.0 S/CO	Negative - No significant level of IgG antibody to varicella-zoster virus detected.
>=1.0 S/CO	Positive - IgG antibody to varicella-zoster virus detected, which may indicate a current or past varicella-zoster infection.

Interpretive Data:

The detection of antibodies to varicella-zoster in CSF may indicate central nervous system infection. However, consideration must be given to possible contamination by blood or transfer of serum antibodies across the blood-brain barrier.

ADMINISTRATIVE

CPT Codes:

86787

COMPLETE VIEW

Available Stat:

No

Ordering Recommendations:

Generally not recommended for the diagnosis of acute disease/encephalitis. May aid in diagnosing varicella-zoster virus vasculopathy.

Test Code:

VZGC

ARUP Test Code:

0054444

Performing Lab:

ARUP

Sendout:

Yes

Performed:

Sun-Sat

Methodology:

Semi-Quantitative Chemiluminescent Immunoassay

Collect:

CSF.

Unacceptable Conditions:

Contaminated, heat-inactivated, hemolyzed, or xanthochromic specimens.

Specimen Preparation:

Transfer 0.5 mL CSF to an ARUP standard transport tube. (Min: 0.3 mL)

Reference Interval:

Effective October 7, 2024

<1.0 S/CO	Negative - No significant level of IgG antibody to varicella-zoster virus detected.
>=1.0 S/CO	Positive - IgG antibody to varicella-zoster virus detected, which may indicate a current or past varicella-zoster infection.

Interpretive Data:

The detection of antibodies to varicella-zoster in CSF may indicate central nervous system infection. However, consideration must be given to possible contamination by blood or transfer of serum antibodies across the blood-brain barrier.

Synonyms:

- CSF VZV
- Herpes Zoster Antibodies CSF
- Varicella-Zoster Antibody CSF
- Varicella-zoster IgG CSF
- VZ AB IgG CSF
- VZ Ab, CSF

Storage/Transport Temperature:

Refrigerated. Also acceptable: Frozen.

Stability (from collection to initiation):
Ambient: 8 hours; Refrigerated: 2 weeks; Frozen: 1 year

Reported:
Within 24 hours

CPT Codes:
86787

Varicella-Zoster Virus Antibody, IgM by ELISA (CSF)

VZMC

ORDERING

Ordering Recommendations:
Not recommended. Refer to Varicella-Zoster Virus by PCR (0060042) or Meningitis/Encephalitis Panel by PCR (2013305).

Available Stat:
No

Performing Lab:
ARUP

Performed:
Mon-Fri

Methodology:
Semi-Quantitative Enzyme-Linked Immunosorbent Assay

Reported:
1-5 days

Synonyms:

- Herpes Zoster
- Varicella Zoster Virus CSF IgM
- VZV CSF IgM

COLLECTION

Collect:
CSF.

Stability (from collection to initiation):
Ambient: 8 hours; Refrigerated: 2 weeks; Frozen: 1 year

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Bacterially contaminated, heat-inactivated, hemolyzed, or xanthochromic specimens.

PROCESSING

Test Code:
VZMC

ARUP Test Code:
0054445

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transfer 0.5 mL CSF to an ARUP Standard Transport Tube. (Min: 0.3 mL)

Unacceptable Conditions:
Bacterially contaminated, heat-inactivated, hemolyzed, or xanthochromic specimens.

Stability (from collection to initiation):
Ambient: 8 hours; Refrigerated: 2 weeks; Frozen: 1 year

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:

0.90 ISR or less	Negative - No significant level of IgM antibody to varicella-zoster virus detected.
0.91-1.09 ISR	Equivocal - Repeat testing in 10-14 days may be helpful.
1.10 ISR or greater	Positive - Significant level of IgM antibody to varicella-zoster virus detected, which may indicate current or recent infection. However, low levels of IgM antibodies may occasionally persist for more than 12 months post-infection.

Interpretive Data:

The detection of antibodies to varicella-zoster in CSF may indicate central nervous system infection. However, consideration must be given to possible contamination by blood or transfer of serum antibodies across the blood-brain barrier.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:

86787

LOINC:

- 31695-0

COMPLETE VIEW

Available Stat:

No

Ordering Recommendations:

Not recommended. Refer to Varicella-Zoster Virus by PCR (0060042) or Meningitis/Encephalitis Panel by PCR (2013305).

Test Code:

VZMC

ARUP Test Code:

0054445

Performing Lab:

ARUP

Sendout:

Yes

Performed:

Mon-Fri

Methodology:

Semi-Quantitative Enzyme-Linked Immunosorbent Assay

Collect:

CSF.

Unacceptable Conditions:

Bacterially contaminated, heat-inactivated, hemolyzed, or xanthochromic specimens.

Specimen Preparation:

Transfer 0.5 mL CSF to an ARUP Standard Transport Tube. (Min: 0.3 mL)

Reference Interval:

0.90 ISR or less	Negative - No significant level of IgM antibody to varicella-zoster virus detected.
0.91-1.09 ISR	Equivocal - Repeat testing in 10-14 days may be helpful.
1.10 ISR or greater	Positive - Significant level of IgM antibody to varicella-zoster virus detected, which may indicate current or recent infection. However, low levels of IgM antibodies may occasionally persist for more than 12 months post-infection.

Interpretive Data:

The detection of antibodies to varicella-zoster in CSF may indicate central nervous system infection. However, consideration must be given to possible contamination by blood or transfer of serum antibodies across the blood-brain barrier.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Synonyms:

- Herpes Zoster
- Varicella Zoster Virus CSF IgM
- VZV CSF IgM

Storage/Transport Temperature:

Refrigerated.

Stability (from collection to initiation):

Ambient: 8 hours; Refrigerated: 2 weeks; Frozen: 1 year

Reported:

1-5 days

CPT Codes:

86787

LOINC:

- 31695-0

Vascular Endothelial Growth Factor

VEGF

ORDERING

Available Stat:
No

Performing Lab:
ARUP

Performed:
Tue

Methodology:
Quantitative Chemiluminescent Immunoassay

Reported:
1-8 days

Synonyms:

- Vascular Endothelial Growth Factor ELISA
- VEGF
- VEGF Plasma

COLLECTION

Collect:
Lavender (EDTA) or pink (K_2EDTA).

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL plasma

Minimum Volume:
0.3 mL plasma

Stability (from collection to initiation):
After separation from cells: Ambient: 4 hours; Refrigerated: 6 hours; Frozen: 6 months

Storage/Transport Temperature:
CRITICAL FROZEN. Additional specimens must be submitted when multiple tests are ordered.

Unacceptable Conditions:
Hemolyzed specimens.

PROCESSING

Test Code:
VEGF

ARUP Test Code:
0092660

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate plasma from cells ASAP or within 2 hours of collection. Transfer 1 mL plasma to an ARUP Standard Transport Tube. (Min: 0.3 mL)

Preferred Volume:
1 mL plasma

Minimum Volume:
0.3 mL plasma

Unacceptable Conditions:
Hemolyzed specimens.

Stability (from collection to initiation):
After separation from cells: Ambient: 4 hours; Refrigerated: 6 hours; Frozen: 6 months

Storage/Transport Temperature:
CRITICAL FROZEN. Additional specimens must be submitted when multiple tests are ordered.

RESULT INTERPRETATION

Reference Interval:
9-86 pg/mL

Interpretive Data:
This assay is performed using the QuantiGlo® Chemiluminescent EIA kit. Values obtained with different assay methods or kits cannot be used interchangeably.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:
83520

LOINC:

- 34694-0

COMPLETE VIEW

Available Stat:
No

Test Code:
VEGF

ARUP Test Code:
0092660

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Tue

Methodology:
Quantitative Chemiluminescent Immunoassay

Collect:
Lavender (EDTA) or pink (K_2EDTA).

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL plasma

Minimum Volume:
0.3 mL plasma

Unacceptable Conditions:
Hemolyzed specimens.

Specimen Preparation:
Separate plasma from cells ASAP or within 2 hours of collection. Transfer 1 mL plasma to an ARUP Standard Transport Tube. (Min: 0.3 mL)

Reference Interval:
9-86 pg/mL

Interpretive Data:
This assay is performed using the QuantiGlo® Chemiluminescent EIA kit. Values obtained with different assay methods or kits cannot be used interchangeably.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Synonyms:

- Vascular Endothelial Growth Factor ELISA
- VEGF
- VEGF Plasma

Storage/Transport Temperature:
CRITICAL FROZEN. Additional specimens must be submitted when multiple tests are ordered.

Stability (from collection to initiation):
After separation from cells: Ambient: 4 hours; Refrigerated: 6 hours; Frozen: 6 months

Reported:
1-8 days

CPT Codes:
83520

LOINC:

- 34694-0

Vasoactive Intestinal Peptides

VIP

ORDERING

Available Stat:
No

Performing Lab:
Quest

Performed:
Set up: Mon-Fri

Methodology:
Direct Enzyme Immunoassay/Enzyme Linked Immunosorbent Assay

Reported:
4-7 days

Synonyms:

- VIP

COLLECTION

Patient Preparation:
Patient should be fasting 10-12 hours prior to collection of specimen.
Patient should not be on any antacid medication or medications that affect intestinal motility for at least 48 hours prior to collection.

Sample Type:
Plasma

Collect:
EDTA Lavender top

Amount to Collect:
20 mL blood

Preferred Volume:
10 ml plasma

Minimum Volume:
1 mL plasma

Remarks:
Pre-chill collection tube and transport immediately to lab on wet ice after collection.

Brown&Toland patients must have samples collected in special kit. Contact laboratory at 415-353-1667.

Stability (from collection to initiation):
Room temperature: Unacceptable
Refrigerated: 24 hours
Frozen: 6 months

Storage/Transport Temperature:
Frozen

Unacceptable Conditions:
Gross hemolysis, gross lipemic, received room temperature, received refrigerated.

PROCESSING

Test Code:
VIP

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Spin down and freeze immediately. Forward to CB frozen Order Quest test code 13986.

Preferred Volume:
10 ml plasma

Minimum Volume:
1 mL plasma

Unacceptable Conditions:
Gross hemolysis, gross lipemic, received room temperature, received refrigerated.

Stability (from collection to initiation):
Room temperature: Unacceptable
Refrigerated: 24 hours
Frozen: 6 months

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Units:
pg/mL

Reference Interval:
Up to 36 pg/mL

ADMINISTRATIVE

CPT Codes:
84586

LOINC Codes:
3125-2

COMPLETE VIEW

Available Stat:
No

Test Code:
VIP

Performing Lab:
Quest

Sendout:
Yes

Performed:
Set up: Mon-Fri

Methodology:
Direct Enzyme Immunoassay/Enzyme Linked Immunosorbent Assay

Patient Preparation:
Patient should be fasting 10-12 hours prior to collection of specimen.
Patient should not be on any antacid medication or medications that affect intestinal motility for at least 48 hours prior to collection.

Remarks:
Pre-chill collection tube and transport immediately to lab on wet ice after collection.

Brown&Toland patients must have samples collected in special kit. Contact laboratory at 415-353-1667.

Collect:
EDTA Lavender top

Amount to Collect:
20 mL blood

Sample Type:
Plasma

Preferred Volume:
10 ml plasma

Minimum Volume:
1 mL plasma

Unacceptable Conditions:
Gross hemolysis, gross lipemic, received room temperature, received refrigerated.

Specimen Preparation:
Spin down and freeze immediately. Forward to CB frozen Order Quest test code 13986.

Units:
pg/mL

Reference Interval:
Up to 36 pg/mL

Synonyms:

- VIP

Storage/Transport Temperature:
Frozen

Stability (from collection to initiation):
Room temperature: Unacceptable
Refrigerated: 24 hours
Frozen: 6 months

Reported:
4-7 days

CPT Codes:
84586

LOINC Codes:
3125-2

VDRL, CSF

VDRL

ORDERING

Available Stat:
No

Performing Lab:
Immunology

Performed:
Wednesday (day shift)

Reported:
1-8 days

Additional Information:
For serum testing see RPR.

Reflex Testing:
Titers are automatically performed on all positive samples and separately billed for.

Synonyms:

- Venereal Disease Research Lab
- Syphilis
- T. pallidum
- Treponema pallidum

COLLECTION

Sample Type:
CSF

Collect:
CSF tube or sterile collection tube

Amount to Collect:
See preferred volume

Preferred Volume:
0.5 mL CSF

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Stability (from collection to initiation):
Refrigerated 4 days

PROCESSING

Test Code:
VDRL

Test Group:
Syphilis

Performing Lab:
Immunology

Specimen Preparation:
Refrigerate CSF

Preferred Volume:
0.5 mL CSF

Stability (from collection to initiation):
Refrigerated 4 days

RESULT INTERPRETATION

Reference Interval:
Non-reactive

Additional Information:
For serum testing see RPR.

ADMINISTRATIVE

CPT Codes:
86592

LOINC Codes:
5290-2

COMPLETE VIEW

Available Stat:
No

Test Code:
VDRL

Test Group:
Syphilis

Performing Lab:
Immunology

Performed:
Wednesday (day shift)

Remarks:
Specimen label must contain the date the sample was collected and the legible name of the person who collected the sample.

Collect:
CSF tube or sterile collection tube

Amount to Collect:
See preferred volume

Sample Type:
CSF

Preferred Volume:
0.5 mL CSF

Specimen Preparation:
Refrigerate CSF

Reference Interval:
Non-reactive

Synonyms:

- Venereal Disease Research Lab
- Syphilis
- T. pallidum
- Treponema pallidum

Stability (from collection to initiation):
Refrigerated 4 days

Reported:
1-8 days

Reflex Testing:
Titers are automatically performed on all positive samples and separately billed for.

Additional Information:
For serum testing see RPR.

CPT Codes:
86592

LOINC Codes:
5290-2

Vedolizumab Quantitation and Antibodies

VEDOZ

ORDERING

Available Stat:
No

Performing Lab:
Mayo

Methodology:
LC-MSMS/Electrochemiluminescent bridging immunoassay

Reported:
7-14 days

Synonyms:

- Entyvio

COLLECTION

Patient Preparation:
For 12 hours before this test do not take multivitamins or dietary supplements containing biotin (vitamin B7), which is commonly found in hair, skin, and nail supplements and multivitamins.

Sample Type:
Blood

Collect:
Red top or gold top

Amount to Collect:
3 mL blood

Preferred Volume:
1.5 mL serum

Minimum Volume:
0.75 mL serum

Stability (from collection to initiation):
Refrigerated or frozen: 28 days

Storage/Transport Temperature:
Frozen

PROCESSING

Test Code:
VEDOZ

Sendout:
Yes

Performing Lab:
Mayo

Specimen Preparation:
Aliquot and freeze. Send to China Basin frozen. Order Mayo test code "VEDOZ".

Preferred Volume:
1.5 mL serum

Minimum Volume:
0.75 mL serum

Stability (from collection to initiation):
Refrigerated or frozen: 28 days

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Reference Interval:

VEDOLIZUMAB QUANTITATION:

Vedolizumab lower limit of quantitation=2.0 mcg/mL

VEDOLIZUMAB ANTIBODIES:

Antibodies to vedolizumab: <9.8 ng/mL

Interpretive Data:

Assessing the unexpected loss of response to therapy with vedolizumab over time

An aid to achieving desired serum levels of vedolizumab

ADMINISTRATIVE

CPT Codes:

80280, 82397

LOINC Codes:

90794-9

COMPLETE VIEW

Available Stat:

No

Test Code:

VEDOZ

Performing Lab:

Mayo

Sendout:

Yes

Methodology:

LC-MSMS/Electrochemiluminescent bridging immunoassay

Patient Preparation:

For 12 hours before this test do not take multivitamins or dietary supplements containing biotin (vitamin B7), which is commonly found in hair, skin, and nail supplements and multivitamins.

Collect:

Red top or gold top

Amount to Collect:

3 mL blood

Sample Type:

Blood

Preferred Volume:

1.5 mL serum

Minimum Volume:

0.75 mL serum

Specimen Preparation:

Aliquot and freeze. Send to China Basin frozen. Order Mayo test code "VEDOZ".

Reference Interval:

VEDOLIZUMAB QUANTITATION:

Vedolizumab lower limit of quantitation=2.0 mcg/mL

VEDOLIZUMAB ANTIBODIES:

Antibodies to vedolizumab: <9.8 ng/mL

Interpretive Data:

Assessing the unexpected loss of response to therapy with vedolizumab over time

An aid to achieving desired serum levels of vedolizumab

Synonyms:

- Entyvio

Storage/Transport Temperature:

Frozen

Stability (from collection to initiation):
Refrigerated or frozen: 28 days

Reported:
7-14 days

CPT Codes:
80280, 82397

LOINC Codes:
90794-9

Very Long-Chain and Branched-Chain Fatty Acids Profile

VLCFA

ORDERING

Ordering Recommendations:
Initial test to screen for disorders of peroxisomal biogenesis and/or function, including X-linked adrenoleukodystrophy and Zellweger syndrome. This test does not detect essential fatty acid deficiency and should not be used to evaluate nutritional status.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Tue, Thu

Methodology:
Liquid Chromatography-Tandem Mass Spectrometry

Reported:
2-9 days

Synonyms:

- VLCFA and BCFA

COLLECTION

Patient Preparation:
Adults: Fasting specimen preferred.
Infants and children: Draw specimen prior to feeding or 2-3 hours after a meal.

Sample Type:
Plasma

Collect:
Green (sodium or lithium heparin) or lavender (EDTA).

Amount to Collect:
1 mL blood

Preferred Volume:
0.5 mL plasma

Minimum Volume:
0.2 mL plasma

Remarks:
Clinical information is needed for appropriate interpretation. Additional required information includes age, gender, diet (e.g.,TPN therapy), drug therapy, and family history. Biochemical Genetics Patient History Form is available on the ARUP Web site at http://www.aruplab.com/patienthistory or by contacting ARUP Client Services.

Stability (from collection to initiation):
After separation from cells: Ambient: 24 hours; Refrigerated: 72 hours; Frozen: 1 month

Storage/Transport Temperature:
CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

Unacceptable Conditions:
Room temperature specimens greater than 24 hours. Refrigerated specimens greater than 48 hours. Specimens exposed to more than one freeze/thaw cycle.

PROCESSING

Test Code:
VLCFA

ARUP Test Code:
2004250

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate plasma from cells. Transfer 0.5 mL plasma to an ARUP standard transport tube and freeze immediately. (Min: 0.2 mL)

Preferred Volume:
0.5 mL plasma

Minimum Volume:
0.2 mL plasma

Unacceptable Conditions:
Room temperature specimens greater than 24 hours. Refrigerated specimens greater than 48 hours. Specimens exposed to more than one freeze/thaw cycle.

Stability (from collection to initiation):
After separation from cells: Ambient: 24 hours; Refrigerated: 72 hours; Frozen: 1 month

Storage/Transport Temperature:
CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

RESULT INTERPRETATION

Reference Interval:

Component	0-11 months	1 year to 2 years	3 years to 6 years	7 years and older
Pristanic Acid	Less than 0.31 µmol/L	Less than 0.55 µmol/L	Less than 0.46 µmol/L	Less than 0.26 µmol/L
Phytanic Acid	0.03-2.13 µmol/L	0.23-5.03 µmol/L	0.33-2.53 µmol/L	0.25- 2.07 µmol/L
Ratio Pristanic Acid to Phytanic Acid	Less than 0.91	Less than 0.28	Less than 0.28	Less than 0.28
C22:0 Behenic Acid	28.94-93.50 µmol/L	28.94-93.50 µmol/L	28.94-93.50 µmol/L	28.94-93.50 µmol/L
C24:0 Tetracosanoic Acid	24.25-77.75 µmol/L	24.25-77.75 µmol/L	24.25-77.75 µmol/L	24.25-77.75 µmol/L
C26:0 Hexacosanoic Acid	0.17-0.73 µmol/L	0.17-0.73 µmol/L	0.17-0.73 µmol/L	0.17-0.73 µmol/L
Ratio C24:0 to C22:0	0.64-1.02	0.64-1.02	0.64-1.02	0.64-1.02
Ratio C26:0 to C22:0	0.003-0.015	0.003-0.015	0.003-0.015	0.003-0.015

Interpretive Data:
Refer to report.

ADMINISTRATIVE

CPT Codes:
82726

LOINC:

- 22671-2
- 30194-5
- 30196-0
- 49263-7
- 30198-6
- 30195-2
- 22761-1
- 30550-8
- 30197-8

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Initial test to screen for disorders of peroxisomal biogenesis and/or function, including X-linked adrenoleukodystrophy and Zellweger syndrome. This test does not detect essential fatty acid deficiency and should not be used to evaluate nutritional status.

Test Code:
VLCFA

ARUP Test Code:
2004250

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Tue, Thu

Methodology:
Liquid Chromatography-Tandem Mass Spectrometry

Patient Preparation:
Adults: Fasting specimen preferred.
Infants and children: Draw specimen prior to feeding or 2-3 hours after a meal.

Remarks:
Clinical information is needed for appropriate interpretation. Additional required information includes age, gender, diet (e.g.,TPN therapy), drug therapy, and family history. Biochemical Genetics Patient History Form is available on the ARUP Web site at http://www.aruplab.com/patienthistory or by contacting ARUP Client Services.

Collect:
Green (sodium or lithium heparin) or lavender (EDTA).

Amount to Collect:
1 mL blood

Sample Type:
Plasma

Preferred Volume:
0.5 mL plasma

Minimum Volume:
0.2 mL plasma

Unacceptable Conditions:
Room temperature specimens greater than 24 hours. Refrigerated specimens greater than 48 hours. Specimens exposed to more than one freeze/thaw cycle.

Specimen Preparation:
Separate plasma from cells. Transfer 0.5 mL plasma to an ARUP standard transport tube and freeze immediately. (Min: 0.2 mL)

Reference Interval:

Component	0-11 months	1 year to 2 years	3 years to 6 years	7 years and older
Pristanic Acid	Less than 0.31 µmol/L	Less than 0.55 µmol/L	Less than 0.46 µmol/L	Less than 0.26 µmol/L
Phytanic Acid	0.03-2.13 µmol/L	0.23-5.03 µmol/L	0.33-2.53 µmol/L	0.25- 2.07 µmol/L
Ratio Pristanic Acid to Phytanic Acid	Less than 0.91	Less than 0.28	Less than 0.28	Less than 0.28
C22:0 Behenic Acid	28.94-93.50 µmol/L	28.94-93.50 µmol/L	28.94-93.50 µmol/L	28.94-93.50 µmol/L
C24:0 Tetracosanoic Acid	24.25-77.75 µmol/L	24.25-77.75 µmol/L	24.25-77.75 µmol/L	24.25-77.75 µmol/L
C26:0 Hexacosanoic Acid	0.17-0.73 µmol/L	0.17-0.73 µmol/L	0.17-0.73 µmol/L	0.17-0.73 µmol/L
Ratio C24:0 to C22:0	0.64-1.02	0.64-1.02	0.64-1.02	0.64-1.02
Ratio C26:0 to C22:0	0.003-0.015	0.003-0.015	0.003-0.015	0.003-0.015

Interpretive Data:
Refer to report.

Synonyms:

- VLCFA and BCFA

Storage/Transport Temperature:
CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

Stability (from collection to initiation):
After separation from cells: Ambient: 24 hours; Refrigerated: 72 hours; Frozen: 1 month

Reported:
2-9 days

CPT Codes:
82726

LOINC:

- 22671-2
- 30194-5
- 30196-0
- 49263-7
- 30198-6
- 30195-2
- 22761-1
- 30550-8
- 30197-8

Vibrio Culture

P159

ORDERING

Approval Required:
Yes, consultation required for samples submitted > 72 hours after inpatient admission. Contact Microbiology at x31268

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Set up daily, all shifts

Methodology:
Culture

Reported:
2-3 days

Synonyms:

- Stool culture
- Bacterial culture

COLLECTION

Sample Type:
Stool

Collect:
Urine cup or C & S (Cary & Blair) transport medium

Amount to Collect:
5 mL

Preferred Volume:
5 mL

Minimum Volume:
Fresh stool : 0.5 mL or size of pea, Stool in C & S (Cary & Blair) transport medium: 5 mL

Remarks:
Submit unpreserved stool to laboratory within 3 hours of collection.

If specimen will be submitted to the laboratory more than 3 hours after collection, or after 11 pm when Microbiology is closed, submit stool in C & S (Cary & Blair) Medium. Add stool to red line on vial and mix well with spoon.

C & S (Cary & Blair) Medium is available from Material Services . Outpatients can obtain these from the laboratories' draw stations. For patient collect samples, order PMM 68902 C & S Medium Cary Blair 2805-05-WB (with bag and instructions). PMM 49206 C & S Medium 2805-05 (without bag or instructions) also available.

Stability (from collection to initiation):
Unpreserved 3 hours, preserved 1 week

Unacceptable Conditions:
Unpreserved stool received > 3 hours after collection. More than two samples per day.

PROCESSING

Test Code:
P159

Performing Lab:
Microbiology

Specimen Preparation:
If < 5mL stool received, add 3 parts Cary & Blair medium to 1 part stool.

Preferred Volume:
5 mL

Minimum Volume:
Fresh stool : 0.5 mL or size of pea, Stool in C & S (Cary & Blair) transport medium: 5 mL

Unacceptable Conditions:
Unpreserved stool received > 3 hours after collection. More than two samples per day.

Stability (from collection to initiation):
Unpreserved 3 hours, preserved 1 week

RESULT INTERPRETATION

Reference Interval:
No Vibrio cholerae isolated

Critical Values:
Inpatient results only. After hours outpatient results will be phoned the following morning. Positive for Vibrio cholerae

ADMINISTRATIVE

CPT Codes:
87046

LOINC Codes:
28549-4

COMPLETE VIEW

Approval Required:
Yes, consultation required for samples submitted > 72 hours after inpatient admission. Contact Microbiology at x31268

Available Stat:
No

Test Code:
P159

Performing Lab:
Microbiology

Performed:
Set up daily, all shifts

Methodology:
Culture

Remarks:
Submit unpreserved stool to laboratory within 3 hours of collection.

If specimen will be submitted to the laboratory more than 3 hours after collection, or after 11 pm when Microbiology is closed, submit stool in C & S (Cary & Blair) Medium. Add stool to red line on vial and mix well with spoon.

C & S (Cary & Blair) Medium is available from Material Services . Outpatients can obtain these from the laboratories' draw stations. For patient collect samples, order PMM 68902 C & S Medium Cary Blair 2805-05-WB (with bag and instructions). PMM 49206 C & S Medium 2805-05 (without bag or instructions) also available.

Collect:
Urine cup or C & S (Cary & Blair) transport medium

Amount to Collect:
5 mL

Sample Type:
Stool

Preferred Volume:
5 mL

Minimum Volume:
Fresh stool : 0.5 mL or size of pea, Stool in C & S (Cary & Blair) transport medium: 5 mL

Unacceptable Conditions:
Unpreserved stool received > 3 hours after collection. More than two samples per day.

Specimen Preparation:
If < 5mL stool received, add 3 parts Cary & Blair medium to 1 part stool.

Reference Interval:
No Vibrio cholerae isolated

Critical Values:
Inpatient results only. After hours outpatient results will be phoned the following morning. Positive for Vibrio cholerae

Synonyms:

- Stool culture
- Bacterial culture

Stability (from collection to initiation):
Unpreserved 3 hours, preserved 1 week

Reported:
2-3 days

CPT Codes:
87046

LOINC Codes:
28549-4

Viscosity, Serum

VISCO

ORDERING

Ordering Recommendations:
Use to evaluate hyperviscosity syndrome associated with disorders such as polycythemia, macroglobulinemia, multiple myeloma, and leukemia.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun, Tue, Thu, Fri

Methodology:
Quantitative Viscometry

Reported:
1-4 days

Synonyms:

- Serum Viscosity

COLLECTION

Sample Type:
Serum

Collect:
Serum separator or plain red tube.

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
After separation from cells: Ambient: 24 hours; Refrigerated: 7 days; Frozen: 1 month

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Clotted specimens.

PROCESSING

Test Code:
VISCO

ARUP Test Code:
0020056

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transfer 1 mL serum to an ARUP standard transport tube. (Min: 0.5 mL)

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Clotted specimens.

Stability (from collection to initiation):
After separation from cells: Ambient: 24 hours; Refrigerated: 7 days; Frozen: 1 month

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:

Components	Reference Interval
Viscosity, Serum	<1.51 cP

Interpretive Data:

Increased viscosity is associated with disorders such as monoclonal gammopathy, macroglobulinemia, and multiple myeloma. Significantly elevated viscosity (>3.0 cP) is associated with clinical symptoms of hyperviscosity syndrome.

ADMINISTRATIVE

CPT Codes:

85810

LOINC:

- 3128-6

COMPLETE VIEW

Available Stat:

No

Ordering Recommendations:

Use to evaluate hyperviscosity syndrome associated with disorders such as polycythemia, macroglobulinemia, multiple myeloma, and leukemia.

Test Code:

VISCO

ARUP Test Code:

0020056

Performing Lab:

ARUP

Sendout:

Yes

Performed:

Sun, Tue, Thu, Fri

Methodology:

Quantitative Viscometry

Collect:

Serum separator or plain red tube.

Amount to Collect:

2 mL blood

Sample Type:

Serum

Preferred Volume:

1 mL serum

Minimum Volume:

0.5 mL serum

Unacceptable Conditions:

Clotted specimens.

Specimen Preparation:

Transfer 1 mL serum to an ARUP standard transport tube. (Min: 0.5 mL)

Reference Interval:

Components	Reference Interval
Viscosity, Serum	<1.51 cP

Interpretive Data:

Increased viscosity is associated with disorders such as monoclonal gammopathy, macroglobulinemia, and multiple myeloma. Significantly elevated viscosity (>3.0 cP) is associated with clinical symptoms of hyperviscosity syndrome.

Synonyms:

- Serum Viscosity

Storage/Transport Temperature:
Refrigerated.

Stability (from collection to initiation):
After separation from cells: Ambient: 24 hours; Refrigerated: 7 days; Frozen: 1 month

Reported:
1-4 days

CPT Codes:
85810

LOINC:

- 3128-6

Vitamin A (Retinol), Serum or Plasma

VITMA

ORDERING

Ordering Recommendations:
Use for nutritional assessment of vitamin A (retinol and retinyl palmitate) in serum or plasma.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative High Performance Liquid Chromatography (HPLC)

Reported:
1-4 days

Synonyms:

- A Vitamin
- Retinol
- Retinyl palmitate

COLLECTION

Patient Preparation:
Patient should fast for 12 hours and abstain from alcohol for 24 hours prior to collection.

Sample Type:
Serum or plasma

Collect:
Green (sodium or lithium heparin), plasma separator tube, or serum separator tube. Also acceptable: Lavender (EDTA) or pink (K_2EDTA).

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Stability (from collection to initiation):
After separation from cells: Ambient: 3 hours; Refrigerated: 1 month; Frozen: 1 year

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Whole blood or body fluids other than serum or plasma.

PROCESSING

Test Code:
VITMA

ARUP Test Code:
0080525

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate serum or plasma within 1 hour of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube immediately. (Min: 0.2 mL) Avoid hemolysis.

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Unacceptable Conditions:
Whole blood or body fluids other than serum or plasma.

Stability (from collection to initiation):
After separation from cells: Ambient: 3 hours; Refrigerated: 1 month; Frozen: 1 year

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:

Components	Reference Interval	
Vitamin A (Retinol)	**Age**	**Reference Interval**
	0-1 month	0.18-0.50 mg/L
	2 months-12 years	0.20-0.50 mg/L
	13-17 years	0.26-0.70 mg/L
	18 years and older	0.30-1.20 mg/L
Vitamin A (Retinyl Palmitate)	0-150 years: 0-0.10 mg/L	

Interpretive Data:
This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:
84590

LOINC:

- 2923-1
- 48767-8
- 38496-6

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Use for nutritional assessment of vitamin A (retinol and retinyl palmitate) in serum or plasma.

Test Code:
VITMA

ARUP Test Code:
0080525

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative High Performance Liquid Chromatography (HPLC)

Patient Preparation:
Patient should fast for 12 hours and abstain from alcohol for 24 hours prior to collection.

Collect:
Green (sodium or lithium heparin), plasma separator tube, or serum separator tube. Also acceptable: Lavender (EDTA) or pink (K_2EDTA).

Amount to Collect:
2 mL blood

Sample Type:
Serum or plasma

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Unacceptable Conditions:
Whole blood or body fluids other than serum or plasma.

Specimen Preparation:
Separate serum or plasma within 1 hour of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube immediately. (Min: 0.2 mL) Avoid hemolysis.

Reference Interval:

Components	Reference Interval	
Vitamin A (Retinol)	**Age**	**Reference Interval**
	0-1 month	0.18-0.50 mg/L
	2 months-12 years	0.20-0.50 mg/L
	13-17 years	0.26-0.70 mg/L
	18 years and older	0.30-1.20 mg/L
Vitamin A (Retinyl Palmitate)	0-150 years: 0-0.10 mg/L	

Interpretive Data:
This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Synonyms:

- A Vitamin
- Retinol
- Retinyl palmitate

Storage/Transport Temperature:
Refrigerated.

Stability (from collection to initiation):
After separation from cells: Ambient: 3 hours; Refrigerated: 1 month; Frozen: 1 year

Reported:
1-4 days

CPT Codes:
84590

LOINC:

- 2923-1
- 48767-8
- 38496-6

Notes:
Serum retinol is typically maintained until hepatic stores are almost depleted. Values greater than 0.30 mg/L represent adequate liver stores, whereas values less than 0.10 mg/L indicate deficiency. Samples that come in contact with plastic tubing or have been exposed to excessive light may show low results.

Vitamin A toxicity occurs when retinol concentration exceeds the capacity of retinol binding protein (RBP). Individuals with compromised renal function can retain RBP and may, therefore, have moderate retinol elevations. Drugs which interfere with vitamin A analysis include probucol (Lorelco).

This assay does not measure other vitamin A metabolites such as retinaldehyde and retinoic acid.

Vitamin B_1 (Thiamine), Whole Blood

VIB1

ORDERING

Ordering Recommendations:
Use for nutritional assessment of vitamin B1 (thiamine).

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative High Performance Liquid Chromatography (HPLC)/Liquid Chromatography-Tandem Mass Spectrometry

Reported:
2-5 days

Synonyms:

- Thiamine Pyrophosphate
- Transketolase
- Beriberi
- B1 Vitamin
- TDP
- Thiamin Pyrophosphate
- Thiamine
- Thiamine Diphosphate
- TPP
- VITB1

COLLECTION

Sample Type:
Whole blood (NO gel separator tubes)

Collect:
Green (sodium or lithium heparin), lavender (EDTA), or pink (K2EDTA).

Amount to Collect:
3 mL blood (NO gel separator tubes)

Minimum Volume:
0.6 mL blood (NO gel separator tubes)

Stability (from collection to initiation):
Room Temperature: Unacceptable; Refrigerated: Unacceptable; Frozen: 6 months

Storage/Transport Temperature:
Frozen

Unacceptable Conditions:
Any specimen other than whole blood. Plasma separator tubes. Glass tubes. Clotted or nonfrozen specimens.

PROCESSING

Test Code:
VIB1

ARUP Test Code:
0080388

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transfer 3 mL whole blood to an ARUP standard transport tube (Min: 0.6 mL) and freeze within 1 hour of collection.

Minimum Volume:
0.6 mL blood (NO gel separator tubes)

Unacceptable Conditions:
Any specimen other than whole blood. Plasma separator tubes. Glass tubes. Clotted or nonfrozen specimens.

Stability (from collection to initiation):
Room Temperature: Unacceptable; Refrigerated: Unacceptable; Frozen: 6 months

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Units:
nmol/L

Reference Interval:
70-180 nmol/L

Interpretive Data:
This assay measures the concentration of thiamine diphosphate (TDP), the primary active form of vitamin B1. Approximately 90 percent of vitamin B1 present in whole blood is TDP. Thiamine and thiamine monophosphate, which comprise the remaining 10 percent, are not measured.

ADMINISTRATIVE

CPT Codes:
84425

LOINC:

- 74444-1

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Use for nutritional assessment of vitamin B1 (thiamine).

Test Code:
VIB1

ARUP Test Code:
0080388

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative High Performance Liquid Chromatography (HPLC)/Liquid Chromatography-Tandem Mass Spectrometry

Collect:
Green (sodium or lithium heparin), lavender (EDTA), or pink (K2EDTA).

Amount to Collect:
3 mL blood (NO gel separator tubes)

Sample Type:
Whole blood (NO gel separator tubes)

Minimum Volume:
0.6 mL blood (NO gel separator tubes)

Unacceptable Conditions:
Any specimen other than whole blood. Plasma separator tubes. Glass tubes. Clotted or nonfrozen specimens.

Specimen Preparation:
Transfer 3 mL whole blood to an ARUP standard transport tube (Min: 0.6 mL) and freeze within 1 hour of collection.

Units:
nmol/L

Reference Interval:
70-180 nmol/L

Interpretive Data:
This assay measures the concentration of thiamine diphosphate (TDP), the primary active form of vitamin B1. Approximately 90 percent of vitamin B1 present in whole blood is TDP. Thiamine and thiamine monophosphate, which comprise the remaining 10 percent, are not measured.

Synonyms:

- Thiamine Pyrophosphate
- Transketolase
- Beriberi
- B1 Vitamin
- TDP
- Thiamin Pyrophosphate
- Thiamine
- Thiamine Diphosphate
- TPP
- VITB1

Storage/Transport Temperature:
Frozen

Stability (from collection to initiation):
Room Temperature: Unacceptable; Refrigerated: Unacceptable; Frozen: 6 months

Reported:
2-5 days

CPT Codes:
84425

LOINC:

- 74444-1

Notes:
Whole blood is the preferred specimen for thiamine assessment. Approximately 80 percent of thiamine present in whole blood is found in red blood cells.

Vitamin B12

VB12

ORDERING

Available Stat:
No

Performing Lab:
China Basin Chemistry

Performed:
Tuesday, Wednesday, Friday, Sunday (day shift)

Methodology:
Chemiluminescent Microparticle Immunoassay (Abbott Architect i2000)

Reported:
1-5 days

Additional Information:
NOTE: Method changed from Siemens Centaur XP platform to Abbott Architect i2000 platform on 11/13/2017. The Abbott Architect method reads approximately 14% higher than the Centaur method. Please note that the reference ranges have changed.

Abbott manufacturers B12 internal standards gravimetrically using Cyoanocobalamin (USP Reference Standard). The B12 calibrators are manufacturered and tested against these internal standards.

To convert ng/L to pmol/L (SI units) multiply by 0.738.

Cobalamin in the plasma and cytosol is bound to several proteins, including intrinsic factor, transcobalamins I and II and haptocorrin. Biologically active cobalamin is carried by intrinsic factor in the gut and by transcobalamin II in plasma. Changes in the other binding proteins ("R proteins"), can alter total cobalamin without affecting normal biological activity. Similarly, some patients may be deficient in biologically active forms of cobalamin despite "normal" or borderline low total cobalamin. If the measured cobalamin level is inconsistent with the clinical presentation, additional testing for increased serum levels of methylmalonic acid may be helpful in confirming or rejecting a diagnosis of B12-deficiency in individuals with normal or borderline low levels of cobalamin.

Synonyms:

- Cobalamin

COLLECTION

Sample Type:
Serum

Collect:
Gold or Red top

Amount to Collect:
1 mL blood

Preferred Volume:
0.3 mL serum

Minimum Volume:
0.15 mL serum

Stability (from collection to initiation):
Room Temperature: 3 days
Refrigerated (2-8°C): 7 days

Avoid more than 3 freeze-thaw cycles.

PROCESSING

Test Code:
VB12

Performing Lab:
China Basin Chemistry

Specimen Preparation:
Aliquot and refrigerate serum at 2C - 8C.

Preferred Volume:
0.3 mL serum

Minimum Volume:
0.15 mL serum

Stability (from collection to initiation):
Room Temperature: 3 days
Refrigerated (2-8°C): 7 days

Avoid more than 3 freeze-thaw cycles.

RESULT INTERPRETATION

Units:
ng/L

Reference Interval:

Additional Information:
NOTE: Method changed from Siemens Centaur XP platform to Abbott Architect i2000 platform on 11/13/2017. The Abbott Architect method reads approximately 14% higher than the Centaur method. Please note that the reference ranges have changed.

Abbott manufacturers B12 internal standards gravimetrically using Cyoanocobalamin (USP Reference Standard). The B12 calibrators are manufacturered and tested against these internal standards.

To convert ng/L to pmol/L (SI units) multiply by 0.738.

Cobalamin in the plasma and cytosol is bound to several proteins, including intrinsic factor, transcobalamins I and II and haptocorrin. Biologically active cobalamin is carried by intrinsic factor in the gut and by transcobalamin II in plasma. Changes in the other binding proteins ("R proteins"), can alter total cobalamin without affecting normal biological activity. Similarly, some patients may be deficient in biologically active forms of cobalamin despite "normal" or borderline low total cobalamin. If the measured cobalamin level is inconsistent with the clinical presentation, additional testing for increased serum levels of methylmalonic acid may be helpful in confirming or rejecting a diagnosis of B12-deficiency in individuals with normal or borderline low levels of cobalamin.

ADMINISTRATIVE

CPT Codes:
82607

LOINC Codes:
2132-9

COMPLETE VIEW

Available Stat:
No

Test Code:
VB12

Performing Lab:
China Basin Chemistry

Performed:
Tuesday, Wednesday, Friday, Sunday (day shift)

Methodology:
Chemiluminescent Microparticle Immunoassay (Abbott Architect i2000)

Collect:
Gold or Red top

Amount to Collect:
1 mL blood

Sample Type:
Serum

Preferred Volume:
0.3 mL serum

Minimum Volume:
0.15 mL serum

Specimen Preparation:
Aliquot and refrigerate serum at 2C - 8C.

Units:
ng/L

Reference Interval:

Synonyms:

- Cobalamin

Stability (from collection to initiation):

Room Temperature: 3 days
Refrigerated (2-8°C): 7 days

Avoid more than 3 freeze-thaw cycles.

Reported:

1-5 days

Additional Information:

NOTE: Method changed from Siemens Centaur XP platform to Abbott Architect i2000 platform on 11/13/2017. The Abbott Architect method reads approximately 14% higher than the Centaur method. Please note that the reference ranges have changed.

Abbott manufacturers B12 internal standards gravimetrically using Cyoanocobalamin (USP Reference Standard). The B12 calibrators are manufacturered and tested against these internal standards.

To convert ng/L to pmol/L (SI units) multiply by 0.738.

Cobalamin in the plasma and cytosol is bound to several proteins, including intrinsic factor, transcobalamins I and II and haptocorrin. Biologically active cobalamin is carried by intrinsic factor in the gut and by transcobalamin II in plasma. Changes in the other binding proteins ("R proteins"), can alter total cobalamin without affecting normal biological activity. Similarly, some patients may be deficient in biologically active forms of cobalamin despite "normal" or borderline low total cobalamin. If the measured cobalamin level is inconsistent with the clinical presentation, additional testing for increased serum levels of methylmalonic acid may be helpful in confirming or rejecting a diagnosis of B12-deficiency in individuals with normal or borderline low levels of cobalamin.

CPT Codes:

82607

LOINC Codes:

2132-9

Vitamin B2

VIB2

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
HPLC with fluorometric detection

Reported:
4-7 days

Additional Information:
Vitamin B2 is involved in metabolism of fats, carbohydrates, and protein. The clinical manifestations of deficiency are non-specific. Clinical manifestations include mucocutaneous lesions of the mouth and skin, corneal vascularization, anemia, and personality changes.

Synonyms:

- Riboflavin

COLLECTION

Sample Type:
EDTA plasma

Collect:
Lavender top

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL plasma

Minimum Volume:
0.5 mL plasma

Remarks:
Wrap tube in aluminum foil to protect from light

Stability (from collection to initiation):
Frozen 1 month

PROCESSING

Test Code:
VIB2

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot and freeze. Transport to CB frozen. Order Quest test code 36399

Preferred Volume:
2 mL plasma

Minimum Volume:
0.5 mL plasma

Stability (from collection to initiation):
Frozen 1 month

RESULT INTERPRETATION

Units:
nmol/L

Reference Interval:
6.2-39.0 nmol/L

Additional Information:
Vitamin B2 is involved in metabolism of fats, carbohydrates, and protein. The clinical manifestations of deficiency are non-specific. Clinical manifestations include mucocutaneous lesions of the mouth and skin, corneal vascularization, anemia, and personality changes.

ADMINISTRATIVE

CPT Codes:
84252-90

COMPLETE VIEW

Available Stat:
No

Test Code:
VIB2

Performing Lab:
Quest

Sendout:
Yes

Methodology:
HPLC with fluorometric detection

Remarks:
Wrap tube in aluminum foil to protect from light

Collect:
Lavender top

Amount to Collect:
4 mL blood

Sample Type:
EDTA plasma

Preferred Volume:
2 mL plasma

Minimum Volume:
0.5 mL plasma

Specimen Preparation:
Aliquot and freeze. Transport to CB frozen. Order Quest test code 36399

Units:
nmol/L

Reference Interval:
6.2-39.0 nmol/L

Synonyms:

- Riboflavin

Stability (from collection to initiation):
Frozen 1 month

Reported:
4-7 days

Additional Information:
Vitamin B2 is involved in metabolism of fats, carbohydrates, and protein. The clinical manifestations of deficiency are non-specific. Clinical manifestations include mucocutaneous lesions of the mouth and skin, corneal vascularization, anemia, and personality changes.

CPT Codes:
84252-90

Vitamin B3

VIB3

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
LC/MS/MS

Reported:
2- 6 days

Additional Information:
Nicotinic Acid occurs naturally in plants and animals and is also added to many foods as a vitamin supplement.

Synonyms:

- Niacin

COLLECTION

Sample Type:
Serum or EDTA plasma

Collect:
Red top or Lavender top

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL serum or plasma

Minimum Volume:
1 mL serum or plasma

Stability (from collection to initiation):
Frozen 1 month

PROCESSING

Test Code:
VIB3

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot and freeze (Protected from light). Transport to CB frozen. Order Quest test code 91029.

Preferred Volume:
2 mL serum or plasma

Minimum Volume:
1 mL serum or plasma

Stability (from collection to initiation):
Frozen 1 month

RESULT INTERPRETATION

Units:
ng/mL

Reference Interval:

Due to the large variability in the metabolism of nicotinic acid, the dosing preparation used (immediate-release vs. extended release), and the mg doses used, the serum concentrations may range from <20 ng/mL to about 30,000 ng/mL. After oral administration of an immediate-release tablet, peak plasma concentrations occur in 4 to 5 hours. The plasma half-life of nicotinic acid is about one hour. In one study, fasting plasma concentrations were reported to be <20 ng/mL. In another study, it was reported that the administration of a single 1000 mg extended-release tablet resulted in mean nicotinic acid concentrations of <50 ng/mL.

Nicotinamide is a metabolite of nicotinic acid. Due to the large variability in the metabolism of nicotinic acid, plasma concentrations of this metabolite are variable. In one study, fasting plasma concentrations were reported to be approximately 40 ng/mL. In another study it was reported that the administration of single 1000 mg of extended-release tablet of nicotinic acid resulted in a mean peak nicotinamide concentration of 400 ng/mL between 5 and 10 hours post dose, decreasing to about 100 ng/mL by 16 hours post dose.

Additional Information:

Nicotinic Acid occurs naturally in plants and animals and is also added to many foods as a vitamin supplement.

ADMINISTRATIVE

CPT Codes:

84591-90

COMPLETE VIEW

Available Stat:

No

Test Code:

VIB3

Performing Lab:

Quest

Sendout:

Yes

Methodology:

LC/MS/MS

Collect:

Red top or Lavender top

Amount to Collect:

4 mL blood

Sample Type:

Serum or EDTA plasma

Preferred Volume:

2 mL serum or plasma

Minimum Volume:

1 mL serum or plasma

Specimen Preparation:

Aliquot and freeze (Protected from light). Transport to CB frozen. Order Quest test code 91029.

Units:

ng/mL

Reference Interval:

Due to the large variability in the metabolism of nicotinic acid, the dosing preparation used (immediate-release vs. extended release), and the mg doses used, the serum concentrations may range from <20 ng/mL to about 30,000 ng/mL. After oral administration of an immediate-release tablet, peak plasma concentrations occur in 4 to 5 hours. The plasma half-life of nicotinic acid is about one hour. In one study, fasting plasma concentrations were reported to be <20 ng/mL. In another study, it was reported that the administration of a single 1000 mg extended-release tablet resulted in mean nicotinic acid concentrations of <50 ng/mL.

Nicotinamide is a metabolite of nicotinic acid. Due to the large variability in the metabolism of nicotinic acid, plasma concentrations of this metabolite are variable. In one study, fasting plasma concentrations were reported to be approximately 40 ng/mL. In another study it was reported that the administration of single 1000 mg of extended-release tablet of nicotinic acid resulted in a mean peak nicotinamide concentration of 400 ng/mL between 5 and 10 hours post dose, decreasing to about 100 ng/mL by 16 hours post dose.

Synonyms:

- Niacin

Stability (from collection to initiation):

Frozen 1 month

Reported:
2- 6 days

Additional Information:
Nicotinic Acid occurs naturally in plants and animals and is also added to many foods as a vitamin supplement.

CPT Codes:
84591-90

Vitamin B6

VIB6

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Liquid Chromatography, Tandem Mass Spectrometry

Reported:
Set up: Sun-Fri; Report available: 1-4 days

Additional Information:
To convert ng/mL to nmol/L (SI units) multiply by 4.046. Pyridoxine is the molecule most commonly referred to as 'Vit. B6', Pyridoxal-5'-phosphate is the active form of the vitamin.

This assay is specific for pyridoxal-5'-phosphate and does not cross react with other components of the vitamin B6 complex.

Synonyms:

- Pyridoxine

COLLECTION

Patient Preparation:
Overnight fasting is required.

Sample Type:
EDTA plasma - protected from light

Collect:
Lavender top (preferrably on ice)

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Remarks:
Wrap the collection tube in aluminum foil to protect it from light during transport to the laboratory. The separation of cells must be completed within 6 hours.

Stability (from collection to initiation):
Room temperature: 6 hours
Refrigerated: 12 hours
Frozen -20°: 6 days
Frozen -70°: 42 days

Storage/Transport Temperature:
Frozen

Unacceptable Conditions:
Specimens left at room temperature over 6 hrs. Collected in tubes other than lavender top tubes.

Rejection Criteria:
Hemolysis, Lipemia, thawed plasma, specimens not protected from light. Shipped/store at refrigerated or room temperatures. Specimens left at room temperature over 6 hours. Collected in tubes other than lavender top tubes.

PROCESSING

Test Code:
VIB6

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Separate cells within 6 hours by centrifugation at 2-8° C (2200-2500 rpm, 800-1000g) for 5-10 minutes. Transfer plasma to an amber polypropylene or polyethylene transport tube to protect from light. Alternately, neutral color polypropylene or polyethylene tubes can be used if wrapped in aluminum foil. Freeze the tubes at -10 to -30° C. Ship frozen to China Basin sendouts. Order Quest test # 926.

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Unacceptable Conditions:
Specimens left at room temperature over 6 hrs. Collected in tubes other than lavender top tubes.

Rejection Criteria:
Hemolysis, Lipemia, thawed plasma, specimens not protected from light. Shipped/store at refrigerated or room temperatures. Specimens left at room temperature over 6 hours. Collected in tubes other than lavender top tubes.

Stability (from collection to initiation):
Room temperature: 6 hours
Refrigerated: 12 hours
Frozen -20°: 6 days
Frozen -70°: 42 days

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Units:
ng/mL

Reference Interval:
2-17 years: 3.0-35 ng/mL
> 17 years: 2.1-21.7 ng/mL

Additional Information:
To convert ng/mL to nmol/L (SI units) multiply by 4.046. Pyridoxine is the molecule most commonly referred to as 'Vit. B6', Pyridoxal-5'-phosphate is the active form of the vitamin.

This assay is specific for pyridoxal-5'-phosphate and does not cross react with other components of the vitamin B6 complex.

ADMINISTRATIVE

CPT Codes:
84207-90

LOINC Codes:
30552-4

COMPLETE VIEW

Available Stat:
No

Test Code:
VIB6

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Liquid Chromatography, Tandem Mass Spectrometry

Patient Preparation:
Overnight fasting is required.

Remarks:
Wrap the collection tube in aluminum foil to protect it from light during transport to the laboratory. The separation of cells must be completed within 6 hours.

Collect:
Lavender top (preferrably on ice)

Amount to Collect:
2 mL blood

Sample Type:
EDTA plasma - protected from light

Preferred Volume:
1 mL plasma

Minimum Volume:
0.5 mL plasma

Rejection Criteria:
Hemolysis, Lipemia, thawed plasma, specimens not protected from light. Shipped/store at refrigerated or room temperatures. Specimens left at room temperature over 6 hours. Collected in tubes other than lavender top tubes.

Unacceptable Conditions:
Specimens left at room temperature over 6 hrs. Collected in tubes other than lavender top tubes.

Specimen Preparation:
Separate cells within 6 hours by centrifugation at 2-8° C (2200-2500 rpm, 800-1000g) for 5-10 minutes. Transfer plasma to an amber polypropylene or polyethylene transport tube to protect from light. Alternately, neutral color polypropylene or polyethylene tubes can be used if wrapped in aluminum foil. Freeze the tubes at -10 to -30° C. Ship frozen to China Basin sendouts. Order Quest test # 926.

Units:
ng/mL

Reference Interval:
2-17 years: 3.0-35 ng/mL
> 17 years: 2.1-21.7 ng/mL

Synonyms:

- Pyridoxine

Storage/Transport Temperature:
Frozen

Stability (from collection to initiation):
Room temperature: 6 hours
Refrigerated: 12 hours
Frozen -20°: 6 days
Frozen -70°: 42 days

Reported:
Set up: Sun-Fri; Report available: 1-4 days

Additional Information:
To convert ng/mL to nmol/L (SI units) multiply by 4.046. Pyridoxine is the molecule most commonly referred to as 'Vit. B6', Pyridoxal-5'-phosphate is the active form of the vitamin.

This assay is specific for pyridoxal-5'-phosphate and does not cross react with other components of the vitamin B6 complex.

CPT Codes:
84207-90

LOINC Codes:
30552-4

Vitamin D, 25-Hydroxy

25HD

ORDERING

Available Stat:
No

Performing Lab:
Parnassus, Mission Bay and Mount Zion Chemistry

Performed:
Parnassus and Mission Bay: 24 hours per day, 7 days per week
Mount Zion: Monday - Friday (day shift)

Methodology:
Chemiluminescent microparticle immunoassay (Abbott Architect i2000 and ci4100)

Additional Information:
To convert µg/L to nmol/L (SI units) multiply by 2.496.

Normal range cutoffs for screening are based on the Institute of Medicine (IOM) Committee's 2011 Report on Dietary Reference Intakes for Calcium and Vitamin D. For a discussion of the controversy regarding normal range cutoffs and the IOM recommendations, see Rosen C, et al. J Clin Endocrinol Metab 97: 1146-1152, 2012.

Synonyms:

- 25-Hydroxycalciferol
- 25-OH-D
- Cholecalciferol Metabolite

COLLECTION

Sample Type:
Plasma or serum

Collect:
Preferred: Light Green Top
Acceptable: Gold Top

Amount to Collect:
3 mL blood

Preferred Volume:
1 mL plasma or serum

Minimum Volume:
0.4 mL plasma or serum

Stability (from collection to initiation):
After separation from cells:
Refrigerated: 12 days
Frozen at -20°C: 1 year

PROCESSING

Test Code:
25HD

Performing Lab:
Parnassus, Mission Bay and Mount Zion Chemistry

Specimen Preparation:
Refrigerate plasma or serum aliquot

Preferred Volume:
1 mL plasma or serum

Minimum Volume:
0.4 mL plasma or serum

Stability (from collection to initiation):
After separation from cells:
Refrigerated: 12 days
Frozen at -20°C: 1 year

RESULT INTERPRETATION

Units:
ng/mL

Reference Interval:
20 - 50 ng/mL

25-OHD values < 20 are considered to be insufficient and values < 10 - 12 are associated with vitamin D deficiency and risk for osteomalacia. Although values of 20 or more are generally considered to be sufficient, values in the range of 20 - 30 may be insufficient in certain high risk patient subgroups. There is no known benefit of values > 50, and values > 100 should be avoided because of possible risk of vitamin D toxicity.

Additional Information:
To convert µg/L to nmol/L (SI units) multiply by 2.496.

Normal range cutoffs for screening are based on the Institute of Medicine (IOM) Committee's 2011 Report on Dietary Reference Intakes for Calcium and Vitamin D. For a discussion of the controversy regarding normal range cutoffs and the IOM recommendations, see Rosen C, et al. J Clin Endocrinol Metab 97: 1146-1152, 2012.

ADMINISTRATIVE

CPT Codes:
82306

LOINC Codes:
49054-0

COMPLETE VIEW

Available Stat:
No

Test Code:
25HD

Performing Lab:
Parnassus, Mission Bay and Mount Zion Chemistry

Performed:
Parnassus and Mission Bay: 24 hours per day, 7 days per week
Mount Zion: Monday - Friday (day shift)

Methodology:
Chemiluminescent microparticle immunoassay (Abbott Architect i2000 and ci4100)

Collect:
Preferred: Light Green Top
Acceptable: Gold Top

Amount to Collect:
3 mL blood

Sample Type:
Plasma or serum

Preferred Volume:
1 mL plasma or serum

Minimum Volume:
0.4 mL plasma or serum

Specimen Preparation:
Refrigerate plasma or serum aliquot

Units:
ng/mL

Reference Interval:
20 - 50 ng/mL

25-OHD values < 20 are considered to be insufficient and values < 10 - 12 are associated with vitamin D deficiency and risk for osteomalacia. Although values of 20 or more are generally considered to be sufficient, values in the range of 20 - 30 may be insufficient in certain high risk patient subgroups. There is no known benefit of values > 50, and values > 100 should be avoided because of possible risk of vitamin D toxicity.

Synonyms:

- 25-Hydroxycalciferol
- 25-OH-D
- Cholecalciferol Metabolite

Stability (from collection to initiation):
After separation from cells:
Refrigerated: 12 days
Frozen at -20°C: 1 year

Additional Information:

To convert µg/L to nmol/L (SI units) multiply by 2.496.

Normal range cutoffs for screening are based on the Institute of Medicine (IOM) Committee's 2011 Report on Dietary Reference Intakes for Calcium and Vitamin D. For a discussion of the controversy regarding normal range cutoffs and the IOM recommendations, see Rosen C, et al. J Clin Endocrinol Metab 97: 1146-1152, 2012.

CPT Codes:

82306

LOINC Codes:

49054-0

Vitamin E, Serum or Plasma

VITE

ORDERING

Ordering Recommendations:
Use for nutritional assessment of vitamin E (alpha- and gamma-tocopherols).

Available Stat:
No

Performing Lab:
ARUP

Performed:
Sun-Sat

Methodology:
Quantitative High Performance Liquid Chromatography (HPLC)

Reported:
1-4 days

Synonyms:

- Vitamin E
- Alpha Tocopherol
- Alpha-Tocopherol
- E, Vitamin
- Gamma-Tocopherol
- Tocopherol

COLLECTION

Patient Preparation:
Patient should fast for 12 hours and abstain from alcohol for 24 hours prior to collection.

Sample Type:
Serum or plasma

Collect:
Green (sodium or lithium heparin) or serum separator tube. Also acceptable: Lavender (EDTA) or pink (K_2EDTA).

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Stability (from collection to initiation):
After separation from cells: Ambient: Unacceptable; Refrigerated: 1 month; Frozen at -20°C: 1 year

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Whole blood or body fluids other than serum or plasma.

PROCESSING

Test Code:
VITE

ARUP Test Code:
0080521

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate serum or plasma from cells within 1 hour of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.2 mL) Avoid hemolysis.

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Unacceptable Conditions:
Whole blood or body fluids other than serum or plasma.

Stability (from collection to initiation):
After separation from cells: Ambient: Unacceptable; Refrigerated: 1 month; Frozen at -20°C: 1 year

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Units:
mg/L

Reference Interval:

Components	Reference Interval	
Vitamin E (Alpha-Tocopherol)	**Age**	**Reference Interval**
	0-1 month	1.0-3.5 mg/L
	2-5 months	2.0-6.0 mg/L
	6 months-1 year	3.5-8.0 mg/L
	2-12 years	5.5-9.0 mg/L
	13 years and older	5.5-18.0 mg/L
Vitamin E (Gamma-Tocopherol)	0-6.0 mg/L	

Interpretive Data:
This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

ADMINISTRATIVE

CPT Codes:
84446

LOINC:

- 1823-4
- 11038-7

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Use for nutritional assessment of vitamin E (alpha- and gamma-tocopherols).

Test Code:
VITE

ARUP Test Code:
0080521

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Sun-Sat

Methodology:
Quantitative High Performance Liquid Chromatography (HPLC)

Patient Preparation:
Patient should fast for 12 hours and abstain from alcohol for 24 hours prior to collection.

Collect:
Green (sodium or lithium heparin) or serum separator tube. Also acceptable: Lavender (EDTA) or pink (K_2EDTA).

Amount to Collect:
2 mL blood

Sample Type:
Serum or plasma

Preferred Volume:
1 mL serum or plasma

Minimum Volume:
0.2 mL serum or plasma

Unacceptable Conditions:
Whole blood or body fluids other than serum or plasma.

Specimen Preparation:
Separate serum or plasma from cells within 1 hour of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.2 mL) Avoid hemolysis.

Units:
mg/L

Reference Interval:

Components	Reference Interval	
Vitamin E (Alpha-Tocopherol)	**Age**	**Reference Interval**
	0-1 month	1.0-3.5 mg/L
	2-5 months	2.0-6.0 mg/L
	6 months-1 year	3.5-8.0 mg/L
	2-12 years	5.5-9.0 mg/L
	13 years and older	5.5-18.0 mg/L
Vitamin E (Gamma-Tocopherol)	0-6.0 mg/L	

Interpretive Data:
This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Synonyms:

- Vitamin E
- Alpha Tocopherol
- Alpha-Tocopherol
- E, Vitamin
- Gamma-Tocopherol
- Tocopherol

Storage/Transport Temperature:
Refrigerated.

Stability (from collection to initiation):
After separation from cells: Ambient: Unacceptable; Refrigerated: 1 month; Frozen at -20°C: 1 year

Reported:
1-4 days

CPT Codes:
84446

LOINC:

- 1823-4
- 11038-7

Vitamin K

VITK

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
HPLC

Additional Information:
Vitamin K is a required co-factor for the synthesis of factors 2, 7, 9, and 10 and proteins C and S. Deficienceies of Vitamin K lead to bleeding. Warfarin acts as ananticoagulant because it is a Vitamin K antagonist.

COLLECTION

Patient Preparation:
Overnight fast preferred.

Sample Type:
Plasma or serum

Collect:
Lavendar top preferred
Gold or Red top acceptable

Amount to Collect:
8 mL blood

Preferred Volume:
4 mL plasma or serum

Minimum Volume:
2 mL plasma or serum

Remarks:
Wrap sample tube in aluminum foil to protect from light.

Stability (from collection to initiation):
Room temperature unacceptable, refrigerated unacceptable, frozen at -20C 3 months

Rejection Criteria:
Thawed or refrigerated sample.

PROCESSING

Test Code:
VITK

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Separate and freeze plasma at -20C in dark plastic transport tube or wrapped with aluminum foil. Ship frozen to China Basin. Order Quest # 36585X

Preferred Volume:
4 mL plasma or serum

Minimum Volume:
2 mL plasma or serum

Rejection Criteria:
Thawed or refrigerated sample.

Stability (from collection to initiation):
Room temperature unacceptable, refrigerated unacceptable, frozen at -20C 3 months

RESULT INTERPRETATION

Units:
pg/mL

Reference Interval:
80-1160 pg/mL

Additional Information:
Vitamin K is a required co-factor for the synthesis of factors 2, 7, 9, and 10 and proteins C and S. Deficienceies of Vitamin K lead to bleeding. Warfarin acts as ananticoagulant because it is a Vitamin K antagonist.

ADMINISTRATIVE

CPT Codes:
84597-90

LOINC Codes:
3129-4

COMPLETE VIEW

Available Stat:
No

Test Code:
VITK

Performing Lab:
Quest

Sendout:
Yes

Methodology:
HPLC

Patient Preparation:
Overnight fast preferred.

Remarks:
Wrap sample tube in aluminum foil to protect from light.

Collect:
Lavendar top preferred
Gold or Red top acceptable

Amount to Collect:
8 mL blood

Sample Type:
Plasma or serum

Preferred Volume:
4 mL plasma or serum

Minimum Volume:
2 mL plasma or serum

Rejection Criteria:
Thawed or refrigerated sample.

Specimen Preparation:
Separate and freeze plasma at -20C in dark plastic transport tube or wrapped with aluminum foil. Ship frozen to China Basin. Order Quest # 36585X

Units:
pg/mL

Reference Interval:
80-1160 pg/mL

Stability (from collection to initiation):
Room temperature unacceptable, refrigerated unacceptable, frozen at -20C 3 months

Additional Information:
Vitamin K is a required co-factor for the synthesis of factors 2, 7, 9, and 10 and proteins C and S. Deficienceies of Vitamin K lead to bleeding. Warfarin acts as ananticoagulant because it is a Vitamin K antagonist.

CPT Codes:
84597-90

LOINC Codes:
3129-4

von Willebrand Factor Antigen

VWFAG

ORDERING

Available Stat:
No

Performing Lab:
Parnassus and Mission Bay Hematology

Reported:
Test run q1-2 weeks. Turnaround time: 3-10 days

Additional Information:
During infancy, vWF Antigen values can be greater than those observed in adults. Nevertheless, a value of approximately 40% was noted as the lower limit of normal for full term infants from birth to 6 months. (Reference: Andrew M. et al. Blood 1987 70:165).

Asymptomatic abnormalities of von Willebrand factor are common. The reference interval for von Willebrand Factor Antigen is set such that 2.5% of people will be below the limit of the reference range. Approximately 1 in 8000 people have symptomatic von Willebrand disease (VWD), which is usually associated with mucocutaneous bleeding.

Von Willebrand Factor Antigen levels should be correlated with patient and family bleeding history, as clinically indicated. The Ristocetin Cofactor Assay can be useful for assessing von Willebrand Factor Activity.

The presence of rheumatoid factor may lead to an over-estimation of the vWF level. The extremely rare presence of anti-bovine and/or anti-rabbit antibodies in certain patients may lead to an over-estimation of the vWF level

Synonyms:

- VWF:Ag
- Factor VIII-Related Antigen
- FVIII:RAg
- FVIII:VWAg
- VWAG
- VW
- VWF Antigen
- vwd

COLLECTION

Sample Type:
Citrated plasma

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Preferred Volume:
1 mL plasma

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

For patients with Hct's >= 55% please contact Hematology (415-353-1747) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

PROCESSING

Test Code:
VWFAG

Test Group:
von Willebrand

Performing Lab:
Parnassus and Mission Bay Hematology

Specimen Preparation:
If this test is ordered with Factor VIII Activity and Ristocetin Cofactor on the same sample, enter VWP to request all three tests.

Preferred Volume:
1 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

RESULT INTERPRETATION

Units:
%

Reference Interval:
42-191%

See Additional Information

Additional Information:
During infancy, vWF Antigen values can be greater than those observed in adults. Nevertheless, a value of approximately 40% was noted as the lower limit of normal for full term infants from birth to 6 months. (Reference: Andrew M. et al. Blood 1987 70:165).

Asymptomatic abnormalities of von Willebrand factor are common. The reference interval for von Willebrand Factor Antigen is set such that 2.5% of people will be below the limit of the reference range. Approximately 1 in 8000 people have symptomatic von Willebrand disease (VWD), which is usually associated with mucocutaneous bleeding.

Von Willebrand Factor Antigen levels should be correlated with patient and family bleeding history, as clinically indicated. The Ristocetin Cofactor Assay can be useful for assessing von Willebrand Factor Activity.

The presence of rheumatoid factor may lead to an over-estimation of the vWF level. The extremely rare presence of anti-bovine and/or anti-rabbit antibodies in certain patients may lead to an over-estimation of the vWF level

ADMINISTRATIVE

CPT Codes:
85246

LOINC Codes:
41867-3

COMPLETE VIEW

Available Stat:
No

Test Code:
VWFAG

Test Group:
von Willebrand

Performing Lab:
Parnassus and Mission Bay Hematology

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

For patients with Hct's >= 55% please contact Hematology (415-353-1747) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Sample Type:
Citrated plasma

Preferred Volume:
1 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Specimen Preparation:
If this test is ordered with Factor VIII Activity and Ristocetin Cofactor on the same sample, enter VWP to request all three tests.

Units:
%

Reference Interval:
42-191%

See Additional Information

Synonyms:

- VWF:Ag
- Factor VIII-Related Antigen
- FVIII:RAg
- FVIII:VWAg
- VWAG
- VW
- VWF Antigen
- vwd

Reported:
Test run q1-2 weeks. Turnaround time: 3-10 days

Additional Information:
During infancy, vWF Antigen values can be greater than those observed in adults. Nevertheless, a value of approximately 40% was noted as the lower limit of normal for full term infants from birth to 6 months. (Reference: Andrew M. et al. Blood 1987 70:165).

Asymptomatic abnormalities of von Willebrand factor are common. The reference interval for von Willebrand Factor Antigen is set such that 2.5% of people will be below the limit of the reference range. Approximately 1 in 8000 people have symptomatic von Willebrand disease (VWD), which is usually associated with mucocutaneous bleeding.

Von Willebrand Factor Antigen levels should be correlated with patient and family bleeding history, as clinically indicated. The Ristocetin Cofactor Assay can be useful for assessing von Willebrand Factor Activity.

The presence of rheumatoid factor may lead to an over-estimation of the vWF level. The extremely rare presence of anti-bovine and/or anti-rabbit antibodies in certain patients may lead to an over-estimation of the vWF level

CPT Codes:
85246

LOINC Codes:
41867-3

von Willebrand Factor Multimers

VWMULT

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Electrophoresis

Reported:
3-5 days

Additional Information:
von Willebrand Disease is the most common hereditary bleeding disorder; it may also be acquired. von Willebrand Factor is necessary for platelet adhesion to injured endothelium. von Willebrand Factor Antigen, Multimeric Analysis is useful when type 2 disease is suspected and to further categorize disease.

Synonyms:

- Factor VIII Multimers
- Factor VIII-Related Antigen Multimers
- FVIII:RM
- vW Multimers
- von Willebrand multimers
- von willebrand related multimers
- VW factor multimers
- Factor VIII-Related Multimers
- Factor 8 Multimers
- Factor 8-Related Antigen Multimers
- F8 vW Multimers
- Factor 8-Related Multimers

COLLECTION

Sample Type:
Citrated plasma

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Preferred Volume:
1 mL plasma

Minimum Volume:
0.2 mL plasma

Stability (from collection to initiation):
Frozen 6 months

PROCESSING

Test Code:
VWMULT

Test Group:
von Willebrand

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Deliver specimen immediately to Hematology M524 for processing.

Preferred Volume:
1 mL plasma

Minimum Volume:
0.2 mL plasma

Stability (from collection to initiation):
Frozen 6 months

RESULT INTERPRETATION

Reference Interval:
Normal pattern

Additional Information:
von Willebrand Disease is the most common hereditary bleeding disorder; it may also be acquired. von Willebrand Factor is necessary for platelet adhesion to injured endothelium. von Willebrand Factor Antigen, Multimeric Analysis is useful when type 2 disease is suspected and to further categorize disease.

ADMINISTRATIVE

CPT Codes:
85247-90

COMPLETE VIEW

Available Stat:
No

Test Code:
VWMULT

Test Group:
von Willebrand

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Electrophoresis

Collect:
Blue top filled to full extent of vacuum

Amount to Collect:
2.7 mL blood

Sample Type:
Citrated plasma

Preferred Volume:
1 mL plasma

Minimum Volume:
0.2 mL plasma

Specimen Preparation:
Deliver specimen immediately to Hematology M524 for processing.

Reference Interval:
Normal pattern

Synonyms:

- Factor VIII Multimers
- Factor VIII-Related Antigen Multimers
- FVIII:RM
- vW Multimers
- von Willebrand multimers
- von willebrand related multimers
- VW factor multimers
- Factor VIII-Related Multimers
- Factor 8 Multimers
- Factor 8-Related Antigen Multimers
- F8 vW Multimers
- Factor 8-Related Multimers

Stability (from collection to initiation):
Frozen 6 months

Reported:
3-5 days

Additional Information:
von Willebrand Disease is the most common hereditary bleeding disorder; it may also be acquired. von Willebrand Factor is necessary for platelet adhesion to injured endothelium. von Willebrand Factor Antigen, Multimeric Analysis is useful when type 2 disease is suspected and to further categorize disease.

CPT Codes:

85247-90

von Willebrand Panel

VWP

ORDERING

Available Stat:
No

Performing Lab:
Parnassus Hematology

Reported:
Test run q1-2 weeks. Turnaround time: 1-4 weeks.

Additional Information:
This panel includes Factor VIII Activity, Ristocetin Cofactor, and Von Willebrand Factor Antigen.

For additional information, see entries for individual panel members.

Synonyms:

- vwd

COLLECTION

Sample Type:
Citrated plasma

Collect:
Blue top filled to full extent of vacuum x2

Amount to Collect:
5.4 mL blood

Preferred Volume:
2 mL plasma

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

For patients with Hct's >= 55% please contact Hematology (415-353-1747) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

PROCESSING

Test Code:
VWP

Test Group:
von Willebrand

Performing Lab:
Parnassus Hematology

Specimen Preparation:
Freeze plasma in plastic at -20C.

Contains test codes: F8,VWFAG, RCOF

Preferred Volume:
2 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

RESULT INTERPRETATION

Additional Information:
This panel includes Factor VIII Activity, Ristocetin Cofactor, and Von Willebrand Factor Antigen.

For additional information, see entries for individual panel members.

ADMINISTRATIVE

CPT Codes:
85240, 85245, 85246

LOINC Codes:
48593-8

COMPLETE VIEW

Available Stat:
No

Test Code:
VWP

Test Group:
von Willebrand

Performing Lab:
Parnassus Hematology

Remarks:
1. Check the expiration date on the label of the blue top vacutainer before drawing the patient.
2. For blood collection in a sodium citrate blue top, the tube must be filled to above the Minimum Fill Indicator on the tube. It is crucial to wait and allow the tube to stop filling before removing it from the needle.
3. With use of a butterfly needle, draw about 1 cc using a separate blue top to remove air from tubing, discard the first tube and then draw a second blue top tube filled to the full extent of the vacuum.
4. Tubes should not be filled past the Maximum Fill dashed line by either using a syringe or removing the tube cap.

For patients with Hct's >= 55% please contact Hematology (415-353-1747) to obtain blue top tubes with adjusted citrate volumes in order to maintain the proper citrate to plasma ratio for coagulation studies.

Collect:
Blue top filled to full extent of vacuum x2

Amount to Collect:
5.4 mL blood

Sample Type:
Citrated plasma

Preferred Volume:
2 mL plasma

Unacceptable Conditions:
Samples collected in outdated blue top vacutainer. Over-filled or under-filled tubes may be rejected

Specimen Preparation:
Freeze plasma in plastic at -20C.

Contains test codes: F8,VWFAG, RCOF

Synonyms:

- vwd

Reported:
Test run q1-2 weeks. Turnaround time: 1-4 weeks.

Additional Information:
This panel includes Factor VIII Activity, Ristocetin Cofactor, and Von Willebrand Factor Antigen.

For additional information, see entries for individual panel members.

CPT Codes:
85240, 85245, 85246

LOINC Codes:
48593-8

Voriconazole
VORIC

ORDERING

Available Stat:
No

Performing Lab:
China Basin Chemistry

Performed:
Monday, Wednesday and Friday (excluding holidays)

In order to be run on Monday, Wednesday or Friday, samples have to be received by the lab by 5am that day.

Methodology:
Liquid chromatography-tandem mass spectrometry (LC-MS/MS)

Reported:
2-3 days

Additional Information:
Voriconazole is a triazole antifungal agent. It has activity against a broad spectrum of clinically significant fungal pathogens in immunocompromised patients, including Candida, Aspergillus, Scedosporium and Fusarium species.

Voriconzaole is predominantly metabolized in the liver by the cytochrome P450 enzyme system, mainly by the isozyme CYP2C19. Substantial inter- and intra-patient variation in the voriconazole exposure is observed, likely due to greater metabolism of the drug by certain population groups, reduced metabolism by those with hepatic impairment, and co-administration of other drugs that increase or decrease the systemic concentration of voriconazole.
Indications for voriconazole TDM
Voriconazole trough levels should be obtained in most patients, whether receiving the agent for prophylaxis or treatment of fungal infections. Trough samples should be obtained 3-5 days after:
-start of therapy
-change in dose
-change in route of administration
-change in potentially interacting drugs

Trough levels may also be obtained to investigate lack of response to therapy or for suspected toxicity.

Voriconazole start/change date:	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Order voriconazole trough level before evening dose on:	Tuesday or Thursday if start/change is late Sunday	Thursday	Thursday or Sunday if start/change is late Tuesday	Sunday	Sunday	Sunday or Tuesday if start/change is late Friday	Tuesday

COLLECTION

Sample Type:
Serum

Collect:
Red top tube

Note: UCSF does not offer CSF testing. If required, this can be ordered as a MOLT from Quest.

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Remarks:
Collect trough levels just before next dose. Peak levels:

IV: 15-30 minutes after end of infusion
IM: 45-60 minutes after injection
PO: 90 minutes after ingestion

Stability (from collection to initiation):
Refrigerated 3 months, frozen 2 years

PROCESSING

Test Code:
VORIC

Performing Lab:
China Basin Chemistry

Specimen Preparation:
Centrifuge blood and separate serum from cells as soon as possible. Keep sample refrigerated.

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Refrigerated 3 months, frozen 2 years

RESULT INTERPRETATION

Units:
µg/mL (mcg/mL)

Reference Interval:
Target range:

Adults (>= 18 years old)
Treatment/prophylaxis: steady-state trough range for most situations should be 2.0-6.0 µg/mL.

Pediatrics (< 18 years old)
Treatment/prophylaxis: steady-state trough range for most situations should be 1.0-5.5 µg/mL.

In adults, serum trough levels of >= 1.5-2.0 µg/mL are associated with greater likelihood of response in invasive fungal infections.

Serum trough levels of > 5.0-6.0 µg/mL have been reported to be associated with reversible neurological adverse events such as hallucinations and possibly hepatotoxicity.

For levels outside of the therapeutic range, consultation with ID or ID pharmacy is recommended.

Levels should be re-checked until a result in the therapeutic range is obtained, and after changes in doses/route/interacting drugs. For patients on long-term voriconazole on stable doses, consider checking surveillance levels every 3 months.

References:
Ashbee HR et al. Therapeutic drug monitoring of antifungal agents: guidelines from the British Society for Medical Mycology. J Antimicrob Chemother 2014;69:1162-1176

Chau MM et al. Consensus guidelines for optimizing antifungal drug delivery and monitoring to avoid toxicity and improve outcomes in patients with haemotological malignancy, 2014. Inten Med Journal 2014;44:1364-1388

Lewis et al. Triazole antifungal therapeutic drug monitoring. European Conference on Infections in Leukemia. 2015.

Hamada et al. Practice Guidelines for therapeutic drug monitoring of voriconazole: a consensus review of the Japanese Society of Chemotherapy and the Japanese Society of Therapeutic Drug Monitoring. Journal of Infection and Chemotherapy. 2013; 19(3): 381-392.

Additional Information:

Voriconazole is a triazole antifungal agent. It has activity against a broad spectrum of clinically significant fungal pathogens in immunocompromised patients, including Candida, Aspergillus, Scedosporium and Fusarium species.

Voriconzaole is predominantly metabolized in the liver by the cytochrome P450 enzyme system, mainly by the isozyme CYP2C19. Substantial inter- and intra-patient variation in the voriconazole exposure is observed, likely due to greater metabolism of the drug by certain population groups, reduced metabolism by those with hepatic impairment, and co-administration of other drugs that increase or decrease the systemic concentration of voriconazole.
Indications for voriconazole TDM
Voriconazole trough levels should be obtained in most patients, whether receiving the agent for prophylaxis or treatment of fungal infections. Trough samples should be obtained 3-5 days after:
-start of therapy
-change in dose
-change in route of administration
-change in potentially interacting drugs

Trough levels may also be obtained to investigate lack of response to therapy or for suspected toxicity.

Voriconazole start/change date:	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Order voriconazole trough level before evening dose on:	Tuesday or Thursday if start/change is late Sunday	Thursday	Thursday or Sunday if start/change is late Tuesday	Sunday	Sunday	Sunday or Tuesday if start/change is late Friday	Tuesday

ADMINISTRATIVE

CPT Codes:
80285

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
VORIC

Performing Lab:
China Basin Chemistry

Performed:
Monday, Wednesday and Friday (excluding holidays)

In order to be run on Monday, Wednesday or Friday, samples have to be received by the lab by 5am that day.

Methodology:
Liquid chromatography-tandem mass spectrometry (LC-MS/MS)

Remarks:
Collect trough levels just before next dose. Peak levels:

IV: 15-30 minutes after end of infusion
IM: 45-60 minutes after injection
PO: 90 minutes after ingestion

Collect:
Red top tube

Note: UCSF does not offer CSF testing. If required, this can be ordered as a MOLT from Quest.

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.3 mL serum

Specimen Preparation:
Centrifuge blood and separate serum from cells as soon as possible. Keep sample refrigerated.

Units:
µg/mL (mcg/mL)

Reference Interval:
Target range:

Adults (>= 18 years old)
Treatment/prophylaxis: steady-state trough range for most situations should be 2.0-6.0 µg/mL.

Pediatrics (< 18 years old)
Treatment/prophylaxis: steady-state trough range for most situations should be 1.0-5.5 µg/mL.

In adults, serum trough levels of >= 1.5-2.0 µg/mL are associated with greater likelihood of response in invasive fungal infections.

Serum trough levels of > 5.0-6.0 µg/mL have been reported to be associated with reversible neurological adverse events such as hallucinations and possibly hepatotoxicity.

For levels outside of the therapeutic range, consultation with ID or ID pharmacy is recommended.

Levels should be re-checked until a result in the therapeutic range is obtained, and after changes in doses/route/interacting drugs. For patients on long-term voriconazole on stable doses, consider checking surveillance levels every 3 months.

References:
Ashbee HR et al. Therapeutic drug monitoring of antifungal agents: guidelines from the British Society for Medical Mycology. J Antimicrob Chemother 2014;69:1162-1176

Chau MM et al. Consensus guidelines for optimizing antifungal drug delivery and monitoring to avoid toxicity and improve outcomes in patients with haemotological malignancy, 2014. Inten Med Journal 2014;44:1364-1388

Lewis et al. Triazole antifungal therapeutic drug monitoring. European Conference on Infections in Leukemia. 2015.

Hamada et al. Practice Guidelines for therapeutic drug monitoring of voriconazole: a consensus review of the Japanese Society of Chemotherapy and the Japanese Society of Therapeutic Drug Monitoring. Journal of Infection and Chemotherapy. 2013; 19(3): 381-392.

Stability (from collection to initiation):
Refrigerated 3 months, frozen 2 years

Reported:
2-3 days

Additional Information:
Voriconazole is a triazole antifungal agent. It has activity against a broad spectrum of clinically significant fungal pathogens in immunocompromised patients, including Candida, Aspergillus, Scedosporium and Fusarium species.

Voriconzaole is predominantly metabolized in the liver by the cytochrome P450 enzyme system, mainly by the isozyme CYP2C19. Substantial inter- and intra-patient variation in the voriconazole exposure is observed, likely due to greater metabolism of the drug by certain population groups, reduced metabolism by those with hepatic impairment, and co-administration of other drugs that increase or decrease the systemic concentration of voriconazole.
Indications for voriconazole TDM
Voriconazole trough levels should be obtained in most patients, whether receiving the agent for prophylaxis or treatment of fungal infections. Trough samples should be obtained 3-5 days after:
-start of therapy
-change in dose
-change in route of administration
-change in potentially interacting drugs

Trough levels may also be obtained to investigate lack of response to therapy or for suspected toxicity.

Voriconazole start/change date:	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Order voriconazole trough level before evening dose on:	Tuesday or Thursday if start/change is late Sunday	Thursday	Thursday or Sunday if start/change is late Tuesday	Sunday	Sunday	Sunday or Tuesday if start/change is late Friday	Tuesday

CPT Codes:
80285

LDT or Modified FDA:

Yes

Walnut Component Panel

WCOMP

ORDERING

Available Stat:
No

Performing Lab:
Quest

Performed:
Tuesday-Saturday

Methodology:
Immunoassay

Reported:
1-3 days

Synonyms:

- Walnut Component Panel IgE

COLLECTION

Sample Type:
Serum

Collect:
Gold or Red-top

Amount to Collect:
1.0 mL blood

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Room Temperate and Refrigerated: 14 days
Frozen: 30 days

Storage/Transport Temperature:
Frozen

PROCESSING

Test Code:
WCOMP

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot and freeze. Send to China Basin frozen. Order Quest test code 94472.

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Stability (from collection to initiation):
Room Temperate and Refrigerated: 14 days
Frozen: 30 days

Storage/Transport Temperature:
Frozen

RESULT INTERPRETATION

Units:
kU/L

Reference Interval:
< 0.10

ADMINISTRATIVE

CPT Codes:
86008x2

LOINC Codes:
81790-8, 81789-0

COMPLETE VIEW

Available Stat:
No

Test Code:
WCOMP

Performing Lab:
Quest

Sendout:
Yes

Performed:
Tuesday-Saturday

Methodology:
Immunoassay

Collect:
Gold or Red-top

Amount to Collect:
1.0 mL blood

Sample Type:
Serum

Preferred Volume:
0.5 mL serum

Minimum Volume:
0.3 mL serum

Specimen Preparation:
Aliquot and freeze. Send to China Basin frozen. Order Quest test code 94472.

Units:
kU/L

Reference Interval:
< 0.10

Synonyms:

- Walnut Component Panel IgE

Storage/Transport Temperature:
Frozen

Stability (from collection to initiation):
Room Temperate and Refrigerated: 14 days
Frozen: 30 days

Reported:
1-3 days

CPT Codes:
86008x2

LOINC Codes:
81790-8, 81789-0

Warfarin Genotype

WARFN

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
PCR

Reported:
4-6 days

Additional Information:
AccuType® Warfarin - Warfarin (Coumadin®) therapy is associated with significant complications because of its narrow therapeutic index and large interpatient dosage variation necessary to achieve an optimal therapeutic response. This variation is due to both genetic and environmental factors. A promoter variant (-1639 G-->A) of the Vitamin K epoxide complex subunit 1 (VCR) accounts for 25%-44% of this variability and variants of the cytochrome P enzyme C (SPCA) account for 10%-15% of this variability. Identification of these warfarin sensitive variants of the VKORC1 and the CYP2C9 genes may allow a more individualized therapy and reduced risk of bleeding complications.

Synonyms:

- Warfarin metabolism
- CYP2C9
- VKORC1

COLLECTION

Sample Type:
EDTA or heparinized whole blood

Collect:
Lavender top, Dark green top

Amount to Collect:
5 mL blood

Preferred Volume:
5 mL blood

Minimum Volume:
3 mL blood

PROCESSING

Test Code:
WARFN

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Do not aliquot sample. Transport to CB & Quest at ambient temperature. Order Quest code 16160X

Preferred Volume:
5 mL blood

Minimum Volume:
3 mL blood

RESULT INTERPRETATION

Additional Information:
AccuType® Warfarin - Warfarin (Coumadin®) therapy is associated with significant complications because of its narrow therapeutic index and large interpatient dosage variation necessary to achieve an optimal therapeutic response. This variation is due to both genetic and environmental factors. A promoter variant (-1639 G-->A) of the Vitamin K epoxide complex subunit 1 (VCR) accounts for 25%-44% of this variability and variants of the cytochrome P enzyme C (SPCA) account for 10%-15% of this variability. Identification of these warfarin sensitive variants of the VKORC1 and the CYP2C9 genes may allow a more individualized therapy and reduced risk of bleeding complications.

ADMINISTRATIVE

CPT Codes:
81355-90, 81227-90

COMPLETE VIEW

Available Stat:
No

Test Code:
WARFN

Performing Lab:
Quest

Sendout:
Yes

Methodology:
PCR

Collect:
Lavender top, Dark green top

Amount to Collect:
5 mL blood

Sample Type:
EDTA or heparinized whole blood

Preferred Volume:
5 mL blood

Minimum Volume:
3 mL blood

Specimen Preparation:
Do not aliquot sample. Transport to CB & Quest at ambient temperature. Order Quest code 16160X

Synonyms:

- Warfarin metabolism
- CYP2C9
- VKORC1

Reported:
4-6 days

Additional Information:
AccuType® Warfarin - Warfarin (Coumadin®) therapy is associated with significant complications because of its narrow therapeutic index and large interpatient dosage variation necessary to achieve an optimal therapeutic response. This variation is due to both genetic and environmental factors. A promoter variant (-1639 G-->A) of the Vitamin K epoxide complex subunit 1 (VCR) accounts for 25%-44% of this variability and variants of the cytochrome P enzyme C (SPCA) account for 10%-15% of this variability. Identification of these warfarin sensitive variants of the VKORC1 and the CYP2C9 genes may allow a more individualized therapy and reduced risk of bleeding complications.

CPT Codes:
81355-90, 81227-90

WBC Count

CBC, CBCD, WBC, WBCDF

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center
San Mateo Cancer Center

Performed:
Parnassus, Mission Bay & Mt. Zion Hematology: 24-hours per day, 7-days per week
Berkeley Outpatient Center: Test available Mon-Fri (0800-1630)
San Mateo Cancer Center (Infusion patients only)

Reported:
STAT 1 hour, Routine 4 hours

Synonyms:

- Leukocyte count
- white cell count
- white blood cell count

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top

Amount to Collect:
3 mL blood

Minimum Volume:
1 mL blood (or 250 µL in a pedi-bullet)

Rejection Criteria:
Clotted specimens

PROCESSING

Test Code:
CBC, CBCD, WBC, WBCDF

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center
San Mateo Cancer Center

Minimum Volume:
1 mL blood (or 250 µL in a pedi-bullet)

Rejection Criteria:
Clotted specimens

RESULT INTERPRETATION

Units:
$x10^9$/L

Reference Interval:

0-24 hours	9.0-38.0 $x10^9$/L
24 hours-1 wk	5.0-34.0 $x10^9$/L
1 wk-6 months	5.0-21.0 $x10^9$/L
6 months -4 years	5.5-17.5 $x10^9$/L
4-14 years	4.5-15.5 $x10^9$/L
14-21 years	4.5-13.2 $x10^9$/L
> 21 years	3.4-10.0 $x10^9$/L

Critical Values:
<= 1.5 x10^9/L or >= 100.0 x10^9/L will be telephoned if a new finding within the past 24 hours.

ADMINISTRATIVE

CPT Codes:
85048

COMPLETE VIEW

Available Stat:
Yes

Test Code:
CBC, CBCD, WBC, WBCDF

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center
San Mateo Cancer Center

Performed:
Parnassus, Mission Bay & Mt. Zion Hematology: 24-hours per day, 7-days per week
Berkeley Outpatient Center: Test available Mon-Fri (0800-1630)
San Mateo Cancer Center (Infusion patients only)

Collect:
Lavender top

Amount to Collect:
3 mL blood

Sample Type:
EDTA whole blood

Minimum Volume:
1 mL blood (or 250 µL in a pedi-bullet)

Rejection Criteria:
Clotted specimens

Units:
x10^9/L

Reference Interval:

0-24 hours	9.0-38.0 x10^9/L
24 hours-1 wk	5.0-34.0 x10^9/L
1 wk-6 months	5.0-21.0 x10^9/L
6 months -4 years	5.5-17.5 x10^9/L
4-14 years	4.5-15.5 x10^9/L
14-21 years	4.5-13.2 x10^9/L
> 21 years	3.4-10.0 x10^9/L

Critical Values:
<= 1.5 x10^9/L or >= 100.0 x10^9/L will be telephoned if a new finding within the past 24 hours.

Synonyms:

- Leukocyte count
- white cell count
- white blood cell count

Reported:
STAT 1 hour, Routine 4 hours

CPT Codes:
85048

West Nile Virus Antibodies, Serum (IgG & IgM)

WNVS

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
EIA

Additional Information:
West Nile Virus (WNV) IgM antibodies, in blood or CSF, are positive in most infected people within 8 days of onset of symptoms and may remain detectable for months. In our laboratory, sera with reactive IgM are rerun in a modified test to rule out nonspecific reactions. IgG antibodies indicate either current or past exposure to the virus.

Reflex Testing:
See 'Additional information'

Synonyms:

- WNV

COLLECTION

Sample Type:
Serum (see Collection Instructions)

Collect:
Gold top, Red top

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL serum

Minimum Volume:
0.7 mL serum

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 1 week, frozen @ -20C 1 month, frozen @ -70C indefinite

PROCESSING

Test Code:
WNVS

Test Group:
WNV

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Order Quest test #36596 , freeze serum at -20C.

Note: Do not use test code WNVN (WNV NAT) or PTXID (Organ Donor Testing) when only West Nile Virus is ordered. Only use test code WNVS.

Preferred Volume:
2 mL serum

Minimum Volume:
0.7 mL serum

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 1 week, frozen @ -20C 1 month, frozen @ -70C indefinite

RESULT INTERPRETATION

Units:
Index

Reference Interval:

West Nile Virus IgG:

Negative	<1.30
Equivocal	1.30-1.49
Positive	>=1.50

West Nile Virus IgM:

Negative	<0.90
Equivocal	0.90-1.10
Positive	>1.10

Additional Information:

West Nile Virus (WNV) IgM antibodies, in blood or CSF, are positive in most infected people within 8 days of onset of symptoms and may remain detectable for months. In our laboratory, sera with reactive IgM are rerun in a modified test to rule out nonspecific reactions. IgG antibodies indicate either current or past exposure to the virus.

ADMINISTRATIVE

CPT Codes:

86788-90, 86789-90

LOINC Codes:

36897-7

COMPLETE VIEW

Available Stat:

No

Test Code:

WNVS

Test Group:

WNV

Performing Lab:

Quest

Sendout:

Yes

Methodology:

EIA

Collect:

Gold top, Red top

Amount to Collect:

4 mL blood

Sample Type:

Serum (see Collection Instructions)

Preferred Volume:

2 mL serum

Minimum Volume:

0.7 mL serum

Specimen Preparation:

Order Quest test #36596 , freeze serum at -20C.

Note: Do not use test code WNVN (WNV NAT) or PTXID (Organ Donor Testing) when only West Nile Virus is ordered. Only use test code WNVS.

Units:

Index

Reference Interval:

West Nile Virus IgG:

Negative	<1.30
Equivocal	1.30-1.49
Positive	>=1.50

West Nile Virus IgM:

Negative	<0.90
Equivocal	0.90-1.10
Positive	>1.10

Synonyms:

- WNV

Stability (from collection to initiation):

Room temperature 4 days, refrigerated 1 week, frozen @ -20C 1 month, frozen @ -70C indefinite

Reflex Testing:

See 'Additional information'

Additional Information:

West Nile Virus (WNV) IgM antibodies, in blood or CSF, are positive in most infected people within 8 days of onset of symptoms and may remain detectable for months. In our laboratory, sera with reactive IgM are rerun in a modified test to rule out nonspecific reactions. IgG antibodies indicate either current or past exposure to the virus.

CPT Codes:

86788-90, 86789-90

LOINC Codes:

36897-7

West Nile Virus Antibody, CSF

WNVC

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
ELISA

Reported:
Test set up 3 days a week at night, reports in 5-7 days.

Additional Information:
West Nile Virus (WNV) IgM antibodies, in blood or CSF, are positive in most infected people within 8 days of onset of symptoms and may remain detectable for months. In our laboratory, CSF samples with reactive IgM are rerun in a modified test to rule out nonspecific reactions. IgG antibodies indicate either current or past exposure to the virus.

Reflex Testing:
See 'Additional information'

Synonyms:

- WNV

COLLECTION

Sample Type:
CSF

Collect:
CSF tube or sterile collection tube

Amount to Collect:
2 mL CSF

Preferred Volume:
2 mL CSF

Minimum Volume:
0.7 mL CSF

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 1 week, frozen @ -20C 1 month, frozen @ -70C indefinite

PROCESSING

Test Code:
WNVC

Test Group:
WNV

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Order Quest test #36597N, freeze CSF at -20C.

Preferred Volume:
2 mL CSF

Minimum Volume:
0.7 mL CSF

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 1 week, frozen @ -20C 1 month, frozen @ -70C indefinite

RESULT INTERPRETATION

Units:
Index

Reference Interval:

West Nile Virus IgG, CSF:

Negative	<1.30
Equivocal	1.30-1.49
Positive	>=1.50

West Nile Virus IgM, CSF:

Negative	<0.90
Equivocal	0.90-1.10
Positive	>1.10

Additional Information:

West Nile Virus (WNV) IgM antibodies, in blood or CSF, are positive in most infected people within 8 days of onset of symptoms and may remain detectable for months. In our laboratory, CSF samples with reactive IgM are rerun in a modified test to rule out nonspecific reactions. IgG antibodies indicate either current or past exposure to the virus.

ADMINISTRATIVE

CPT Codes:

86788-90, 86789-90

COMPLETE VIEW

Available Stat:

No

Test Code:

WNVC

Test Group:

WNV

Performing Lab:

Quest

Sendout:

Yes

Methodology:

ELISA

Collect:

CSF tube or sterile collection tube

Amount to Collect:

2 mL CSF

Sample Type:

CSF

Preferred Volume:

2 mL CSF

Minimum Volume:

0.7 mL CSF

Specimen Preparation:

Order Quest test #36597N, freeze CSF at -20C.

Units:

Index

Reference Interval:

West Nile Virus IgG, CSF:

Negative	<1.30
Equivocal	1.30-1.49
Positive	>=1.50

West Nile Virus IgM, CSF:

Negative	<0.90
Equivocal	0.90-1.10
Positive	>1.10

Synonyms:

- WNV

Stability (from collection to initiation):
Room temperature 4 days, refrigerated 1 week, frozen @ -20C 1 month, frozen @ -70C indefinite

Reported:
Test set up 3 days a week at night, reports in 5-7 days.

Reflex Testing:
See 'Additional information'

Additional Information:
West Nile Virus (WNV) IgM antibodies, in blood or CSF, are positive in most infected people within 8 days of onset of symptoms and may remain detectable for months. In our laboratory, CSF samples with reactive IgM are rerun in a modified test to rule out nonspecific reactions. IgG antibodies indicate either current or past exposure to the virus.

CPT Codes:
86788-90, 86789-90

Western Equine Encephalitis Antibodies

WEEB

ORDERING

Available Stat:
No

Performing Lab:
Focus via Quest

Methodology:
IFA

Reported:
Performed 5x per week. Turnaround 3-5 days.

COLLECTION

Sample Type:
Serum

Collect:
Red top or Gold top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen at -20C 1 months.

PROCESSING

Test Code:
WEEB

Sendout:
Yes

Performing Lab:
Focus via Quest

Specimen Preparation:
Freeze serum at -20C. Order Quest test #37311X

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen at -20C 1 months.

RESULT INTERPRETATION

Units:
Titer

Reference Interval:
IgG: < 1:16 titer
IgM: < 1:20 titer

ADMINISTRATIVE

CPT Codes:
86654-90 (x2)

LOINC Codes:
17770-9

COMPLETE VIEW

Available Stat:
No

Test Code:
WEEB

Performing Lab:
Focus via Quest

Sendout:
Yes

Methodology:
IFA

Collect:
Red top or Gold top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.2 mL serum

Specimen Preparation:
Freeze serum at -20C. Order Quest test #37311X

Units:
Titer

Reference Interval:
IgG: < 1:16 titer
IgM: < 1:20 titer

Stability (from collection to initiation):
Room temperature 1 week, refrigerated 2 weeks, frozen at -20C 1 months.

Reported:
Performed 5x per week. Turnaround 3-5 days.

CPT Codes:
86654-90 (x2)

LOINC Codes:
17770-9

White Blood Cell Differential

CBCD, WBCDF

ORDERING

Available Stat:
Yes

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center
San Mateo Cancer Center

Performed:
Parnassus, Mission Bay & Mt. Zion Hematology: 24-hours per day, 7-days per week
Berkeley Outpatient Center: Test available Mon-Fri (0800-1630)
San Mateo Cancer Center (Infusion patients only)

Reported:
Stat 1 hour, Routine 4 hours

Note: STAT differential turnaround time of greater than 1 hour may be seen if manual review of a sample is required

Additional Information:
All differential counts are routinely performed by automated flow cytometry.

Neutrophil Absolute Count (Total ANC) includes segmented neutrophils and bands. Immature granulocytes/left shift includes metamyelocytes and myelocytes.

A manual differential will be initiated by the laboratory at a separate charge if an automated differential is technically inadequate for the analysis of a particular sample.

Manual differentials also include RBC morphology and platelet morphology.

Synonyms:

- Eosnophil
- Basophil
- Neutrophiil
- Granulocyte
- Monocyte
- Lymphocyte
- Immature granulocyte
- Leukocyte differential
- WBC differential

COLLECTION

Sample Type:
EDTA whole blood

Collect:
Lavender top

Amount to Collect:
3 mL blood

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood (or 250 µL in a pedi-bullet)

Rejection Criteria:
Clotted specimens

PROCESSING

Test Code:
CBCD, WBCDF

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center
San Mateo Cancer Center

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood (or 250 µL in a pedi-bullet)

Rejection Criteria:
Clotted specimens

RESULT INTERPRETATION

Units:
$x10^9$/L

Reference Interval:
Normal Absolute Counts in $x10^9$/L:

AGE	NEUTS	LYMPH	MONO	EO	BASO	IG
0-24 hours	5.0-28	2.0-12	0.4-3.1	0.0-0.9	0.0-0.6	0.0-0.3
24 hours-1 wk	1.5-21	2.0-17	0.3-2.7	0.1-1.1	0.0-0.3	0.0-0.3
1 wk-6 months	1.0-10	2.0-17	0.2-2.7	0.1-1.1	0.0-0.3	0.0-0.1
6 months -4 years	1.0-8.5	2.0-14	0.0-0.9	0.0-1.1	0.0-0.3	0.0-0.1
4-14 years	1.5-8.5	1.2-8.0	0.0-1.4	0.0-1.1	0.0-0.3	< 0.1
14-21 years	1.8-8.0	1.0-6.1	0.0-1.4	0.0-0.8	0.0-0.3	< 0.1
> 21 years	1.8-6.8	1.0-3.4	0.2-0.8	0.0-0.4	0.0-0.1	< 0.1

Critical Values:
Neutrophils <= 1.0 $x10^9$/L

Note: Neutrophil counts <= 1.0 $x10^9$/L are not called if a prior critical was reported in the preceding 24 hours

Additional Information:
All differential counts are routinely performed by automated flow cytometry.

Neutrophil Absolute Count (Total ANC) includes segmented neutrophils and bands. Immature granulocytes/left shift includes metamyelocytes and myelocytes.

A manual differential will be initiated by the laboratory at a separate charge if an automated differential is technically inadequate for the analysis of a particular sample.

Manual differentials also include RBC morphology and platelet morphology.

ADMINISTRATIVE

CPT Codes:
85004

COMPLETE VIEW

Available Stat:
Yes

Test Code:
CBCD, WBCDF

Performing Lab:
Parnassus, Mission Bay & Mt. Zion Hematology
Berkeley Outpatient Center
San Mateo Cancer Center

Performed:
Parnassus, Mission Bay & Mt. Zion Hematology: 24-hours per day, 7-days per week
Berkeley Outpatient Center: Test available Mon-Fri (0800-1630)
San Mateo Cancer Center (Infusion patients only)

Collect:
Lavender top

Amount to Collect:
3 mL blood

Sample Type:
EDTA whole blood

Preferred Volume:
3 mL blood

Minimum Volume:
1 mL blood (or 250 µL in a pedi-bullet)

Rejection Criteria:

Clotted specimens

Units:

$x10^9/L$

Reference Interval:

Normal Absolute Counts in $x10^9/L$:

AGE	NEUTS	LYMPH	MONO	EO	BASO	IG
0-24 hours	5.0-28	2.0-12	0.4-3.1	0.0-0.9	0.0-0.6	0.0-0.3
24 hours-1 wk	1.5-21	2.0-17	0.3-2.7	0.1-1.1	0.0-0.3	0.0-0.3
1 wk-6 months	1.0-10	2.0-17	0.2-2.7	0.1-1.1	0.0-0.3	0.0-0.1
6 months -4 years	1.0-8.5	2.0-14	0.0-0.9	0.0-1.1	0.0-0.3	0.0-0.1
4-14 years	1.5-8.5	1.2-8.0	0.0-1.4	0.0-1.1	0.0-0.3	< 0.1
14-21 years	1.8-8.0	1.0-6.1	0.0-1.4	0.0-0.8	0.0-0.3	< 0.1
> 21 years	1.8-6.8	1.0-3.4	0.2-0.8	0.0-0.4	0.0-0.1	< 0.1

Critical Values:

Neutrophils <= 1.0 $x10^9/L$

Note: Neutrophil counts <= 1.0 $x10^9/L$ are not called if a prior critical was reported in the preceding 24 hours

Synonyms:

- Eosnophil
- Basophil
- Neutrophiil
- Granulocyte
- Monocyte
- Lymphocyte
- Immature granulocyte
- Leukocyte differential
- WBC differential

Reported:

Stat 1 hour, Routine 4 hours

Note: STAT differential turnaround time of greater than 1 hour may be seen if manual review of a sample is required

Additional Information:

All differential counts are routinely performed by automated flow cytometry.

Neutrophil Absolute Count (Total ANC) includes segmented neutrophils and bands. Immature granulocytes/left shift includes metamyelocytes and myelocytes.

A manual differential will be initiated by the laboratory at a separate charge if an automated differential is technically inadequate for the analysis of a particular sample.

Manual differentials also include RBC morphology and platelet morphology.

CPT Codes:

85004

XX/XY FISH

XXXY, BXXXY

ORDERING

Available Stat:
No

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Fluorescent in-situ hybridization

Synonyms:

- Sex mismatch
- Transplant monitoring
- TX monitoring
- XXXY
- BXXXY

COLLECTION

Sample Type:
Heparinized whole blood, bone marrow, bone core, Amniotic fluid, CVS, POC

Collect:
Blood & bone marrow aspirate: 15 mL centrifuge tube with transport media (RPMI, FBS, L-Glutamine, Sodium Heparin and PenStrep). Available from Cytogenetics. Dark Green top also acceptable

Bone marrow core: 15 mL centrifuge tube with transport media (RPMI, FBS, L-Glutamine, Sodium Heparin and PenStrep). Available from Cytogenetics.

Amount to Collect:
See preferred volume.

Preferred Volume:
Bone marrow: 2 mL
Blood: 3 mL
Bone core: 2 cm
Amniotic fluid: 10 mL
CVS: 10 mg
POC: 10 mg

Minimum Volume:
Bone marrow: 1 mL
Blood: 1 mL
Bone core: 1 cm
Amniotic fluid: 5 mL
CVS: 5 mg
?POC: 5 mg

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

PROCESSING

Test Code:
BXXXY: Blood
XXXY: Bone marrow

Test Group:
FISH

Performing Lab:
Medical Genomics - Cytogenetics

Specimen Preparation:
Maintain sample at room temperature. Transport to CB Cytogenetics within 24 hours

Preferred Volume:
Bone marrow: 2 mL
Blood: 3 mL
Bone core: 2 cm
Amniotic fluid: 10 mL
CVS: 10 mg
POC: 10 mg

Minimum Volume:
Bone marrow: 1 mL
Blood: 1 mL
Bone core: 1 cm
Amniotic fluid: 5 mL
CVS: 5 mg
?POC: 5 mg

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

ADMINISTRATIVE

CPT Codes:
88275, 88271

LDT or Modified FDA:
Yes

COMPLETE VIEW

Available Stat:
No

Test Code:
BXXXY: Blood
XXXY: Bone marrow

Test Group:
FISH

Performing Lab:
Medical Genomics - Cytogenetics

Methodology:
Fluorescent in-situ hybridization

Collect:
Blood & bone marrow aspirate: 15 mL centrifuge tube with transport media (RPMI, FBS, L-Glutamine, Sodium Heparin and PenStrep). Available from Cytogenetics. Dark Green top also acceptable

Bone marrow core: 15 mL centrifuge tube with transport media (RPMI, FBS, L-Glutamine, Sodium Heparin and PenStrep). Available from Cytogenetics.

Amount to Collect:
See preferred volume.

Sample Type:
Heparinized whole blood, bone marrow, bone core, Amniotic fluid, CVS, POC

Preferred Volume:
Bone marrow: 2 mL
Blood: 3 mL
Bone core: 2 cm
Amniotic fluid: 10 mL
CVS: 10 mg
POC: 10 mg

Minimum Volume:
Bone marrow: 1 mL
Blood: 1 mL
Bone core: 1 cm
Amniotic fluid: 5 mL
CVS: 5 mg
?POC: 5 mg

Unacceptable Conditions:
Insufficient volume; unlabeled tubes; clotted samples; broken, leaking or contaminated tubes; frozen samples.

Specimen Preparation:
Maintain sample at room temperature. Transport to CB Cytogenetics within 24 hours

Synonyms:

- Sex mismatch
- Transplant monitoring
- TX monitoring
- XXXY
- BXXXY

CPT Codes:
88275, 88271

LDT or Modified FDA:
Yes

Y Chromosome Microdeletion

YCMD

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Agarose Gel Electrophoresis • Polymerase Chain Reaction (PCR)

Reported:
3-7 days

Additional Information:
To detect Y chromosome microdeletions associated with oligospermia and azoospermia. About 15-20% of azoospermic men and about 10% of severely oligospermic men present with microdeletions of Yq. This test targets 20 genetic loci, including those recommended by the European Quality Monitoring Network Group (Int J Andr 22: 292-299 (1999).

COLLECTION

Sample Type:
Whole Blood

Collect:
Lavender top or dark green top tube

Amount to Collect:
4 mL

Preferred Volume:
4 mL

Minimum Volume:
3 mL

Stability (from collection to initiation):
Room temperature: 8 days
Refrigerated: 8 days
Frozen: Unacceptable

PROCESSING

Test Code:
YCMD

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Do not aliquot. Transport to CB ambient. Order Quest test code 14679

Preferred Volume:
4 mL

Minimum Volume:
3 mL

Stability (from collection to initiation):
Room temperature: 8 days
Refrigerated: 8 days
Frozen: Unacceptable

RESULT INTERPRETATION

Additional Information:
To detect Y chromosome microdeletions associated with oligospermia and azoospermia. About 15-20% of azoospermic men and about 10% of severely oligospermic men present with microdeletions of Yq. This test targets 20 genetic loci, including those recommended by the European Quality Monitoring Network Group (Int J Andr 22: 292-299 (1999).

ADMINISTRATIVE

CPT Codes:
81403-90

LOINC Codes:
35456-3

COMPLETE VIEW

Available Stat:
No

Test Code:
YCMD

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Agarose Gel Electrophoresis • Polymerase Chain Reaction (PCR)

Collect:
Lavender top or dark green top tube

Amount to Collect:
4 mL

Sample Type:
Whole Blood

Preferred Volume:
4 mL

Minimum Volume:
3 mL

Specimen Preparation:
Do not aliquot. Transport to CB ambient. Order Quest test code 14679

Stability (from collection to initiation):
Room temperature: 8 days
Refrigerated: 8 days
Frozen: Unacceptable

Reported:
3-7 days

Additional Information:
To detect Y chromosome microdeletions associated with oligospermia and azoospermia. About 15-20% of azoospermic men and about 10% of severely oligospermic men present with microdeletions of Yq. This test targets 20 genetic loci, including those recommended by the European Quality Monitoring Network Group (Int J Andr 22: 292-299 (1999).

CPT Codes:
81403-90

LOINC Codes:
35456-3

Yersinia only Culture

P158

ORDERING

Approval Required:
Yes, consultation required for samples submitted > 72 hours after inpatient admission. Contact Microbiology at x3-1268

Available Stat:
No

Performing Lab:
Microbiology

Performed:
Set up daily, day and evening shifts

Methodology:
Culture

Reported:
2-3 days

Synonyms:

- Bacterial culture

COLLECTION

Sample Type:
Stool

Collect:
Urine cup or C & S (Cary & Blair) transport media

Amount to Collect:
5 mL

Preferred Volume:
5 mL

Minimum Volume:
Fresh stool : 0.5 mL or size of pea, Stool in C & S (Cary & Blair) transport medium: 5 mL

Remarks:
Submit unpreserved stool to laboratory within 3 hours of collection.

If specimen will be submitted to the laboratory more than 3 hours after collection, or after 11 pm when Microbiology is closed, submit stool in C & S (Cary & Blair) Medium. Add stool to red line on vial and mix well with spoon.

C & S (Cary & Blair) Medium is available from Material Services . Outpatients can obtain these from the laboratories' draw stations. For patient collect samples, order PMM 68902 C & S Medium Cary Blair 2805-05-WB (with bag and instructions). PMM 49206 C & S Medium 2805-05 (without bag or instructions) also available.

Stability (from collection to initiation):
Unpreserved 3 hours, preserved 1 week

Unacceptable Conditions:
Unpreserved stool received > 3 hours after collection. More than two samples per day.

PROCESSING

Test Code:
P158

Test Group:
Yersinia

Performing Lab:
Microbiology

Specimen Preparation:
If < 5mL stool received, add 3 parts Cary & Blair medium to 1 part stool.

Incubate CIN plate at ROOM TEMPERATURE.

Preferred Volume:
5 mL

Minimum Volume:
Fresh stool : 0.5 mL or size of pea, Stool in C & S (Cary & Blair) transport medium: 5 mL

Unacceptable Conditions:
Unpreserved stool received > 3 hours after collection. More than two samples per day.

Stability (from collection to initiation):
Unpreserved 3 hours, preserved 1 week

ADMINISTRATIVE

CPT Codes:
87046

LOINC Codes:
28549-4

COMPLETE VIEW

Approval Required:
Yes, consultation required for samples submitted > 72 hours after inpatient admission. Contact Microbiology at x3-1268

Available Stat:
No

Test Code:
P158

Test Group:
Yersinia

Performing Lab:
Microbiology

Performed:
Set up daily, day and evening shifts

Methodology:
Culture

Remarks:
Submit unpreserved stool to laboratory within 3 hours of collection.

If specimen will be submitted to the laboratory more than 3 hours after collection, or after 11 pm when Microbiology is closed, submit stool in C & S (Cary & Blair) Medium. Add stool to red line on vial and mix well with spoon.

C & S (Cary & Blair) Medium is available from Material Services . Outpatients can obtain these from the laboratories' draw stations. For patient collect samples, order PMM 68902 C & S Medium Cary Blair 2805-05-WB (with bag and instructions). PMM 49206 C & S Medium 2805-05 (without bag or instructions) also available.

Collect:
Urine cup or C & S (Cary & Blair) transport media

Amount to Collect:
5 mL

Sample Type:
Stool

Preferred Volume:
5 mL

Minimum Volume:
Fresh stool : 0.5 mL or size of pea, Stool in C & S (Cary & Blair) transport medium: 5 mL

Unacceptable Conditions:
Unpreserved stool received > 3 hours after collection. More than two samples per day.

Specimen Preparation:
If < 5mL stool received, add 3 parts Cary & Blair medium to 1 part stool.

Incubate CIN plate at ROOM TEMPERATURE.

Synonyms:

- Bacterial culture

Stability (from collection to initiation):
Unpreserved 3 hours, preserved 1 week

Reported:
2-3 days

CPT Codes:
87046

LOINC Codes:
28549-4

Zika Virus by PCR, Blood

ZVPB

ORDERING

Ordering Recommendations:
Testing should only be performed on individuals meeting Centers for Disease Control and Prevention (CDC) clinical criteria for Zika virus (eg, clinical signs and symptoms associated with Zika virus infection) and/or CDC epidemiological criteria for Zika virus (eg, history of residence in or travel to a geographic region with active Zika transmission at the time of travel, or other epidemiological criteria for which Zika virus testing may be indicated).

Available Stat:
No

Performing Lab:
ARUP

Performed:
Mon, Wed, Fri

Methodology:
Qualitative Polymerase Chain Reaction (PCR)

Reported:
1-4 days

COLLECTION

Sample Type:
Serum, Gold or Red top

Collect:
Serum separator tube (SST).

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Remarks:
Specimen source required.

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 5 days; Frozen: 6 weeks

Storage/Transport Temperature:
Frozen.

Unacceptable Conditions:
Urine (refer to Zika Virus by PCR, Urine, ARUP test code 2014069).

PROCESSING

Test Code:
ZVPB

ARUP Test Code:
2014065

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Separate from cells. Transfer 2 mL serum to a sterile container. (Min: 1 mL)

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Unacceptable Conditions:
Urine (refer to Zika Virus by PCR, Urine, ARUP test code 2014069).

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 5 days; Frozen: 6 weeks

Storage/Transport Temperature:
Frozen.

RESULT INTERPRETATION

Interpretive Data:
Zika Virus by PCR is a real-time RT-PCR test intended for the qualitative detection of Zika virus RNA from individuals meeting CDC Zika virus clinical criteria (e.g., clinical signs and symptoms associated with Zika virus infection) and/or CDC Zika virus epidemiological criteria (e.g., history of residence in or travel to a geographic region with active Zika transmission at the time of travel, or other epidemiologic criteria for which Zika virus testing may be indicated).

Diagnostic testing for Zika virus infection should be performed as outlined by current CDC guidance.

If serologic testing is needed as a follow-up to PCR, contact ARUP client services to order Zika Virus IgM Antibody Capture (MAC), by ELISA (ARUP test code 2013942). Additional charges apply.

ADMINISTRATIVE

CPT Codes:
87662

LOINC:

- 91078-6
- 31208-2

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Testing should only be performed on individuals meeting Centers for Disease Control and Prevention (CDC) clinical criteria for Zika virus (eg, clinical signs and symptoms associated with Zika virus infection) and/or CDC epidemiological criteria for Zika virus (eg, history of residence in or travel to a geographic region with active Zika transmission at the time of travel, or other epidemiological criteria for which Zika virus testing may be indicated).

Test Code:
ZVPB

ARUP Test Code:
2014065

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Mon, Wed, Fri

Methodology:
Qualitative Polymerase Chain Reaction (PCR)

Remarks:
Specimen source required.

Collect:
Serum separator tube (SST).

Amount to Collect:
4 mL blood

Sample Type:
Serum, Gold or Red top

Preferred Volume:
2 mL serum

Minimum Volume:
1 mL serum

Unacceptable Conditions:
Urine (refer to Zika Virus by PCR, Urine, ARUP test code 2014069).

Specimen Preparation:
Separate from cells. Transfer 2 mL serum to a sterile container. (Min: 1 mL)

Interpretive Data:

Zika Virus by PCR is a real-time RT-PCR test intended for the qualitative detection of Zika virus RNA from individuals meeting CDC Zika virus clinical criteria (e.g., clinical signs and symptoms associated with Zika virus infection) and/or CDC Zika virus epidemiological criteria (e.g., history of residence in or travel to a geographic region with active Zika transmission at the time of travel, or other epidemiologic criteria for which Zika virus testing may be indicated).

Diagnostic testing for Zika virus infection should be performed as outlined by current CDC guidance.

If serologic testing is needed as a follow-up to PCR, contact ARUP client services to order Zika Virus IgM Antibody Capture (MAC), by ELISA (ARUP test code 2013942). Additional charges apply.

Storage/Transport Temperature:

Frozen.

Stability (from collection to initiation):

Ambient: Unacceptable; Refrigerated: 5 days; Frozen: 6 weeks

Reported:

1-4 days

CPT Codes:

87662

LOINC:

- 91078-6
- 31208-2

Zika Virus by PCR, Urine

ZVPU

ORDERING

Ordering Recommendations:
Testing should only be performed on individuals meeting Centers for Disease Control and Prevention (CDC) clinical criteria for Zika virus (eg, clinical signs and symptoms associated with Zika virus infection) and/or CDC epidemiological criteria for Zika virus (eg, history of residence in or travel to a geographic region with active Zika transmission at the time of travel, or other epidemiological criteria for which Zika virus testing may be indicated).

Available Stat:
No

Performing Lab:
ARUP

Performed:
Mon, Wed, Fri

Methodology:
Qualitative Polymerase Chain Reaction (PCR)

Reported:
1-4 days

COLLECTION

Sample Type:
Sterile urine

Collect:
Urine and patient-matched serum separator tube (SST).

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Remarks:
Specimen source required.

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 5 days; Frozen: 6 weeks

Storage/Transport Temperature:
Frozen.

Unacceptable Conditions:
Serum (refer to Zika Virus by PCR, Blood, ARUP test code 2014065).

PROCESSING

Test Code:
ZVPU

ARUP Test Code:
2014069

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Urine: Transfer 1 mL urine to a sterile container. (Min: 0.5 mL)
Serum: Collect and retain 2 mL of patient-matched serum at the client site in the event that serological follow-up testing is needed. (Min: 1 mL)

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Unacceptable Conditions:
Serum (refer to Zika Virus by PCR, Blood, ARUP test code 2014065).

Stability (from collection to initiation):
Ambient: Unacceptable; Refrigerated: 5 days; Frozen: 6 weeks

Storage/Transport Temperature:
Frozen.

RESULT INTERPRETATION

Interpretive Data:
Zika Virus by PCR is a real-time RT-PCR test intended for the qualitative detection of Zika virus RNA from individuals meeting CDC Zika virus clinical criteria (e.g., clinical signs and symptoms associated with Zika virus infection) and/or CDC Zika virus epidemiological criteria (e.g., history of residence in or travel to a geographic region with active Zika transmission at the time of travel, or other epidemiologic criteria for which Zika virus testing may be indicated).

Diagnostic testing for Zika virus infection should be performed as outlined by current CDC guidance.

If serologic testing is needed as a follow-up to PCR, contact ARUP client services to order Zika Virus IgM Antibody Capture (MAC), by ELISA (ARUP test code 2013942). Additional charges apply.

ADMINISTRATIVE

CPT Codes:
87662

LOINC:

- 31208-2
- 85623-7

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
Testing should only be performed on individuals meeting Centers for Disease Control and Prevention (CDC) clinical criteria for Zika virus (eg, clinical signs and symptoms associated with Zika virus infection) and/or CDC epidemiological criteria for Zika virus (eg, history of residence in or travel to a geographic region with active Zika transmission at the time of travel, or other epidemiological criteria for which Zika virus testing may be indicated).

Test Code:
ZVPU

ARUP Test Code:
2014069

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Mon, Wed, Fri

Methodology:
Qualitative Polymerase Chain Reaction (PCR)

Remarks:
Specimen source required.

Collect:
Urine and patient-matched serum separator tube (SST).

Sample Type:
Sterile urine

Preferred Volume:
1 mL

Minimum Volume:
0.5 mL

Unacceptable Conditions:
Serum (refer to Zika Virus by PCR, Blood, ARUP test code 2014065).

Specimen Preparation:
Urine: Transfer 1 mL urine to a sterile container. (Min: 0.5 mL)
Serum: Collect and retain 2 mL of patient-matched serum at the client site in the event that serological follow-up testing is needed. (Min: 1 mL)

Interpretive Data:

Zika Virus by PCR is a real-time RT-PCR test intended for the qualitative detection of Zika virus RNA from individuals meeting CDC Zika virus clinical criteria (e.g., clinical signs and symptoms associated with Zika virus infection) and/or CDC Zika virus epidemiological criteria (e.g., history of residence in or travel to a geographic region with active Zika transmission at the time of travel, or other epidemiologic criteria for which Zika virus testing may be indicated).

Diagnostic testing for Zika virus infection should be performed as outlined by current CDC guidance.

If serologic testing is needed as a follow-up to PCR, contact ARUP client services to order Zika Virus IgM Antibody Capture (MAC), by ELISA (ARUP test code 2013942). Additional charges apply.

Storage/Transport Temperature:

Frozen.

Stability (from collection to initiation):

Ambient: Unacceptable; Refrigerated: 5 days; Frozen: 6 weeks

Reported:

1-4 days

CPT Codes:

87662

LOINC:

- 31208-2
- 85623-7

Zinc Protoporphyrin (ZPP), Whole Blood

ZNPP

ORDERING

Ordering Recommendations:
This test should not be used as the primary screening test for lead exposure; the preferred test for lead exposure assessment is Lead Blood (Venous) (0020098). For iron deficiency assessment, Iron and Iron Binding Capacity (0020420) and Ferritin (0070065) are recommended. For assessment of occupational exposure to lead, Lead Industrial Exposure Panel, Adults (0025016) is recommended.

Available Stat:
No

Performing Lab:
ARUP

Performed:
Mon-Fri

Methodology:
Quantitative Hematofluorometry

Reported:
1-4 days

Synonyms:

- Porphyrins
- ZP
- ZPP
- ZPP/Heme Ratio

COLLECTION

Collect:
Lavender (EDTA), royal blue (K2EDTA), royal blue (NaHep),tan (K2EDTA), or pink (K2EDTA).

Stability (from collection to initiation):
Ambient: 30 hours; Refrigerated: 5 weeks; Frozen: Unacceptable

Storage/Transport Temperature:
Refrigerated.

Unacceptable Conditions:
Clotted, frozen, or hemolyzed specimens.

PROCESSING

Test Code:
ZNPP

ARUP Test Code:
0020605

Sendout:
Yes

Performing Lab:
ARUP

Specimen Preparation:
Transport 3 or 6 mL whole blood in the original collection tube. (Min: 0.2 mL)

Unacceptable Conditions:
Clotted, frozen, or hemolyzed specimens.

Stability (from collection to initiation):
Ambient: 30 hours; Refrigerated: 5 weeks; Frozen: Unacceptable

Storage/Transport Temperature:
Refrigerated.

RESULT INTERPRETATION

Reference Interval:
0-69 µmol ZPP/ mol Hem

Interpretive Data:
This test was performed on the ProtoFluor Z system manufactured by Helena Laboratories. The result is not comparable to results obtained from extraction-based methods or from the AVIV ZPP system.

ADMINISTRATIVE

CPT Codes:
84202

LOINC:

- 29763-0

COMPLETE VIEW

Available Stat:
No

Ordering Recommendations:
This test should not be used as the primary screening test for lead exposure; the preferred test for lead exposure assessment is Lead Blood (Venous) (0020098). For iron deficiency assessment, Iron and Iron Binding Capacity (0020420) and Ferritin (0070065) are recommended. For assessment of occupational exposure to lead, Lead Industrial Exposure Panel, Adults (0025016) is recommended.

Test Code:
ZNPP

ARUP Test Code:
0020605

Performing Lab:
ARUP

Sendout:
Yes

Performed:
Mon-Fri

Methodology:
Quantitative Hematofluorometry

Collect:
Lavender (EDTA), royal blue (K2EDTA), royal blue (NaHep),tan (K2EDTA), or pink (K2EDTA).

Unacceptable Conditions:
Clotted, frozen, or hemolyzed specimens.

Specimen Preparation:
Transport 3 or 6 mL whole blood in the original collection tube. (Min: 0.2 mL)

Reference Interval:
0-69 µmol ZPP/ mol Hem

Interpretive Data:
This test was performed on the ProtoFluor Z system manufactured by Helena Laboratories. The result is not comparable to results obtained from extraction-based methods or from the AVIV ZPP system.

Synonyms:

- Porphyrins
- ZP
- ZPP
- ZPP/Heme Ratio

Storage/Transport Temperature:
Refrigerated.

Stability (from collection to initiation):
Ambient: 30 hours; Refrigerated: 5 weeks; Frozen: Unacceptable

Reported:
1-4 days

CPT Codes:
84202

LOINC:

- 29763-0

Notes:

Elevated ZPP results are seen in early and late iron deficiency, the anemia of chronic disease, chronic lead poisoning, and erythropoietic protoporphyria. Elevated bilirubin or riboflavin and hemolyzed, clotted, or improperly aliquoted specimens may falsely increase the ZPP concentration.

A more specific test for free protoporphyrin is Porphyrins, Serum Total (0080429). Erythrocyte Porphyrin (EP), Whole Blood (0020610), measures free protoporphyrin and zinc protoporphyrin.

Zinc Transporter 8 Antibody

ZNT8

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
ELISA

Reported:
3-5 days

Synonyms:

- Autoimmune Diabetes

COLLECTION

Sample Type:
Serum

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
Room temperature or refrigerated 1 week, frozen 4 weeks.

Unacceptable Conditions:
Gross Hemolysis; Lipemia; Icterus; specimens other than serum

Rejection Criteria:
Gross Hemolysis; Lipemia; Icterus; specimens other than serum

PROCESSING

Test Code:
ZNT8

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Centrifuge and aliquot. Freeze. Send to CB frozen. Order Quest test code 93022

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Unacceptable Conditions:
Gross Hemolysis; Lipemia; Icterus; specimens other than serum

Rejection Criteria:
Gross Hemolysis; Lipemia; Icterus; specimens other than serum

Stability (from collection to initiation):
Room temperature or refrigerated 1 week, frozen 4 weeks.

RESULT INTERPRETATION

Units:
U/mL

Reference Interval:
< 15 U/mL

ADMINISTRATIVE

CPT Codes:
86341-90

COMPLETE VIEW

Available Stat:
No

Test Code:
ZNT8

Performing Lab:
Quest

Sendout:
Yes

Methodology:
ELISA

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
0.5 mL serum

Rejection Criteria:
Gross Hemolysis; Lipemia; Icterus; specimens other than serum

Unacceptable Conditions:
Gross Hemolysis; Lipemia; Icterus; specimens other than serum

Specimen Preparation:
Centrifuge and aliquot. Freeze. Send to CB frozen. Order Quest test code 93022

Units:
U/mL

Reference Interval:
< 15 U/mL

Synonyms:

- Autoimmune Diabetes

Stability (from collection to initiation):
Room temperature or refrigerated 1 week, frozen 4 weeks.

Reported:
3-5 days

CPT Codes:
86341-90

Zinc, 24 hour urine

ZINU

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Atomic Absorption Spectroscopy

Reported:
Test run Monday-Saturday. Turnaround time: 3-6 days.

Additional Information:
To convert µg/L to µmol/L (SI units) multiply by 0.0153.

COLLECTION

Sample Type:
24 hour urine collection

Collect:
Acid Wash Container Required

Amount to Collect:
Entire 24 hour urine output

Preferred Volume:
7 mL urine

Minimum Volume:
3 mL urine

Stability (from collection to initiation):
Room temperature 5 days, refrigerated 2 weeks, frozen at -20C 1 month.

Rejection Criteria:
Hemolysis or fecal contamination

PROCESSING

Test Code:
ZINU

Test Group:
Zinc

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Follow the detailed processing instructions for Trace Metal Analysis.

24 hour urine: After collection, be sure the urine is mixed well before transferring to the shipping container. To avoid contamination, carefully pour the designated amount of urine directly from the collection container into the acid wash shipping container. Prepare two (2) aliquots. Save (1) in storage rack. Discard after 1 week. Measure the remaining volume of urine AFTER the aliquot is taken and add volume of aliquots for total 24 hour urine volume or weigh the entire 24 hour collection, record total volume, then aliquot into acid washed shipping container. Freeze at -20C. Order Quest # 946.

Preferred Volume:
7 mL urine

Minimum Volume:
3 mL urine

Rejection Criteria:
Hemolysis or fecal contamination

Stability (from collection to initiation):
Room temperature 5 days, refrigerated 2 weeks, frozen at -20C 1 month.

RESULT INTERPRETATION

Units:
µg/24 hours

Reference Interval:
100-1200 µg/24 hours

Additional Information:
To convert µg/L to µmol/L (SI units) multiply by 0.0153.

ADMINISTRATIVE

CPT Codes:
84630-90

LOINC Codes:
5765-3

COMPLETE VIEW

Available Stat:
No

Test Code:
ZINU

Test Group:
Zinc

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Atomic Absorption Spectroscopy

Collect:
Acid Wash Container Required

Amount to Collect:
Entire 24 hour urine output

Sample Type:
24 hour urine collection

Preferred Volume:
7 mL urine

Minimum Volume:
3 mL urine

Rejection Criteria:
Hemolysis or fecal contamination

Specimen Preparation:
Follow the detailed processing instructions for Trace Metal Analysis.

24 hour urine: After collection, be sure the urine is mixed well before transferring to the shipping container. To avoid contamination, carefully pour the designated amount of urine directly from the collection container into the acid wash shipping container. Prepare two (2) aliquots. Save (1) in storage rack. Discard after 1 week. Measure the remaining volume of urine AFTER the aliquot is taken and add volume of aliquots for total 24 hour urine volume or weigh the entire 24 hour collection, record total volume, then aliquot into acid washed shipping container. Freeze at -20C. Order Quest # 946.

Units:
µg/24 hours

Reference Interval:
100-1200 µg/24 hours

Stability (from collection to initiation):
Room temperature 5 days, refrigerated 2 weeks, frozen at -20C 1 month.

Reported:
Test run Monday-Saturday. Turnaround time: 3-6 days.

Additional Information:
To convert µg/L to µmol/L (SI units) multiply by 0.0153.

CPT Codes:
84630-90

LOINC Codes:
5765-3

Zinc, random urine

ZINUR

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
Inductively-Coupled Plasma / Mass Spectrometry

Reported:
Set up 5x per week. Turn around 5-7 days.

Additional Information:
Zinc is an essential element involved in a myriad of enzyme systems including wound healing, immune function, and fetal development. Zinc measurements are used to detect and monitor industrial, dietary, and accidental exposure to zinc. Also, Zinc measurements may be used to evaluate health and monitor response to treatment.

Synonyms:

- Zn

COLLECTION

Patient Preparation:
Patient should refrain from taking vitamins or mineral supplements at least 3 days prior to sample collection.

Sample Type:
Random urine, second voided AM preferred

Collect:
Urine cup

Amount to Collect:
10 mL urine

Preferred Volume:
7 mL urine

Minimum Volume:
2 mL urine

Stability (from collection to initiation):
Room temperature 5 days, refrigerated 2 weeks, frozen at -20C 1 month.

Rejection Criteria:
Grossly decomposed urine. hemolysis or fecal contamination. Use of metal based preservative.

PROCESSING

Test Code:
ZINUR

Test Group:
Zinc

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Aliquot 7 mL. Store and transport sample at refrigerated. Order Quest #16502

Preferred Volume:
7 mL urine

Minimum Volume:
2 mL urine

Rejection Criteria:
Grossly decomposed urine. hemolysis or fecal contamination. Use of metal based preservative.

Stability (from collection to initiation):
Room temperature 5 days, refrigerated 2 weeks, frozen at -20C 1 month.

RESULT INTERPRETATION

Units:
µg/g Creatinine (mcg/g Creatinine)

Reference Interval:
2nd voided urine in non-exposed >= 18 year old: 100-810 µg/g creatinine

Additional Information:
Zinc is an essential element involved in a myriad of enzyme systems including wound healing, immune function, and fetal development. Zinc measurements are used to detect and monitor industrial, dietary, and accidental exposure to zinc. Also, Zinc measurements may be used to evaluate health and monitor response to treatment.

ADMINISTRATIVE

CPT Codes:
82570-90, 84630-90

LOINC Codes:
13473-4

COMPLETE VIEW

Available Stat:
No

Test Code:
ZINUR

Test Group:
Zinc

Performing Lab:
Quest

Sendout:
Yes

Methodology:
Inductively-Coupled Plasma / Mass Spectrometry

Patient Preparation:
Patient should refrain from taking vitamins or mineral supplements at least 3 days prior to sample collection.

Collect:
Urine cup

Amount to Collect:
10 mL urine

Sample Type:
Random urine, second voided AM preferred

Preferred Volume:
7 mL urine

Minimum Volume:
2 mL urine

Rejection Criteria:
Grossly decomposed urine. hemolysis or fecal contamination. Use of metal based preservative.

Specimen Preparation:
Aliquot 7 mL. Store and transport sample at refrigerated. Order Quest #16502

Units:
µg/g Creatinine (mcg/g Creatinine)

Reference Interval:
2nd voided urine in non-exposed >= 18 year old: 100-810 µg/g creatinine

Synonyms:

- Zn

Stability (from collection to initiation):
Room temperature 5 days, refrigerated 2 weeks, frozen at -20C 1 month.

Reported:
Set up 5x per week. Turn around 5-7 days.

Additional Information:
Zinc is an essential element involved in a myriad of enzyme systems including wound healing, immune function, and fetal development. Zinc measurements are used to detect and monitor industrial, dietary, and accidental exposure to zinc. Also, Zinc measurements may be used to evaluate health and monitor response to treatment.

CPT Codes:
82570-90, 84630-90

LOINC Codes:
13473-4

Zinc, Serum/Plasma

ZINC

ORDERING

Available Stat:
No

Performing Lab:
UC Irvine

Methodology:
Inductively Coupled Plasma Mass Spectroscopy (ICPMS)

Reported:
3-7 days.

COLLECTION

Patient Preparation:
The patient should refrain from taking vitamins or mineral supplements for at least 3 days prior to specimen collection.

Sample Type:
EDTA plasma preferred, serum accepted

Collect:
Navy blue top (EDTA) tube

Amount to Collect:
4 mL blood

Preferred Volume:
1 mL plasma or serum

Minimum Volume:
0.6 mL plasma or serum

Remarks:
Because Zinc levels display a circadian rhythm which peaks at 0900 and 1800, specimens should always be drawn at the same time of day.Be sure to gently mix the specimen promptly after phlebotomy.

Stability (from collection to initiation):
Room temperature 1 day, refrigerated 2 weeks, frozen at -20C 6 months.

Unacceptable Conditions:
Moderate to gross hemolysis.

Rejection Criteria:
Hemolysis

PROCESSING

Test Code:
ZINC

Test Group:
Zinc

Sendout:
Yes

Performing Lab:
UC Irvine

Specimen Preparation:
Spin down and separate plasma/serum from cells within 2 hours of collection. Pour the plasma into a plastic trace element shipping container and ship to China Basin sendouts frozen.

Preferred Volume:
1 mL plasma or serum

Minimum Volume:
0.6 mL plasma or serum

Unacceptable Conditions:
Moderate to gross hemolysis.

Rejection Criteria:
Hemolysis

Stability (from collection to initiation):
Room temperature 1 day, refrigerated 2 weeks, frozen at -20C 6 months.

RESULT INTERPRETATION

Units:
µg/dL (mcg/dL)

Reference Interval:
55 - 150 µg/dL (mcg/dL)

ADMINISTRATIVE

CPT Codes:
84630-90

LOINC Codes:
5763-8

COMPLETE VIEW

Available Stat:
No

Test Code:
ZINC

Test Group:
Zinc

Performing Lab:
UC Irvine

Sendout:
Yes

Methodology:
Inductively Coupled Plasma Mass Spectroscopy (ICPMS)

Patient Preparation:
The patient should refrain from taking vitamins or mineral supplements for at least 3 days prior to specimen collection.

Remarks:
Because Zinc levels display a circadian rhythm which peaks at 0900 and 1800, specimens should always be drawn at the same time of day.Be sure to gently mix the specimen promptly after phlebotomy.

Collect:
Navy blue top (EDTA) tube

Amount to Collect:
4 mL blood

Sample Type:
EDTA plasma preferred, serum accepted

Preferred Volume:
1 mL plasma or serum

Minimum Volume:
0.6 mL plasma or serum

Rejection Criteria:
Hemolysis

Unacceptable Conditions:
Moderate to gross hemolysis.

Specimen Preparation:
Spin down and separate plasma/serum from cells within 2 hours of collection. Pour the plasma into a plastic trace element shipping container and ship to China Basin sendouts frozen.

Units:
µg/dL (mcg/dL)

Reference Interval:
55 - 150 µg/dL (mcg/dL)

Stability (from collection to initiation):
Room temperature 1 day, refrigerated 2 weeks, frozen at -20C 6 months.

Reported:
3-7 days.

CPT Codes:
84630-90

LOINC Codes:
5763-8

Zonisamide

ZONI

ORDERING

Available Stat:
No

Performing Lab:
Quest

Methodology:
LC/MS/MS

Reported:
Run Tuesday and Friday evenings. Turnaround 3-6 days.

Additional Information:
Zonisamide is commonly used as an adjunct together with other conventional anticonvulsants. As multiple drugs are administered, it is important to monitor its level to optimize therapeutic effects, to assure compliance, and to avoid toxicity.

COLLECTION

Sample Type:
Serum

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Preferred Volume:
1 mL serum

Minimum Volume:
1 mL serum

Stability (from collection to initiation):
Room temperature 1 day, refrigerated 2 weeks, frozen at -20C 1.5 months

PROCESSING

Test Code:
ZONI

Sendout:
Yes

Performing Lab:
Quest

Specimen Preparation:
Order Quest test # 37852N

Preferred Volume:
1 mL serum

Minimum Volume:
1 mL serum

Stability (from collection to initiation):
Room temperature 1 day, refrigerated 2 weeks, frozen at -20C 1.5 months

RESULT INTERPRETATION

Units:
µg/mL (mcg/mL)

Reference Interval:
10-40 µg/mL

Additional Information:
Zonisamide is commonly used as an adjunct together with other conventional anticonvulsants. As multiple drugs are administered, it is important to monitor its level to optimize therapeutic effects, to assure compliance, and to avoid toxicity.

ADMINISTRATIVE

CPT Codes:
80203

LOINC Codes:
29620-2

COMPLETE VIEW

Available Stat:
No

Test Code:
ZONI

Performing Lab:
Quest

Sendout:
Yes

Methodology:
LC/MS/MS

Collect:
Gold top or Red top

Amount to Collect:
2 mL blood

Sample Type:
Serum

Preferred Volume:
1 mL serum

Minimum Volume:
1 mL serum

Specimen Preparation:
Order Quest test # 37852N

Units:
µg/mL (mcg/mL)

Reference Interval:
10-40 µg/mL

Stability (from collection to initiation):
Room temperature 1 day, refrigerated 2 weeks, frozen at -20C 1.5 months

Reported:
Run Tuesday and Friday evenings. Turnaround 3-6 days.

Additional Information:
Zonisamide is commonly used as an adjunct together with other conventional anticonvulsants. As multiple drugs are administered, it is important to monitor its level to optimize therapeutic effects, to assure compliance, and to avoid toxicity.

CPT Codes:
80203

LOINC Codes:
29620-2

ZSFG Comprehensive Drug Screen, Plasma/Serum

SFGDSP

ORDERING

Ordering Recommendations:

This test should only be used in cases where the Poison Control Center has advised the clinicians to order it. It should not be used routinely.

If a routine comprehensive urine drug screen is required, please order drug screen (general toxicology, not available stat)" in ApeX.

Available Stat:

No

Performing Lab:

ZSFG

Performed:

Monday - Friday

Methodology:

LC-MS/TOF

Reported:

1-3 days with prior approval.
Monday through Friday only.
Not available on weekends or holidays.

Additional Information:

This test should only be used in cases where the Poison Control Center has advised the clinicians to order it. It should not be used routinely.

If a routine comprehensive urine drug screen is required, please order drug screen (general toxicology, not available stat)" in ApeX.

Synonyms:

- Comprehensive serum drug screen
- comprehensive plasma drug screen
- High resolution drug screen

COLLECTION

Sample Type:

Serum or Plasma

Collect:

SST, Red top, Dark green top, or PST

Amount to Collect:

2 mL blood

Preferred Volume:

1 mL serum/plasma

Minimum Volume:

0.5 mL serum or plasma

Stability (from collection to initiation):

Refrigerated 1 week, frozen 1 month.

Storage/Transport Temperature:

Refrigerated

PROCESSING

Test Code:

SFGDSP

Test Group:

Drug screening

Sendout:

Yes

Performing Lab:

ZSFG

Specimen Preparation:

Processing departments at Parnassus, Mission Bay or Mount Zion:
The samples will be sent to ZSFG directly from the laboratory site where they are received.

If this is an add-on test, find already collected aliquot of plasma or serum.
If newly collected sample, aliquot plasma or serum.
Print the ApeX requisition. Place requisition and sample in a bag or box, refrigerated and call a STAT courier to take the sample to ZSFG.
Courier = AmTran
Courier phone number = (877)-243-8733
ZSFG address = UCSF Clinical Laboratory at ZSFG, Specimen Collection and Management, 1001 Potrero Avenue, San Francisco, CA 94110-3518. Tel: 628-206-8590.

The results will be emailed to the sendout department and will be scanned into ApeX (Monday through Friday only, not on holidays or weekends).

Preferred Volume:

1 mL serum/plasma

Minimum Volume:

0.5 mL serum or plasma

Stability (from collection to initiation):

Refrigerated 1 week, frozen 1 month.

Storage/Transport Temperature:

Refrigerated

RESULT INTERPRETATION

Reference Interval:

No compounds detected

Additional Information:

This test should only be used in cases where the Poison Control Center has advised the clinicians to order it. It should not be used routinely.

If a routine comprehensive urine drug screen is required, please order drug screen (general toxicology, not available stat)" in ApeX.

ADMINISTRATIVE

CPT Codes:

80307, G0483

LOINC:

- Comprehensive serum drug
- comprehensive plasma drug
- High resolution drug scre

COMPLETE VIEW

Available Stat:

No

Ordering Recommendations:

This test should only be used in cases where the Poison Control Center has advised the clinicians to order it. It should not be used routinely.

If a routine comprehensive urine drug screen is required, please order drug screen (general toxicology, not available stat)" in ApeX.

Test Code:

SFGDSP

Test Group:

Drug screening

Performing Lab:

ZSFG

Sendout:

Yes

Performed:

Monday - Friday

Methodology:

LC-MS/TOF

Collect:
SST, Red top, Dark green top, or PST

Amount to Collect:
2 mL blood

Sample Type:
Serum or Plasma

Preferred Volume:
1 mL serum/plasma

Minimum Volume:
0.5 mL serum or plasma

Specimen Preparation:
Processing departments at Parnassus, Mission Bay or Mount Zion:
The samples will be sent to ZSFG directly from the laboratory site where they are received.

If this is an add-on test, find already collected aliquot of plasma or serum.
If newly collected sample, aliquot plasma or serum.
Print the ApeX requisition. Place requisition and sample in a bag or box, refrigerated and call a STAT courier to take the sample to ZSFG.
Courier = AmTran
Courier phone number = (877)-243-8733
ZSFG address = UCSF Clinical Laboratory at ZSFG, Specimen Collection and Management, 1001 Potrero Avenue, San Francisco, CA 94110-3518. Tel: 628-206-8590.

The results will be emailed to the sendout department and will be scanned into ApeX (Monday through Friday only, not on holidays or weekends).

Reference Interval:
No compounds detected

Synonyms:

- Comprehensive serum drug screen
- comprehensive plasma drug screen
- High resolution drug screen

Storage/Transport Temperature:
Refrigerated

Stability (from collection to initiation):
Refrigerated 1 week, frozen 1 month.

Reported:
1-3 days with prior approval.
Monday through Friday only.
Not available on weekends or holidays.

Additional Information:
This test should only be used in cases where the Poison Control Center has advised the clinicians to order it. It should not be used routinely.

If a routine comprehensive urine drug screen is required, please order drug screen (general toxicology, not available stat)" in ApeX.

CPT Codes:
80307, G0483

LOINC:

- Comprehensive serum drug
- comprehensive plasma drug
- High resolution drug scre

ZSFG Comprehensive Drug Screen, Urine

SFGDU

ORDERING

Ordering Recommendations:

This test should only be used in cases where the Poison Control Center has advised the clinicians to order it. It should not be used routinely.

If a routine comprehensive urine drug screen is required, please order drug screen (general toxicology, not available stat)" in ApeX.

Available Stat:

No

Performing Lab:

ZSFG

Methodology:

LC-MS/TOF

Reported:

1-3 days with prior approval

Additional Information:

This test should only be used in cases where the Poison Control Center has advised the clinicians to order it. It should not be used routinely.

If a routine comprehensive urine drug screen is required, please order drug screen (general toxicology, not available stat)" in ApeX.

Synonyms:

- Comprehensive urine drug screen
- High resolution drug screen

COLLECTION

Sample Type:

Urine

Collect:

Sterile Container/urine cup

Amount to Collect:

2 mL

Preferred Volume:

2 mL

Minimum Volume:

1 mL

Remarks:

Preferably added on to the oldest urine sample available from the patient, but a fresh specimen can be collected.

Stability (from collection to initiation):

Refrigerated 1 week, frozen 1 month

Storage/Transport Temperature:

Refrigerated

PROCESSING

Test Code:

SFGDU

Test Group:

Drug Screening

Sendout:

Yes

Performing Lab:

ZSFG

Specimen Preparation:

Processing departments at Parnassus, Mission Bay or Mount Zion:
The samples will be sent to ZSFG directly from the laboratory site where they are received. They can be sent 24/7 if a courier is available.

If this is an add-on test, find already collected aliquot of urine.
If newly collected sample, aliquot urine.
Print the ApeX requisition. Place requisition and sample in a bag or box, refrigerated, and call a STAT courier to take the sample to ZSFG.
Courier = AmTran
Courier phone number = (877)-243-8733
ZSFG address = UCSF Clinical Laboratory at ZSFG, Specimen Collection and Management, 1001 Potrero Avenue, San Francisco, CA 94110-3518. Tel: 628-206-8590.

The results will be emailed to the sendout department and will be scanned into ApeX (Monday through Friday only, not on holidays or weekends).

Preferred Volume:

2 mL

Minimum Volume:

1 mL

Stability (from collection to initiation):

Refrigerated 1 week, frozen 1 month

Storage/Transport Temperature:

Refrigerated

RESULT INTERPRETATION

Reference Interval:

No compounds detected

Additional Information:

This test should only be used in cases where the Poison Control Center has advised the clinicians to order it. It should not be used routinely.

If a routine comprehensive urine drug screen is required, please order drug screen (general toxicology, not available stat)" in ApeX.

ADMINISTRATIVE

CPT Codes:

80307, G0483

COMPLETE VIEW

Available Stat:

No

Ordering Recommendations:

This test should only be used in cases where the Poison Control Center has advised the clinicians to order it. It should not be used routinely.

If a routine comprehensive urine drug screen is required, please order drug screen (general toxicology, not available stat)" in ApeX.

Test Code:

SFGDU

Test Group:

Drug Screening

Performing Lab:

ZSFG

Sendout:

Yes

Methodology:

LC-MS/TOF

Remarks:

Preferably added on to the oldest urine sample available from the patient, but a fresh specimen can be collected.

Collect:

Sterile Container/urine cup

Amount to Collect:

2 mL

Sample Type:
Urine

Preferred Volume:
2 mL

Minimum Volume:
1 mL

Specimen Preparation:
Processing departments at Parnassus, Mission Bay or Mount Zion:
The samples will be sent to ZSFG directly from the laboratory site where they are received. They can be sent 24/7 if a courier is available.

If this is an add-on test, find already collected aliquot of urine.
If newly collected sample, aliquot urine.
Print the ApeX requisition. Place requisition and sample in a bag or box, refrigerated, and call a STAT courier to take the sample to ZSFG.
Courier = AmTran
Courier phone number = (877)-243-8733
ZSFG address = UCSF Clinical Laboratory at ZSFG, Specimen Collection and Management, 1001 Potrero Avenue, San Francisco, CA 94110-3518. Tel: 628-206-8590.

The results will be emailed to the sendout department and will be scanned into ApeX (Monday through Friday only, not on holidays or weekends).

Reference Interval:
No compounds detected

Synonyms:

- Comprehensive urine drug screen
- High resolution drug screen

Storage/Transport Temperature:
Refrigerated

Stability (from collection to initiation):
Refrigerated 1 week, frozen 1 month

Reported:
1-3 days with prior approval

Additional Information:
This test should only be used in cases where the Poison Control Center has advised the clinicians to order it. It should not be used routinely.

If a routine comprehensive urine drug screen is required, please order drug screen (general toxicology, not available stat)" in ApeX.

CPT Codes:
80307, G0483

ZSFG Ethylene Glycol

MOLT

ORDERING

Approval Required:
Yes

Available Stat:
No

Performing Lab:
ZSFG

Methodology:
Catachem Inc enzymatic ethylene glycol assay

Reported:
<24 hours with prior approval

Additional Information:
This test should only be used in cases where the turn-around time for the ARUP ethylene glycol test is not adequate and/or when the Poison Control Center advises the clinicians to order it. It should not be used routinely.

If clinicians would like to order this test, please follow the procedure below:

1. Look for the oldest serum sample in a gold top tube that we have from the patient in question. Keep them refrigerated. If we don't have any samples, request a new serum sample collected in a gold top tube.

2. Once you find the sample/receive the sample, email the clinician the ZSFG requisition that can be found at the link below and have them complete the top section with the patient information and the contact information. Once they email the requisition form back, complete the bottom part of the form including adding the accession number of each sample and check the ethylene glycol test.

3. Add a “MOLT" on to the accession numbers of each of the samples that will be sent. In the description, please write “ZSFG ethylene glycol."

4. Aliquot samples if necessary - see preferred volume information.

5. Package the samples up in a box and attach the address label at the link below.

6. Call a STAT courier to have the samples picked up and taken to ZSFG.

The results will be called or emailed to the contact information given on the requisition form. The report will be emailed or faxed to the sendout department and will be scanned into ApeX (Monday through Friday only, not on holidays or weekends).

ZSFG Requisition

ZSFG address label

Supplemental Test Request Form Required:
Yes

COLLECTION

Sample Type:
Serum

Collect:
Gold top

Amount to Collect:
4 mL blood

Preferred Volume:
2 mL serum

Minimum Volume:
0.5 mL serum

Remarks:
Preferably added on to the oldest serum sample available from the patient in a gold top tube.

If none available, request fresh specimen. Collect serum in a gold top tube.

Stability (from collection to initiation):
After separation from cells: Refrigerated 3 months

PROCESSING

Test Code:
MOLT

Test Group:
Drug screening

Sendout:
Yes

Performing Lab:
ZSFG

Specimen Preparation:
Take already collected aliquot of serum and store refrigerated.

If newly collected sample, aliquot serum and store refrigerated.

Preferred Volume:
2 mL serum

Minimum Volume:
0.5 mL serum

Stability (from collection to initiation):
After separation from cells: Refrigerated 3 months

RESULT INTERPRETATION

Reference Interval:
Negative

Additional Information:
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ZSFG Requisition

ZSFG address label

ADMINISTRATIVE

CPT Codes:
82693

COMPLETE VIEW

Approval Required:
Yes

Available Stat:
No

Test Code:
MOLT

Test Group:
Drug screening

Performing Lab:
ZSFG

Sendout:
Yes

Methodology:
Catachem Inc enzymatic ethylene glycol assay

Remarks:
Preferably added on to the oldest serum sample available from the patient in a gold top tube.

If none available, request fresh specimen. Collect serum in a gold top tube.

Collect:
Gold top

Amount to Collect:
4 mL blood

Sample Type:
Serum

Preferred Volume:
2 mL serum

Minimum Volume:
0.5 mL serum

Specimen Preparation:
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If newly collected sample, aliquot serum and store refrigerated.

Reference Interval:
Negative

Stability (from collection to initiation):
After separation from cells: Refrigerated 3 months

Reported:
<24 hours with prior approval

Additional Information:
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ZSFG Requisition

ZSFG address label

CPT Codes:
82693

Supplemental Test Request Form Required:

Yes