Backus JDOS Tests

ABO/RH — ABOT

Testing performed daily.

Specimen Container:
Lavender EDTA

Preferred Specimen:
Whole Blood

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

ACETAMINOPHEN — ACET

Testing performed daily

CPT Code(s): 82003

Specimen Container:
LIGHT GREEN

Preferred Specimen:
Plasma

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to date reference range

ACETONE, QUANTITATIVE — ACTN

Testing performed daily.

CPT Code(s): 82010

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Acetylcholine Receptor Binding Antibody — 206X

CPT Code(s): 83519

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.2 mL minimum)

Instructions:
Serum is the only acceptable sample.

Transport Temperature:
Room temperature

Methodology:
Radioimmunoassay

Reference Range:

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

Clinical Use:
Myasthenia gravis (MG) is a neuromuscular disorder characterized by muscle weakness, most commonly due to autoantibody-mediated loss of functional acetylcholine receptors (AChR) in the neuromuscular junction. This assay aids in the differential diagnosis of MG-like muscle weakness, in differentiating between generalized MG and ocular MG, and in monitoring therapeutic response. If binding antibodies are negative, assays for blocking and modulating antibodies should be considered.

Acetylcholine Receptor Blocking Antibody 34459X

CPT Code(s): 83519

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.1 mL minimum)

Instructions:
Serum is the only acceptable sample.

Transport Temperature:
Room temperature

Methodology:
Radioimmunoassay

Reference Range:
<15% of inhibition

Clinical Use:
Myasthenia gravis (MG) is a neuromuscular disorder characterized by muscle weakness, most commonly due to autoantibody-mediated loss of functional acetylcholine receptors (AChR) in the neuromuscular junction. This assay is most useful when the acetylcholinesterase receptor modulating antibodies are positive. The assay for blocking antibodies is useful in monitoring response to therapy.

Acetylcholine Receptor Modulating Antibody 26474X

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. 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 Code(s): 83519

Specimen Container:
No additive serum separator tube

Preferred Specimen:
1 mL serum (0.3 mL minimum)

Transport Temperature:
Refrigerated

Methodology:
Radiobinding Assay

Reference Range:
< 32% binding inhibition

Clinical Use:
Myasthenia gravis (MG) is a neuromuscular disorder characterized by muscle weakness, most commonly due to autoantibody-mediated loss of functional acetylcholine receptors (AChR) in the neuromuscular junction. Modulating Antibody to AChR causes weakness by inhibiting or modulating binding to the receptors.

ACID FAST SMEAR AFBS

Testing performed daily.

Specimen Container:
Glass Slide

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

ACTH, Plasma 211X

This highly sensitive assay is able to differentiate low levels seen in some Cushing's syndrome patients from normal. It is recommended for most ACTH determinations.

CPT Code(s): 82024

Specimen Container:
EDTA (lavender-top)

Preferred Specimen:
1.5 mL plasma (0.5 mL minimum)

Instructions:
Draw specimens between 7AM and 10AM. If drawn during any other time, the reference ranges do not apply. Transfer the plasma to a plastic transport tube and ship frozen. Do not thaw.

Transport Temperature:
Frozen, stable 28 days

Reject Criteria:
Received room temperature; Received refrigerated

Methodology:
Immunoassay

Reference Range:
Adult Males: 7 - 50 pg/mL

Adult Females:	5 - 27 pg/mL

Clinical Use:
Determination of ACTH is useful in differentiating between primary and secondary adrenocortical hypo-and hyperfunctional disorders: Addison's disease, Cushing's syndrome, adrenal carcinoma, ectopic ACTH syndrome, and nodular hyperplasia.

Actin (Smooth Muscle) Antibody (IgG) 15043X

CPT Code(s): 83516

Specimen Container:
No additive serum separator tube

Preferred Specimen:
1 mL serum

Transport Temperature:
Refrigerated

Reject Criteria:
Microbially contaminated serum; Grossly hemolyzed specimens; Lipemic specimens; specimens containing heavy, visible particulate

Methodology:
Enzyme Linked Immunosorbent Immunoassay

Reference Range:

Negative:	<20 units
Weak postitive:	20-30 units
Positive:	>30

Clinical Use:
Actin is the major antigen to which smooth muscle antibodies react in autoimmune hepatitis. F-Actin IgG antibodies are found in 52-85% of patients with autoimmune hepatitis (AIH) or chronic active hepatitis and in 22% of patients with primary bilary cirrhosis (PBC). Anti-actin antibodies have been reported in 3-18% of sera from normal healthy controls.

Acylcarnitine, Plasma 14531X

For New York patient testing, use test code 14846X.

CPT Code(s): 82017

Preferred Specimen:
1 mL sodium heparin plasma

Instructions:
Date of birth is required.

Transport Temperature:
Frozen, stable 1 month

Reject Criteria:
Received refrigerated or room temperature

Methodology:
Liquid Chromatography Tandem Mass Spectrometry

Reference Range:
Iso-/Butrylcarnitine, C4:

0-7 days:	<0.33 nMol/mL
8 days-7 years:	<1.22 nMol/mL

8-17 years:	<0.33 nMol/mL
>=18 years:	<0.38 nMol/mL
Methylmalonylcarnitine, C4DC:	
0 days-17 years:	<0.02 nMol/mL
>=18 years:	<0.03 nMol/mL
OH-Butyrylcarnitine, C4OH:	
0-7 days:	<0.04 nMol/mL
8 days-7 years:	<0.05 nMol/mL
8-17 years:	<0.03 nMol/mL
>=18 years:	<0.04 nMol/mL
Isovaleryl-/2-methylbutyrylcarnitine, C5:	
1: 0-7 days:	<0.35 nMol/mL
8 days-7 years:	<0.30 nMol/mL
8-17 years:	<0.29 nMol/mL
>=18 years:	<0.30 nMol/mL
Tiglyl-/ Methylcrotonylcarnitine, C5:	
0-7 years:	<0.02 nMol/mL
8-17 years:	<0.03 nMol/mL
>=18 years:	<0.03 nMol/mL
Glutarylcarnitine, C5DC:	
0-7 years:	<0.04 nMol/mL
8-17 years:	<0.06 nMol/mL
>=18 years:	<0.05 nMol/mL
OH-Isovalerylcarnitine, C5OH:	
0-7 years:	<0.03 nMol/mL
8-17 years:	<0.04 nMol/mL
>=18 years:	<0.03 nMol/mL
Hexanoylcarnitine, C6:	
0-7 days:	<0.09 nMol/mL
8 days-7 years:	<0.10 nMol/mL
8-17 years:	<0.06 nMol/mL
>=18 years:	<0.09 nMol/mL
Adipoylcarnitine, C6DC:	<0.02 nmol/mL
OH-Hexanoylcarnitine, C6OH:	
0-7 days:	<0.02 nMol/mL
8 days-7 years:	<0.05 nMol/mL
8-17 years:	<0.02 nMol/mL
>=18 years:	<0.02 nMol/mL
Octanoylcarnitine, C8:	
0-7 days:	<0.27 nMol/mL
8 days-7 years:	<0.35 nMol/mL
8-17 years:	<0.52 nMol/mL
>=18 years:	<0.65 nMol/mL
Octenoylcarnitine, C8:1:	
0-7 days:	<1.24 nMol/mL
8 days-7 years:	<1.15 nMol/mL
8-17 years:	<1.09 nMol/mL
>=18 years:	<1.26 nMol/mL
Suberylcarnitine, C8DC:	
0-7 days:	<0.03 nMol/mL
8 days-7 years:	<0.02 nMol/mL
8-17 years:	<0.03 nMol/mL
>=18 years:	<0.03 nMol/mL
Decanoylcarnitine, C10:	
0-7 days:	<0.21 nMol/mL
8 days-7 years:	<0.33 nMol/mL
8-17 years:	<0.34 nMol/mL
>=18 years:	<0.51 nMol/mL
Decenoylcarnitine, C10:1:	
0-7 days:	<0.40 nMol/mL
8 days-7 years:	<0.64 nMol/mL
8-17 years:	<0.81 nMol/mL
>=18 years:	<0.81 nMol/mL
Dodecanoylcarnitine, C12:	

0-7 years:	<0.13 nMol/mL
8-17 years:	<0.12 nMol/mL
>=18 years:	<0.12 nMol/mL
Dodecenoylcarnitine, C12:1:	
0-7 days:	<0.11 nMol/mL
8 days-17 years:	<0.19 nMol/mL
>=18 years:	<0.19 nMol/mL
OH-Dodecanoylcarn, C12OH:	<0.02 nMol/mL
Tetradecanoylcarnitine,C14:	
0-7 years:	<0.06 nMol/mL
8-17 years:	<0.02 nMol/mL
>=18 years:	<0.03 nMol/mL
Tetradecenoylcarnitine, C14:1:	
0-7 days:	<0.30 nMol/mL
8 days-7 years:	<0.48 nMol/mL
8-17 years:	<0.45 nMol/mL
>=18 years:	<0.43 nMol/mL
Tetradecadienoylcarnitine, C14:2:	
0-7 days:	<0.05 nMol/mL
8 days-7 years:	<0.09 nMol/mL
8-17 years:	<0.06 nMol/mL
>=18 years:	<0.06 nMol/mL
OH-Tetradecanoylcarn,C14OH:	<0.02 nMol/mL
OH-Tetradecenoyl, C14:1-OH:	<0.02 nmol/mL
Hexadecanoylcarnitine, C16:	
0-7 days:	<0.28 nMol/mL
8 days-7 years:	<0.17 nMol/mL
8-17 years:	<0.13 nMol/mL
>=18 years:	<0.14 nMol/mL
Hexadecenoylcarnitine, C16:1:	
0-7 days:	<0.07 nMol/mL
8 days-7 years:	<0.05 nMol/mL
8-17 years:	<0.04 nMol/mL
>=18 years:	<0.05 nMol/mL
OH-Hexadecanoylcarn, C16OH:	<0.02 nmol/mL
OH-Hexadecenoyl, C16:1-OH:	<0.02 nmol/mL
Stearoylcarnitine, C18:	
0-7 days:	<0.06 nMol/mL
8 days-7 years:	<0.08 nMol/mL
8-17 years:	<0.07 nMol/mL
>=18 years:	<0.11 nMol/mL
Oleoylcarnitine, C18:1:	
0-7 days:	<0.20 nMol/mL
8 days-7 years:	<0.27 nMol/mL
8-17 years:	<0.25 nMol/mL
>=18 years:	<0.24 nMol/mL
Linoleoylcarnitine, C18:2:	
0-7 days:	<0.15 nMol/mL
8 days-7 years:	<0.14 nMol/mL
8-17 years:	<0.12 nMol/mL
>=18 years:	<0.13 nMol/mL
OH-Oleoylcarn, C18:1-OH:	<0.02 nmol/mL
OH-Lineleoylcarn, C18:2-OH:	<0.02 nmol/mL

Adenovirus Antibody 686X

CPT Code(s): 86603

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.5 mL minimum)

Transport Temperature:
Room temperature, stable 7 days

Reject Criteria:
Hemolysis

Methodology:
Complement Fixation

Reference Range:

<1:8 Antibody	Not Detected
> or = 1:8 Antibody	Detected

Single titers of > or = 1:64 are 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.

Clinical Use:
Adenoviruses can cause acute respiratory and conjunctivitis, as well as infantile diarrhea.

AEROBIC/ANAEROBIC CULTURE WDAN

Testing performed daily.

Specimen Container:
Culturette & Anaerobic Transport

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

AFB CULTURE AFBC

Testing performed daily.

Specimen Container:
Sterile Container

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

ALBUMIN ALB

Testing performed daily

CPT Code(s): 82040

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to date reference range

ALBUMIN, SYNOVIAL FLUID ALBSY

Testing performed daily

Specimen Container:
Sterile Fluid Container

Preferred Specimen:
Fluid

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to date reference range

Alcohol, Methyl, Blood 643X

CPT Code(s): 84600

Specimen Container:
Potassium oxalate (gray-top)

Preferred Specimen:
1 mL whole blood (0.5 mL minimum)

Instructions:
Do not use alcohol solutions as a skin preparation for drawing specimens. Use non-alcohol solutions such as betadine® or zephiran®. Keep specimen container tightly sealed. Do not use gel barrier tubes.

Transport Temperature:
Room temperature

Methodology:
Chromatography

Reference Range:
None Detected
Reportable Limit:5 mg/dL
Potentially Toxic:Any Detectable Amount

Aldolase 227X

CPT Code(s): 82085

Specimen Container:
No additive (red-top)

Preferred Specimen:
2 mL serum (0.5 mL minimum)

Instructions:
Hemolyzed specimens are not acceptable.

Transport Temperature:
Refrigerated, stable 10 days

Reject Criteria:
Received room temperature

Reference Range:

<24 months:	3.4 - 11.8 U/L
2 to 17 years:	3.4 - 8.6 U/L
Adults:	< or = 8.1 U/L

Clinical Use:
Aids in the diagnosis of primary disease of skeletal muscle; myocardial infarction and viral hepatitis.

Aldosterone, LC/MS/MS 17181X

CPT Code(s): 82088

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum

Instructions:
SST tubes are unacceptable. Draw blood in a no-additive (red-top) tube. Separate serum after clotting. Ship serum refrigerated or frozen. Do not submit glass tubes. Draw "upright" samples at least 1/2 hour after patient sits up.

Transport Temperature:
Refrigerated

Methodology:
Liquid Chromatography Tandem Mass Spectrometry

Reference Range:

Adult:	
Upright 8:00-10:00 am:	28 ng/dL or less
Upright 4:00-6:00 pm:	21 ng/dL or less
Supine 8:00-10:00 am:	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 or less
10-13 years:	21 ng/dL or less
14-17 years:	35 ng/dL or less
Premature (31-35 months):	144 ng/dL
Term infants:	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 dL females:	4-32 ng/

** Pediatric data from J Clin Endocrinol Metab. 1992;75: 1491-1496 and J Clin Endocrinol Metab. 1989;69: 1133-1136.

Clinical Use:

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 position, some physicians prefer measurement of 24-hour urine concentrations for aldosterone.

Measurement of aldosterone by liquid chromatography-tandem mass spectrometry (LC/MS/MS) overcomes interference issues frequently encountered when using direct immunoassays in clinical situations such as chronic renal failure or in pediatric applications. Matching or exceeding the performance (analytical sensitivity, specificity, accuracy and precision) of organic solvent extraction/ chromatography/ radioimmunoassays, LC/MS/MS

provides a gold standard reference method for measurement of steroid hormones.

Aldosterone/Plasma Renin Activity Ratio, LC/MS/MS 16845

CPT Code(s): 84244; 82088

Specimen Container:
EDTA (lavender-top)

Preferred Specimen:
1.8 mL plasma

Transport Temperature:
Frozen, stable 28 days

Reject Criteria:
Plasma collected in Plasma separator tube is unacceptable.

Methodology:
Liquid Chromatography Tandem Mass Spectrometry

Reference Range:

PRA,LC/MS/MS:	0.25-5.82	ng/mL/h	
ALDO/PRA Ratio:	0.9-28.9	Ratio	
Aldosterone: Adults:	Upright 8:00-10:00 am	< or = 28	ng/dL
	Upright 4:00-6:00 pm	< or = 21	ng/dL
	Supine 8:00-10:00 am	3-16	ng/dL
Pediatric	1-12 months**:	2-70	ng/dL
	1-4 years**:	2-37	ng/dL
	5-9 years:	< or = 9	ng/dL
	10-13 years:	< or = 21	ng/dL
	14-17 years:	< or = 35	ng/dL
	Premature infants (31-35 weeks)**:	< or = 144	ng/dL
	Term infants**:	< or = 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

**Pediatric data from J Clin Endocrinol Metab. 1992;75:1491 and J Clin Endocrinol Metab. 1989; 69;1133-1136.

Clinical Use:
The aldosterone-renin ratio is used to screen for primary aldosteronism.

ALKALINE PHOSPHATASE ALK

Testing performed daily

CPT Code(s): 84075

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:

Refrigerated

Reference Range:
Call Lab for up-to date reference range

Alkaline Phosphatase, Bone Specific 29498X

CPT Code(s): 84075

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.3 mL minimum)

Transport Temperature:
Frozen

Reject Criteria:
Room temperature or refrigerated Gross hemolysis

Methodology:
Immunoenzymatic

Reference Range:

mcg/L**	Females	Males
0 - 1 month:	Not Established	
2 - 24 months:	25.4 - 124.0	25.4 - 124.0
25 months - 5 years:	Not Established	
6 - 9 years:	41.0 - 134.6	41.0 - 134.6
10 - 13 years:	24.2 - 154.2	43.8 - 177.4
14 - 17 years:	10.5 - 75.2	13.7 - 128.0
18 - 29 years:	4.7 - 17.8	8.4 - 29.3
30 - 39 years:	5.3 - 19.5	7.7 - 21.3
40 - 49 years:	5.0 - 18.8	7.0 - 18.3
50 - 68 years:		7.6 - 14.9
50 - 76 years:	5.6 - 29.0	
Premenopausal females:		
35 - 45 years:	5.0 - 18.2	

**Pediatric data from Int J Biol Markers (1996) 11:159-164

Clinical Use:
This test is used for the therapeutic monitoring of postmenopausal osteoporosis and Paget's disease.

ALPHA FETOPROTEIN, TUMOR MARKER AFP

Testing performed daily.

CPT Code(s): 82105

Specimen Container:
Gold

Preferred Specimen:
Serum

Instructions:
Collect on male & non-pregnant females.

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Alpha-1-Antitrypsin (AAT) Mutation Analysis 15340X

For New York patient testing, use test code 15341X.

This test was developed and its performance characteristics have been determined by Quest Diagnostics Nichols Institute. Performance characteristics refer to the analytical performance of the test.

CPT Code(s): 83891, 83900, 83892 x2, 83909, 83912

Specimen Container:
EDTA (lavender top)

Preferred Specimen:
5 mL whole blood (minimum 3 mL)

Instructions:
Normal phlebotomy procedure. Store and ship ambient immediately, do not freeze.

Transport Temperature:
Whole blood: room temperature, stable 8 days; serum; refrigerated, stable 7 days

Methodology:
Fluorescent Restriction Fragment Length Polymorphism

Reference Range:
The alpha-1 antitrypsin (AAT) deficiency is a relatively common autosomal recessive disorder. The two most frequent deficient variants/alleles are designated Z and S. The normal allele is designated M. The SS, ZS and ZZ genotypes are most important clinically and are associated with decreased AAT serum levels of 50-60%, 35-40% and 10-20%, respectively. It has been reported that individuals with ZZ or ZS genotypes are at increased risk of developing emphysema in adult life and liver disease in childhood. The AAT levels are decreased in the SS, MZ and MS genotypes, but are apparently adequate to protect the lungs in the vast majority of affected individuals. The Z and S alleles (variants) are detected by amplification of the relevant alpha-1 antitrypsin (PI) gene regions by polymerase chain reaction (PCR), followed by digestion with Taq I restriction enzyme and capillary electrophoresis. This assay does not test for the presence of other mutations within the PI gene or non-genetic causes of AAT deficiency. Since genetic variation and other problems can affect the accuracy of the direct polymorphism testing, the results should always be interpreted in light of clinical and familial data.

Clinical Use:
This test identifies individuals with the alpha-1 antitrypsin (AAT) S and Z mutations. It can confirm the clinical diagnosis of AAT deficiency in affected individuals and can identify individuals at risk to be carriers of AAT deficiency.

Alpha-1-Antitrypsin (AAT) Phenotype 853X

CPT Code(s): 82104

Preferred Specimen:
1 mL serum (minimum 0.1 mL)

Transport Temperature:
Refrigerated, stable 7 days

Methodology:
Isoelectrofocusing

Clinical Use:
More than 40 phenotypes of AAT exist. The inherited deficiency, seen most often as the ZZ, SS and SZ phenotypes, is associated with neonatal hepatitis and infantile cirrhosis. In adults, these phenotypes are associated with chronic lung disease, including emphysema and chronic bronchitis.

Alpha-1-Antitrypsin (AAT) Quantitation 235X

CPT Code(s): 82103

Specimen Container:
No additive serum separator tube

Preferred Specimen:
1 mL serum (0.5 mL minimum)

Instructions:
Spin and separate serum immediately. Overnight fasting is preferred.

Transport Temperature:
Room temperature, stable 3 days

Methodology:
Nephelometry

Reference Range:

Adults:	83-199 mg/dL

Clinical Use:
Alpha-1-Antitrypsin level may be increased in normal pregnancy and in several diseases including chronic pulmonary disease; hereditary angioedema; renal, gastric, liver and pancreatic diseases; diabetes; carcinomas and rheumatoid diseases. Alpha-1-Antitrypsin may be decreased in emphysema, hepatic cirrhosis, respiratory distress syndrome of the newborn, nephrosis, malnutrition and cachexia.

Alpha-Fetoprotein, Tumor Marker 237X

Note: For use in cancer testing only. See Maternal Serum Screen 1, 2, or 3 for prenatal testing of maternal serum.

CPT Code(s): 82105

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.2 mL minimum)

Instructions:
Grossly hemolyzed specimens are unacceptable.

Transport Temperature:
Room temperature, stable 1 week

Methodology:
Immunoassay

Reference Range:

	Males(ng/mL)	Females(ng/mL)
0-1 month:	0.5 - 16387.0	0.5 - 18964.0
1-11 months:	0.5 - 28.3	0.5 - 77.0
1-3 years:	0.5 - 7.9	0.5 - 11.1

4 years or greater: Pediatric range is based on full term neonates, values for premature infants may be higher. Ranges adopted from: SJ Soldin, et al. "Pediatric Reference Ranges." Third ed. AACC press (1999). This test was performed using the Siemens (DPC) chemiluminescent method. Values obtained from different assay methods cannot be used inter-changeably. AFP levels, regardless of value, should not be interpreted as absolute evidence of the presence or absence of disease.	<6.1	<6.1

Clinical Use:
Elevation of serum AFP above values found in healthy individuals occurs in several malignant diseases, most notably nonseminomatous testicular cancer and primary hepatocellular carcinoma. AFP is not recommended as a screening procedure to detect cancer in the general population.

ALT ALT

Testing performed daily.

CPT Code(s): 84460

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

AMMONIA AMM

Testing performed daily.

CPT Code(s): 82140

Specimen Container:
LAVENDER (ON ICE)

Preferred Specimen:
Whole Blood

Instructions:
Immediately place tube on ice & tansport to lab.

Transport Temperature:
On ice

Reference Range:
Call Lab for up-to-date reference range.

AMPHETAMINES SCREEN, URINE AMPU

Testing performed daily.

Specimen Container:
Sterile Container

Preferred Specimen:
Urine

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

AMYLASE AMY

Testing performed daily.

CPT Code(s): 82150

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

AMYLASE, 2 HOUR URINE AMY2

Testing performed daily.

CPT Code(s): 82150

Specimen Container:
Sterile Container

Preferred Specimen:
Urine

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

AMYLASE, RANDOM URINE AMYRU

Testing performed daily

CPT Code(s): 82150

Specimen Container:

Gold

Preferred Specimen:
Serum or Plasma

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to date reference range

ANAchoiceâ„¢ Screen with Reflex to Titer, IFA 249X

If ANAchoiceâ„¢ Screen is positive, ANA Titer and Pattern will be performed at an additional charge (CPT code(s): 86039).

CPT Code(s): 86038

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.5 mL minimum)

Instructions:
Overnight fasting is preferred.

Transport Temperature:
Room temperature, stable 7 days

Reject Criteria:
Alternate samples, grossly lipemic, hemolysed, icteric samples.

Methodology:
Immunoassay

Reference Range:
See individual assays.

Clinical Use:
Antinuclear antibodies are present in systemic lupus erythematosus, Sjögren's syndrome, mixed connective tissue disease, scleroderma, liver disease, drug induced lupus, and rheumatoid arthritis.

Anaplasma phagocytophilum Antibodies (IgG, IgM) 34464X

This test was developed and its performance characteristics have been determined by Quest Diagnostics. 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 Code(s): 86666 (x2)

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.2 mL minimum).

Transport Temperature:
Refrigerated

Methodology:

Immunofluorescence Assay

Reference Range:

IgG:	1:64
IgM:	1:120

Clinical Use:
Anaplasma phagocytophilum is a tick-borne agent that causes an acute febrile illness that often resembles Rocky Mountain spotted fever.

ANCA Vasculitides 36733X

Includes: Myeloperoxidase Antibody and Proteinase-3 Antibody

CPT Code(s): 86021 (x2)

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.3 mL minimum).

Instructions:
Avoid hemolysis. Overnight fasting is preferred.

Transport Temperature:
Refrigerated

Reject Criteria:
Gross hemolysis; Gross lipemia

Methodology:
Enzyme Immunoassay

Reference Range:
For both:

< 6 U/ml Negative	Negative
6 - 9 U/ml	Equivocal
> 9 U/ml	Positive

Clinical Use:
Testing for anti-neutrophil cytoplasmic antibodies (P-ANCA and/or C-ANCA) has been found to be useful in establishing the diagnosis of suspected vascular diseases (e.g., crescentic glomerulonephritis, microscopic polyarteritis and Churg-Strauss syndrome), bowel disease (Crohn's Disease, ulcerative colitis, primary sclerosing cholangitis, and autoimmune hepatitis) as well as with other autoimmune diseases (drug-induced lupus, SLE, Felty's syndrome). ANCA has classically been divided into C-ANCA and P-ANCA depending on the immunofluorescent pattern observed. More recently the specific antigens responsible for these patterns have been described and isolated. The antigen that gives the C-ANCA pattern is proteinase-3 (PR-3). Multiple antigens are responsible for P-ANCA pattern, the principle antigen being myeloperoxidase (MPO). Patients with vascular diseases will generally have either a C-ANCA pattern or P-ANCA pattern, and give positive results in specific tests for PR-3 or MPO. Patients with bowel disease have been shown to have antibodies that give a P-ANCA or C-ANCA pattern. These antibodies however, may not be directed towards MPO. Patients with drug induced lupus, etc., often present with a P-ANCA pattern that is associated with antibodies against MPO.

Androstenedione, LC/MS/MS 17182X

CPT Code(s): 82157

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum

Instructions:
SST tubes are unacceptable. Draw blood in a no additive (red-top) tube. Separate serum after clotting. Ship serum refrigerated or frozen. Do not submit glass tubes. An early morning specimen is preferred.

Transport Temperature:
Refrigerated

Reject Criteria:
Received room temperature

Methodology:
Liquid Chromatography Tandem Mass Spectrometry

Reference Range:

Infants (1-5 days):		
Premature (31-35 weeks)**:	<or= 480 ng/dL	
Term (36-42 weeks)**:	<or= 290 ng/dL	
Pediatrics:		
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	
Tanner Stages:	Males	Females
II - III:	17-82 ng/dL	43-180 ng/dL
IV - V:	57- 50 ng/dL	73-220 ng/dL
Adult Females:		
Follicular:	35-250 ng/dL	
Mid-cycle:	60-285 ng/dL	
Luteal:	30-235 ng/dL	
Postmenopausal:	20 - 75 ng/dL	
Adult Males:		
18-30 years:	50-220 ng/dL	
31-50 years:	40-190 ng/dL	
51-60 years:	50-220 ng/dL	
60 yrs and older:	Not established	

**Pediatric data from J Clin Endocrinol Metab. 1991;73:674-686 and J Clin Endocrinol Metab. 1989;69;113-1136.

Clinical Use:
Androstenedione may be useful in evaluating patients with androgen excess and managing patients with congenital adrenal hyperplasia (CAH).

Angiotensin Converting Enzyme (ACE) 683X

CPT Code(s): 82164

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.2 mL minimum)

Instructions:
Centrifuge refrigerated within 1 hour of collection. Separate serum from clot. EDTA is not acceptable.

Transport Temperature:
Refrigerated

Reject Criteria:
Received EDTA plasma

Methodology:
Kinetic

Reference Range:

Pediatric range: 6 months-17 years:	13-100 U/L
Adult range:	9-67 U/L

Clinical Use:
Increased in sarcoidosis, Gaucher's disease and lymphoangiomyomatosis.

ANTIBODY SCREEN ABS

Testing performed daily.

Specimen Container:
Lavender EDTA

Preferred Specimen:
Whole Blood

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

ANTI-FACTOR Xa FACXA

Testing performed daily.

Specimen Container:
Blue (sodium citrate)

Preferred Specimen:
Plasma

Instructions:
Specimen must be tested within one hour after collection.

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

ANTI-NUCLEAR ANTIBODY W/REFLEX ANA

Testing performed Monday - Friday.

Preferred Specimen:
Serum

Transport Temperature:
Frozen

Reference Range:
Call Lab for up-to-date reference range.

ANTI-PLATELET ANTIBODY ANPL

Testing performed daily.

Specimen Container:
4 Lavender and 1 Red (non-gel)

Preferred Specimen:
Serum or Plasma

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

Antistreptolysin-O 265X

CPT Code(s): 86060

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.5 mL minimum)

Instructions:
Avoid hemolysis. Serum should be separated immediately and shipped refrigerated. Avoid freezing and thawing. Overnight fasting is preferred.

Transport Temperature:
Refrigerated

Reject Criteria:
Received room temperature

Methodology:
Immunoturbidometry

Reference Range:

Adults:	200 or less IU/mL
Pediatrics:	Less than or equal to 17 years <150 IU/mL

Clinical Use:
Antistreptolysin-O is useful in confirming exposure to Streptococcus pyrogenes in the absence of other laboratory evidence.

Antithrombin III Activity 216X

CPT Code(s): 85300

Specimen Container:
3.2% Sodium Citrate (light blue-top)

Preferred Specimen:
1 mL plasma (0.5 mL minimum)

Instructions:
See specimen collection section.

Transport Temperature:
Frozen

Methodology:
Chromogenic Substrate

Reference Range:

1 - 7 days:	39 - 93% activity
8 days - 1 month:	41 - 108% activity
1 - 3 months:	50 - 120% activity
3 - 6 months:	73 - 120% activity
> 6 months:	80 - 120% activity

Clinical Use:
Antithrombin III is a very potent physiologic inhibitor of activated coagulation clotting factors. Deficiencies, both hereditary and acquired, are considered hypercoagulable states. A deficiency may also be a rare cause of resistance to unfractionated heparin. Aids in the detection of hypercoagulable states associated with venous thrombotic episodes. May be useful in patients who appear to be hyporesponsive to heparin.

ANTI-THROMBIN III ACTIVITY — AT3ACT

Testing performed Monday - Friday.

Specimen Container:
Blue (sodium citrate)

Preferred Specimen:
Plasma

Transport Temperature:
Frozen

Reference Range:
Call Lab for up-to-date reference range.

Apolipoprotein A1 & B — 7018X

CPT Code(s): 82172 (x2)

Specimen Container:
No additive (red-top)

Preferred Specimen:
2 mL serum (0.5 mL minimum)

Instructions:
Fasting for at least 12 hours is required.

Transport Temperature:
Room temperature

Methodology:
Fixed Rate Time Nephelometry

Reference Range:

Apolipoprotein A1	
Adult males:	94-176 mg/dL
Adult females:	101-198 mg/dL
Apolipoprotein B	
Adult males:	52-109 mg/dL
Adult females:	49-103 mg/dL
Apo B/A1 Ratio	
Adults:	
Below average risk:	< 0.29
Average risk:	0.29-1.30

Above average: >1.30

Clinical Use:
Apolipoprotein A1 (APO A1) has been reported to be a better predictor than HDL cholesterol and triglycerides for Coronary Artery Disease (CAD). Low levels of APO A1 in serum are associated with increased risk of CAD. The measurement of APO A1 may be of value in identifying patients with atherosclerosis. Apolipoprotein B (APO B) has been reported to be a more powerful indicator of CAD than total cholesterol or LDL cholesterol in angiographic CAD and in survivors of myocardial infarction. In some patients with CAD, APO B is elevated even in the presence of normal LDL cholesterol.

Apolipoprotein B 5224X

CPT Code(s): 82172

Specimen Container:
No additive (red-top)

Preferred Specimen:
2 mL serum (0.5 mL minimum)

Instructions:
Fasting for at least 12 hours is required.

Transport Temperature:
Room temperature

Methodology:
Fixed Rate Time Nephelometry

Reference Range:
Adult males: 52-109 mg/dL
Adult females: 49-103 mg/dL

Clinical Use:
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.

Arginine Vasopressin (AVP, Antidiuretic Hormone, ADH) 252X

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. 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 Code(s): 84588

Specimen Container:
EDTA (lavender-top)

Preferred Specimen:
4 mL plasma (1.1 mL minimum)

Instructions:
Draw blood in a pre-chilled lavender-top tube. Transport in an ice bath to a refrigerated centrifuge. Separate and freeze immediately. Do not thaw.

Transport Temperature:
Frozen

Reject Criteria:
Received room temperature; Received refrigerated

Methodology:
Extraction, Radioimmunoassay

Reference Range:
1.0-13.3 pg/mL
2.5 pg = 1 uU

Clinical Use:
Antidiuretic Hormone (also called ADH or Vasopressin) regulates water reabsorption in the kidney, reducing diuresis and increasing blood volume and pressure. The syndrome of inappropriate release of ADH has been labeled SIADH, occurring with neoplasia, pulmonary disorders (e.g., pneumonia and tuberculosis), CNS disorders, and with specific drugs.

Arsenic, Blood 269X

For states requiring demographic information, contact the lab.

CPT Code(s): 82175

Specimen Container:
EDTA (royal blue-top)

Preferred Specimen:
4 mL whole blood (2 mL minimum)

Instructions:
To avoid contamination, use powderless gloves. DO NOT ALIQUOT SPECIMEN. See Specimen Collection Section, Toxicology. Patient should refrain from eating seafood and taking herbal supplements at least 3 days prior to sample collection.

Transport Temperature:
Room temperature, stable 10 days

Reject Criteria:
Received frozen; Clotted; Gross hemolysis

Methodology:
Inductively Coupled Plasma - Mass Spectrometry

Reference Range:
80 or less mcg/L

Clinical Use:
Arsenic is widely distributed in the earth's crust. Arsenic is used in some pesticides and industrial applications. Arsenic toxicity can cause skin changes, respiratory illness, nausea and vomiting, and other effects.

Arsenic, Random Urine 270X

Includes creatinine.

CPT Code(s): 82175; 82570

Specimen Container:
Acid washed container

Preferred Specimen:
7 mL urine (3.5 mL minimum)

Instructions:
See Specimen Collection Section, Toxicology. Patient should refrain from eating shellfish, shrimp, crab, lobster and bottom-feeders such as flounder at least three days prior to

specimen collection.

Transport Temperature:
Refrigerated

Reject Criteria:
Received room temperature; Grossly decomposed sample; Use of metal based preservative

Methodology:
Inductively-Coupled Plasma/Mass Spectrometry

Reference Range:
2nd Voided AM Urine for Nonexposed Adult:

50 mcg/g creatinine or less

Biological Exposure Index (end of shift/work week):

50 mcg/g creatinine or less

Creatinine, Random Urine

Age	g/L	n
0-6 Months	0.02-0.32	57
7-11 Months	0.02-0.36	23
1-2 Years	0.02-1.28	57
3-8 Years	0.02-1.49	104
9-12 Years	0.02-1.83	38
Adults	0.27-3.00	104

Clinical Use:
Arsenic is widely distributed in the earth's crust. Arsenic is used in some pesticides and industrial applications. Arsenic toxicity can cause skin changes, respiratory illness, nausea and vomiting, and other effects.

Aspergillus Antigen 14950Z

CPT Code(s): 87305

Preferred Specimen:
2 mL serum

Instructions:
Serum should be collected in plastic SST tube and spun to separate from clot. Unopened serum specimens may be stored at 2-8ºC for up to 5 days prior to testing, or for only 48 hours after they have been opened (Do not reject if received refrigerated). Care is required to avoid contamination of specimens with mold during collection, processing and shipment.

Methodology:
Immunoassay

Reference Range:
<0.5 Index

Clinical Use:
The Aspergillus EIA is used for the detection of galactomannan antigen in serum. The Aspergillus EIA is an aid in the early diagnosis of invasive aspergillosis. This assay is to be used and test results interpreted in conjunction with other conventional diagnostic procedures such as microbiological culture, histologic examination of biopsy samples and other signs and symptoms for detection of Aspergillus infection.

AST AST

Testing performed daily.

CPT Code(s): 84450

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

AUTOLOGOUS DONATION AUTD

Testing performed Monday - Friday.

Preferred Specimen:
Whole Blood

Instructions:
Appointment must be made by AMC clinic.

Reference Range:
Call Lab for up-to-date reference range.

Babesia microti Antibodies (IgG, IgM) 34300X

This test was developed and its performance characteristics have been determined by Quest Diagnostics. 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 Code(s): 86753 (x2)

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.1 mL minimum)

Transport Temperature:
Refrigerated

Methodology:
Immunofluorescence Assay

Reference Range:

IgG:	<1:16
IgM:	<1:20

Clinical Use:
Babesia serological testing is used to diagnose infection by the Babesia tick-borne protozoan. Infection may cause hemolytic anemia.

Babesia Microti DNA, PCR 37314X

This test was developed and its performance characteristics have been determined by Quest Diagnostics. Performance characteristics refer to the analytical performance of the test.

CPT Code(s): 87798

Specimen Container:

ACD solution B (yellow-top)

Preferred Specimen:
5 mL whole blood (1 mL minimum)

Transport Temperature:
Refrigerated, stable 1 week

Reject Criteria:
Frozen

Methodology:
Do not freeze.

Reference Range:
Real-Time Polymerase Chain Reaction

BABESIA SCREEN BABES

Testing performed daily.

Specimen Container:
Lavender EDTA

Preferred Specimen:
Whole Blood

Instructions:
Specimen should be in the lab within 15 minutes after collection.

Transport Temperature:
Transport Immediately

Reference Range:
Call Lab for up-to-date reference range.

BARBITURATES SCREEN, URINE BARBU

Testing performed daily.

Specimen Container:
Sterile Container

Preferred Specimen:
Urine

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Bartonella Species Antibody (IgG, IgM) w/Reflex to Titers 34251X

Includes: Bartonella henselae (IgG, IgM), Bartonella quintana (IgG, IgM)

If *Bartonella henselae* and *Bartonella quintana* IgG and IgM screens are positive, titers will be performed at an additional charge (CPT code(s): 86611 for each titer performed).

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. 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 Code(s): 86611 (x4)

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.2 mL minimum)

Instructions:
Separate serum from the clot within 4 hours of collection.

Transport Temperature:
Room temperature stable 4 days; refrigerated stable 5 days; frozen stable 6 months

Methodology:
Immunofluorescence Assay

Reference Range:
See individual assays.

BASIC METABOLIC PROFILE BCP

Testing performed daily.

CPT Code(s): 80048

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

bcr/abl Gene Rearrangement, Quantitative PCR, Cell-based 15052X

This test was developed and its performance characteristics have been determined by Quest Diagnostics Nichols Institute. Performance characteristics refer to the analytical performance of the test.

CPT Code(s): 83891; 83896 (x3); 83900; 83902 (x2); 83912

Specimen Container:
EDTA (lavender-top)

Preferred Specimen:
6 mL EDTA (lavender-top) whole blood (minimum: 4 mL)

Instructions:
Preferred sample type is whole blood. Bone marrow is acceptable.
Collect 6 mL of whole blood or 3 mL bone marrow in lavender-top (EDTA) tube. Whole blood or bone marrow is shipped at refrigerated. Do not freeze whole blood or bone marrow. After

collection of the sample, draw date and time, as well as sample type, must be written on the tube and included as requested information. Ship sample immediately due to short sample stability of 72 hours. If the stability of the sample can not be determined, delay in result or cancellation of test may occur. Alternative samples: frozen cells must be approved by the medical director prior to sending. Do not thaw. Must remain frozen until testing.

Transport Temperature:
Refrigerated

Reject Criteria:
Clotted blood or bone marrow; hemolyzed or frozen samples

Methodology:
Real-Time Reverse Transcriptase Polymerase Chain Reaction

Clinical Use:
Used for diagnosis and monitoring therapy in chronic myeloid leukemia (CML) and acute lymphoblastic leukemia (ALL). Also useful in evaluating minimal residual disease (MRD).

BETA STREP SCREEN BSTR

Testing performed daily.

Specimen Container:
Culturette

Preferred Specimen:
Throat Swab

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

Beta-2-Glycoprotein I Antibodies (IgA, IgG, IgM) 30340X

CPT Code(s): 86146 (x3)

Specimen Container:
No additive (red-top)

Preferred Specimen:
3 mL serum (1.5 mL minimum)

Transport Temperature:
Room temperature, stable 5 days

Reference Range:

B2-Glycoprotein I (IgG) Ab:	<20 U/mL
B2-Glycoprotein I (IgM) Ab:	<10 U/mL
B2-Glycoprotein I (IgA) Ab:	<10 U/mL

Clinical Use:
Beta 2 Glycoprotein I antibodies belong to the family of antiphospholipid antibodies which recognize plasma proteins that bind to phospholipids rather than the phospholipids themselves. Persistent Anti B2GPI antibodies (IgM/IgG) have been incorporated in the 2006 International Consensus Criteria for the laboratory criteria of Antiphospholipid Antibody Syndrome.

BETA-2-MICROGLOBULIN B2M

CPT Code(s): 82232

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reject Criteria:
Hemolyzed specimens; lipemic specimens

Clinical Use:
Beta-2-microglobulin normally passes through the glomerulus into the proximal tubule where much of it is reabsorbed. Serum levels are therefore an index of glomerular function. When impaired, serum levels rise in inverse ratio to glomerular filtration rate. Increased amounts of beta-2-microglobulin are excreted in several renal disorders, e.g., Balkan nephropathy, heavy metal poisoning and renal tubular disease due to therapeutic agents. Serial levels of beta-2-microglobulin in serum and urine are used to evaluate transplant viability and anticipate rejection. Following a successful graft, serum levels decline toward normal. Increasing serum levels provide an early sign of rejection. Elevated levels are also noted in lymphproliferative disorders, neoplasms (malignant and benign), inflammatory disease, and autoimmune diseases such as systemic lupus erythematosus (SLE) and Sjögren's disease.

Beta-Hydroxybutyrate 37054Z

CPT Code(s): 82010

Specimen Container:
No additive (red-top)

Preferred Specimen:
2 mL serum

Transport Temperature:
Refrigerated, stable 1 week

Methodology:
Enzymatic

Reference Range:

Adults:	0.28 mmol/L or Less
Pediatrics:	0.04-0.18 mmol/L

Clinical Use:
In diabetics, the measurement of B-hydroxybutyrate as well as blood glucose is needed for the assessment of the severity of diabetic coma and is essential for the exclusion of hyperosmolar non-ketotic diabetic coma. A specific enzymatic assay for Beta-hydroxybutyrate is extremely important in the assessment of ketosis.

Bile Acids, Fractionated & Total 4668X

Includes: Cholic Acid, Deoxycholic Acid, Chenodeoxycholic Acid and Total Bile Acids.

CPT Code(s): 83789

Specimen Container:
No additive (red-top); No additive serum separator tube

Preferred Specimen:
1 mL serum (0.2 mL minimum)

Instructions:
Collect blood in a red top or SST tube. After clot formation centrifuge sample and pour off serum into a transport tube. Store sample refrigerated or frozen. Overnight fasting is preferred.

Transport Temperature:
Room temperature

Methodology:
Liquid Chromatography Tandem Mass Spectrometry

Reference Range:

Cholic Acid	3.1 or less umol/L
Deoxycholic Acid:	7.3 or less umol/L
Chenodeoxycholic Acid:	9.9 or less umol/L
Total Bile Acids:	4.5-19.2 or less umol/L

Clinical Use:
Bile Acids are formed in the liver, from cholesterol, stored and concentrated in the gallbladder, and excreted into the intestines in response to food. Elevated concentrations often suggest impaired hepatic clearance due to liver disease. Patients with intestinal malabsorption and metabolic disorders such as Gilbert's disease do not exhibit elevated Bile Acids concentrations.

BILIRUBIN, DIRECT — BILD

Testing performed daily

CPT Code(s): 82248

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to date reference range

BILIRUBIN, PEDIATRIC — PBIL

Testing performed daily.

Specimen Container:
Gold

Preferred Specimen:
Serum or Plasma

Instructions:
Patients

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

BILIRUBIN, TOTAL — BILT

Testing performed daily

CPT Code(s): 82247

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to date reference range

BLOOD CULTURE BLDC

Testing performed daily.

Specimen Container:
Aerobic/anaerobic vials

Preferred Specimen:
Whole Blood

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

BLOOD CULTURE, ACID FAST BACTERIA (AFB) BAFB

Testing performed daily.

Specimen Container:
Myco/F vial

Preferred Specimen:
Whole Blood

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

BLOOD CULTURE, FUNGUS BLDF

Testing performed daily.

Specimen Container:
Myco/F vial

Preferred Specimen:
Whole Blood

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

BLOOD PARASITES- MALARIA SMEAR — MALS

Testing performed Monday - Friday.

Specimen Container:
Lavender EDTA

Preferred Specimen:
Whole Blood

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

BLOOD UREA NITROGEN (BUN) — BUN

Testing performed daily

CPT Code(s): 84520

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to date reference range

BONE MARROW — BM

Testing performed daily.

Preferred Specimen:
Bone Marrow

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

Bordetella pertussis/parapertussis DNA, Qualitative Real-time PCR — 11365X

This test was developed and its performance characteristics have been determined by Quest Diagnostics. Performance characteristics refer to the analytical performance of the test.

CPT Code(s): 87798 (x2)

Preferred Specimen:
Nasopharyngeal swab or 1 mL nasopharyngeal aspirate (minimum 0.3 mL)

Instructions:
Nasopharyngeal aspirates: Instill 1-1.5 mL of nonbacteriostatic saline (pH 7.0) into one nostril. Flush a plastic catheter or tubing with 2-3 mL of saline. Insert the tubing into the

nostril parallel to the palate. Aspirate nasopharyngeal secretions. Repeat this procedure for the other nostril. Combine aspirates into a sterile vial. Ship aspirate refrigerated or frozen. Nasopharyngeal swab: Use Amies collection tube with liquid Amies and wire collection swab. Do not use calcium alginate swab as they may contain substances that inhibit PCR. Insert swab into nostril parallel to the palate and leave in place for a few seconds to absorb secretions. Swab both nostrils. Place swab(s) immediately into transport tube. Ship swab refrigerated.

Transport Temperature:
Refrigerated

Methodology:
Real-Time Polymerase Chain Reaction

Reference Range:
Not Detected 50 copies/mL

Clinical Use:
Bordetella pertussis is the cause of whooping cough that may occur in unimmunized individuals. B. parapertussis is a related organism that causes a similar but milder disease. Laboratory diagnosis may require both culture and serological confirmation although culture is difficult.

BUFFY COAT FOR EHRLICHIA BUFFY

Testing performed daily.

Specimen Container:
Lavender EDTA

Preferred Specimen:
Whole Blood

Instructions:
Test within 24 hrs.

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

C1 Inhibitor, Protein 298X

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. 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 Code(s): 86160

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.5 mL minimum)

Instructions:
Freeze within one hour of time drawn.

Transport Temperature:
Refrigerated

Reject Criteria:
Received room temperature

Methodology:
Fixed Rate Time Nephelometry

Reference Range:
12-26 mg/dL

Clinical Use:
C1 Esterase Inhibitor is decreased in angioedema. The inherited form is usually diagnosed in the first two decades of life. The acquired form affects primarily adults with autoimmune or lymphoproliferative disorders. Approximately 15% of patients with hereditary angioedema have a normal concentration of the protein but it is dysfunctional.

C1q Complement Component 981X

CPT Code(s): 86160

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.1 mL minimum)

Transport Temperature:
Frozen

Methodology:
Radial Immunodiffusion

Reference Range:
5.0-8.6 mg/dL
Low levels of C1q indicate either increased consumption (catabolism) or decreased synthesis.

Clinical Use:
The complement system is critical to the inflammatory response. C1q concentrations may be decreased in patients with acquired angioedema, immune complexed induced vasculitis, and concurrent low concentrations of C1 inhibitor, carcinoma, or lymphoma.

C2 Complement Component 433X

CPT Code(s): 86160

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.1 mL minimum)

Instructions:
Separate serum within one hour of time drawn and refrigerate.

Transport Temperature:
Frozen

Methodology:
Radial Immunodiffusion

Reference Range:
1.6-3.5 mg/dL
Low levels of C2 indicate increased catabolism (as in immune complex disease) or decreased

synthesis.

Clinical Use:
C2 is a component of the classic complement pathway. Decreased concentrations are observed in patients with immune complex diseases such as systemic lupus erythematosus (SLE) and immune complex-induced vasculitis.

CA 125 C125P

Testing performed daily

CPT Code(s): 86304

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to date reference range

CA 19-9 CA19

CPT Code(s): 86301

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Room temperatures

Reject Criteria:
Gross hemolysis

Clinical Use:
A large percentage of patients with gastrointestinal tumors (such as pancreatic, liver, gastric, colorectal tumors) and some other malignancies have been shown to have elevated serum or plasma CA 19-9 levels. The serum or plasma CA 19-9 levels may be useful for monitoring disease activity predicting relapse following treatment. CA 19-9 should not be used as a screening test.

CA 27.29 29493X

CPT Code(s): 86300

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.5 mL minimum)

Transport Temperature:
Room temperature, stable 7 days

Reference Range:
less than 38 U/mL

Clinical Use:
CA 27.29 may be useful for monitoring patients for metastatic breast cancer.

Calcitonin 30742X

CPT Code(s): 82308

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.5 mL minimum)

Instructions:
Overnight fasting is preferred.

Transport Temperature:
Frozen, stable 28 days

Reject Criteria:
Received room temperature or refrigerated

Methodology:
Immunoassay

Reference Range:

Adult males: 10 pg/mL or Less	10 pg/mL or Less
Adult females: 5 pg/mL or Less	5 pg/mL or Less
Pediatrics:	
<6 months:	41 pg/mL or Less*
6 months – 3 years:	14 pg/mL or Less*
3-17 years:	6 pg/mL or Less

#* Infant/toddler ranges obtained with the Nichols Institute Diagnostics calcitonin-ICMA (Clinical Chemistry 2004;50:1828-9)

Clinical Use:
Calcitonin concentration is increased in patients with medullary thyroid carcinoma. Calcitonin concentrations may be used to monitor disease.

CALCIUM CA

Testing performed daily.

CPT Code(s): 82310

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

CALCIUM, IONIZED CALI

Testing performed daily

CPT Code(s): 82330

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to date reference range

CALCIUM, RANDOM URINE CALRU

Testing performed daily

CPT Code(s): 82310

Specimen Container:
Sterile Container

Preferred Specimen:
Urine

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to date reference range

Clinical Use:
.

CALCIUM, URINE 24 HOUR CAL24

Testing performed daily.

CPT Code(s): 82340

Specimen Container:
Sterile Container

Preferred Specimen:
24 hr urine

Instructions:
No additives.

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

CANCER ANTIGEN 15-3 C153P

Testing performed daily.

CPT Code(s): 86300

Specimen Container:

LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Frozen

Reference Range:
Call Lab for up-to-date reference range.

CANNABINOIDS SCREEN, URINE — CANNQUANT

Testing performed daily.

Specimen Container:
Sterile Container

Preferred Specimen:
Urine

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

CARBAMAZEPINE — CARB

Testing performed daily.

CPT Code(s): 80156

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

CARBON DIOXIDE — CO2

Testing performed daily.

CPT Code(s): 82374

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

CARCINOEMBRYONIC ANTIGEN CEA

Testing performed daily.

CPT Code(s): 82378

Specimen Container:
Gold

Preferred Specimen:
Serum

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Cardiolipin Antibody Screen w/Reflex to IgG and IgM 36172X

If Cardiolipin Antibody Screen is positive, Cardiolipin Antibody IgG and IgM will be performed at an additional charge (CPT code(s): 86147 x2).

CPT Code(s): 86147

Specimen Container:
3.2% sodium citrate (light blue-top)

Preferred Specimen:
1 mL plasma (0.3 mL minimum)

Transport Temperature:
Frozen

Methodology:
Enzyme Linked Immunosorbent Immunoassay

Reference Range:
See individual assays.

Clinical Use:
Persistent Anti Cardiolipin antibodies (IgM/IgG) > 40 GPL or MPL have been incorporated into the 2006 International Consensus Criteria for the laboratory diagnosis of Antiphospholipid Antibody Syndrome.

Carotene 311X

CPT Code(s): 82380

Specimen Container:
No additive (red-top)

Preferred Specimen:
2 mL serum (0.7 mL minimum)

Instructions:
Separate from cells as soon as possible after clotting. Send serum in an amber tube. If amber tube is not available, wrap tube in aluminum foil to protect from light. Overnight fasting is preferred.

Transport Temperature:
Refrigerated

Methodology:
High Performance Liquid Chromatography

Reference Range:
Males 4-51 mcg/dL
Females 6-77 mcg/dL
Pediatrics:
9 months-6 years 5-80 mcg/dL
7-17 years 9-190 mcg/dL
Pediatric data from Acta Paediatr (1997) Vol: 86:677-81 and International Journal of Vitamins Nutrition and Research 1995) Vol: 65:31-35.

Clinical Use:
Beta Carotene, a fat soluble nutrient, is a precursor to vitamin A. Deficiencies may lead to vitamin A deficiency. Excessive vitamin A intake may lead to headaches, loss of appetite, nausea and diarrhea, skin changes, and potential birth defects.

Catecholamines, Fractionated, 24-Hour Urine with Creatinine 39627X

Includes: Epinephrine, Norepinephrine, Dopamine, Total Catecholamines (calculated), and Creatinine.

CPT Code(s): 82384; 82570

Specimen Container:
24-hour urine container-25 mL 6N HCl

Preferred Specimen:
10 mL urine (5 mL minimum)

Instructions:
Collect 24-hour urine with 15 g of boric acid or 25 mL of 6N HCl to maintain a pH below 3. Urine without preservative is acceptable if pH is below 6 and the sample is shipped frozen. Record 24-hour urine volume on test request form and urine vial. 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.

Transport Temperature:
Room temperature

Methodology:
High Performance Liquid Chromatography (Electrochemical Detection), Kinetic Alkaline Picrate

Reference Range:

Epinephrine	
Age	mcg/24 hrs
3-8	1-7
9-12	8 or less
13-17	11 or less
Adults	2-24
Norepinephrine	
Age	mcg/24 hrs
3-8	5-41
9-12	5-50
13-17	12-88
Adults	15-100
Dopamine	
Age	mcg/24 hrs
3-8	80-378
9-12	51-474

13-17	51-645
Adults	52-480
Total (N+E)	
Age	mcg/24 hrs
3-8	9-51
9-12	9-71
13-17	13-90
Adults	26-121
Creatinine, Urine	
Age	g/24 hours
3-8	11-0.68
9-12	0.17-1.41
13-17	0.29-1.87
Adults	0.63-2.50

Clinical Use:
The three catecholamines (norepinephrine, epinephrine, and dopamine) are the principal secretory products of neural tissue. Clinically, the measurement of circulating catecholamines is valuable in the diagnosis of catecholamine secreting tumors associated chiefly with hypertension (pheochromocytomas, neuroblastomas, and gangliomas) and with the evaluation of orthostatic hypotension.

Catecholamines, Fractionated, 24-Hour Urine without Creatinine 318X

Includes: Epinephrine, Norephinephrine, Dopamine, Total Catecholamines (calculated)

CPT Code(s): 82384

Preferred Specimen:
10 mL aliquot of a 24-hour collection. Collect urine with 25 mL of 6N HCl to maintain a Ph below 3.

Transport Temperature:
Room temperature, stable 1 week

Methodology:
High Performance Liquid Chromatography (Electrochemical Detection)

Reference Range:
See individual assays
Epinephrine, 24 hr Urine
0 - 2 years: Not established
3 - 8 years: 1 - 7 mcg/24 hrs
9 - 12 years: 8 or less mcg/24 hrs
13 - 17 years: 11 or less mcg/24 hrs
Adults: 2 - 24 mcg/24 hrs
Norepinephrine, 24 hr Urine
0 - 2 years: Not established
3 - 8 years: 5 - 41 mcg/24 hrs
9 - 12 years: 5 - 50 mcg/24 hrs
13 - 17 years: 12 - 88 mcg/24 hrs
Adults: 15 - 100 mcg/24 hrs)
Calculated Total (N+E)
0 - 2 years: Not established
3 - 8 years: 9 - 51 mcg/24 hrs
9 - 12 years: 9 - 71 mcg/24 hrs
13 - 17 years: 13 - 90 mcg/24 hrs
Adults: 26 - 121 mcg/24 hrs
Dopamine, 24 hr Urine
0 - 2 years: Not established
3 - 8 years: 80 - 378 mcg/24 hrs
9 - 12 years: 51 - 474 mcg/24 hrs
13 - 17 years: 51 - 645 mcg/24 hrs

Adults: 52 - 480 mcg/24 hrs)
Creatinine, 24-Hour Urine
< 3 years: Not established
3 - 8 years: 0.11 - 0.68 g/24 hours
9 - 12 years: 0.17 - 1.41 g/24 hours
13 - 17 years: 0.29 - 1.87 g/24 hours
Adults: 0.63 - 2.50 g/24 hours

Clinical Use:
Fractionated catecholamine measurement is useful in the diagnosis of pheochromocytoma and its differentiation from essential hypertension.

Catecholamines, Fractionated, Plasma 314X

Includes: Epinephrine, Norepinephrine, Dopamine, and Total Catecholamines.

CPT Code(s): 82384

Specimen Container:
Sodium heparin (green-top)

Preferred Specimen:
4 mL plasma (2.5 mL minimum)

Instructions:
Patients should be relaxed in either a supine or upright position before blood is drawn. States of anxiety and stress can cause fluctuations in the catecholamine levels. Draw specimen in a pre-chilled green-top Vacutainer™. Plasma should be separated in a refrigerated centrifuge within 30 minutes of collection and then frozen immediately -20 degrees C in plastic vials. Each specimen will be invoiced separately. Patient should avoid alcohol, coffee, tea, tobacco and strenuous exercise prior to collection. Overnight fasting is required. Patient should avoid alcohol, coffee, tea, tobacco and strenuous exercise prior to collection. Overnight fasting is required.

Transport Temperature:
Frozen

Reject Criteria:
Received room temperature; Received refrigerated

Methodology:
High Performance Liquid Chromatography, Electrochemical Detection

Reference Range:

Adults	Supine	Upright
Epinephrine:	Less than 50 pg/mL	Less than 95 pg/mL
Norepinephrine:	112-658 pg/mL	217-1109 pg/mL
Dopamine:	Less than 30 pg/mL	less than 30 pg/mL
Total (N+E):	123-671 pg/mL	242-1125 pg/mL
Due to stress, plasma catecholamine levels are generally unreliable in infants and small children. Urinary catecholamine assays are more reliable.		
Pediatrics 3-15 years		
Epinephrine	Less than or equal to 464 pg/mL	Not available
Norepinephrine	Less than or equal to 1251 pg/mL	Not available
Dopamine	Less than 60 pg/mL	Not available
Pediatric data from J Chromatogr (1993) 617:304-307.		

Clinical Use:
The evaluation of plasma catecholamines is utilized in the differential diagnosis of pheochromocytoma. In addition, monitoring norepinephrine levels in association with clonidine suppression has been recommended as a means of distinguishing patients with pheochromocytoma from patients with essential hypertension. Measurement of plasma norepinephrine levels may aid in the differential diagnosis of orthostatic and postural hypotension.

CBC WITH DIFFERENTIAL & PLATELET COUNT — CBCD

Testing performed daily.

Specimen Container:
Lavender EDTA

Preferred Specimen:
Whole Blood

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

Centromere B Antibody, EIA — 16088X

CPT Code(s): 86038

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.5 mL minimum)

Transport Temperature:
Room temperature, stable 4 days

Methodology:
Enzyme Immunoassay

Reference Range:

Clinical Use:
Centromere B Antibody is diagnostic for the form of scleroderma known as CREST (Calcinosis, Raynaud's phenomenon, Esophageal dysmotility, Sclerodactyly, and Telangiectasia).

Ceruloplasmin — 326X

CPT Code(s): 82390

Specimen Container:
No additive (red-top or royal blue top)

Preferred Specimen:
1 mL serum (0.5 mL minimum)

Instructions:
Overnight fasting is preferred.

Transport Temperature:
Room temperature

Methodology:
Fixed Rate Time Nephelometry

Reference Range:

Adult males:	18-36 mg/dL	
Adult females:	18-53 mg/dL	
Pediatrics:		
	Males	Females
0-30 days	8-25	3-28 mg/dL
31 days-11 months	15-48	15-43 mg/dL
1-3 years	25-56	29-54 mg/dL
4-6 years	29-56	26-54 mg/dL
7-9 years	25-52	23-48 mg/dL
10-12 years	21-51	21-48 mg/dL
13-15 years	20-50	21-46 mg/dL
16-18 years	20-45	22-50 mg/dL

Clinical Use:
Decreased levels of ceruloplasmin are found in Wilson's Disease, fulminant liver failure, intestinal malabsorption, renal failure resulting in proteinuria, chronic active hepatitis and malnutrition. Elevated levels are found in primary biliary cirrhosis, pregnancy (1st trimester), oral contraceptive use and in acute inflammatory conditions since ceruloplasmin is an acute phase reactant.

Chlamydia and Chlamydophila Antibody Panel 3 (IgG, IgA, IgM) 29479X

Includes: C. pneumoniae, C. trachomatis, C. psittaci IgM, IgG, and IgA Antibodies.

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. 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 Code(s): 86632 (x3); 86631 (x6)

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.1 mL minimum)

Instructions:
Collect serum using aseptic technique. Centrifuge and separate serum from clot within 4 hours of drawing.

Transport Temperature:
Room temperature, stable 7 days

Methodology:
Micro Immunoflourescence Assay

Reference Range:

IgM:	<1:10
IgG:	<1:64
IgA:	<1:16

Clinical Use:
The immunofluorescent detection of specific antibodies to Chlamydia trachomatis, Chlamydophila pneumoniae, and C. psittaci may be complicated by crossreactive antibodies, non-specific antibody stimulation, or past exposure to more than one of these organisms. IgM titers of 1:10 or greater are indicative of recent infection; however, IgM antibody is very cross-reactive, often demonstrating titers to multiple organisms. Any IgG titer may

indicate past exposure to that particular organism. Infection by a particular organism typically yields IgG titers that are higher than antibody titers to non-infecting organisms. IgA titers may help to identify the infecting organism when cross-reactive IgG is present. IgA is typically present at low titers during primary infection, but may be elevated in recurrent exposures or in chronic infection.

CHLAMYDIA ANTIGEN GPCH

Testing performed daily.

Specimen Container:
Genprobe transport vial

Preferred Specimen:
Cervical, urethral or eye

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

Chlamydia pneumoniae DNA, Qualitative Real-Time PCR 16003X

This test was developed and its performance characteristics have been determined by Quest Diagnostics. Performance characteristics refer to the analytical performance of the test.

CPT Code(s): 87486

Specimen Container:
VCM - Viral-Chlamydial-Mycoplasma transport medium (green-cap) available from client supplies

Preferred Specimen:
Respiratory samples in VCM

Instructions:
Use sterile vials containing 3 mL of sterile VCM media. Do not use calcium alginate swabs, as they may contain substances that inhibit PCR testing.

Transport Temperature:
Refrigerated

Reject Criteria:
Specimens containing heparin, specimens in leaking or broken containers, specimens exceeding stability, non-validated specimen types.

Methodology:
Real Time Polymerase Chain Reaction

Reference Range:
Not Detected

Clinical Use:
This test is used to determine the presence of Chlamydia pneumoniae DNA in respiratory specimens. Organisms may be detected by PCR prior to detection by immunological methods. PCR provides more rapid results than culture.

Chlamydia trachomatis, RNA, TMA 11361X

CPT Code(s): 87491

Specimen Container:
Aptima™ Transport Devices

Preferred Specimen:
Urine specimen, urethral or endocervical swab, (female or male) in APTIMA™ transport medium

Instructions:
'SWABS: Swab MUST be submitted in Aptima™ Combo 2 Assay Unisex Swab Specimen Collection tube. Follow instructions in the Aptima™ Combo 2 Assay Unisex Swab Specimen Collection Kit for Endocervical and Urethral Swab Specimens package insert. In females, to ensure collection of an adequate specimen, columnar epithelial cells lining the endocervix should be obtained. To that effect, excess mucus should be removed prior to sampling by using the white shaft-cleaning swab which is discarded after use. COLLECTION CONTAINER: Gen-Probe Aptima™ Combo 2 Assay Unisex Swab Specimen Collection Kit. URINE: Urine MUST be submitted in Aptima™ Combo 2 Assay Urine Specimen Collection tube within 24 hours of collection. The patient should not have urinated for at least one hour prior to specimen collection.
Direct patient to provide a first-catch urine (approximately 20-30 mL of the initial urine stream) into a urine collection cup free of any preservatives. Collection of larger volumes of urine may result in specimen dilution that may reduce test sensitivity. Female patients should not cleanse the labial area prior to providing the specimen. Thus, a urine sample collected from a female for Chlamydia/GC TMA cannot be collected at the same voiding event as that urine which would be intended for bacterial culture. Remove the cap of the Aptima™ Combo 2 Assay Urine Specimen Collection tube and transfer 2mL of urine into the urine specimen transport tube using the disposable pipette provided. The correct volume of urine has been added when the fluid level is between the black lines within the clear pane on the urine specimen transport tube label.
Urine Stability: Room Temperature & Refrigerated: 1 Month Frozen: 3 Months COLLECTION CONTAINER: Gen-Probe Aptima™ Combo 2 Assay Urine Specimen Collection Kit.

Transport Temperature:
Room temperature

Reject Criteria:
Swabs other than Aptima™. Urine over 24 hours old not in transport. Vaginal swabs.

Methodology:
Transcription Mediated Amplification (TMA)

Reference Range:
None detected

Clinical Use:
For the detection of Chlamydia trachomatis in endocervical or male urethral specimens and urine from men or women

Chlamydia trachomatis/Neisseria gonorrhoeae RNA, TMA 11363X

CPT Code(s): 87491; 87591

Specimen Container:
Aptima™ Transport Devices

Preferred Specimen:
Urine specimen, urethral or endocervical swab, (female or male) in APTIMA transport medium

Instructions:
'SWABS: Swab MUST be submitted in Aptima™ Combo 2 Assay Unisex Swab Specimen Collection tube. Follow instructions in the Aptima™ Combo 2 Assay Unisex Swab Specimen Collection Kit for Endocervical and Urethral Swab Specimens package insert. In females, to ensure collection of an adequate specimen, columnar epithelial cells lining the endocervix should be obtained. To that effect, excess mucus should be removed prior to sampling by using the white shaft-cleaning swab which is discarded after use. COLLECTION CONTAINER: Gen-Probe Aptima™ Combo 2 Assay Unisex Swab Specimen Collection Kit. URINE: Urine MUST be submitted in Aptima™ Combo 2 Assay Urine Specimen Collection tube within 24 hours of collection. The patient should not have urinated for at least one hour prior to specimen collection.
Direct patient to provide a first-catch urine (approximately 20-30 mL of the initial urine stream) into a urine collection cup free of any preservatives. Collection of larger volumes of urine may result in specimen dilution that may reduce test sensitivity. Female patients should not cleanse the labial area prior to providing the specimen. Thus, a urine sample collected from a female for Chlamydia/GC TMA cannot be collected at the same voiding event as that urine which would be intended for bacterial culture. Remove the cap of the Aptima™ Combo 2 Assay Urine Specimen Collection tube and transfer 2mL of urine into the urine specimen transport tube using the disposable pipette provided. The correct volume of urine has been added when the fluid level is between the black lines within the clear pane on the urine specimen transport tube label.
Urine Stability: Room Temperature & Refrigerated: 1 Month Frozen: 3 Months COLLECTION CONTAINER: Gen-Probe Aptima™ Combo 2 Assay Urine Specimen Collection Kit.

Transport Temperature:
Room temperature

Reject Criteria:
Swabs other than Aptima. Urine over 24 hours old not in transport. Vaginal swabs.

Methodology:
Transcription Mediated Amplification (TMA)

Reference Range:
None detected

Chlamydophila pneumoniae Antibodies (IgG, IgA, IgM) 37111X

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. 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 Code(s): 86632; 86631 (x2)

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.1 mL minimum)

Instructions:
Collect serum using aseptic technique. Centrifuge and separate serum from clot within 4 hours of drawing.

Transport Temperature:
Room temperature, stable 7 days

Methodology:
Micro Immunofluorescence Assay

Reference Range:
IgM: <1:10

IgG:	<1:64
IgA:	<1:16

Clinical Use:
Chlamydia pneumoniae is a common cause of infantile and community-acquired pneumonia.

CHLORIDE CL

Testing performed daily.

CPT Code(s): 82435

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

CHLORIDE, 24 HOUR URINE GRP CL24

Testing performed daily.

CPT Code(s): 82436

Specimen Container:
Sterile Container

Preferred Specimen:
Urine

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

CHLORIDE, RANDOM URINE CLRU

Testing performed daily.

CPT Code(s): 82436

Specimen Container:
Sterile Container

Preferred Specimen:
Urine

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

CHOLESTEROL CHOL

Testing performed daily.

CPT Code(s): 82465

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Chromium, Serum 5248X

CPT Code(s): 82495

Specimen Container:
Royal blue-top (no additive) in trace element collection package

Preferred Specimen:
2 mL serum (1 mL minimum)

Instructions:
See Specimen Collection Section, Toxicology. Collect serum in special trace element collection system available from Quest Diagnostics, Nichols Institute. Ship specimen refrigerated. Patient should refrain from taking vitamins, mineral or herbal supplements at least one week prior to specimen collection.

Transport Temperature:
Refrigerated

Reject Criteria:
Received room temperature; Hemolysis

Methodology:
Atomic Absorption Spectrometry with Zeeman Background Correction

Reference Range:
1.4 or less mcg/L

Clinical Use:
Occupational exposure and exposure to environmental contamination of Chromium may lead to toxicity. The need for Chromium supplements is unproven. Supplements taken in excess may also lead to Chromium toxicity.

Chromogranin A 34468X

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. 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 Code(s): 86316

Specimen Container:
No additive (red-top)

Preferred Specimen:
0.8 mL serum (0.3 mL minimum)

Transport Temperature:
Refrigerated

Methodology:
Immunoassay

Reference Range:
36.4 ng/mL or less

Clinical Use:
Chromagranin A is stored in and secreted from the secretory cells of endocrine and neuroendocrine cells. Patients with neuroendocrine tumors such as pheochromocytoma, neuroblastoma, carcinoid-like tumors, and small cell lung carcinoma have increased concentrations of Chromagranin A.

Citric Acid, 24-hour Urine (with Creatinine) 4616X

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. This test should not be used for diagnosis without confirmation by other medically established means.

CPT Code(s): 82507; 82570

Specimen Container:
24-hour urine container

Preferred Specimen:
10 mL urine (1.5 mL minimum).

Transport Temperature:
Refrigerated

Reject Criteria:
Received room temperature

Methodology:
Spectrophotometry, Enzymatic

Reference Range:

Males:	60-660 mg/g creatinine
Females:	180-1070 mg/g creatinine
Creatinine, 24-hour urine:	
<3 years	not established
3-8 years	0.11-0.68 g/24 hours
9-12 years	0.17-1.41 g/24 hours
13-17 years	0.29-1.87 g/24 hours
Adults	0.63-2.50 g/24 hours

Citric Acid, 24-Hour Urine (without Creatinine) 11315X

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. This test should not be used for diagnosis without confirmation by other medically established means.

CPT Code(s): 82507

Specimen Container:
24-hour urine container

Preferred Specimen:

10 mL aliquot of a 24-hour collection. Collect urine without preservative. Refrigerate during and after collection. Do not include first morning specimen; collect all subsequent voidings. The last sample collected should be the first morning specimen voided the following morning at the same time as the previous morning's first voiding. Record 24-hour urine volume on test request form and urine vial. Please aliquot unpreserved specimen prior to any addition of acid.

Transport Temperature:
Refrigerated preferred; Room temperature unacceptable; Frozen acceptable

Methodology:
Spectrophotometry

Reference Range:
100-1300 mg/24 hours Reference ranges have not been established for non-24 hour urine specimens.

Clinical Use:
Urine levels of citrate are increased in metabolic and respiratory alkalosis. Increased citrate excretion is associated with increased calcium excretion due to the formation of soluble citrate-calcium complexes in the kidney. Citrate levels are decreased in metabolic acidosis. As a result of lowered citrate excretion, calcium excretion may be reduced resulting in the formation of renal stones.

Clozapine (Clozaril) 1769X

Includes: Clozapine and Norclozapine

CPT Code(s): 83789

Specimen Container:
EDTA (lavender-top)

Preferred Specimen:
2 mL plasma (1 mL minimum)

Instructions:
Do not use gel barrier tubes. For plasma, collect blood into lavender-top tube. Centrifuge at 2000-2200 rpm (1000 g) at 15-25 C for 8-10 min to separate the plasma. Pipet or pour the plasma into polypropylene or polyethylene tubes. Ship and store frozen. Refrigeration is acceptable for shipping. For serum, collect blood into plain red-top tube. Allow tube to stand at 15-28 C for 20-30 min for clotting. Centrifuge at 2000-2200 rpm (1000 g) at 15-25 C for 8-10 min to separate the serum. Pipet or pour serum into polypropylene or polyethylene tubes. Ship and store as above. Optimal time to collect sample: 0.5-1 hour before next oral dose at steady state. (Time to steady state: 3-5 days).

Transport Temperature:
Frozen

Reject Criteria:
Gross hemolysis; Gel barrier tube; Lipemic sample

Methodology:
Liquid Chromatography, Tandem Mass Spectrometry

Reference Range:

Norclozapine:	25-400 ng/mL (trough, steady state)
Toxic Range	Not well established
Clozapine:	The therapeutic response begins to appear at 100 ng/mL. Refractory schizophrenia appears to require a therapeutic concentration of at least 350 ng/mL (trough, at steady state).
Toxic range:	>1000 ng/mL

Clinical Use:
Clozapine is used selectively in the treatment of patients with schizophrenia. The major active metabolite is norclozapine. Hematologic parameters may be affected. Therapeutic drug monitoring is useful to optimize dose and to avoid toxicity.

CO2 C02

Testing performed daily.

CPT Code(s): 82374

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

COCAINE SCREEN, URINE COCU

Testing performed daily.

Specimen Container:
Sterile Container

Preferred Specimen:
Urine

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Coccidioides Antibody, Complement Fixation 906X

CPT Code(s): 86635

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.2 mL minimum)

Transport Temperature:
Refrigerated, stable 2 weeks

Reject Criteria:
Pleural fluid samples

Methodology:
Complement Fixation

Reference Range:
<1:2 Antibody not detected
> or = 1:2 Antibody detected
All serum titers > or = 1:2 should be considered evidence indicative of coccidiodomycosis, although titers of 1:2 and 1:4 should be confirmed by Immunodiffusion testing. Titers

exceeding 1:16 usually reflect disseminated disease. In general, higher titers are correlated with disease severity, and changes in serial titers are of prognostic value. A negative CF test does not, however, rule out the diagnosis. Only 70% of patients with cavitary disease are positive, and only 30% of patients with nodular disease are positive.

Clinical Use:
Infection by Coccidioides immitis can produce a spectrum of disease, with most patients being asymptomatic and some developing disseminated disease, including pneumonia and meningitis.

Cold Hemagglutinins 349X

CPT Code(s): 86157

Specimen Container:
No additive (red-top)

Preferred Specimen:
3 mL serum (0.5 mL minimum)

Transport Temperature:
Room temperature, stable 2 weeks

Methodology:
Hemagglutination

Reference Range:
None detected

Clinical Use:
This test can be useful for the detection of cold agglutinins in association with cold agglutinin syndrome.

Collagen Cross-Linked N-Telopeptide (NTx), Urine 36167X

Includes creatinine.

CPT Code(s): 82523; 82570

Specimen Container:
Sterile, screw-cap container

Preferred Specimen:
2 mL second void urine (1 mL minimum).

Instructions:
Do not use preservatives. Acidified specimen is not acceptable. Discard the first morning void specimen. Collect second morning void, mix well. If submitting a 24-hour urine specimen, use test code 86959N.

Transport Temperature:
Refrigerate, stable 5 days

Reject Criteria:
Received room temperature; Acidified specimen; Preserved specimen

Methodology:
Enhanced Chemiluminescence

Reference Range:
Males:

18-29 years:	12-99 nmol BCE/mmol Creat
30-59 years:	9-60 nmol BCE/mmol Creat

Premenopausa females:
females: 4-64 nmol BCE/mmol Creat

Clinical Use:
NTx is useful to assess bone resorption in patients with metabolic bone disease. The test is also useful in monitoring therapy to slow or halt osteoporotic bone loss. A decline of 30% or more of NTx over a six month period suggests effective therapy.

Collagen Type I C-Telopeptide (CTx) 17406X

CPT Code(s): 82523

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.5 mL minimum)

Instructions:
Collect blood in a red-top vacutainer containing no additives. Allow blood to clot (10-15 minutes) at room temperature. Centrifuge and separate the serum from the cells. Freeze as soon as possible. Fasting is required. Fasting morning collection 8-10 am. (Diurnal variations cause elevated levels at night.)

Transport Temperature:
Frozen, stable 3 months

Reject Criteria:
Non-fasting

Methodology:
Electrochemiluminescent Immunoassay

Clinical Use:
CTx is useful to assess bone resorption in patients with metabolic bone disease. The test is also useful in monitoring therapy to slow or halt osteoporotic bone loss.

COMPLEMENT C3 C3

Testing performed daily.

CPT Code(s): 86160

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

COMPLEMENT C4 C4

Testing performed daily.

CPT Code(s): 86160

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Complement, Total (CH50) 618X

CPT Code(s): 86162

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.2 mL minimum).

Instructions:
Draw sample without anticoagulant, allow to clot. Separate serum into a plastic tube and freeze sample within one hour of time drawn. Avoid hemolysis. Do not use gel barrier tubes. Do not submit the sample in a glass tube. Do not thaw.

Transport Temperature:
Frozen

Reject Criteria:
Received room temperature; Received refrigerated

Methodology:
Colorimetry

Reference Range:
31-66 U/mL

Clinical Use:
Decreased levels are observed in patients with active SLE and other immune complex-mediated diseases. Decreased levels may also be due to hyposynthesis of C components or genetic deficiency of an individual component.

COMPLETE BLOOD COUNT (CBC) CBCD

Testing performed daily.

Specimen Container:
Lavender EDTA

Preferred Specimen:
Whole Blood

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

COMPREHENSIVE METABOLIC PANEL CCP

Testing performed daily.

CPT Code(s): 80053

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Copper Liver 563Z

CPT Code(s): 82525

Specimen Container:
Trace metal-free (royal blue–top) tube

Preferred Specimen:
5 mg liver biopsy tissue

Methodology:
Inductively Coupled Plasma/ Mass Spectrometry

Reference Range:
10-35 ug/g drywt

Clinical Use:
Evaluation of Wilson's Disease.

Copper, Serum 363X

CPT Code(s): 82525

Specimen Container:
Royal blue-top (no additive) in trace element collection package

Preferred Specimen:
2 mL serum (0.5 mL minimum)

Instructions:
See Specimen Collection Section, Toxicology. Patient should refrain from taking vitamins, mineral or herbal supplements at least one week prior to specimen collection.

Transport Temperature:
Room temperature

Reject Criteria:
Gross hemolysis

Methodology:
Inductively-Coupled Plasma/Optical Emission Spectroscopy

Reference Range:

Adults:	70 – 155 mcg/dL
Pediatrics (mcg/dL)	
< 6 months:	38 – 104
6-11 months:	24 – 152
1 year:	76 – 193
2-3 years:	87 – 187
4-5 years:	56 – 191

6-9 years:	117 – 181
10-13 years:	87 – 182
14-17 years:	75 – 187

Clinical Use:
Copper is an essential trace element. It is required for hemoglobin synthesis and is a constituent of the cytochrome oxidase system. The most important abnormality in copper metabolism is Wilson's Disease. Subnormal concentrations are found in patients with hypoproteinemia, e.g., protein malnutrition, protein malabsorption syndrome, nephrosis and Menkes' syndrome. Above normal concentrations are found in a number of acute and chronic diseases, such as malignant diseases (including leukemia), hemochromatosis, biliary cirrhosis, thyrotoxicosis, and various infections. Serum copper levels are also high in patients taking contraceptives or estrogens.

CORTISOL CORT

Testing performed daily.

CPT Code(s): 82533

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Cortisol, Free, 24-Hour Urine, LC/MS/MS 11280X

Includes creatinine.

CPT Code(s): 82530

Specimen Container:
24-hour urine container

Preferred Specimen:
2 mL urine (0.5 mL minimum).

Instructions:
Record 24-hour urine volume on test request form and urine vial. Reference ranges do not apply to random urine samples.

Transport Temperature:
Refrigerated

Reject Criteria:
Received room temperature

Methodology:
Liquid Chromatography, Tandem Mass Spectrometry

Reference Range:

Adults:	4-50 mcg/24 hrs
<1 year:	not established
1-4 years:	0.9-8.2 mcg/24 hrs
5-9 years:	1.0-30.0 mcg/24 hrs
10-13 years:	1.0-45.0 mcg/24 hrs

14-17 years:	3.0-55.0 mcg/24 hrs

Clinical Use:
Urinary Free Cortisol is useful in the detection of patients with Cushing's syndrome for whom Free Cortisol concentrations are elevated.

Cortisol, Free, LC/MS/MS 36423X

CPT Code(s): 82530

Specimen Container:
No additive (red-top)

Preferred Specimen:
2 mL serum (0.7 mL minimum).

Transport Temperature:
Refrigerated

Reject Criteria:
Received room temperature; Grossly hemolyzed specimens are unacceptable.

Methodology:
Equilibrium Dialysis, Radioimmunoassay

Reference Range:

Adults	
baseline :	8-10 AM: 0.40-1.92 mcg/dL
60 minutes:	1.88-4.73 mcg/dL
Baseline:	4-6 PM 0.20-0.90 mcg/dL
Full Term Newborns	9.3 mcg/dL
Premature Newborns (27-36 Weeks)	7.5 mcg/dL
Full-Term Infants, 3 Months Old	3.9 mcg/dL
Premature Infants, 3 Months Old	3.5 mcg/dL
Age Ranges (AM)	
6- 9 Years	0.37-1.62 mcg/dL6
10-11 Years	0.27-1.12 mcg/dL
12-14 Years	0.23-1.67 mcg/dL
15-17 Years	0.43-1.77 mcg/dL

Newborn and infant pediatric data from Bio Neonate (1990) 57:21-29.

Clinical Use:
Free Cortisol is useful in the detection of patients with Cushing's syndrome for whom Free Cortisol concentrations are elevated.

Cortisone, Serum 37098X

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. 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 Code(s): 83789

Specimen Container:
No additive (red-top)

Preferred Specimen:
4 mL serum (1 mL minimum).

Instructions:
Specify time of day specimen was collected. Overnight fasting is preferred.

Transport Temperature:
Refrigerated

Reject Criteria:
Received room temperature

Methodology:
Liquid Chromatogaphy, Tandem Mass Spectrometry

Reference Range:

Males and Females:	1.2-3.5 mcg/dL am. 0.6-2.8 mcg/dL p.m.
Pediatric a.m.	
Full Term Infants, birth:	2.6-15.6 mcg/dL
7 Days:	0.3-4.5 mcg/dL
2 Weeks-3 Months:	0.9-5.4 mcg/dL
3 Months-1 year:	0.7-4.6 mcg/dL
1-7 years:	0.6-3.0 mcg/dL

Pediatric data from Pediat Res (1980) 14:39-46

Clinical Use:
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.

Coxsackie A Panel 37477X

Includes: Coxsackie types 2, 4, 7, 9, 10 and 16

CPT Code(s): 86658 (x6)

Specimen Container:
No additive (red-top)

Preferred Specimen:
2 mL serum (1 mL minimum)

Transport Temperature:
Refrigerated, stable 2 weeks

Methodology:
Complement Fixation

Reference Range:

Coxsackie B (1-6) Antibody 7656X

Coxsackie B Types 1, 2, 3, 4, 5, 6

CPT Code(s): 86658 (x6)

Specimen Container:
No additive (red-top)

Preferred Specimen:
21mL serum (0.5 mL minimum).

Transport Temperature:
Refrigerated, stable 7 days

Reject Criteria:

Hemolysis

Methodology:
Complement Fixation

Reference Range:
Serum: or = 1:32 are indicative of recent infection. Titers of 1:8 or 1:16 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. There is considerable cross reactivity among enteroviruses; however, the highest titer is usually associated with the infecting serotype.

C-Peptide 372X

CPT Code(s): 84681

Specimen Container:
No additive (red-top)

Preferred Specimen:
2 mL serum (0.4 mL minimum).

Instructions:
Overnight fasting is required.

Transport Temperature:
Frozen

Methodology:
Immunoassay

Reference Range:
0.8-3.1 ng/mL

Clinical Use:
C-peptide is useful in the evaluation of pancreatic function since it gives a direct evaluation of beta cell function.

C-REACTIVE PROTEIN, CARDIO H-S CARDIOCRP

Testing performed daily.

CPT Code(s): 86141

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

C-REACTIVE PROTEIN, INFLAMMATORY CRPI

Testing performed daily.

CPT Code(s): 86140

Specimen Container:

LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

CREATINE KINASE CKO

Testing performed daily.

CPT Code(s): 82550

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Creatine Kinase Isoenzymes (CK Isoenzymes) 4451X

Includes: Total CK, CK-BB, CK-MB, CK-MM

CPT Code(s): 82550; 82552

Specimen Container:
No additive (red-top)

Preferred Specimen:
2 mL serum (1 mL minimum).

Instructions:
Hemolyzed specimens are not acceptable.

Transport Temperature:
Frozen

Reject Criteria:
Received room temperature; Received refrigerated; Hemolysis

Methodology:
Electrophoresis

Clinical Use:
Creatine Kinase Isoenzymes is useful in the evaluation of myocardial disease. Isoenzyme MM is found in skeletal muscle whereas isoenzyme MB is increased in recent myocardial (heart) damage.

CREATINE KINASE W/ REFLEX CK-MB CK

Testing performed daily.

Specimen Container:

LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

CREATININE CREA

Testing performed daily.

CPT Code(s): 82565

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

CREATININE CLEARANCE, URINE CREATCLE

Testing performed daily.

CPT Code(s): 82575

Specimen Container:
24 hr urine container

Preferred Specimen:
Urine

Instructions:
No preservatives.

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

CREATININE, 12 HOUR URINE CREAT12

Testing performed daily.

CPT Code(s): 82570

Specimen Container:
Sterile Container

Preferred Specimen:
Urine

Transport Temperature:

Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

CREATININE, 24 HOUR URINE GRP CREA24

Testing performed daily.

CPT Code(s): 82570

Specimen Container:
24 hr urine container

Preferred Specimen:
Urine

Instructions:
No preservatives.

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

CREATININE, RANDOM URINE CREATRU

Testing performed daily.

CPT Code(s): 82570

Specimen Container:
Sterile Container

Preferred Specimen:
Urine

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range

Cryoglobulin (% Cryocrit), Serum 36562X

CPT Code(s): 82595

Specimen Container:
No additive (red-top)

Preferred Specimen:
3 mL serum (2 mL minimum)

Instructions:
Clot for one hour in 37°C water bath. Separate serum in room temperature centrifuge carriers. Transport at room temperature.

Transport Temperature:
Room temperature, stable 3 days

Reject Criteria:
Received refrigerated or frozen or serum in SST tubes.

Methodology:
Cryoprecipitation

Clinical Use:
The Cryocrit is primarily intended for following a patient with previously defined and quantitated cryoglobulins. The Cryocrit may consist of cryoglobulins, fibrin or mixtures of cryoglobulins and fibrin.

Cryptococcus Antigen Screen with Reflex to Titer 11197X

If Cryptococcus Screen is positive, a Cryptococcus Titer will be performed at an additional charge (CPT code(s): 86406).

CPT Code(s): 87327

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.5 mL minimum).

Transport Temperature:
Frozen, stable 3 months

Methodology:
Enzyme Immunoassay, Latex Agglutination

Cryptosporidium Antigen, DFA 37213X

Includes concentration.

CPT Code(s): 87015; 87272

Specimen Container:
Ova and parasite tube set

Preferred Specimen:
Preserved stool (10% formalin) preferred, SAF, Ecofix

Instructions:
The specimen must be passed into a clean dry container and must not be contaminated with urine. Add stool to the 10% formalin vial to bring the liquid level to the "fill to here" line on the vial. Mix the contents thoroughly until homogenous. The patient must not use barium products, antacids, antidiarrheal medications, or laxatives containing oil prior to collection of a specimen for parasitological exam.

Transport Temperature:
Room temperature, stable 60 days

Reject Criteria:
Frozen

Methodology:
Direct Immunofluorescent Detection

Clinical Use:
Cryptosporidiosis is a disease which produces watery diarrhea and which can be life threatening in immunosuppressed patients.

Cyclic Citrullinated Peptide (CCP) IgG 11173X

CPT Code(s): 86200

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.5 mL minimum)

Transport Temperature:
Refrigerated

Methodology:
Enzyme-linked Immunosorbent Immunoassay

Reference Range:

Negative:	<20	
< 20	Units	Negative
20-39	Units	Weak Positive
40-59	Units	Moderate Positive

Clinical Use:
Anti-CCP is useful in diagnosing Rheumatoid Arthritis in entities that may potentially be confused with Rheumatoid Arthritis that are Rheumatoid-Factor positive, such as SLE, Anti-CCP is is usually negative.

Cyclosporine A, Trough, Blood 8812X

CPT Code(s): 80158

Specimen Container:
EDTA (lavender-top)

Preferred Specimen:
2 mL whole blood (1 mL minimum).

Instructions:
Collect blood in lavender-top tube (EDTA). Gently rock the tube for 5-10 minutes at 15-25 C for mixing blood with the anticoagulant. Ship and store refrigerated. Ambient transportation (

Transport Temperature:
Refrigerated, stable 1 week

Reject Criteria:
Received room temperature; Received frozen; Moderate hemolysis; Lipemic; Gel barrier tube

Methodology:
Fluorescent Polarization Immunoassay

Reference Range:
Therapy Phase Kidney-Triple Therapy Heart-Triple Therapy Liver-Triple Therapy Liver-Double Therapy
Induction 250-375 300-400 250-313 300-375
Maintenance 100-250 150-250 135-200 150-250
Oellerich, M. et al., Lake Louise Consensus Conference on Cyclosporine Monitoring in Organ Transplantation: Report of the Consensus Panel, Therapeutic Drug Monitoring, 17:642-654, Lippincott-Raven Publishers, Philadelphia, 1995.

Clinical Use:
Cyclosporine (Cyclosporin A) is an immunosuppressant therapeutic agent used in the prevention of organ graft rejection. Measurement of blood levels is recommended due to the inter-individual variability of metabolism as well as the toxicity associated with excessive dosage.

Cystic Fibrosis Screen 10458X

For New York patient testing, use test tode 10463X.

CPT Code(s): 83891; 83909; 83914 (x32); 83900; 83901 (x13); 83912

Specimen Container:
EDTA (lavender-top)

Preferred Specimen:
5 mL whole blood (3 mL minimum)

Instructions:
Please indicate the ethnicity of the patient.
Whole blood: Normal phlebotomy procedure. Specimen stability is crucial. Store and ship ambient immediately. Do not freeze.
For Genetic Testing, original tube required. Aliquots for other testing from original tube are permitted, if performed with out cross contamination of samples and using sterile techniques.
For prenatal diagnosis, please use test code 10226X, Cystic Fibrosis DNA Analysis, Fetus.

Transport Temperature:
Room temperature

Methodology:
Polymerase Chain Reaction and Oligonucleotide Ligation Assay

Reference Range:
The twenty-three mutations analyzed in this test (A455E, Delta I507, Delta F508, G542X, G551D, R553X, R560T, 1717-1 G>A, R1162X, 3659delC, N1303K, W1282X, R334W, R347P, R117H, 621+1 G>T, 2789+5 G>A, |3849+10kb C>T, G85E, 711+1 G>T, 3120+1 G>A, 1898+1 G>A, 2184delA) comprise approximately 90% of the CF mutations found in non-Hispanic Caucasians, 97% in Ashkenazi-Jewish individuals, 69% in African-Americans, and 57% in Hispanics. There is insufficient data on the sensitivity of this assay in Asian-Americans. This includes all 23 core mutations recommended by the American College of Obstetricians and Gynecologists (ACOG) and the American College of Medical Genetics (ACMG) for population-based CF carrier screening. Testing for the intron 8 5T polymorphism is performed only when the R117H mutation is detected and testing for the I506V and I507V polymorphisms is performed only when a homozygous Delta F508 or Delta I507 mutation is detected.
These mutations are detected by amplification of specific CFTR gene regions by polymerase chain reaction (PCR) followed by an oligonucleotide ligation assay (OLA) and detection of fluorescent reaction products by automated capillary electrophoresis. Since genetic variation and other factors can affect the accuracy of direct mutation testing, the results of this testing should always be interpreted in light of clinical and familial data. ###For assistance with the interpretation of these results, please contact your local Quest Diagnostics genetic counselor or call 1-866-GENEINFO (436-3463).

Clinical Use:
Cystic fibrosis (CF) is the most common recessive lethal genetic disorder affecting primarily Caucasians of Northern European descent, with an incidence of approximately 1 in 3300 births and a carrier rate of 1 in 29. Testing for 23 mutations and associated polymorphisms will be performed as recommended by the American College of Medical Genetics (ACMG) and American College of Obstetrics and Gynecology (ACOG).

Cysticercus Antibody, ELISA 34164X

CPT Code(s): 86682

Specimen Container:
Sterile, screw-cap container

Preferred Specimen:

1 mL CSF (0.1 mL minimum)

Transport Temperature:
Refrigerated, stable 2 weeks

Methodology:
Immunoassay

Reference Range:

Cystine, Quantitative, Random Urine 401X

Includes creatinine.

CPT Code(s): 82131; 82570

Specimen Container:
Sterile, screw-cap container

Preferred Specimen:
1.8 mL random urine

Instructions:
Do not use preservatives. Urine with a pH less than 2.0 will be rejected. Do not thaw. Patient age is required for correct reference range.

Transport Temperature:
Frozen

Reject Criteria:
Received room temperature; Received refrigerated; pH

Methodology:
Liquid Chromatography Mass Spectrometry

Reference Range:

Pediatrics:	Less than 18 years: 2.8-10.9 mmol/mol creat
Adults:	2.9-14.1 mmol/mol creat

Clinical Use:
Cystinuria is an autosomal recessive disease in which DI BASIC amino acids, including cystine, are excreted in excess.

Cytology, ThinPrep® Pap 35455X

Pap results requiring physician interpretation will be performed at an additonal charge (CPT code(s): 88141).
Gynecologic cytology is a screening test which is subject to both false positive and false negative results. For that reason, the test is most reliable when a satisfactory sample is obtained on a regular repetitive basis. Hence, these results must be interpreted in the context of historic and current clinical information.

CPT Code(s): 88142

Specimen Container:
ThinPrep vial

Instructions:
ThinPrep vial must be used with plastic spatula, plus endocervical brush or broom device. Patient's name must be written on the specimen container.

Transport Temperature:
Room temperature

Methodology:
Papanicolaou Staining/Bethesda System of Reporting

Cytomegalovirus Antibodies (IgG, IgM) 6732X

CPT Code(s): 86644; 86645

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.2 mL minimum).

Instructions:
Allow specimen to clot at room temperature and then centrifuge. Separate serum from cells as soon as possible. Refrigerate 2-8 degrees C.

Transport Temperature:
Room temperature, stable 7 days

Methodology:
Enzyme Immunoassay

Reference Range:
gG

Negative	0.90 ISR
quivocal	0.91-1.09 ISR
Positive	1.10 ISR

The presence of IgG antibodies demonstrate prior infection with cytomegalovirus. Seroconversion of CMV IgG from negative to positive or a significant rise in antibody level between paired sera is indicative of active or recent infection. Testing for IgM antibodies (also indicative of active or recent infection) is recommended to support a diagnosis of active disease.
NOTE: This test is not FDA approved for use in screening blood or plasma donors.Patients exhibiting equivocal results should be retested in one month, if clinically indicated.

Negative	<0.9 Index
quivocal	0.9-1.1 Index
Positive	>1.1 Index

Results from any one IgM assay should not be used as a sole determinant of a current or recent infection. Because an IgM test can yield false positive results and low levels of IgM antibody may persist for more than 12 months post infection, reliance on a single test result could be misleading. If an acute infection is suspected, consider obtaining a new specimen and submit for both IgG and IgM testing in two or more weeks.

Clinical Use:
Intrauterine or congenital CMV infections occur in 0.5 to 2.2% of all live births.

Symptomatic congenital infections usually occur in infants born to nonimmune mothers who have primary infections during pregnancy. Latency and reactivation of CMV influence the interpretation of serological results. A single positive CMV IgG result is and indication of present or past infection. The presence of CMV IgM suggests a recent CMV exposure but does not differentiate between primary infection and reactivation.

Cytomegalovirus DNA, Qualitative Real-Time PCR 10601X

This test was developed and its performance characteristics have been determined by Quest Diagnostics. Performance characteristics refer to the analytical performance of the test.

CPT Code(s): 87496

Specimen Container:
EDTA (lavender-top) or sterile container

Preferred Specimen:

1 mL Whole blood; 1 mL CSF or Amniotic fluid; 3 mm Fresh (unfixed) tissue; 1 mL Plasma; 1 mL Random urine.
Instructions: Blood collected in tubes with heparin anticoagulant are not accepted for this test.

Plasma: Collect blood in sterile tubes containing EDTA or ACD as anticoagulant or in Plasma Preparation Tubes (PPTs). Store collected whole blood at room temperature and separate plasma from cells within 2 hours of collection. Transfer plasma to sterile, plastic, screw-capped tubes and store refrigerated or frozen. If blood is collected in a PPT tube, centrifuge within 2 hours of collection and store refrigerated or frozen. It is not necessary to transfer the plasma from a PPT tube to aliquot tubes.

Whole blood: Collect whole blood in sterile tubes containing EDTA or ACD as anticoagulant. Store at room temperature. Do not freeze whole blood.

CSF, amniotic fluid, urine and tissue: Collect in a sterile container and store refrigerated or frozen.

Reject Criteria:
Heparinized specimens, unspun PPT tubes

Methodology:
Real-Time Polymerase Chain Reaction

Reference Range:
200 copies/mL

Clinical Use:
CMV infections are common and usually asymptomatic. In patients who are immunocompromised, CMV may cause disseminated, severe disease. CMV may cause birth defects in a minority of infected newborns. DNA methods provide the highest sensitivity and specificity of any method.

Cytomegalovirus DNA, Quantitative Real-Time PCR 10600X

This test was developed and its performance characteristics have been determined by Quest Diagnostics. Performance characteristics refer to the analytical performance of the test.

CPT Code(s): 87497

Specimen Container:
EDTA (lavender-top) or sterile container

Preferred Specimen:

1 mL Whole blood; 1 mL CSF or Amniotic fluid; 3 mm Fresh (unfixed) tissue; 1 mL Plasma; 1 mL Random urine.
Instructions: Blood collected in tubes with heparin anticoagulant are not accepted for this test.

Plasma: Collect blood in sterile tubes containing EDTA or ACD as anticoagulant or in Plasma Preparation Tubes (PPTs). Store collected whole blood at room temperature and separate plasma from cells within 2 hours of collection. Transfer plasma to sterile, plastic, screw-capped tubes and store refrigerated or frozen. If blood is collected in a PPT tube, centrifuge within 2 hours of collection and store refrigerated or frozen. It is not necessary to transfer the plasma from a PPT tube to aliquot tubes.

Whole blood: Collect whole blood in sterile tubes containing EDTA or ACD as anticoagulant. Store at room temperature. Do not freeze whole blood.

CSF, amniotic fluid, urine and tissue: Collect in a sterile container and store refrigerated or frozen.

Reject Criteria:
Heparinized specimens, unspun PPT tubes

Methodology:
Real-Time Polymerase Chain Reaction

Reference Range:
200-200,000,000 copies/mL

Clinical Use:
CMV infections are common and usually asymptomatic. In patients who are immunocompromised, CMV may cause disseminated, severe disease. CMV may cause birth defects in a minority of infected newborns. DNA methods provide the highest sensitivity and specificity of any method.

Cytomegalovirus IgG Antibody 403X

CPT Code(s): 86644

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.1 mL minimum).

Instructions:
Separate serum from cells as soon as possible.

Transport Temperature:
Room temperature

Methodology:
Enzyme Immunoassay

Reference Range:
Negative <=0.90 ISR
Equivocal 0.91-1.09 ISR
Positive >=1.10 ISR
The presence of IgG antibodies demonstrate prior infection with cytomegalovirus. Seroconversion of CMV IgG from negative to positive or a significant rise in antibody level between paired sera is indicative of active or recent infection. Testing for IgM antibodies (also indicative of active or recent infection) is recommended to support a diagnosis of active disease.
Note: This test is not FDA approved for use in screening blood or plasma donors. Patients exhibiting equivocal results should be retested in one month, if clinically indicated.

Clinical Use:
Exposure to cytomegalovirus (CMV) occurs throughout life and by adulthood, 50-90% of the population is seropositive for CMV antibodies. CMV is spread by close contact, sexual transmission, perinatal or congenital transmission, and through blood transfusions and tissue transplants. Intrauterine or congenital infections occur in 0.5 to 2.2% of all live births. Symptomatic congenital infections usually occur in infants born to nonimmune mothers who have primary infections during pregnancy. Latency and reactivation of CMV influence the interpretation of serological results. A single positive CMV IgG result is an indication of present or past infection. The presence of CMV IgM suggests a recent CMV exposure but does not differentiate between primary infection and reactivation.

Cytomegalovirus IgM Antibody 8503X

CPT Code(s): 86645

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum separator tube serum (0.1 mL minimum) Plasma is not acceptable.

Instructions:
Allow specimen to clot at room temperature and then centrifuge. Separate serum from cells as soon as possible. Refrigerate 2-8 degrees C. (Store specimen -20 degrees C if it will not be tested within one week.) Avoid freezing and thawing.

Transport Temperature:
Room temperature: 4 days
Refrigerated: 7 days
Frozen: 30 days

Methodology:
Enzyme Immunoassay

Reference Range:
Negative <0.9 Index
Equivocal 0.9-1.1 Index
Positive >1.1 Index
Results from any one IgM assay should not be used as a sole determinant of a current or recent infection. Because an IgM test can yield false positive results and low levels of IgM antibody may persist for more than 12 months post infection, reliance on a single test result could be misleading. If an acute infection is suspected, consider obtaining a new specimen and submit for both IgG and IgM testing in two or more weeks.

Clinical Use:
Exposure to cytomegalovirus (CMV) occurs throughout life and by adulthood, 50-90% of the population is seropositive for CMV antibodies. CMV is spread by close contact, sexual

transmission, perinatal or congenital transmission, and through blood transfusions and tissue transplants. Intrauterine or congenital infections occur in 0.5 to 2.2% of all live births. Symptomatic congenital infections usually occur in infants born to nonimmune mothers who have primary infections during pregnancy. Latency and reactivation of CMV influence the interpretation of serological results. A single positive CMV IgG result is an indication of present or past infection. The presence of CMV IgM suggests a recent CMV exposure but does not differentiate between primary infection and reactivation.

D-Dimer D-DIMER

Testing performed daily

Specimen Container:
Blue (sodium citrate)

Preferred Specimen:
Plasma

Instructions:
Test immediately

Transport Temperature:
Frozen

Methodology:
Immunoturbidometric

Reference Range:
Call Lab for up-to date reference range

DHEA (Dehydroepiandrosterone) LC/MS/MS, Serum 19894X

CPT Code(s): 82626

Specimen Container:
No additive (red-top)

Preferred Specimen:
0.5 mL serum (0.3 mL minimum)

Instructions:
Specify age and sex on test request form. Overnight fasting is preferred.

Transport Temperature:
Room temperature, stable 7 days

Reject Criteria:
Received room temperature

Methodology:
Liquid Chromatography/Tandem Mass Spectrometry (LCMSMS

Reference Range:

Adult Males:	61-1636 ng/
Females:	102-1185 ng/dL
Pediatric:	
<1 year	not established
1-5 years	< or = 377 ng/dL
6-9 years:	19-592 ng/dL
10-13 years:	42-1067 ng/dL
14-17 years:	137-1489 ng/dL

Clinical Use:

DHEA is a weakly androgenic steroid that is useful when congenital adrenal hyperplasia is suspected. It is also useful in determining the source of androgens in hyperandrogenic conditions, such as polycystic ovarian syndrome and adrenal tumors.

DHEA Sulfate 402X

CPT Code(s): 82627

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.3 mL minimum).

Instructions:
Specify age and sex on test request form.

Transport Temperature:
Refrigerated

Methodology:
Immunoassay

Reference Range:
See report

Clinical Use:
DHEA-S is the most prevalent steroid present in the serum. It is the circulating, sulfated form of DHEA, the metabolic precursor of testosterone and estrogen. DHEA-S concentrations are very high at birth, rapidly decline to prepuberty levels during infancy, and increase again at the onset of puberty. A measurement of both cortisol and DHEA is recommended for comprehensive appraisal of adrenocortical insufficiency. Serum DHEA-S determination is considered more reliable in evaluating hyperadrenocorticism than urinary 17-ketosteroids because many hirsute females have elevated DHEA-S with normal levels of other androgens. The measurement of DHEA-S can further be used to differentiate between adrenal hyperplasia and adrenal tumors. Elevated DHEA-S levels due to hyperadrenocorticism can be suppressed by dexamethasone, whereas DHEA-S-secreting adrenal tumors do not respond to dexamethasone.

DIGOXIN DIG

Testing performed daily.

CPT Code(s): 80162

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Instructions:
Draw 6 hrs after dose.

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Dihydrotestosterone 204X

CPT Code(s): 82651

Specimen Container:
No additive (red-top)

Preferred Specimen:
4 mL serum (1.1 mL minimum)

Instructions:
Specify age and sex on test request form.

Transport Temperature:
Refrigerated

Reject Criteria:
Received room temperature

Methodology:
Extraction, Chromatography, Radioimmunoassay

Reference Range:

	Males	Females
Cord Blood	<2-8 ng/dL	<2-5 ng/dL
1-6 Months	12-85 ng/dL	<5 ng/dL
Prepubertal	<5 ng/dL	<5 ng/dL
Tanner Stages II-III	3-33 ng/dL	5-19 ng/dL
Tanner Stages IV-V	22-75 ng/dL	3-30 ng/dL

Includes data from J Clin Endocrinl Metab (1979) 48:821-826

Clinical Use:
DHT is a potent androgen derived from testosterone via 5-alpha-reductase activity. 5-alpha-reductase deficiency results in incompletely virilized males (phenotypic females). This diagnosis is supported by an elevated ratio of testosterone to DHT.

Diphtheria Antitoxoid Antibody 4865X

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. 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 Code(s): 86648

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.2 mL minimum)

Instructions:
Blood samples should be collected by venipuncture, allowed to clot naturally, and the serum separated.

Transport Temperature:
Room temperature

Methodology:
Enzyme Immunoassay

Reference Range:
0.01 IU/mL or greater indicates protective level of antitoxoid antibodies

DIRECT COOMBS DAT

Testing performed daily.

Specimen Container:
Lavender EDTA

Preferred Specimen:
Whole Blood

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

DNA (Double Stranded) Antibodies, EIA 255X

CPT Code(s): 86225

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.5 minimum).

Instructions:
Collect sample in red-top (no additive) or SST tube. Overnight fasting is preferred.

Transport Temperature:
Room temperature

Methodology:
Enzyme Immunoassay

Reference Range:

< or = 4 IU/mL	Negative
5-9 IU/mL	Indeterminate
> or =10 IU/mL	Postitive

Clinical Use:
High levels of antibody to double stranded DNA are found in active systemic lupus erythematosus, but are uncommon in other autoimmune diseases.

DNA Antibody (Double Stranded), Crithidia IFA with Reflex to Titer 37092X

If dsDNA Antibody Screen detects an abnormal band, dsDNA Antibody Titer will be performed at an additional charge (CPT code(s): 86256).

CPT Code(s): 86255

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.1 mL minimum).

Instructions:
Overnight fasting is preferred.

Transport Temperature:
Refrigerated

Reject Criteria:

Received room temperature

Methodology:
Immunofluorescence Assay

Reference Range:
See individual assays.

Clinical Use:
dsDNA Antibody is detected in patients with active systemic lupus erythematosus (SLE) and approximately 20% of patients with mixed connective tissue disease.

DNase-B Antibody 256X

CPT Code(s): 86215

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.3 mL minimum).

Transport Temperature:
Refrigerated

Methodology:
Tube Test

Reference Range:

Preschool:	<=60 titer
School:	<=170 Titer
Adult:	<=85 Titer

Clinical Use:
DNase-B Antibody is useful in patients with group A streptococcal infection. DNase-B Antibody may persist for as long as three months.

ELECTROLYTES LYTES

Testing performed daily.

CPT Code(s): 80051

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Bordetella pertussis IgG and IgA Antibodies, MAID 17825X

Includes: pertussis toxins (PT) IgG, IgA and filamentous hemagglutinin antigen (FHA) IgG, IgA

CPT Code(s): 86615 (x4)

Specimen Container:

No additive (red-top)

Preferred Specimen:
1 mL serum (0.5 minimum)

Transport Temperature:
Refrigerated, stable 2 weeks

Methodology:
Multiple Analyte Immuno Detection

Chlamydia trachomatis/Neisseria gonorrhoeae, DNA, SDA 17305X

CPT Code(s): 87491; 87591

Preferred Specimen:
Liquid Cytology (PreservCyt® Preservative (ThinPrep®) or TriPath SurePathâ„¢ vials)-post-processing of the PAP smear

Instructions:
Use the following transports only when also submitting for liquid cytology. Residual SurePath vial-2 mL post-processing of the PAP smear. ThinPrep vial-6 mL post-processing of the PAP smear. No add on's to regularly processed SurePath or ThinPrep samples

Transport Temperature:
Room temperature, stable 6 days

Methodology:
Strand Displacement Amplification

Clinical Use:
Chlamydia trachomatis infections are recognized as the leading cause of sexually transmitted diseases (STD) in the United States. *C. trachomatis* is known to cause cervicitis, pelvic inflammatory disease (PID), urethritis, epididymitis an

Ehrlichia chaffeensis Antibodies (IgG, IgM) 34271X

This test was developed and its performance characteristics have been determined by Quest Diagnostics. 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. P

CPT Code(s): 86666 (x2)

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.2 mL minimum)

Instructions:
Allow specimen to clot at room temperature and then centrifuge. Separate serum from cells as soon as possible. Refrigerate 2-8 degrees C. (Store specimen -20 degrees C if it will not be tested within one week.)

Transport Temperature:
Refrigerated

Methodology:
Immunofluorescence Assay

Clinical Use:
Human monocytic ehrlichiosis (HME) is a tick-borne infection caused by Ehrlichia chaffeensis. Infections range in severity from asymptomatic to life-threatening, especially in patients

who are immunocompromised.

Saccharomyces cerevisiae Antibodies (ASCA) (IgA) 10295X

CPT Code(s): 86671

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.3 mL minimum)

Transport Temperature:
Refrigerated, stable 3 weeks

Reject Criteria:
Grossly hemolyzed or lipemic specimens

Methodology:
Enzyme-Linked Immunosorbent Assay

Reference Range:
Negative:
Equivocal: 20.1-24.9 Units
Positive: >=25.0 Units

Clinical Use:
Antibodies to *Saccharomyces cerevisiae* are found in approximately 75% of patients with Crohn's disease, 15% of patients with ulcerative colitis, and 5% of the healthy population. High titers of antibody increase the likelihood of disease, and spe

Saccharomyces cerevisiae Antibodies (ASCA) (IgG) 10294X

CPT Code(s): 86671

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.3 mL minimum)

Transport Temperature:
Room temperature

Reject Criteria:
Grossly hemolyzed or lipemic specimens

Methodology:
Enzyme-Linked Immunosorbent Assay

Reference Range:
Negative:
Equivocal: 20.1-29.9 Units
Positive: >=30.0 Units

Clinical Use:
Antibodies to *Saccharomyces cerevisiae* are found in approximately 75% of patients with Crohn's disease, 15% of patients with ulcerative colitis, and 5% of the healthy population. High titers of antibody increase the likelihood of disease, and spe

Endomysial Antibody Screen (IgA) with Reflex to Titer 15064X

If Endomysial Antibody Screen (IgA) is abnormal, Endomysial Antibody Titer will be performed at an additional charge (CPT code(s): 86256).

CPT Code(s): 86255

Preferred Specimen:
1 mL serum

Transport Temperature:
Refrigerated, stable 3 weeks

Methodology:
Immunofluorescence Assay

Clinical Use:
A positive IgA endomysial antibody result supports the diagnosis of celiac disease.

Enterovirus Culture 2647X

CPT Code(s): 87254

Specimen Container:
Sterile, screw-cap container

Preferred Specimen:
3 mL (1 mL minimum) urine, CSF, tissue, blood, body fluids, swabs, lavage, stool, throat and rectal swabs

Instructions:
Submit appropriate swab (throat or nasopharygeal, rectal) in viral transport media (VCM transport media preferred). Viral culturettes are not preferred, but will be accepted. Submit CSF added to viral transport media in equal proportion or non-diluted (2 mL required, 1 mL minimum) in sterile container. Submit feces non-diluted in sterile container or in vial transport media. Collect whole blood in heparin.

Reject Criteria:
Received room temperature

Methodology:
Rapid method

Reference Range:
Specimens are inoculated onto two genetically engineered (for rapid virus growth) cell monolayers. After 48 hours, two monolayers are stained using Enterovirus antibodies for early detection by Indirect Immuo-fluorescence Assay (IFA). If the monolayers are negative at this stage, the remaining monolayers will be fixed at 5 days, stained and examined for virus.

Clinical Use:
More than 70 Enteroviruses have been identified including the poliovirus group, ECHO virus group, coxsackie A virus subgroup, the coxsackie B subgroup, and several that are just numbered. Twenty or more different clinical syndromes caused by Enterovirus have been identified including polio, aseptic meningitis, myocarditis, hand-foot-mouth syndrome, and the common cold to name just a few.

Enterovirus RNA, Qualitative Real-Time PCR 15082X

This test was developed and its performance characteristics have been determined by Quest Diagnostics. Performance characteristics refer to the analytical performance of the test.

CPT Code(s): 87498

Specimen Container:

Sterile screw cap container

Preferred Specimen:
0.7 mL CSF (0.3 mL minimum)

Instructions:
Plasma: Collect blood in sterile tubes containing EDTA or ACD as anticoagulant or in Plasma Preparation Tubes(PPTs). Store collected whole blood at room temperature and separate plasma from cells within 2 hours of collection. Transfer plasma to sterile, plastic, screw-capped tubes and store refrigerated or frozen. If blood is collected in a PPT tube, centrifuge within 2 hours of collection and store refrigerated or frozen. It is not necessary to transfer the plasma from a PPT tube to aliquot tubes. Specimens can be stored and transported either refrigerated or frozen. Avoid repeated freezing and thawing of specimens.

Transport Temperature:
Refrigerated, stable 7 days

Reject Criteria:
Avoid freeze/thaw

Methodology:
Real-Time Polymerase Chain Reaction

Reference Range:
Not detected

Clinical Use:
This test is used to determine the presence of Enterovirus in a patient's specimen. Organisms may be detected by PCR prior to diagnosis by immunological methods. PCR provides more rapid results than other methods, including culture.

EOSINOPHIL COUNT — TOTALEOS

Testing performed daily.

Specimen Container:
Lavender EDTA

Preferred Specimen:
Whole Blood

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

EOSINOPHIL SMEAR — EOSS

Testing performed daily.

Specimen Container:
Swab

Preferred Specimen:
Nasal swab

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

Epstein Barr Virus DNA, Qualitative Real-Time PCR 34179X

This test was developed and its performance characteristics have been determined by Quest Diagnostics. Performance characteristics refer to the analytical performance of the test.

CPT Code(s): 87798

Specimen Container:
EDTA (lavender-top) or sterile container

Preferred Specimen:
1 mL Plasma (EDTA, PPT preferred) or whole blood or CSF or tissue or serum (0.3 mL minimum).

Instructions:
Plasma: Collect blood in sterile tubes contained EDTA anticoagulant; either 0.15% solution v/v final EDTA K3 (standard EDTA tube) or 9 mg spray-dried EDTA K2 (Plasma Preparation Tube or PPT tube with plasma separator-gel, preferred). Blood collected in tubes containing ACD anticoagulant are acceptable but will yield results approximately 15% lower when compared to EDTA tubes due to the dilution effect of the 1.5 mL of anticoagulant used in the tube. Blood collected in tubes with heparin anticoagulant are unsuitable for this test. Store whole blood at room temperature and separate plasma from cells within 2 hours of collection. Transfer plasma to sterile, plastic screw-capped aliquot tubes and store refrigerated up to 8 days or at -18 C or colder more than 8 days. Do not clarify plasma by filtration or further centrifugation. Avoid repeated freezing and thawing of specimen.
Note: If blood is collected in a PPT tube, centrifuge within 2 hours of collection as before, but it is not necessary to transfer the plasma to aliquot tubes. Following centrifugation, a gel barrier maintains separation of plasma from cellular components during specimen transport and storage, and unlike standard Vacutainer® blood collection tubes, the PPT tube is plastic and hence the plasma can be shipped and stored refrigerated or frozen in the original tube.
Serum: Collect blood in sterile tubes with no anticoagulants; serum separator tubes (SSTs) are recommended. 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 up to 8 days or at -18 C or colder more than 8 days. Avoid repeated freezing and thawing of specimen.
Whole blood: Do not collect whole blood from a peripheral line that has heparin. Store and ship EDTA or ACD-treated whole blood refrigerated. Do not freeze. For all other sample types, collect by standard methods. Collect in a sterile vessel.

Transport Temperature:
Room temperature unacceptable; Refrigerated (See instructions/specimen requirements); Frozen (See instructions/specimen requirements)

Reject Criteria:
Specimens collected in heparin. Sputum is not an acceptable specimen type.

Methodology:
Real-Time Polymerase Chain Reaction

Reference Range:
200 copies/mL

Clinical Use:
Infection with EBV is common and is generally subclinical or presents as a self-limited illness. Reactivation of latent EBV is an immunocompromised person can lead to more serious results, including lymphoproliferative disorders or neurological disease. PCR methods maybe useful in identifying EBV in a variety of clinical specimens.

Epstein Barr Virus DNA, Quantitative Real-Time PCR 10186X

This test was developed and its performance characteristics have been determined by Quest Diagnostics. Performance characteristics refer to the analytical performance of the test.

CPT Code(s): 87799

Specimen Container:
EDTA (lavender-top) or sterile container

Preferred Specimen:
1 mL plasma (EDTA, PPT preferred) or whole blood or CSF or serum (0.3 mL minimum)

Instructions:
Plasma: Collect blood in sterile tubes containing EDTA anticoagulant; either 0.15% solution v/v final EDTA K3 (standard EDTA tube) or 9 mg spray-dried EDTA K2 (Plasma Preparation Tube or PPT tube with plasma separator-gel, preferred).
Blood: Blood collected in tubes with heparin anticoagulant are not acceptable for this test. Blood collected in tubes containing ACD anticoagulant are acceptable but will yield results approximately 15% lower when compared to EDTA tubes due to the dilution effect of the 1.5 mL of anticoagulant used in the tube. Store whole blood at room temperature and separate plasma from cells within 2 hours of collection. Transfer plasma to sterile, plastic, screw-capped tubes and store refrigerated or at -18 degrees C or colder. Do not clarify plasma by filtration or further centrifugation. Avoid repeated freezing and thawing of specimen. Note: If blood is collected in a PPT tube, centrifuge within 2 hours of collection as before, but it is not necessary to transfer the plasma to aliquot tubes. Following centrifugation, a gel barrier maintains spearation of plasma from cellular components during specimen transport and storage, and unlike standard VACUTAINER Brand blood collection tubes, the PPT tube is plastic and hence the plasma can be shipped and stored refrigerated or frozen in the original tube. Store at -20 degrees C for up to 30 days. Minimum volume: 0.3 mL. Required volume: 0.8 mL. **Serum:** Collect blood in sterile tubes with no anticoagulants; serum separator tubes (SSTs) are recommended. 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 at -18 degrees C or colder. Avoid repeated freezing and thawing of specimen. Store at -20 degrees C for up to 30 days. Minimum volume: 0.3 mL. Required volume: 0.8 mL. For all other sample types, collect by standard methods into a sterile leak-proof container.

Transport Temperature:
Refrigerated, stable 48 hours

Reject Criteria:
Specimens collected in heparin. Amniotic fluid, sputum and tissue are not acceptable specimen types.

Methodology:
Real-Time Polymerase Chain Reaction

Reference Range:

Clinical Use:
Monitoring EBV DNA levels by quantitative PCR in patients at risk of EBV-associated lymphoproliferative disorders may allow timely recognition of virus reactivation and permit installment of antiviral treatment. This is a quantitative molecular test, with a linear range of 200-2000000 copies/mL.

Epstein-Barr Virus Antibody Panel 6421X

Includes: EBV Capsid (IgG, IgM) and EBNA (IgG)

CPT Code(s): 86665 (x2); 86664

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.6 mL minimum)

Instructions:

Allow specimen to clot at room temperature and then centrifuge. Separate serum from cells as soon as possible. Refrigerate 2-8 degrees C.

Transport Temperature:
Room temperature

Methodology:
Enzyme Immunoassay

Reference Range:

<=0.90	Negative	Index
0.91-1.09	Equivocal	
>=1.10 ISR	Positive	

Clinical Use:
Primary infection by EBV causes infectious mononucleosis, usually a self-limiting disease in children and young adults. Infection with EBV can cause lymphoproliferative disorders including tumors. VCA-IgG appears approximately
10 weeks after initial infection and persists for life. VCA-IgM typically appears approximately 4-6 weeks after initial infection and declines to undetectable in 1 month in young children and up to 3 months in others.

Epstein-Barr Virus Early Antigen D Antibody (IgG) 15447X

CPT Code(s): 86663

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.2 mL minimum)

Instructions:
Separate serum from cells as soon as possible.

Transport Temperature:
Room temperature

Methodology:
Immunoassay

Reference Range:

<=0.90:	Negative
0.91-1.09:	Equivocal
>=1.10:	Positive

Early IgG antibodies are transient and may last only 1-2 months. A negative result does not rule out current EBV infection. A positive result, suggestive of active IM, should be substantiated with the EBV VCA IgM antibody test.

Clinical Use:
Primary infection by EBV causes infectious mononucleosis, usually a self-limiting disease in children and young adults. Infection with EBV can cause lymphoproliferative disorders including tumors. Early Antigen Antibody appears approximately 1 month after infection and typically is transient lasting only 1-2 months. Persistently elevated levels suggest reactivation or persistence of EBV infection.

ERYTHROCYTE SEDIMENTATION RATE (ESR) ESR

Testing performed daily.

Specimen Container:
Lavender EDTA

Preferred Specimen:
Whole Blood

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

Erythropoietin (EPO) 427X

CPT Code(s): 82668

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.5 mL minimum)

Transport Temperature:
Refrigerated

Reject Criteria:
Gross hemolysis; Lipemia

Methodology:
Immunochemiluminometric Assay

Reference Range:

Adults	4.1-19.5 mIU/mL
Pediatric Reference Ranges:	
3 Weeks-2 Months	5.0-13.0 mIU/mL
3 Months-16 Years	9.0-28.0 mIU/mL

Pediatric data from Br J Haematol (1988) 70:247-250.

Clinical Use:
Elevated levels of serum erythropoietin (EPO) occur in patients with anemias due to increased red cell destruction in hemolytic anemia and also in secondary polycythemias associated with impaired oxygen delivery to the tissues, impaired pulmonary oxygen exchange, abnormal hemoglobins with increased oxygen affinity, constriction of the renal vasculature, and inappropriate EPO secretion caused by certain renal and extrarenal tumors. Normal or depressed levels may occur in anemias due to increased oxygen delivery to tissues, in hypophosphatemia, and in polycythemia vera.

ESTRADIOL ESTRAD

Testing performed daily.

CPT Code(s): 82670

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Estradiol, Ultrasensitive, LC/MS/MS 30289X

CPT Code(s): 82670

Specimen Container:
No additive (red-top)

Preferred Specimen:
0.5 mL serum (0.2 mL minimum).

Instructions:
Specify age and sex on test request form.

Transport Temperature:
Refrigerated

Reject Criteria:
Received room temperature

Methodology:
Liquid Chromatography Tandem Mass Spectrometry

Reference Range:

Adult Males:	< or = 29 pg/mL
Adult Females:	
Post-menopausal:	< or = 10 pg/mL
Follicular Stage:	39-375 pg/mL
Mid-Cycle Stage:	94-762 pg/mL
Luteal Stage:	48-440 pg/mL
Pediatric Females:	
Prepubertal 1-9 years:	< or = 16 pg/mL
10-11 years:	< or = 65 pg/mL
12-14 years:	< or = 142 pg/mL
15-17 years:	< or = 283 pg/mL
Pediatric Males:	
Prepubertal 1-9 years:	< or = 4 pg/mL
10-11 years:	< or = 12 pg/mL
12-14 years:	< or = 24 pg/mL
15-17 years:	< or = 31 pg/mL

Clinical Use:
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.

Estrogen, Total, Serum 439X

CPT Code(s): 82672

Specimen Container:
No additive (red-top)

Preferred Specimen:
1.5 mL serum (1 mL minimum)

Transport Temperature:
Refrigerated

Reject Criteria:
Received room temperature

Methodology:
Extraction, Radioimmunoassay

Reference Range:

Total Serum Estrogen	pg/mL
Females:	
Prepubertal:	<40.0
Postmenopausal:	<40.0
HMG Treatment (therapeutic range):	400-800
Days 1-10 of menstrual cycle:	61 - 394
Days 11-20 of menstrual cycle:	122 - 437
Days 21-30 of menstrual cycle:	156 - 350
Males:	
Prepubertal:	<40.0
Adults:	40.0 - 115.0

Clinical Use:
Estrogens are secreted by the gonads, adrenal glands, and placenta. Total Estrogens provide an overall picture of estrogen status for men and women.

Estrogens, Fractionated, LC/MS/MS 36742X

Includes: Estrone; Estradiol, Ultrasensitive; Estriol

CPT Code(s): 82671

Specimen Container:
No additive (red-top)

Preferred Specimen:
3 mL serum (0.8 mL minimum)

Transport Temperature:
Refrigerated, stable 1 week

Reject Criteria:
Received room temperature

Methodology:
Liquid Chromatography Tandem Mass Spectrometry, Extraction, Radioimmunoassay

ETHANOL ALC

Testing performed daily.

CPT Code(s): 82055

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Instructions:
Do not use alcohol prep during specimen collection.

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Ethylene Glycol, Blood 801X

CPT Code(s): 82693

Specimen Container:
Sodium fluoride (gray-top)

Preferred Specimen:
3 mL whole blood (1 mL minimum)

Transport Temperature:
Refrigerated, stable 2 weeks

Methodology:
Gas Chromatography

Reference Range:
Less than 10.0 mcg/mL
Detection limit: 10.0-100.0 mcg/mL

Clinical Use:
Ethylene glycol (present in antifreeze) may be ingested accidentally or for purpose of suicide. It is relatively non-toxic but metabolizes to toxic oxalic acid and glycolic acids. Toxicity is manifested as neurological abnormalities, severe metabolic acidosis, acute renal failure and cardiopulmonary failure.

Euglobulin Clot Lysis Time 462X

CPT Code(s): 85360

Specimen Container:
3.2% Sodium Citrate (light blue-top)

Preferred Specimen:
2 mL plasma (1 mL minimum)

Instructions:
Do not thaw. Specimen collection container is blue-top (3.2% sodium citrate) tube. To avoid release of plaminogen activator, do not massage vein vigorously, pump first excessively or leave tourniquet in place for a prolonged period. Centrifuge within 30 minutes after collection to get platelet-poor plasma and freeze on dry ice. Ship specimens frozen on dry ice. Keep samples in a -60 to -80 degree C freezer if they cannot be shipped promptly. Prohibit exercise prior to drawing sample.

Transport Temperature:
Frozen

Methodology:
Clot Dissolution

Reference Range:
>60 Minutes

Clinical Use:
Euglobulin Clot Lysis Time (ECLT) provides an overall assessment of the fibrinolysis system by measuring the time for an in vitro clot to dissolve in the absence of the normal plasmin inhibitors. ECLT is useful in assessing the fibrinolytic system and monitoring patients on urokinase or streptokinase fibrinolytic therapy.

FACTOR 10 FAC10

Testing performed Monday - Friday.

Specimen Container:
Blue (sodium citrate)

Preferred Specimen:
Plasma

Instructions:
Plasma must be platelet poor prior to freezing.

Transport Temperature:
Frozen

Reference Range:
Call Lab for up-to-date reference range.

FACTOR 2 FAC2

Testing performed Monday - Friday.

Specimen Container:
Blue (sodium citrate)

Preferred Specimen:
Plasma

Instructions:
Plasma must be platelet poor prior to freezing.

Transport Temperature:
Frozen

Reference Range:
Call Lab for up-to-date reference range.

FACTOR 5 FAC5

Testing performed Monday - Friday.

Specimen Container:
Blue (sodium citrate)

Preferred Specimen:
Plasma

Instructions:
Plasma must be platelet poor prior to freezing.

Transport Temperature:
Frozen

Reference Range:
Call Lab for up-to-date reference range.

FACTOR 7 FAC7

Testing performed Monday - Friday.

Specimen Container:
Blue (sodium citrate)

Preferred Specimen:

Plasma

Instructions:
Plasma must be platelet poor prior to freezing.

Transport Temperature:
Frozen

Reference Range:
Call Lab for up-to-date reference range.

FACTOR 8 FAC8

Testing performed Monday - Friday.

Specimen Container:
Blue (sodium citrate)

Preferred Specimen:
Plasma

Instructions:
Plasma must be platelet poor prior to freezing.

Transport Temperature:
Frozen

Reference Range:
Call Lab for up-to-date reference range.

FACTOR 9 FAC9

Testing performed Monday - Friday.

Specimen Container:
Blue (sodium citrate)

Preferred Specimen:
Plasma

Instructions:
Plasma must be platelet poor prior to freezing.

Transport Temperature:
Frozen

Reference Range:
Call Lab for up-to-date reference range.

Factor II Activity, Clotting 331X

CPT Code(s): 85210

Specimen Container:
3.2% Sodium Citrate (light blue-top)

Preferred Specimen:
2 mL plasma (1 mL minimum)

Instructions:
See specimen collection section.

Transport Temperature:

Frozen

Methodology:
Photometric Clot Detection

Reference Range:
70-150 % of normal

Clinical Use:
Factor II Activity is indicated for diagnosing a congenital deficiency (rare) or evaluating acquired deficiencies (i.e. liver disease, vitamin K deficiency, and oral anticoagulant therapy) or as an alternative way to determine the degree of anticoagulation with warfarin.

Factor II Prothrombin 20210G>A Mutation Analysis 17909X

For New York patient testing, use test code 17910X.

CPT Code(s): 83891; 83898; 83909; 83914; 83912

Specimen Container:
EDTA (lavender-top)

Preferred Specimen:
5 mL whole blood (3 mL minimum).

Methodology:
Polymerase Chain Reaction, Oligonucleotide Ligation Assay, Fluorescent Microspheres

Reference Range:
The Prothrombin (Factor II) gene 20210G>A mutation is associated with elevated prothrombin levels and is the second most common inherited risk factor for thrombosis. Heterozygotes have a 3 to 6-fold elevated risk for thrombosis. Homozygotes are rare but two copies of the mutation would increase that risk. When heterozygosity for 20210G>A is combined with heterozygosity for the Factor V Leiden mutation, the relative risk for thrombosis is approximately 25. Combination with non-genetic risk factors such as use of oral contraceptives, also leads to substantial elevations in relative risk.

Clinical Use:
The G20210A mutation in the Prothrombin (Factor II) gene is the second most common inherited risk factor for thrombosis. (2.3% of the general population are heterozygous for the mutation.) Individuals who have one copy of the mutation are at a 3-6 fold increased risk of thrombosis and individuals who have two copies are at an even more increased risk.

Factor IX Activity, Clotting 352X

CPT Code(s): 85250

Specimen Container:
3.2% Sodium Citrate (light blue-top)

Preferred Specimen:
2 mL plasma (1 mL minimum)

Instructions:
See specimen collection section.

Transport Temperature:
Frozen

Methodology:
Photometric Clot Detection

Reference Range:
60-160 % of normal

Clinical Use:
Factor IX deficiency is also known as hemophilia B (Christmas disease). It is also helpful in the evaluation of a prolonged aPTT.

Factor V (Leiden) Mutation Analysis 17900X

For New York patient testing, use test code 17901X.
For tests sent to Chantilly, VA use test code 22722X.
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. 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 Code(s): 83891; 83898; 83909; 83914; 83912

Specimen Container:
EDTA (lavender-top)

Preferred Specimen:
5 mL whole blood (3 mL minimum).

Instructions:
Whole blood: Normal phlebotomy procedure. Specimen stability is crucial. Store and ship ambient immediately.

Methodology:
Polymerase Chain Reaction, Oligonucleotide Ligation Assay, Fluorescent Microspheres

Reference Range:
The presence of the mutation is determined by amplification of exon 10 by polymerase chain reaction (PCR) followed by individual hybridizations with interrogation oligonucleotides specific for the mutant and wild-type sequences. Light produced by a chemical reaction only in the presence of a perfect match between the probe and sample is measured by an automated luminometer.

Clinical Use:
Factor V Leiden is the one of the most common causes of inherited thrombophilia. The R506Q mutation leads to resistance to degradation of the Factor V protein by activated protein C (APC). Individuals who have one copy of the mutation are at a 4-8 fold increased risk of thrombosis and individuals who have two copies are at a 50-100 fold increased risk.

Factor V Activity, Clotting 344X

CPT Code(s): 85220

Specimen Container:
3.2% Sodium Citrate (light blue-top)

Preferred Specimen:
2 mL plasma (1 mL minimum)

Instructions:
See specimen collection section.

Transport Temperature:
Frozen

Methodology:
Photometric Clot Detection

Reference Range:
65-150 % of normal

Clinical Use:
Factor V activity is used to evaluate both hereditary (rare) and acquired (liver disease, inhibitors, intravascular coagulation) deficiencies.

Factor VII Activity, Clotting 346X

CPT Code(s): 85230

Specimen Container:
3.2% Sodium Citrate (light blue-top)

Preferred Specimen:
2 mL plasma (1 mL minimum)

Instructions:
See specimen collection section.

Transport Temperature:
Frozen

Methodology:
Photometric Clot Detection

Reference Range:
60-150% of normal

Clinical Use:
Factor VII activity is used to evaluate for heriditary deficiencies, acquired deficiencies (liver disease, vitamin K deficiency, warfarin), and the investigation of a prolonged PT.

Factor VIII Activity, Clotting 347X

CPT Code(s): 85240

Specimen Container:
3.2% Sodium Citrate (light blue-top)

Preferred Specimen:
2 mL plasma (1 mL minimum)

Instructions:
See specimen collection section.

Transport Temperature:
Frozen

Methodology:
Photometric Clot Detection

Reference Range:

50 – 180% of normal

Clinical Use:
Factor VIII Activity is used most commonly in evaluating for deficiencies (i.e. hereditary and acquired hemophilia A). Low levels may also be seen in association with von Willebrand Disease. Elevated levels > 200% are considered a thrombophilia risk factor.

Factor X Activity, Clotting 359X

CPT Code(s): 85260

Specimen Container:
3.2% Sodium Citrate (light blue-top)

Preferred Specimen:
2 mL plasma (1 mL minimum)

Instructions:
See specimen collection section.

Transport Temperature:
Frozen

Methodology:
Photometric Clot Detection

Reference Range:
70-150 % of normal

Clinical Use:
Factor X Activity is used to evaluate for hereditary or acquired deficiencies (liver disease, vitamin K deficiency, Warfarin, amyloidosis). It is also used in the investigation of a prolonged aPTT and PT.

Fecal Lipids, Total 455X

CPT Code(s): 82710

Specimen Container:
See Collection Instructions

Preferred Specimen:
20 gm Feces (3 gm minimum).

Instructions:
Send entire collection sample - Use a 1 gallon, plastic leak-proof container with screw cap (Warehouse item #2614). Sending an aliquot sample - Use a yellow cap, 120 mL specimen container (Warehouse item #38791). Submit a well mixed timed stool collection. Record total collection time (24, 48, or 72 hours) and weight on test requisition. If entire collection is sent to the lab, the lab will weigh the sample. If an aliquot is sent, please enter the total collected weight of stool on test requisition. Keep refrigerated during collection. Do not submit specimen in metal paint cans, as processing poses safety hazard. Specimens received in paint cans will be rejected.

Transport Temperature:
Frozen
Stability:
RT: 4 days
Refrigerated: 6 days
Frozen: 2 weeks

Reject Criteria:
Received room temperature; Paint cans

Methodology:
Gravimetric

Reference Range:

Clinical Use:
Excessive Fat in stool, steatorrhea, is useful in diagnosing patients with malabsorption and maldigestion, e.g., pancreatic failure. In addition, results may be useful in monitoring patients receiving exogenous enzyme therapy for chronic diarrhea.

FERRITIN FER

Testing performed daily

CPT Code(s): 82728

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated (up to 2 days); Frozen (greater than 2 days)

Reference Range:
Call Lab for up-to date reference range

FETAL HEMOGLOBIN DETECTION KB

Testing performed daily.

Specimen Container:
Lavender EDTA

Preferred Specimen:
Whole Blood

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

FETAL SCREEN FTLS

Testing performed daily.

Specimen Container:
Lavender EDTA

Preferred Specimen:
Whole Blood

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

FIBRIN DEGRADATION PRODUCTS (FDP) FDP

Testing performed daily.

Specimen Container:
Blue (sodium citrate)

Preferred Specimen:
Whole Blood

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

FIBRINOGEN — FBG

Testing performed daily

Specimen Container:
Blue (sodium citrate)

Preferred Specimen:
Whole Blood

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to date reference range

FISH, Vysis UroVysion â„¢, Bladder Cancer — 10107X

CPT Code(s): 88368 (x4)

Specimen Container:
Sterile, screw-cap container

Preferred Specimen:
Perform urine collection (50 mL) at the physician's office or Patient Service Center in a urine preservative transport kit with handling instructions (available upon request).

Instructions:
Mix voided urine with CytoLyt or ethanol 50% in a 1:1 solution or mix 2:1 (v:v) with carbowax (2% polyetheline glycol in 50% ethanol) preservative and transfer to a tightly-capped plastic container. Transport on cold packs. Specimens should be processed within 72 hours.

Transport Temperature:
On cold packs within 72 hours

Methodology:
Fluorescence in situ Hybridization

Clinical Use:
Useful for monitoring bladder cancer recurrence.

FLUID CELL COUNT — Varies by source

Testing performed daily.

Specimen Container:

Lavender EDTA

Preferred Specimen:
Fluid

Instructions:
Transport to lab immediately after collection.

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

FLUID CULTURE — FLDC

Testing performed daily.

Specimen Container:
Sterile Container

Preferred Specimen:
Fluid

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

FLUID DIFFERENTIAL

Testing performed daily.

Specimen Container:
Lavender EDTA

Preferred Specimen:
Fluid

Instructions:
Transport to lab immediately after collection.

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

FLUID, CRYSTALS — CRYSF OR CRYSY

Testing performed daily.

Specimen Container:
Lavender EDTA

Preferred Specimen:
Fluid

Instructions:
Transport to lab immediately after collection.

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

FOLATE FOL

Testing performed daily.

Specimen Container:
Gold

Preferred Specimen:
Serum

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Folate, RBC 467X

Includes: Folate, RBC and hematocrit

CPT Code(s): 82747

Specimen Container:
EDTA (lavender-top)

Preferred Specimen:
1 mL whole blood (0.5 mL minimum).

Instructions:
Transfer EDTA whole blood from glass collection tube to plastic tube. Folate is light sensitive. Minimize exposure to light during sample handling and storage. Both the HCT and Folate will be performed on this tube. Do not refrigerate, as this will affect the HCT.

Transport Temperature:
Room temperature, stable 3 days

Methodology:
Chemiluminescence (Centaur)

Reference Range:
>280 ng/mL

Clinical Use:
Folate levels have diagnostic significance in nutritional deficiencies, especially in cases of severe alcoholism, function damage to the upper third of small bowel, pregnancy and various forms of megoblastic anemia. Since serum folate levels are subject to rapid changes reflecting diet and absorption, RBC folate may be a better diagnostic tool since the levels remain fairly constant.

FOLLICLE STIMULATING HORMONE (FSH) FSH

Testing performed daily.

CPT Code(s): 83001

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Fragile X with Reflex, Xsenseâ„¢ 19757X

For New York patient testing, use test code 19758X.
This test was developed and its performance characteristics have been determined by Quest Diagnostics. Performance characteristics refer to the analytical performance of the test .
If PCR result is a carrier or abnormal male then Southern blot will be performed at an additional charge (CPT code(s): 83891, 83892 x2, 83894, 83897, 83896).
If PCR result is a carrier or gray zone female or has normal homozygous FMR1 alleles then Capillary Electrophoresis will be performed at an additional charge (CPT code(s): 83892 x2, 83909 x8, 83900 x4).
If Capillary Electrophoresis is abnormal then Southern blot is performed at an additional charge (CPT code(s): 83891, 83892 x2, 83894, 83897, 83896).

CPT Code(s): 83891; 83900; 83909; 83894; 83912

Specimen Container:
EDTA (lavender-top)

Preferred Specimen:
5 mL whole blood

Instructions:
Room temperature

Methodology:
Polymerase Chain Reaction with Detection by Capillary Electrophoresis, Capillary Southern Analysis, Southern Blot Analysis

Clinical Use:
Fragile X syndrome is the most common cause of inherited mental retardation. The mutation responsible for the Fragile X syndrome involves the expansion of tandem trinucleuotide repeats in the Fragile X mental retardation (FMR-1) gene (GenBank GI:1668818) on the long arm of the X chromosome. It is a defect in the FMR1 gene on the X chromosome and seen in approximately one in 1,200 males and one in 2,500 females.

FREE THYROXINE FT4

Testing performed daily.

CPT Code(s): 84439

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Fructosamine 8340X

CPT Code(s): 82985

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.5 mL minimum)

Transport Temperature:
Room temperature

Reject Criteria:
Hemolysis; Lipemia

Methodology:
Colorimetric

Clinical Use:
The fructosamine assay is useful in monitoring the degree of glycemia over short-to-intermediate time frames (1-3 weeks). A fructosamine concentration greater than the established normal range is an indication of prolonged hyperglycemia of 1-3 weeks or longer. The higher the fructosamine value, the poorer the degree of glycemia control.

FSH (Follicle Stimulating Hormone), Pediatrics 36087X

CPT Code(s): 83001

Specimen Container:
No additive (red-top)

Preferred Specimen:
0.5 mL serum (0.3 mL minimum)

Instructions:
Refrigerate immediately

Transport Temperature:
Refrigerated, stable 1 week

Methodology:
Immunoassay

Reference Range:
Females

0-8 years/prepubertal*:	0.50-4.50 mIU/mL
9-13 years/early pubertal:	0.40-6.50 mIU/mL
14-17 years:	0.80-8.50 mIU/mL

* 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).

Males

0-9 years/prepubertal*:	<3.00 mIU/mL
10-13 years/early pubertal:	0.30-4.00 mIU/mL
14-17 years:	0.40-7.40 mIU/mL

* 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. (Forest MG, Ducharme JR, Gonadotropic and gonadal hormones. Ch 8, in: Bertrand et al, eds. Pediatric Endocrinology, 2nd Ed. Baltimore: Williams & Wilkins, 1993).

Clinical Use:
Third Generation FSH testing is appropriate to assess gonadal dysfunction in children. Combined with luteinizing hormone (LH), FSH is useful in the diagnosis and management of infertility and in monitoring FSH suppressive therapy.

FTA-ABS (Fluorescent Treponemal Antibody-Absorption) 4112X

CPT Code(s): 86780

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.2 mL minimum).

Transport Temperature:
Room temperature

Methodology:
Immunofluorescence

Reference Range:
Nonreactive

Clinical Use:
A reactive FTA-ABS test confirms the presence of treponemal antibodies but does not indicate the stage or presence of active infection. The FTA-ABS does not distinguish between syphilis and other treponemal infections. Once the FTA-ABS becomes positive, it remains so for long periods, regardless of therapy. False positive reactions have been associated with diseases with increased or abnormal globulins, patients with lupus erythematosus, positive Anti-Nuclear Antibodies (ANA) and during pregnancy.

Fungal Identification, Molds 39489X

CPT Code(s): 87107

Specimen Container:
Double wall safety container

Preferred Specimen:
Pure culture isolate on slant. Stability of isolates will be determined by the laboratory.

Instructions:
Stability of isolates will be determined by the laboratory. Organism must be viable.

Transport Temperature:
Room Temperature

Methodology:
Microscopy and Conventional Culture

Clinical Use:
Fungal identification of pure colony isolates provides an aid in the diagnosis of filamentous fungi and selection of therapy.

FUNGUS CULTURE FUNC

Testing performed daily.

Specimen Container:
Sterile Container

Preferred Specimen:
Swab,scrapings

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

FUNGUS STAIN FUNS

Testing performed daily.

Specimen Container:
Glass Slide

Preferred Specimen:
Swab,scrapings

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

GAMMA GLUTAMYL TRANSPEPTIDASE (GGT) GGT

Testing performed daily.

CPT Code(s): 82977

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Gastric Parietal Cell Antibody, ELISA 15114X

CPT Code(s): 83516

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.3 mL minimum).

Reject Criteria:
Microbially contaminated serum; Gross hemolysis; Lipemic specimen; Specimen containing heavy visible particulate

Methodology:
Enzyme Linked Immunosorbent Immunoassay

Reference Range:

Negative:	<=20.0
Equivocal:	20.1-24.9

Postitive: >=25

Clinical Use:
Anti-gastric parietal cell antibodies (Anti-GPA) were previously tested for by indirect immunofluorescence (IF) using mouse stomach as a substrate. Identification of the specific antibody target as H+/K+ ATPase protein (a gastric proton pump) has led to the development of an ELISA based assay.Antibodies to this protein are present in approximately 80% of patients with pernicious anemia and a small percentage of the general adult population. The latter percentage increases with age and may reflect the presence of atrophic gastritis. A negative test does not exclude a diagnosis of pernicious anemia. A test for intrinsic factor blocking antibody (IFab) may provide serological evidence in support of the diagnosis in some of these patients.

Gastrin 478X

CPT Code(s): 82941

Specimen Container:
No additive (red-top)

Preferred Specimen:
2 mL serum (0.5 mL minimum).

Instructions:
Overnight fasting is required.

Transport Temperature:
Frozen

Reject Criteria:
Received room temperature; Received refrigerated

Methodology:
Chemiluminescence

Reference Range:
Adults: Less than or equal to 100 pg/mL
Pediatrics 5-17 years: 13 – 64 pg/mL
Pediatrics <5 years: not established
Reference range applies to fasting specimens only.

Clinical Use:
For the diagnosis and monitoring of gastrin-secreting tumors, gastric ulcer, Zollinger-Ellison syndrome. Increased in pernicious anemia.

GC SCREEN GCSC

Testing performed daily.

Specimen Container:
Culturette

Preferred Specimen:
Cervical

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

GENTAMICIN LEVEL, PEAK GENP

Testing performed daily.

CPT Code(s): 80170

Specimen Container:
Gold

Preferred Specimen:
Serum

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

GENTAMICIN LEVEL, RANDOM GENTAR

Testing performed daily.

CPT Code(s): 80170

Specimen Container:
Gold

Preferred Specimen:
Serum

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

GENTAMICIN LEVEL, TROUGH GENT

Testing performed daily.

CPT Code(s): 80170

Specimen Container:
Gold

Preferred Specimen:
Serum

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Gliadin Antibody Panel (IgG, IgA) 8889X

CPT Code(s): 83516 (x2)

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.5 mL minimum).

Instructions:

Grossly hemolyzed specimens are unacceptable. Avoid lipemia.

Transport Temperature:
Refrigerated

Reject Criteria:
Microbially contaminated serum

Methodology:
Enzyme Immunoassay

Reference Range:

< 11 U/ml	Negative
11 - 17 U/ml	Equivocal
> 17 U/ml	Positive

Clinical Use:
Celiac Disease is characterized by the presence of Gliadin Antibody. Such patients display a hypersensitivity to gluten (wheat) in their diet. The antibody is undetectable when patients with hypersensitivity are placed on gluten-free diets. Antibody IgA is more specific and IgG is a more sensitive assay to Celiac Disease.

Glomerular Basement Membrane Antibody (IgG) 257X

CPT Code(s): 83520

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.3 mL minimum)

Transport Temperature:
Room temperature, stable 1 week

Methodology:
Enzyme Immunoassay

Reference Range:

<3 U/mL	Negative
>=3 U/mL	Positive

Clinical Use:
Glomerular Basement Membrane Antibody is present in one fourth of patients with Goodpasture's syndrome. This syndrome consists of glomerulonephritis and pulmonary hemorrhage.

GLUCOSE TOLERANCE TEST, 3 HOUR GTT3

Testing performed daily.

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

GLUCOSE TOLERANCE TEST, 5 HOUR GTT5

Testing performed daily.

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

GLUCOSE, 1 HR PP G1PP

Testing performed daily.

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

GLUCOSE, 2 HR PP GLU2PP

Testing performed daily.

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

GLUCOSE, 24HR UR GRP GL24

Testing performed daily.

Specimen Container:
Gold

Preferred Specimen:
Serum

Transport Temperature:
Refrigerated

Reference Range:

Call Lab for up-to-date reference range.

GLUCOSE, RANDOM GLU

Testing performed daily.

CPT Code(s): 82947

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

GLUCOSE, RANDOM URINE GLURU

Testing performed daily.

CPT Code(s): 82945

Specimen Container:
Sterile Container

Preferred Specimen:
Urine

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Glucose-6-Phosphate Dehydrogenase, Quantitative (G-6-PD) 500

CPT Code(s): 82955

Specimen Container:
EDTA (lavender-top)

Preferred Specimen:
1 mL whole blood (0.2 mL minimum).

Transport Temperature:
Refrigerated

Reject Criteria:
Received frozen

Methodology:
Kinetic

Reference Range:
G-6-PD: 4.6-13.5 U/g Hb

Clinical Use:

G-6-PD is the most common enzyme deficiency in the world. Newborns with G-6-PD may have prolonged and more pronounced neonatal jaundice than other newborns. Older individuals are subject to hemolytic anemia that can be induced by some foods, drugs, and infections.

Glutamic Acid Decarboxylase-65 Autoantibodies 34878X

CPT Code(s): 83519

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.2 mL minimum).

Transport Temperature:
Refrigerated

Reject Criteria:
Received room temperature

Methodology:
Radiobinding Assay

Reference Range:
1.0 or less U/mL

Clinical Use:
Glutamic Acid Decarboxylase (GAD-65) Antibody is useful to diagnose insulin dependent diabetes mellitus (IDDM, Type I diabetes), to assess risk for development of IDDM, to predict onset of IDDM, and risk of development of related endocrine disorders, e.g., thyroiditis. Before clinical onset, Type I diabetes is characterized by lymphocytic infiltration of the islet cells, and by circulating autoantibodies against a variety of islet cell antigens, including GAD-65, IA-2 (a tyrosine phosphatase-like protein), and insulin autoantibody (IAA).

GlycoMark® 19599

CPT Code(s): 84378

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum

Transport Temperature:
Room temperature, stable 7 days

Methodology:
Enzymatic • Colorimetric

Reference Range:
> 18 years

Males:	10.7 - 32.0 mcg/mL
Females:	6.8 - 29.3 mcg/mL

Clinical Use:
The GlycoMark® test provides quantitative measurement of 1,5-anhydroglucitol (1,5AG) in serum or plasma. The test is indicated for the intermediate term monitoring of glycemic control in people with diabetes.

GRAM STAIN GS

Testing performed daily

Specimen Container:
Glass Slide

Preferred Specimen:
Swab, scrapings

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to date reference range

Growth Hormone (GH) 521X

CPT Code(s): 83003

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.5 mL minimum)

Transport Temperature:
Refrigerated

Methodology:
Immunochemiluminometric Assay

Reference Range:
Because of a pulsatile secretion pattern, random (unstimulated) GH levels are frequently undetectable in normal children and adults and are not reliable for the diagnosis of GH deficiency unless above the stimulated cutoff values. Failure to suppress GH during a glucose tolerance (GH suppression) test is diagnostic of acromegaly.
Using the glucose tolerance (GH suppression) test, acromegaly is ruled out if the patients GH level is <1.0 ng/mL
Using the GH stimulation test, the following results rule out GH deficiency:

Adults (> or = 20 years):	Insulin Hypoglycemia > or = 5.1 ng/mL
	Arginine/GHRH > or = 4.1 ng/mL
Pediatric (<20years):	All stimulation tests > or = 10.0 ng/mL

Clinical Use:
Measurement of GH is primarily used for the diagnosis and treatment of disorders of growth hormone secretion, including GH excess (acromegaly) and deficiency. Growth hormone measurements in children are used in the evaluation of short stature and help differentiate short stature due to low GH production from other causes of growth failure.

HAPTOGLOBIN HAPT

CPT Code(s): 83010

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Instructions:
Overnight fasting is preferred.

Transport Temperature:

Refrigerated

Reject Criteria:
Received room temperature

Clinical Use:
Decreased haptoglobin is found in hemolytic disease, hepatocellular disease and infectious mononucleosis. Increased level is found in inflammatory disease in the presence of tissue necrosis and in general acute inflammatory conditions.

HCG QUALITATIVE HCGP

Testing performed daily.

CPT Code(s): 84703

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

HCG QUANTITATIVE HCGQ

Testing performed daily.

CPT Code(s): 84702

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

hCG, Total, Quantitative 8396X

CPT Code(s): 84702

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.4 mL minimum)

Transport Temperature:
Room temperature

Reject Criteria:
Grossly hemolyzed specimens are unacceptable.

Methodology:
Immunchemiluminometric Assay

Reference Range:

Males:
Females non-pregnant or pre-menopausal:
Postmenopausal:

Values from different assay methods may vary. The use of this assay to monitor or to diagnose patients with cancer or any condition unrela

Clinical Use:
hCG is a glycoprotein hormone produced by the syncytiotrophoblast of the placenta and secreted during normal pregnancy and with pathologic conditions such as hydatidiform mole, choriocarcinoma and testicular neoplasm.

HDL CHOLESTEROL HDL

Testing performed daily.

CPT Code(s): 83718

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Helicobacter pylori Antibodies (IgA, IgG) 37695X

CPT Code(s): 86677 (x2)

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.4 mL minimum)

Instructions:
Allow specimen to clot at room temperature and then centrifuge. Separate serum from cells as soon as possible.

Transport Temperature:
Room temperature

Methodology:
Immunoassay

Reference Range:
Negative
H. pylori serology testing measures antibodies to H.pylori and is not recommended for the diagnosis of active infection. The American College of Gastroenterology and the American Gastroenterological Association recommend either the urea breath test (test code #14839X) or the fecal antigen test (test code# 34838X) for diagnosis and confirmation of eradication

in cases of suspected or proven Helicobacter pylori infection.

Clinical Use:
Colonization with H. pylori is associated with increased risk of patients developing gastritis, peptic ulcer disease, and gastric adenocarcinoma. Serologic testing is recommended only for symptomatic patients. Antibodies IgG and IgA provide higher sensitivity than either test alone. Antibody titers may be elevated for years in infected individuals. Following treatment, titers generally decrease but may not become undetectable.

Helicobacter pylori Antibody (IgA) 34122X

CPT Code(s): 86677

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.2 mL minimum)

Instructions:
Allow specimen to clot at room temperature and then centrifuge. Separate serum from cells as soon as possible.

Transport Temperature:
Room temperature

Methodology:
Immunoassay

Reference Range:
Negative

Clinical Use:
Colonization with H. pylori is associated with increased risk of patients developing gastritis, peptic ulcer disease, and gastric adenocarcinoma. Serologic testing is recommended only for symptomatic patients. Antibody IgA may be elevated for years in infected individuals. Following treatment, titers generally decrease but may not become undetectable.

Helicobacter pylori Antibody (IgM) 34123X

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. 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 Code(s): 86677

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.1 mL minimum)

Transport Temperature:
Room temperature

Methodology:
Enzyme Immunoassay

Reference Range:
Nonreactive

Clinical Use:

Colonization with H. pylori is associated with increased risk of patients developing gastritis, peptic ulcer disease, and gastric adenocarcinoma. Serologic testing is recommended only for symptomatic patients. Antibody IgM may be not be elevated in many infected individuals.

Helicobacter pylori Antigen Detection, EIA, Stool 34838X

CPT Code(s): 87338

Specimen Container:
Sterile, screw-cap container

Preferred Specimen:
1 g fresh stool (0.5 mL minimum)

Instructions:
Collect 0.5 mL of liquid/semi-solid stool or 20 mm diameter solid stool and transfer to properly labelled sterile leakproof container. Do not place stool in preservative, transport media or swab. Watery, diarrheal stool is not acceptable. Patients should be off proton pump Inhibitors (PPI), antibiotics orbismuth for two weeks prior to specimen collection.

Transport Temperature:
Frozen

Reject Criteria:
Received room temperature

Methodology:
Enzyme Immunoassay

Reference Range:
Not detected
This test is intended to aid in the diagnosis of H. Pylori infection and to aid in monitoring the efficacy of antimicrobial therapy. Antimicrobials, proton pump inhibitors, and bismuth preparations inhibit H. Pylori and ingestion prior to testing may cause false negative results. If a negative result is obtained for a patient ingesting these compounds within two weeks prior to performing this test, it may be a false negative result and the test should be repeated on a new specimen obtained two weeks after discontinuing treatment.
The performance characteristics of this assay have not been established for use in asymptomatic individuals or on watery diarrheal stools.

Clinical Use:
Colonization with H. pylori is associated with increased risk of patients developing gastritis, peptic ulcer disease, and gastric adenocarcinoma. Stool antigen testing provides a sensitive measure of infection including during and after treatment.

HEMATOCRIT HCT

Testing performed daily.

Specimen Container:
Lavender EDTA

Preferred Specimen:
Whole Blood

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

HEMOGLOBIN HGB

Testing performed daily.

Specimen Container:
Lavender EDTA

Preferred Specimen:
Whole Blood

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

HEMOGLOBIN A1c GLYH

Testing performed daily

Specimen Container:
Lavender EDTA

Preferred Specimen:
Whole Blood

Instructions:
Fasting Specimen

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to date reference range

Hemoglobinopathy Evaluation 35489X

Includes: Red Blood Cell count, Hemoglobin, Hematocrit, MCV, MCH, RDW, Hemoglobin A1, Fetal Hemoglobin, Hemoglobin A2 and any hemoglobin variants

CPT Code(s): 85041; 85018; 85014; 83021

Specimen Container:
EDTA (lavender-top)

Preferred Specimen:
5 mL EDTA whole blood, minimum: 0.5 mL

Instructions:
Patient age and ethnicity are necessary for proper interpretation. Blood transfusions within the last 4 months may affect results.

Transport Temperature:
Room temperature, stable 1 week

Methodology:
High Performance Liquid Chromatography

Clinical Use:
Hemoglobinopathy Evaluation examines specimens for common variant hemoglobins such as S and C as well as most other less common variant hemoglobins.

Heparin-Induced Platelet Antibody 414X

CPT Code(s): 86022

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.5 mL minimum)

Instructions:
Separate from cells as soon as possible after clotting.

Transport Temperature:
Frozen

Methodology:
Enzyme Linked Immunosorbent Immunoassay

Reference Range:
Negative

Clinical Use:
This test is used to screen for antibodies directed against Heparin-Platelet Factor 4 complexes. These antibodies may develop subsequent to heparin therapy and lead to thrombocytopenia and in some individuals, thrombosis (Heparin Induced Thrombocytopenia with Thrombosis).

HEPATIC FUNCTION PANEL HFP

Testing performed daily

CPT Code(s): 80076

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to date reference range

Hepatitis A Antibody, Total 508X

CPT Code(s): 86708

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (minimum: 0.5 mL)

Transport Temperature:
Room temperature and refrigerated: 14 days
Frozen: Indefinite

Reject Criteria:
PPT Potassium EDTA (white top) plasma is not acceptable.
Grossly hemolyzed and hyperlipemic specimens are not acceptable.

Methodology:
Immunoassay

Clinical Use:
HAV antibody indicates prior or acute infection with, or immunization to, hepatitis A virus.

HEPATITIS A IgM ANTIBODY HAAB

Testing performed Monday - Friday.

CPT Code(s): 86709

Specimen Container:
Gold

Preferred Specimen:
Serum

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

HEPATITIS A TOTAL ANTIBODY HAABT

Testing performed Monday - Friday.

CPT Code(s): 86708

Specimen Container:
Gold

Preferred Specimen:
Serum

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

HEPATITIS B CORE ANTIBODY TOTAL HBCAT

Testing performed Monday - Friday.

CPT Code(s): 86704

Specimen Container:
Gold

Preferred Specimen:
Serum

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Hepatitis B Core Total Antibody 501X

CPT Code(s): 86704

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.5 mL minimum).

Transport Temperature:
Room temperature

Reject Criteria:
Gross lipemia and gross hemolysis are unacceptable.

Methodology:
Enzyme Immunoassay

Reference Range:
Nonreactive
The presence of antibody to hepatitis B core antigen indicates either a current or previous HBV infection. This test cannot be used to determine recovery from or immune status to an HBV infection.

Clinical Use:
This assay does not distinguish between Total B core antibody IgG and IgM detected before or at the onset of symptoms; however, such reactivity can persist for years after illness, and may even outlast anti-HBs. Occasionally hepatitis B core antibody may be the only marker of either current or past hepatitis B infection.

HEPATITIS B SURFACE ANTIBODY HBAB

Testing performed daily

CPT Code(s): 86706

Specimen Container:
Gold

Preferred Specimen:
Serum

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to date reference range

Hepatitis B Surface Antibody Quantitation 8475X

For use in evaluating antibody response to Hepatitis B vaccine optimally at three months postvaccine, and following the last vaccine dose.

CPT Code(s): 86317

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.8 mL minimum).

Instructions:
Serum should be removed from cells promptly after collection and transferred to a plastic

tube.

Transport Temperature:
Room temperature

Methodology:
Enzyme Immunoassay

Reference Range:
CDC guidelines indicate values equal to or greater than 10 mIU/mL indicate immunity.
(1) Source MMWR (ACIP) Nov. 22, 1991 Vol. 40 No. RR-13.

Clinical Use:
This assay is used to determine immune status for hepatitis B as > 10 µIU/mL as per CDC Guidelines.

HEPATITIS B SURFACE ANTIGEN HBAG

Testing performed Monday - Friday.

CPT Code(s): 87340

Specimen Container:
Gold

Preferred Specimen:
Serum

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Hepatitis B Viral DNA, Quantitative, Real-tim PCR 8369X

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. Food and Drug Administration. The FDA has determined that such clearance or approval i

CPT Code(s): 87517

Specimen Container:
Potassium EDTA (white-top) or; No additive serum separator tube

Preferred Specimen:
2 mL PPT-Potassium EDTA plasma

Instructions:
Specimen may be collected in an SST red top glass tube and transferred to a plastic transport tube for submission to the laboratory. Do not submit glass tubes. PPT or SST: separate plasma or serum by centrifugation within 6 hours if collection. Then freez

Transport Temperature:
Frozen

Reject Criteria:
Received at room temp

Methodology:
Real-time Polymerase Chain Reaction

Reference Range:

100 - 500,000,000 IU/mL or 160 - 2.5 billion copies/mL

Clinical Use:
Chronic carriers will persist in producing detectable HBV. Patients with chronic liver disease of unknown origin most commonly have HBV that is detected by Viral DNA testing. Quantitative measurement of HBV Viral DNA may be used to monitor progression of

Hepatitis B Viral DNA, Quantitative, Real-time PCR 8369X

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. 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 Code(s): 87517

Specimen Container:
Potassium EDTA (white-top) or; No additive serum separator tube

Preferred Specimen:
2 mL PPT-Potassium EDTA plasma

Instructions:
Specimen may be collected in an SST red top glass tube and transferred to a plastic transport tube for submission to the laboratory. Do not submit glass tubes. PPT or SST: separate plasma or serum by centrifugation within 6 hours if collection. Then freeze the plastic PPT or SST tube at -20 degrees C or colder. Ship frozen.
EDTA plasma: separate plasma within 6 hours of collection, transfer plasma to a sterile, screw-capped plastic aliquot tube. Freeze immediately at -20 degrees C. ship frozen.
Serum: collect blood in a sterile tube without anticoagulant and allow to clot completely. Separate serum from the clot within 6 hours of collection, transfer to a sterile, screw-capped plastic tube. Freeze immediately at -20 degrees C. Ship frozen.

Transport Temperature:
Frozen

Reject Criteria:
Received at room temp

Methodology:
Real-time Polymerase Chain Reaction

Reference Range:

<100	IU/mL
<160	copies/mL

Clinical Use:
Chronic carriers will persist in producing detectable HBV. Patients with chronic liver disease of unknown origin most commonly have HBV that is detected by Viral DNA testing. Quantitative measurement of HBV Viral DNA may be used to monitor progression of disease.

Hepatitis Be Antibody 556X

CPT Code(s): 86707

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.2 mL minimum).

Transport Temperature:
Room temperature

Methodology:
Enzyme Immunoassay

Reference Range:
Nonreactive

Clinical Use:
Anti-HBe in the blood following exposure to the Hepatitis B virus suggests a good prognosis for patients with Hepatitis B infection.

Hepatitis Be Antigen 555X

CPT Code(s): 87350

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.3 mL minimum).

Transport Temperature:
Room temperature

Methodology:
Enzyme Immunoassay

Reference Range:
Nonreactive

Clinical Use:
Persistence of HBeAg for greater than 6 months is a prognostic indicator of a chronic hepatitis B virus carrier state.

Hepatitis C Antibody Supplemental Testing 8739X

CPT Code(s): 86804

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.1 mL minimum).

Transport Temperature:
Room temperature

Methodology:
RIBA 3.0 Strip Immunoblot Assay (SIA)

Reference Range:
Negative

Clinical Use:
HCV Antibody Supplemental testing is used as a follow-up to rule out false positive HCV Antibody test results.

HEPATITIS C IgG ANTIBODY HCV

Testing performed Monday - Friday.

Specimen Container:
Gold

Preferred Specimen:
Serum

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Hepatitis C RNA, Genotype, LiPA 37811X

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. 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 Code(s): 87902

Specimen Container:
PPT-Potassium EDTA (white-top) or No additive serum separator tube

Preferred Specimen:
2 mL plasma (0.6 mL minimum).

Transport Temperature:
Frozen

Methodology:
Mutli-probe Reverse Hybridization

Reference Range:
LOD: 300 IU/mL

Clinical Use:
Hepatitis C genotype is a predictor of response to interferon alfa-2b (non-type 1 are better responders) and to combination therapy with interferon and ribavirin (all types respond but dosage and duration of treatment is dependent on genotype; Type 1 requires extended treatment).

Hepatitis C RNA, Quantitative bDNA 29271X

CPT Code(s): 87522

Specimen Container:
Potassium EDTA (white-top) or; No additive red-top

Preferred Specimen:
1 mL EDTA plasma or serum (0.2 mL minimum). 1 mL EDTA plasma or serum (0.2 mL minimum).

Instructions:
Plasma: Collect blood in sterile tubes containing EDTA anticoagulant; either 0.15% solution v/v final EDTA K3 (standard EDTA tube) or 9 mg spray-dried EDTA K2 (Plasma Preparation Tube or PPT tube with plasma separator-gel, preferred). Store whole blood at room temperature and separate plasma from cells within 2 hours of collection. Transfer plasma collected in standard EDTA tubes to sterile, plastic, screw-capped, aliquot tubes and store at -18 C or colder. Do not clarify plasma by filtration or further centrifugation. Avoid repeated freezing and thawing of specimen. Note: If blood is collected in a PPT tube, centrifuge within 2 hours of collection as before, but it is not necessary to remove the plasma and transfer to aliquot tubes. Following centrifugation, a gel barrier maintains separation of plasma from cellular components, during specimen transport and storage, and unlike standard VACUTAINER Brand blood collection tubes, the PPT tube is plastic and hence the

plasma can be shipped and stored frozen in the original tube. Serum: Collect blood in sterile tubes with no anticoagulants; serum separator tubes (SST's) are recommended. 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 at -18 C or colder. Avoid repeated freezing and thawing of specimen.

Transport Temperature:
Frozen

Reject Criteria:
Received at room temp and received refrigerated

Methodology:
Branched DNA Signal Amplification

Reference Range:
615 - 7,700,000 IU/mL

Clinical Use:
Quantitative RNA by bDNA is useful in confirming HCV infection, assessing prognosis (prior to the initiation of therapy), prescribing individualized therapy, predicting response to therapy, and monitoring response to therapy. Reportable range is 615 to 7,700,000 IU/mL.

Hepatitis C RNA, Quantitative Real-Time PCR 35645X

CPT Code(s): 87522

Specimen Container:
PPT-Potassium EDTA (white-top) or No additive serum separator tube

Preferred Specimen:
3 mL plasma (minimum volume 2.5 mL)

Instructions:
Plasma: Collect blood in sterile tubes containing EDTA anticoagulant; either 0.15% solution v/v final EDTA K3 (standard EDTA tube) or 9 mg spray-dried EDTA K2 (Plasma Preparation Tube or PPT tube with plasma separator-gel, preferred.) Blood collected in tubes containing ACD anticoagulant are acceptable but will yield results approximately 15% lower when compared to EDTA tubes due to the dilution effect of the 1.5 mL of anticoagulant used in the tube. Blood collected in tubes with heparin anticoagulant are unsuitable for this test. Store whole blood at room temperature and separate plasma from cells within 2 hours of collection. Transfer plasma to sterile, plastic, screw-capped, aliquot tubes and store at -18 C or colder. Do not clarify plasma by filtration or further centrifugation. Avoid repeated freezing and thawing of specimen. Note: If blood is collected in a PPT tube, centrifuge within 2 hours of collection as before, but it is not necessary to transfer the plasma to aliquot tubes. Following centrifugation, a gel barrier maintains separation of plasma from cellular components during specimen transport and storage, and unlike standard VACUTAINER Brand blood collection tubes, the PPT tube is plastic and hence the plasma can be shipped and stored frozen in the original tube. Serum: Collect blood in sterile tubes with no anticoagulants; serum separator tubes (SST's) are recommended. 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 at -18 C or colder. Avoid repeated freezing and thawing of specimen.

Transport Temperature:
Frozen

Reject Criteria:
Received at room temp

Methodology:
Real-Time Polymerase Chain Reaction

Reference Range:

50 - 50,000,000 IU/mL

Clinical Use:
Useful in monitoring therapy and disease progression. Reportable range is 50 to 50,000,000 IU/mL.

Hepatitis C RNA, Quantitative TMA 10073X

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. 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 Code(s): 87522

Specimen Container:
PPT-Potassium EDTA (white-top) or No additive serum separator tube

Preferred Specimen:
2 mL EDTA, Heparin, Sodium citrate plasma or serum (0.8 mL minimum)

Instructions:
Plasma: Collect blood in sterile tubes containing EDTA anticoagulant; either 0.15% solution v/v final EDTA K3 (standard EDTA tube) or 9 mg spray-dried EDTA K2 (Plasma Preparation Tube or PPT tube with plasma separator-gel, preferred). Blood collected in tubes containing ACD anticoagulant are acceptable but will yield results approximately 15% lower when compared to EDTA tubes due to the dilution effect of the 1.5 mL of anticoagulant used in the tube. Store whole blood at room temperature and separate plasma from cells within 6 hours of collection. Transfer plasma to sterile, plastic, screw-capped aliquot tubes and store at -18 C or colder. Do not clarify plasma by filtration or further centrifugation. Avoid repeated freezing and thawing of specimen. Note: If blood is collected in a PPT tube, centrifuge within 6 hours of collection as before, but it is not necessary to transfer the plasma to aliquot tubes. Following centrifugation, a gel barrier maintains separation of plasma from cellular components during specimen transport and storage, and unlike standard VACUTAINER Brand blood collection tubes, the PPT tube is plastic and hence the plasma can be shipped and stored frozen in the original tube.
Serum: Collect blood in sterile tubes with no anticoagulants; serum separator tubes (SSTs) are recommended. Allow blood to clot at room temperature and separate serum from cells within 6 hours of collection. Transfer serum to sterile, plastic screw-capped, aliquot tubes and store at -18 C or colder. Avoid repeated freezing and thawing of specimen.

Transport Temperature:
Frozen

Reject Criteria:
Received at room temp and received refrigerated

Methodology:
Transcription Mediated Amplification

Reference Range:
5 -7500 IU/mL

Clinical Use:
Quantitative RNA by TMA is useful in confirming HCV infection, assessing prognosis (prior to the initiation of therapy), prescribing individualized therapy, predicting response to therapy, and monitoring response to therapy. Reportable range is 5 to 7,500 IU/mL.

Hepatitis C Virus RNA, Qualitative PCR 34024X

CPT Code(s): 87521

Specimen Container:

PPT-Potassium EDTA (white-top) or No additive serum separator tube

Preferred Specimen:
2 mL plasma (0.6 mL minimum).

Instructions:
Plasma: Collect blood in sterile tubes containing EDTA anticoagulant; either 0.15% solution v/v final EDTA K3 (standard EDTA tube) or 9 mg spray-dried EDTA K2 (Plasma Preparation Tube or PPT tube with plasma separator-gel, preferred.) Blood collected in tubes containing ACD anticoagulant are acceptable but will yield results approximately 15% lower when compared to EDTA tubes due to the dilution effect of the 1.5 mL of anticoagulant used in the tube. Blood collected in tubes with heparin anticoagulant are unsuitable for this test. Store whole blood at room temperature and separate plasma from cells within 2 hours of collection. Transfer plasma to sterile, plastic, screw-capped, aliquot tubes and store at -18 C or colder. Do not clarify plasma by filtration or further centrifugation. Avoid repeated freezing and thawing of specimen. Note: If blood is collected in a PPT tube, centrifuge within 2 hours of collection as before, but it is not necessary to transfer the plasma to aliquot tubes. Following centrifugation, a gel barrier maintains separation of plasma from cellular components during specimen transport and storage, and unlike standard VACUTAINER Brand blood collection tubes, the PPT tube is plastic and hence the plasma can be shipped and stored frozen in the original tube. Serum: Collect blood in sterile tubes with no anticoagulants; serum separator tubes (SST's) are recommended. 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 at -18 C or colder. Avoid repeated freezing and thawing of specimen.

Transport Temperature:
Frozen

Reject Criteria:
Received at room temp

Methodology:
Polymerase Chain Reaction

Reference Range:
Not Detected 50 IU/mL

Clinical Use:
Confirm Hepatitis C infection and demonstrate resolution of infection. Limit of detection is 50 IU/mL.

Hereditary Hemochromatosis DNA Mutation Analysis 35079X

For New York patient testing, use test code 36193X.

This test was developed and its performance characteristics have been determined by Quest Diagnostics. Performance characteristics refer to the analytical performance of the test.

CPT Code(s): 83891; 83900; 83892 (x2); 83909; 83912

Specimen Container:
EDTA (lavender-top)

Preferred Specimen:
5 mL whole blood (3 mL minimum)

Instructions:
Whole blood: Normal phlebotomy procedure. Specimen stability is crucial. Store and ship ambient immediately. Do not freeze

Methodology:
Polymerase Chain Reaction and Fluorescent Restriction
Fragment Length Polymorphism

Reference Range:
Hereditary hemochromatosis (HH) is an autosomal-recessive disorder of iron metabolism that results in iron overload and organ failure in some cases. It is one of the most common genetic disorders in individuals of European-Caucasian ancestry, with an incidence of about 1/200 to 1/500, and an estimated carrier frequency of 10%. Approximately 60-90% of HH cases are homozygous for one mutation in the HFE gene, C282Y, which results in a cysteine to tyrosine substitution at amino acid position 282 (due to a G to A transition at nucleotide position 845). A second mutation, H63D, results in a histidine to aspartate substitution at amino acid position 63 (due to a C to G transversion at nucleotide position 187. H63D is viewed by some as a polymorphism rather than a mutation due to its prevalence in the population since about 15% of the population carry the variant. However, approximately 3-5% of individuals affected with HH are compound heterozygotes for C282Y and H63D and about 1% of patients are H63D homozygotes, which suggests that H63D may be causative in the development of the disorder at a reduced penetrance. Detection of the C282Y and H63D mutations is accomplished by amplification of the HFE gene regions by polymerase chain reaction (PCR) followed by restriction digestion and detection of restriction fragments on an automated DNA sequencer. This assay may not detect all mutations that cause HH. Since genetic variation and other problems can affect the accuracy of direct mutation testing, the results should always be interpreted in light of clinical and familial data. This test is performed pursuant to a license agreement with Roche Molecular Systems, Inc

Clinical Use:
Hereditary Hemochromatosis is an autosomal recessive disease that results in an abnormal build-up of iron in the body. The C282Y and H63D are among the most common mutations in patients with hereditary hemochromatosis. Penetrance of the mutations (phenotypic disease), including individuals with compound heterozygous mutations, is variable.

Herpes Simplex Virus 1/ 2 IgG HerpeSelect® Type-Specific Antibody 6447X

CPT Code(s): 86695; 86696

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.2 mL minimum).

Instructions:
Specimen may be collected in an SST red top glass tube and transferred to plastic for transport. Do not submit glass tubes.

Transport Temperature:
Refrigerated, stable 1 week

Reject Criteria:
Glass tubes

Methodology:
Enzyme Immunoassay, Type Specific

Reference Range:

<0.90	Negative Index
0.90-1.10	Equivocal Index
>1.10	Positive Index

Clinical Use:
Herpes Simplex Virus (HSV) is responsible for several clinically significant human viral diseases, with severity ranging from inapparent to fatal. Clinical manifestations include genital tract infections, neonatal herpes, meningoencephalitis, keratoconjunctivitis, and

gingivostomatitis. There are two HSV serotypes that are closely related antigenically. HSV type 2 is more commonly associated with genital tract and neonatal infections, while HSV type 1 is more commonly associated with infections of non-genital sites. Specific typing is not usually required for diagnosis or treatment. The mean time to seroconversion using the type specific assay is 25 days. The performance of this assay has not been established for use in a pediatric population, for neonatal screening, or for testing of immunocompromised patients.

Herpes Simplex Virus Culture, Rapid Method 2692X

CPT Code(s): 87255

Specimen Container:
VCM - Viral-Chlamydial-Mycoplasma transport medium (green-cap) available from client supplies

Preferred Specimen:
3 mL (0.5 mL minimum) tissue, lesions, CSF, cervical, urethral, sputum, vaginal, respiratory, or eye swab.

Instructions:
Specimens for viral, Chlamydia, mycoplasmal or ureaplasmal investigation should be collected and handled following industry standard protocols. To maintain optimum viability, transport the specimen to the laboratory as soon as possible. Best recovery is obtained when the specimens are refrigerated at 2-8 degress C or kept on wet ice following collection and while in transit. If there will be a long delay before processing, specimens should be frozen at -70 degrees C or colder and transported on dry ice. Storage at -20 degrees C is less satisfactory than storage at 4 degrees C or -70 degrees C and can result in the loss of infectivity. For shipping and handling of specimens, follow state and federal regulations. Institutional guidelines should be followed to handle samples within the laboratory. All specimens should be processed as soon as they are received in the laboratory.Specimen Collection:Proper specimen collection from the patient is extremely critical for successful isolation and identification of infectious organisms. For specific guidance regarding specimen collection procedures follow industry standards for collecting infectious organisms. Specimens should be collected as soon as possible after clinical onset of disease. Highest viral titers are present during the acute illness.For V-C-M Medium Vials:1. Aseptically remove cap from vial.2. Aseptically place sample into the vial with medium.3. Replace cap on vial and close tightly.4. Label with appropriate patient information.5. Send to the laboratory for immediate analysis.

Transport Temperature:
Refrigerated

Reject Criteria:
Raw stool.Dry swabs. Gel-based transport systems. Tissues or biopsies in formalin or other fixatives. DNA Probe Transport systems. Wooden shaft swabs. Non-gel based bacterial transport. Non-gel based bacteria.

Methodology:
Tissue Culture Histochemical Staining

Reference Range:
None isolated

Clinical Use:
A clinical diagnosis of HSV infection is based on identifying characteristic multiple vesicles on an erythematous base. HSV Culture is useful in verifying that HSV is present within the vesicles. Rapid Culture allows for the initiation of therapy that may diminish the severity of symptoms and shorten the length of symptoms.

Herpes Simplex Virus IgM Antibody, w/Reflex to Titer 7438X

If HSV IgM is positive, HSV IgM Titer will be performed at an additional charge (CPT

code(s): 86694).

CPT Code(s): 86694

Preferred Specimen:
1 mL serum (0.5 mL minimum)

Instructions:
Separate serum from cells as soon as possible.

Transport Temperature:
Room temperature

Reference Range:
HSV IgM Ab Screen Not detected HSV IgM Ab Titer

Clinical Use:
Herpes Simplex Virus (HSV) is responsible for several clinically significant human viral diseases, with severity ranging from inapparent to fatal. Clinical manifestations include genital tract infections, neonatal herpes, meningoencephalitis, keratoconjunctivitis, and gingivostomatitis. There are two HSV serotypes that are closely related antigenically. HSV type 2 is more commonly associated with genital tract and neonatal infections, while HSV type 1 is more commonly associated with infections of non-genital sites. IgM HSV antibodies in infants may be helpful in the diagnosis of neonatal infection. IgM antibody usually appears within the first 4 weeks of life in infected infants and persists for many months. IgM suggests a recent HSV exposure but does not differentiate between primary infection and reactivation.

Herpes Simplex Virus, Type 1 & 2 DNA, PCR 34257X

This test was developed and its performance characteristics have been determined by Quest Diagnostics. Performance characteristics refer to the analytical performance of the test.

CPT Code(s): 87529 (x2)

Specimen Container:
EDTA/ACD; Sterile, screw-cap container; VCM - Viral-Chlamydial-Mycoplasma transport medium (green-cap) available from client supplies

Preferred Specimen:
1 mL CSF, or swab in sterile leak proof container or VCM transport medium

Instructions:
CSF or Swab (dry or in transport media): Collect in a sterile container and store refrigerated or frozen.Serum: Collect blood in sterile tubes with no anticoagulants; serum separator tubes (SSTs) are recommended. Allow blood to clot at room temperature and separate serum from cells within 2 hours of collection. Transfer serum into sterile, plastic screw-capped aliquot tubes and store refrigerated or frozen.

Reject Criteria:
Received at room temp

Methodology:
Real-Time Polymerase Chain Reaction

Reference Range:
Not detected

Clinical Use:
DNA testing is analytically more sensitive than culture, especially in patients with encephalitis or meningitis. DNA testing may be useful in diagnosis of infection in neonates. Neonates who have been exposed to HSV can develop disseminated infection and encephalitis. Encephalitis is usually due to HSV I whereas meningitis is usually due to HSV II. DNA testing provides reliable means to define the Type.

5-HIAA (5-Hydroxyindoleacetic Acid), 24-Hour Urine 39625X

Includes creatinine.

CPT Code(s): 83497; 82570

Specimen Container:
24-hour urine container-25 mL 6N HCl

Preferred Specimen:
10 mL urine (5 mL minimum).

Instructions:
Collect 24-hour urine with 15 g of boric acid or 25 mL of 6N HCl to maintain a pH below 3. Urine without preservative is acceptable if pH is below 6 and the sample is shipped frozen. Keep urine refrigerated during collection if preservative is not used. Record 24-hour urine volume on test request form and urine vial. Record patient's age on test request form and urine vial. Patient should avoid food high in indoles: avocado, banana, tomato, plum, walnut, pineapple, and eggplant. Patient should also avoid tobacco, tea and coffee for three days prior to specimen collection.

Transport Temperature:
Room temperature

Methodology:
High Performance Liquid Chromatography, Electrochemical Detection

Reference Range:

0 - 1 years:	not established
2 - 10 years:	8.0 or less mg/24 hr
>10 years:	6.0 or less mg/24 hr

Clinical Use:
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.

5-HIAA (5-Hydroxyindoleacetic Acid), 24-Hour Urine (without Creatinine) 523X

CPT Code(s): 83497

Preferred Specimen:
10 mL aliquot of a 24-hour collection. Collect urine with 25 mL of 6N HCl to maintain a Ph below 3.

Instructions:
After urine collection, add 0.5-1.0 g/L boric acid (or 6N HCl) to maintain a pH below 3. Urine without preservative is acceptable if pH is below 6 and the sample is shipped frozen. Record patient's age on test request form and urine vial. Patient should avoid food high in indoles: avocado, banana, tomato, plum, walnut, pineapple, and eggplant. Patient should also avoid tobacco, tea and coffee for three days prior to specimen collection.

Transport Temperature:
Room temperature, stable 1 week

Methodology:
High Performance Liquid Chromatography (Electrochemical Detection)

Reference Range:

0 - 1 years:	Not established

2 - 10 years:	8.0 or less mg/24 hr
>10 years:	6.0 or less

Clinical Use:
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.

5-HIAA (5-Hydroxyindoleacetic Acid), Random Urine 1648X

Includes creatinine.

CPT Code(s): 83497; 82570

Specimen Container:
Sterile, screw-cap container

Preferred Specimen:
10 mL urine (5 mL minimum).

Instructions:
After urine collection, add 0.5-1.0 g/L boric acid (or 6N HCl) to maintain a pH below 3. Urine without preservative is acceptable if pH is below 6 and the sample is shipped frozen. Record patient's age on test request form and urine vial. Patient should avoid food high in indoles: avocado, banana, tomato, plum, walnut, pineapple, and eggplant. Patient should also avoid tobacco, tea and coffee for three days prior to specimen collection.

Transport Temperature:
Room temperature

Methodology:
High Performance Liquid Chromatography, Electrochemical Detection

Reference Range:

>10 years:	10.0 or less mg/g creat	
Creatinine, Random Urine:		
Age	g/L	n
0-6 Months	0.02-0.32 g/L	57
7-11 Months	0.02-0.36	23
1-2 Years	0.02-1.28	57
3-8 Years	0.02-1.49	104
9-12 Years	0.02-1.83	38
Adults	0.27-3.00	104

Clinical Use:
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.

Histone Antibody, EIA 37056X

CPT Code(s): 83516

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.3 mL minimum).

Instructions:
Avoid hemolysis. Overnight fasting is preferred.

Transport Temperature:
Refrigerated

Reject Criteria:
Received room temperature

Methodology:
Enyzme Immunoassay

Reference Range:

< 1.0	Negative
1.0-1.5	Weak positive
1.6-2.5	Moderate posititive
>2.5	Strong positive

Clinical Use:
Histone Antibody is present in 80-95% of patients with drug-induced systemic lupus erythematosus (SLE), 20-50% of patients with idiopathic SLE, and infrequently in patients with other rheumatic diseases.

HIV 1/2 EIA Antibody Screen with Reflexes 19728X

For New York patient testing, use test code 17659X.
If HIV 1/2 EIA Antibody Screen is reactive, HIV-1 Antibody Western Blot will be performed at an additional charge (CPT code(s): 86689). If HIV-1 Antibody, Western Blot is negative or indeterminate, HIV-2 Antibody EIA will be performed at additional charge (CPT code(s): 86702). If HIV-2 Antibody EIA is reactive, HIV-2 Antibody Western Blot will be performed at an additional charge (CPT code(s): 86689).

CPT Code(s): 86703

Specimen Container:
No additive (red-top)

Preferred Specimen:
2 mL serum (1 mL minimum)

Instructions:
To protect patient confidentiality, we recommend identifying specimens by using a code number in place of patient's name on the specimen vial and the test request form.

Transport Temperature:
Room temperature, stable 1 week

Methodology:
Immunoassay

Reference Range:
See individual assays.

Clinical Use:
The combination of HIV-1/HIV-2 includes detection of subtypes of HIV-1 not included in HIV-1, EIA alone.

HIV-1 Genotyping, PR and RT, DNA Sequencing 15459X

For New York patients, use test code 11651X.This test can only be performed reliably on specimens with a viral load of at least 2000 copies/mL. Use test code 15459X for testing sent to Chantilly, VA and 34949X for San Juan Capistrano, CA.

CPT Code(s): 87901

Specimen Container:
PPT EDTA (white-top) or EDTA (lavender-top)

Preferred Specimen:
4 mL PPT plasma (1 mL minimum)

Instructions:
Separate plasma from the clot within 6 hours of collection.

Transport Temperature:
Frozen, stable 3 months

Methodology:
RT-PCR and DNA Sequencing

Reference Range:
None detected

HIV-1 RNA, Quantitative, Real-Time PCR 40085X

CPT Code(s): 87536

Specimen Container:
EDTA lavender-top or PPT

Preferred Specimen:
3 mL plasma (1.1 mL minimum)

Instructions:
Separate plasma from the cells by centrifugation within 6 hours after collection. Transfer the plasma to a plastic screw-cap vial and ship frozen.

Transport Temperature:
Frozen, stable 35 days

Reference Range:
HIV-1 RNA Copies/mL: Copies/mL

Clinical Use:
This test is intended for use in conjunction with clinical presentation and other laboratory markers of disease progress for the clincal 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.

HIV-1/HIV-2 ANTIBODY HIV12

Testing performed Monday - Friday.

Specimen Container:
Gold

Preferred Specimen:
Serum

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

HLA TYPING HLAB

Testing performed Monday - Thursday.

Specimen Container:
Lavender EDTA

Preferred Specimen:
Whole Blood

Instructions:
Testing performed by the American Red Cross. Can only be drawn Monday - Thursday. Specimen must arrive in the Blood Bank by 9:00 AM.

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

HLA-B27 Antigen 528X

CPT Code(s): 86812

Specimen Container:
ACD solution B (yellow-top)

Preferred Specimen:
10 mL whole blood (5 mL minimum).

Instructions:
Do not refrigerate or freeze.

Transport Temperature:
Room temperature, stable 5 days

Reject Criteria:
Received frozen

Methodology:
Flow Cytometry

Clinical Use:
HLA-B27 is found in 90% of patients with ankylosing spondylitis and 80% in Reiter's disease. Ankylosing spondylitis affects 1 in 1000 Caucasians. Ankylosing spondylitis is 10 times more common among individuals with HLA-B27 compared to individuals without this antigen.

HOMOCYSTEINE HOMCYS

CPT Code(s): 83090

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Clinical Use:
Elevated levels of homocysteine are observed in patients at risk for coronary heart disease and stroke.

Homovanillic Acid, Random Urine 6346X

Includes creatinine.

CPT Code(s): 83150; 82570

Specimen Container:
Sterile, screw-cap container

Preferred Specimen:
10 mL urine (5 mL minimum).

Instructions:
10 mL urine: ph adjusted to

Transport Temperature:
Room temperature

Methodology:
High Performance Liquid Chromatography, Electrochemical Detection

Reference Range:

Age	mg/g creatinine	n
Birth-6 Months	9.1-36	40
7-11 Months	11.2-33	20
1-2 Years	8.5-38	42
3-8 Years	2.1-23	95
9-12 Years	1.1-12	32
Adults	1.4-5.3	91

Creatinine, Random Urine:

Age	g/L	n
0-6 Months	0.02-0.32	57
7-11 Months	0.02-0.36	23
1-2 Years	0.02-1.28	57
3-8 Years	0.02-1.49	104
9-12 Years	0.02-1.83	38
Adults	0.27-3.00	104

Clinical Use:
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.

HPV (Human Papillomavirus), High Risk DNA, Hybrid Capture II 31532X

CPT Code(s): 87621

Specimen Container:
Cytyc ThinPrep Solution

Preferred Specimen:
1 mL Cervical brush or fresh cervical biopsy (3mm maximum). 8.1 mL Cytyc ThinPrep Solution (4.1 mL minimum).

Instructions:
SurePath(tm) Cell Pellet Fraction: Following Pap smear slide preparation, forward the cell pellet fraction in labeled leak-proof 15 mL conical centrifuge tube to the lab for testing. Cell pellet fraction is stable for 30 days at 2-30 degrees C. Prior to forwarding the cytorich fractions to the lab for HPV DNA testing, add 2.0 mL fresh, uninoculated SurePath(TM) medium (Cytorich(R) preservative) to each centrifuge tube containing cytorich preserved

cells in 0.8 mL of water (0.8 mL of 1.0 mL cytorich fraction remaining after slide preparation) and vortex for 5 s to resuspend the cells. Resuspended cells are to be stored at 2-30 degrees C until tested for HPV DNA. Collect all specimens prior to colposcopy. See Specimen Collection Section, Virology.
To use the Cytyc PreservCyt ("ThinPrep") Solution: Use the cervical broom to collect cells from the cervix and place into the Cytyc PreservCyt solution in the routine manner. To make a slide for a PAP test, remove an aliquot of the solution and prepare the slide according to the Cytyc PreservCyt instructions. The remaining volume of fluid solution is used for the HPV DNA Assay. Store and transport at room temperature. Do not freeze.
To use the Digene Cervical Sampler: Collect per instructions provided with the Sampler, store and ship at room temperature. Please use only the cervical brush provided in the kit. Pease note: Cervical swabs are NOT acceptable. Only cervical brushes provided with the kit are acceptable. Do NOT submit swabs in Digene HC Cervical Sampler transport media. Cervical swabs submitted in Digene HC Cervical Sampler transport media will be rejected.
Cervical biopsy: collect 2-5 mm2 sterile cervical biopsy and place immediately into sterile, leak-proof container with 1 mL STM ship at 2-30 degrees C for overnight delivery or ship and store at

Methodology:
Hybrid Capture

Reference Range:
Not detected
This specimen was tested for the presence of the following High Risk serotypes: 16/18/31/33/35/39/45/51/52/56/58/59/68. This assay is not a screening device for cervical cancer. It is designed to augment existing methods for the detection of cervical disease, and should be used together with the medical history and physical examination.

Clinical Use:
HPV is the causative agent of cervical dysplasia and cervical carcinoma.

HPV (Human Papillomavirus), Low and High Risk DNA, Hybrid Capture II 36453X

CPT Code(s): 87621 (x2)

Specimen Container:
Digene Cervical Sampler (Brush); Cytyc ThinPrep Solution; SurePath Cell Pellet Fraction

Preferred Specimen:
1 mL cervical brush or fresh cervical biopsy (3mm maximum). 8.1 mL Cytyc ThinPrep Solution (4.1 mL minimum).

Instructions:
SurePath(tm) Cell Pellet Fraction: Following Pap smear slide preparation, forward the cell pellet fraction in labeled leak-proof 15 mL conical centrifuge tube to the lab for testing. Cell pellet fraction is stable for 30 days at 2-30 degrees C. Prior to forwarding the cytorich fractions to the lab for HPV DNA testing, add 2.0 mL fresh, uninoculated SurePath(TM) medium (Cytorich(R) preservative) to each centrifuge tube containing cytorich preserved cells in 0.8 mL of water (0.8 mL of 1.0 mL cytorich fraction remaining after slide preparation) and vortex for 5 s to resuspend the cells. Resuspended cells are to be stored at 2-30 degrees C until tested for HPV DNA. Collect all specimens prior to colposcopy. See Specimen Collection Section, Virology.
To use the Cytyc PreservCyt ("ThinPrep") Solution: Use the cervical broom to collect cells from the cervix and place into the Cytyc PreservCyt solution in the routine manner. To make a slide for a PAP test, remove an aliquot of the solution and prepare the slide according to the Cytyc PreservCyt instructions. The remaining volume of fluid solution is used for the HPV DNA Assay. Store and transport at room temperature. Do not freeze.
To use the Digene Cervical Sampler: Collect per instructions provided with the Sampler, store and ship at room temperature. Please use only the cervical brush provided in the kit. Pease note: Cervical swabs are NOT acceptable. Only cervical brushes provided with the kit are acceptable. Do NOT submit swabs in Digene HC Cervical Sampler transport media.

Cervical swabs submitted in Digene HC Cervical Sampler transport media will be rejected. Cervical biopsy: collect 2-5 mm2 sterile cervical biopsy and place immediately into sterile, leak-proof container with 1 mL STM ship at 2-30 degrees C for overnight delivery or ship and store at

Transport Temperature:
Refrigerated

Reject Criteria:
Specimens other than Cytyc, SurePath or Digene Specimen Transport specimens.· Specimens less than 4mL of PreservCyt Solution. · Samples with less than 4mL after the Pap Test has been prepared may contain insufficient material and could be falsely negative

Methodology:
DNA Hybridization, Hybrid Capture (Digene)

Reference Range:
Not detected
This specimen was tested for the presence of the following Low Risk serotypes: 6/11/42/43/44 and Intermediate/High Risk serotypes: 16/18/31/33/35/39/45/51/52/56/58/59/68. This assay is not a screening device for cervical cancer. It is designed to augment existing methods for the detection of cervical disease, and should be used together with the medical history and physical examination.

Clinical Use:
HPV is the causative agent of cervical dysplasia and cervical carcinoma.

HTLV-I/II Antibody, EIA with Reflex to Western Blot 36175

This test was 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.If HTLV-I/II Antibody is positive, HTLV-I/-II Western Blot will be performed at an additional charge (CPT code(s): 86689).

CPT Code(s): 86790

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.7 mL minimum)

Instructions:
Serum should be removed from cells promptly after collection and transferred to a plastic tube.

Transport Temperature:
Refrigerated

Methodology:
Chemiluminescence, Immunoassay, Western Blot

Reference Range:
Nonreactive

Clinical Use:
HTLV-I is associated with adult T-cell lymphoblastic leukemia and B-cell chronic lymphocytic leukemia. HTLV-II is less common and is associated with neoplasias of the CD8 T lymphocytes. Blood donor screening began in 1998. Western blot is used for confirmation of Antibody testing.

17-Hydroxypregnenolone 8352X

CPT Code(s): 84143

Specimen Container:
No additive (red-top)

Preferred Specimen:
2 mL serum (0.4 mL minimum).

Transport Temperature:
Refrigerated

Reject Criteria:
Received room temperature

Methodology:
Extraction, Chromatography, Radioimmunoassay

Reference Range:

Males and Females	20-450 ng/dL	
Post-ACTH Stimulation	60 Minutes	
Males & Premenopausal Females (Follicular Phase)	290-910 ng/dL	

Pediatric Reference Ranges for 17 Hydroxypregnenolone, Serum

Premature Infants (31-35 weeks)	2409 ng/dL or less	
Term Infants, 3 days old	830 ng/dL or less	
ACTH Simulation	Baseline	60 Minutes
1-12 Months	14-830 ng/dL	395-3290 ng/dL
1-5 Years	10-100 ng/dL	45-740 ng/dL
6-12 Years	11-190 ng/dL	70-660 ng/dL
Tanner Stages II-III		
Males	20-360 ng/dL	88-675 ng/dL
Females	58-450 ng/dL	250-800 ng/dL
Tanner Stages IV-V		
Males	32-300 ng/dL	220-860 ng/dL
Females	53-540 ng/dL	500-1600 ng/dL

Pediatric data from J Clin Endocrinol Metab (1991) 73:674-686 and J Clin Endocrinol Metab (1989) 69:1133-1136

Clinical Use:
17-Hydroxypregnenolone is useful in the diagnosis of 3-Beta-Hydroxylase enzyme deficiency, a rare cause of congenital adrenal hyperplasia, and 17-Hydroxylase (P450c17) enzyme deficiency.

17-Hydroxyprogesterone, LC/MS/MS 17180X

CPT Code(s): 83498

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum

Instructions:
SST tubes are unacceptable. Draw blood in a no-additive (red-top) tube. Separate serum after clotting. Ship serum refrigerated or frozen. Do not submit glass tubes.

Transport Temperature:
Frozen, stable 2 years

Reject Criteria:
Received room temperature

Methodology:
Liquid Chromatography Tandem Mass Spectrometry

Reference Range:

Infants (1-5 days) Premature (31-35 weeks)* :	-< or = 360 ng/dL
Term (36-42 weeks)*:	-< or = 420ng/dL
1 - 12 months:	11 - 170 ng/dL*
1 - 4 years:	4 - 115 ng/dL*
5 - 9 years:	90 ng/dL or less
10 - 13 years:	169 ng/dL or less
14 - 17 years:	16 - 283 ng/dL
Tanner Stages	
II-III: Males	12 - 130 ng/dL
II-III; Females	18 - 220 ng/mL
IV-V Males	51 - 190 ng/dL
IV-V Females	36 - 200 ng/mL
Adult Females	
Follicular Phase:	185 ng/dL or less
Mid-cycle Phase:	225 ng/dL or less
Luteal Phase:	285 ng/dL or less
Postmenopausal Phase:	45 ng/dL or less
Pregnancy	
First Trimester:	78 - 457 ng/dL
Second Trimester:	144 - 578 ng/dL
Males	
18-30 years:	32-307 ng/dL
31-40 years:	42 -196 ng/dL
51 - 60 years:	37 - 129 ng/dL
>=60 years:	Not Established

*Includes data from J Clin Endocrinol Metab.1991; 73:674-686; J Clin Endocrinol Metab. 1989;69:1133-1136;and J Clin Endocrinol Metab. 1994;78:226-270

Clinical Use:
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.

IgE, Total, Serum 542X

CPT Code(s): 82785

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.2 mL minimum)

Transport Temperature:
Refrigerated

Methodology:
FEIA

Reference Range:

Total IgE Age Specific Normal Ranges (kU/L)*	
0 - 6 weeks:	9 kU/L or less
6 weeks & 1 day - 3 months:	17 kU/L or less
3 months & 1 day - 6 months:	30 kU/L or less
6 months & 1 day - 9 months:	39 kU/L or less
9 months & 1 day - 12 months:	53 kU/L or less

12 months & 1 day - 2 years:	93 kU/L or less
2 years & 1 day - 3 years:	128 kU/L or less
3 years & 1 day - 4 years:	128 kU/L or less
4 years & 1 day - 5 years:	192 kU/L or less
5 years & 1 day - 6 years:	224 kU/L or less
6 years & 1 day - 7 years:	248 kU/L or less
7 years & 1 day - 8 years:	280 kU/L or less
8 years & 1 day - 9 years:	304 kU/L or less
9 years & 1 day - 10 years:	328 kU/L or less
10 years & 1 day - Adults:	114 kU/L or less

*MEAN + 2 SD

Clinical Use:
For diagnosis of allergic disease. A normal IgE level does not exclude the possible presence of an allergic disorder.

IGF Binding Protein-3 (IGFBP-3) 34458X

CPT Code(s): 83519

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.5 mL minimum)

Transport Temperature:
Room Temperature stable 7 days: Refrigerated, stable 14 days; frozen, stable 28 days

Reject Criteria:
Room temperature

Methodology:
Immunoassay

Reference Range:

3 years:	0.9 - 4.3 mg/L
4 years:	1.0 - 4.7 mg/L
5 years:	1.1 - 5.2 mg/L
6 years:	1.3 - 5.6 mg/L
7 years:	1.4 - 6.1 mg/L
8 years:	1.6 - 6.5 mg/L
9 years:	1.8 - 7.1 mg/L
10 years:	2.1 - 7.7 mg/L
11 years:	2.4 - 8.4 mg/L
12 years:	2.7 - 8.9 mg/L
13 years:	3.1 - 9.5 mg/L
14 years:	3.3 - 10.0 mg/L
15 years:	3.5 - 10.0 mg/L
16 years:	3.4 - 9.5 mg/L
17 years:	3.2 - 8.7 mg/L
18 years:	3.1 - 7.9 mg/L
19 years:	2.9 - 7.3 mg/L
20 years:	2.9 - 7.2 mg/L
21-30 years:	3.4 - 7.8 mg/L
31-40 years:	3.4 - 7.0 mg/L
41-50 years:	3.3 - 6.7 mg/L
51-60 years:	3.4 - 6.9 mg/L
61-70 years:	3.0 - 6.6 mg/L
71-80 years:	2.5 - 5.7 mg/L
81-85 years:	2.2 - 4.5 mg/L

>85 years: No primary data available; use 81-85 year range as a guideline.
By pubertal (Tanner) stage:

Tanner I:	Females 1.2 - 6.4 mg/L	Males 1.4 - 5.2 mg/L

Tanner II:	Females 2.8 - 6.9 mg/L	Males 2.3 - 6.3 mg/mL
Tanner III:	Females 3.9 - 9.4 mg/L	Males 3.1 - 8.9 mg/m
Tanner IV:	Females 3.3 - 8.1 mg/L	Males 3.7 - 8.7 mg/L
Tanner V:	Females 2.7 - 9.1 mg/L	Males 2.6 - 8.6 mg/L

Clinical Use:
IGFBP-3 is the major carrier of insulin-like growth factors. IGFBP-3 is Growth Hormone (hGH) responsive. Therefore, concentrations are elevated with acromegaly and decreased with hypopituitarism. Ratios of IGF-1/IGFBP-2 and IGFBP-2/IGFBP-3 are useful as markers of hGH action and in evaluating short stature.

IGF-I (Somatomedin-C) 839X

CPT Code(s): 84305

Specimen Container:
No additive (red-top) or SST

Preferred Specimen:
1 mL serum or plasma (0.5 mL minimum)

Transport Temperature:
Frozen

Reject Criteria:
Room temperature specimen

Methodology:
Immunoassay

Reference Range:
Adult Reference Ranges for IGF-I (ng/mL):

Age	Males	Females
19-30 years	126-382	138-410
31-40 years	106-255	126-291
41-50 years	86-220	88-249
51-60 years	87-225	92-190
61-70 years	75-228	87-178
71-80 years	31-187	25-171
81-88 years	68-157	31-162
>88 years	Not Established	

Pediatric Reference Ranges for IGF-I (ng/mL):

Age	Males	Females
1-7 days	< or = 31	< or = 31
8-14 days	< or = 43	< or = 43
15 days-1 year	25-265	25-265
1-2 years	45-222	99-254
3-4 years	36-202	36-202
5-6 years	32-259	57-260
7-8 years	65-278	97-352
9-10 years	52-330	49-461
11-12 years	80-723	101-580
13-14 years	142-855	199-658
15-16 years	176-845	236-808
17-18 years	152-668	165-526
Tanner Stages (7-17 years)	Males	Females
Tanner I	59-296	45-358
Tanner II	56-432	111-426
Tanner III	135-778	169-644
Tanner IV	230-855	297-627
Tanner V	181-789	142-868

Clinical Use:
Insulin-like growth factor I (IGF-1 or somatomedin C) is useful in evaluating growth-related disorders. Dwarfism is associated with low Growth Factor (hGH) concentrations and IGF-1. In contrast, both hormones are increased with acromegaly. IGF-1 concentrations are low with malnutrition, returning to the reference range upon restoration of a healthy diet.

IgG Subclasses and Total IgG 7903X

Includes: IgG1, IgG2, IgG3, IgG4, and Total IgG

CPT Code(s): 82787 (x4); 82784

Specimen Container:
No additive (red-top)

Preferred Specimen:
2 mL serum (1 mL minimum).

Instructions:
Overnight fasting is preferred.

Transport Temperature:
Refrigerated

Methodology:
Nephelometry

Reference Range:

Age (yrs)	IgG 1	IgG 2	IgG 3	IgG 4
0-1	194-942	23-300	19-85	0.5-78
2-3	194-842	17-68	17-68	1.0-54
4-5	308-945	61-345	10-122	2.0-112
6-7	288-918	44-375	16-85	0.4-98
8-9	432-1020	72-430	13-85	2.0-95
10-11	423-1080	78-355	17-173	2.0-115
12-13	342-1150	100-455	28-125	4.0-136
14-17	315-855	64-495	23-198	11-157
Adult	382-929	241-700	22-178	4-86

Reference Ranges for Total IgG:

Age	(mg/dL)
Cord Blood:	553-1360
1 month:	213-765
6-9 months:	187-765
10-12 months:	247-910
1-3 years:	533-1078
4-6 years:	592-1723
7-9 years:	673-1734
10-11 years:	821-1835
12-13 years:	893-1823
14-15 years:	842-2013
>=16 years:	694-1618

Clinical Use:
Measurement of IgG subclasses may be helpful in the management and understanding of immunodeficiency diseases, hypersensitivity states, and conditions involving susceptibility to infection.

IgG Synthesis Rate / Index, CSF 7558X

Includes: Albumin (CSF and Serum), IgG (CSF and Serum), CSF IgG Index, CSF Synthesis Rate IgG

CPT Code(s): 82042; 82040; 82784 (x2)

Specimen Container:
Sterile, screw-cap container-CSF; No additive (red-top)-serum

Preferred Specimen:
2 mL CSF and serum (1 mL minimum). 1 mL CSF and serum (0.5 mL minimum)

Instructions:
The collection date and time must be the same for both specimens. Both serum and CSF must be sent for calculation of synthesis rate by nephelometry. CSF must be crystalline clear.

Transport Temperature:
Refrigerated

Methodology:
Nephelometry

Reference Range:

Synthesis Rate IgG:	-9.9 to +3.3 mg/day
IgG Index:	Less than 0.66
Albumin::	8.0-42.0 mg/dL
IgG, CSF:	0.8-7.7 mg/dL
IgG, Serum:	
Immunoglobulin G:	(mg/dL)
Cord Blood:	553-1360
1 Month:	213-765
2-5 Months:	170-595
6-9 Months:	
10-12 Months:	247-910
1-3 Years:	533-1078
4-6 Years:	592-1723
7-9 Years:	673-1734
10-11 Years:	821-1835
12-13 Years:	893-1823
14-15 Years:	842-2013
>=16 Years:	694-1618
Albumin, Serum	
Albumin, Serum:	
0-40 Years:	3.7-5.1 g/dL
41-60 Years:	3.5-4.9 g/dL
>60 Years:	3.2-4.6 g/dL

The IgG synthesis rate and index are two different measurements of CSF IgG. Both are useful in the diagnosis of multiple sclerosis.

Clinical Use:
The IgG Synthesis Rate/Index is useful in diagnosing and monitoring patients with multiple sclerosis and other inflammatory diseases involving the brain and meninges.

Immune Complex Detection by C1q Binding 36735X

CPT Code(s): 86332

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.2 mL minimum).

Instructions:
Freeze serum within one hour of time drawn. With multiple tests, submit a separate tube for each test. Do not use gel barrier tubes. Do not submit the sample in a glass tube. Do not

thaw.

Transport Temperature:
Frozen

Reject Criteria:
Received room temperature; Received refrigerated

Methodology:
Enzyme Immunoassay or ELISA

Reference Range:
< 4.0 ug Eq*/mL
C1q binding values of >4 ug Eq/mL indicate the presence of immune complexes such as SLE.
*Aggregated IgG

Clinical Use:
Immune Complex Detection by C1q Binding is useful in diagnosing and monitoring immune complex diseases such as certain vasculitides, rheumatoid arthritis, systemic lupus erythematosis, and glomulonephritis

Immunofixation, Serum SIEP

Testing performed daily

Specimen Container:
Gold

Preferred Specimen:
Refrigerated

Instructions:
Overnight fasting is preferred.

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to date reference range

Immunofixation, Urine UIEP

Testing performed daily

Specimen Container:
Sterile Container

Preferred Specimen:
Urine

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to date reference range

IMMUNOGLOBULIN A IGA

Testing performed daily.

CPT Code(s): 82784

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

IMMUNOGLOBULIN G IGG

Testing performed daily.

CPT Code(s): 82784

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

IMMUNOGLOBULIN M IGM

Testing performed daily.

CPT Code(s): 82784

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

INSULIN INS

CPT Code(s): 83525

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated, stable 8 days

Reject Criteria:

Received room temperature

Methodology:
Immunoassay

Clinical Use:
For diagnosis and monitoring of diabetes and insulin-secreting tumors.

Intrinsic Factor Blocking Antibody 568X

CPT Code(s): 86340

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.3 mL minimum).

Transport Temperature:
Room temperature, stable 7 days

Methodology:
Immunoassay

Reference Range:
Negative

Clinical Use:
Intrinsic Factor, produced by cells lining the stomach, binds vitamin B12 (cyanocobalamin) to facilitate absorption of the vitamin. Blocking antibody impedes the action of Intrinsic Factor as observed in approximately half of the patients who develop pernicious anemia.

IRON IRON

Testing performed daily.

CPT Code(s): 83540

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Iron Liver 8828Z

CPT Code(s): 83540

Specimen Container:
Trace metal-free (royal blue–top) tube

Preferred Specimen:
5 mg liver biopsy tissue
Fixed tissue in Paraffin embedded tissue block is also acceptable.

Transport Temperature:

Room temperature and refrigerated: 28 days

Methodology:
Inductively Coupled Plasma/ Mass Spectrometry

Reference Range:
Males: 400-2200 ug/g dryw
Females: 200-1600 ug/g dryw

Clinical Use:
Iron index results between 1.0-1.9 suggest mild iron accumulation (alcoholic liver disease or heterozygous hemochromatosis). Results greater than 1.9 indicate hemochromatosis (transfusion-related iron overload or homozygous hemochromatosis).

Islet Cell Antibody Screen with Reflex to Titer 36741X

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. 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.

If Islet Cell Antibody Screen is positive, Islet Cell Antibody Titer will be performed at an additional charge (CPT code(s): 86341).

CPT Code(s): 86341

Specimen Container:
No additive (red-top)

Preferred Specimen:
2 mL serum (0.5 mL minimum).

Transport Temperature:
Refrigerated

Methodology:
Indirect Immunofluorescence

Clinical Use:
Type 1 diabetes is characterized by lymphocytic cell infiltration of the pancreatic islets. Measurement of GAD-65, ICA-512, and Insulin Antibodies provides a highly sensitive means to assess risk and predict onset of Type I diabetes. There is a correlation between the number of antibodies detected, the titer of the antibodies, and the severity of the autoimmune process.

JAK2 V617F, QL, Leumeta® w/Reflex to Exons 12,13 and Reflex to MPL W515, S505 16538X

This test was developed and its performance characteristics have been determined by Quest Diagnostics. Performance characteristics refer to the analytical performance of the test.

If JAK2 V617F result is negative, Exons 12,13 will be performed at an additional charge (CPT code(s): 83904, 83912). If JAK2 Exons 12,13 Mutations result is negative, MPL W515 and MPL S505 Mutation Analysis will be performed at an additional charge (CPT code(s): 83902, 83898, 83904 x2, 83912).

CPT Code(s): 83891; 83902; 83898; 83904; 83912

Specimen Container:
EDTA (lavender-top)

Preferred Specimen:
6 mL whole blood

Instructions:
Submission of whole blood (preferred): Follow standard whole blood collection procedure. Collect 5-6 mL whole blood samples in an EDTA tube. Blood samples are shipped at RT or 4 degrees C. Do not freeze whole blood. Record the draw time and date on the tube. Ship immediately to maintain sample stability. Submission of plasma (acceptable): Collect blood in sterile tubes containing EDTA anticoagulant (lavender-top). Separate plasma from the cells by centrifugation within 2 hours after collection. Transfer the plasma to a separate plastic screw-cap vial, and ship frozen.

Reject Criteria:

Frozen whole blood and frozen bone marrow are not acceptable.

Clinical Use:
Myeloproliferative disorders (MPDs) are clonal hematopoietic stem cell malignancies characterized by excessive production of blood cells by hematopoietic precursors. In addition to thrombotic and hemorrhagic complications, leukemic transformation can occur. The main members of MPD are Polycythemia Vera (PV), Essential Thrombocythemia (ET) and Idiopathic Myelofibrosis (MF). The molecular pathogenesis of most MPDs is unknown. This V617F mutation leads to constituitive tyrosine phosphorylation activity that promotes cytokine activity and induces
erythrocytosis. The V617F mutation in JAK2 is a dominant gain-of function mutation that contributes to the expansion of the myeloproliferative disorder clone. JAK2 exon 12 mutations define a distinctive myeloproliferative syndrome.

Jo-1 Antibody 5810X

CPT Code(s): 86235

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.5 mL minimum).

Instructions:
Overnight fasting is preferred.

Transport Temperature:
Refrigerated

Reject Criteria:
Gross hemolysis; hyperlipemia

Methodology:
Enzyme Immunoassay or ELISA

Reference Range:

Clinical Use:
Jo-1 Antibody occurs most frequently (31%) in patients with polymyositis, but has also been found in patients with dermatomyositis, and the polymyositis/Scleroderma “overlap syndrome” (PM/SCL) or polymyositis/Systemic lupus erythematosus “overlap syndrome” (PM/SLE).

Kappa/Lambda Light Chains, Free with Ratio and 15122X

Reflex to Immunofixation, Serum

If the Kappa/Lambda Light Chain ratio is 1.65, Immunofixation will be performed at an additional charge (CPT code(s): 86334).

CPT Code(s): 83883 (x2)

Specimen Container:
No additive (red-top)-serum

Preferred Specimen:
2 mL serum (Minimum: 1 mL)

Transport Temperature:
Refrigerated, stable 1 week

Reject Criteria:
Microbially contaminated serum; gross hemolysis; lipemic

Methodology:
Nephelometry, Immunofixation

Kappa/Lambda Light Chains, Free with Ratio, Serum 11234X

CPT Code(s): 83883 (x2)

Specimen Container:
No additive (red-top)-serum

Preferred Specimen:
2 mL serum (Minimum: 1 mL)

Transport Temperature:
Refrigerated, stable 3 weeks

Reject Criteria:
Microbially contaminated serum; gross hemolysis; lipemic

Methodology:
Nephelometry

Reference Range:

Kappa Light Chain, Free:	3.30-19.40 mg/L
Lambda Light Chain, Free:	5.71-26.30 mg/L
Kappa/Lambda, Free:	0.26-1.65 ratio

Clinical Use:
Elevated serum levels of monoclonal flc are associated with malignant plasma cell proliferation (e.g. multiple myeloma), primary amyloidosis and light chain deposition disease. Raised serum levels of polyclonal flc may be associated with autoimmune diseases such as systemic lupus erythematosus.

LACTIC ACID LAC

Testing performed daily.

CPT Code(s): 83605

Specimen Container:
Grey (sodium fluoride)

Preferred Specimen:
Plasma

Instructions:
Immediately place tube on ice & tansport to lab.

Transport Temperature:
Immediately place tube on ice & tansport to lab

Reference Range:
Call Lab for up-to-date reference range.

LACTOSE TOLERANCE TEST LTT

Testing performed daily.

Specimen Container:
Gold

Preferred Specimen:
Serum

Instructions:
Contact Chemistry Department for specific requirements.

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Lamotrigine 22060X

CPT Code(s): 80299

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.5 mL minimum).

Instructions:
Draw 1/2-1 hour before next dose at steady state. Do not use gel barrier tubes. See Specimen Collection Section, Toxicology.

Transport Temperature:
Refrigerated

Reject Criteria:
Gross hemolysis; Gel barrier tube; Lipemic sample

Methodology:
Liquid Chromatography, Tandem Mass Spectrometry

Reference Range:
4.0-18.0 mcg/mL

Clinical Use:
Lamotrigine is an anticonvulsant drug used as adjunctive treatment for refractory partial seizures.

LAP (Leukocyte Alkaline Phosphatase) 233X

CPT Code(s): 85540

Specimen Container:
Sodium heparin (green-top)

Preferred Specimen:
5 mL whole blood

Transport Temperature:
Room temperature

Reject Criteria:
Received frozen

Methodology:
Enzyme Assay, Micro Exam

Reference Range:
17-189 (normal score)

Clinical Use:
Aid in the differential diagnosis of chronic granulocytic leukemia versus leukemoid reaction; aid in the evaluation of polycythemia and myelofibrosis.

LDH LDH

Testing performed daily.

CPT Code(s): 83615

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

LDL CHOLESTEROL, DIRECT LDL

Testing performed daily.

CPT Code(s): 83721

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Lead, Blood 599X

For states requiring demographic information, call the lab

CPT Code(s): 83655

Specimen Container:
Lavender-top lead-free capillary tubes

Preferred Specimen:
2 mL whole blood (1 mL minimum).

Instructions:
Whole blood should be collected in royal blue-top (EDTA) evacuated tubes with negligible trace element levels. Examples are Monoject (Cat. No. 9991-307022), Becton-Dickinson (Cat. No. 367855 or 6528), or Nichols Institute Trace Element Collection tube. For capillary blood collection, Terumo Capiject (Cat. No. T-MQ), Becton-Dickson MicroGard (Cat. No. 36-5974) or Unopette (Cat. No. 5907) may be used. Check insert for trace element levels and follow manufacturer's instructions.
1. For contamination control during blood collection, use powderless gloves, and wash the draw site with soap and water, then dry with a clean, low lint towel. If water is unavailable, the skin may be cleansed using foaming soaps or using alcohol prep pads.
2. Follow universal precautions during blood collection.
3. For venous sample, follow the standard venipuncture procedure. Collect 3 mL of whole blood in a tan top tube. (EDTA, Becton-Dickson #367855 or equivalent).
4. Follow the guidelines below for collection of capillary blood:
a. Heel stick should be performed for children under the age of 12 months.
b. Please note that the high potential for Lead contamination of capillary specimens during collection is well known (CDC, 1985) and that special precautions must be followed to minimize the Lead contamination which may be present on the skin
* thoroughly wash the hand/foot with soap and water and dry with a clean, low lint towel
* if water is not available, the skin may be cleansed using foaming soaps or using alcohol prep pads
* the finger/heel to be punctured must be free of any visible infection or wound(s) and the area should be massaged to increase the circulation prior to collection
* do not allow the cleansed area to touch any articles of clothing or non-cleansed skin areas prior to sample collection
* lance the skin area using routine capillary collection techniques and remove the first droplet of blood using gauze pad or other sterile blotting material - DO NOT WIPE
* blood which runs down the finger or around the fingernail is not suitable for collection
* draw the blood into the capillary container (Becton-Dickson #365974 or equivalent) maintaining a continuous flow of blood.
Cap or seal the container and agitate gently (20-30 sec) to mix the blood with the anticoagulant. Check the tube identification. Stop the bleeding and cover the draw site with sterile gauze. If bleeding is slow to stop, apply pressure to the puncture site with sterile gauze. If bleeding continues after 3-5 min, consult a physician. If multiple tubes are drawn for chemistry, hematology, etc., the draw for trace elements should be done last. Refer to catalog for optimal volume. Be sure to gently mix the blood specimen immediately after collection.
Avoid trace element contamination by observing the following precautions:
1. Use powderless gloves
2. Do not aliquot specimen
Patients should refrain from seafood, antacids, vitamins with mineral supplements, and herbal preparations at least three days prior to specimen collection. Ship specimen to laboratory as soon as possible refrigerated. Pediatric samples may be collected in lead free microtubes following manufacturer's instructions. See Specimen Collection Section, Toxicology.

Transport Temperature:
Room temperature

Reject Criteria:
Received frozen; Clotted; Gross hemolysis

Methodology:

Atomic Absorption Spectrometry

Reference Range:

Age: 6 years or older:	10 mcg/dL or less
Less than 6 years:	
CDC CLASS Blood lead concentration	
	(mcg/dL)
I	<10
IIA	10-14
IIB	15-19
III	20-44
IV	45-69
V	>69

Refer to Current CDC guidelines for comments and interventions recommended for each class. OSHA Reference: 40 mcg/dL or less###Guidelines effective June 3, 1993 were published in the Federal Register, Volume 58, No. 84, pp 26627-26649, May 4, 1993.

Clinical Use:
Blood Lead is useful in detecting industrial, dietary, and accidental exposure to lead and to monitor detoxification therapy.

Legionella Antigen Detection, DFA 34475X

CPT Code(s): 87278

Specimen Container:
Sterile, screw-cap container

Preferred Specimen:
Bronchial wash, lung tissue, sputum

Instructions:
Air-dried slides acceptable. Keep refrigerated.

Transport Temperature:
Refrigerated

Methodology:
Immunofluorescence Assay

Reference Range:
None detected

Clinical Use:
Legionnaire's disease is associated with pneumonia and other illnesses. Antigen Detection by DFA is often used in conjunction with Culture. Antigen Detection provides a more rapid result; however, Antigen Detection has lower sensitivity and specificity than Culture.

Legionella Culture 688X

CPT Code(s): 87081

Specimen Container:
Sterile, screw-cap container

Preferred Specimen:
Bronchial wash, lung tissue, sputum

Instructions:

Keep refrigerated.

Transport Temperature:
Refrigerated

Reject Criteria:
Received room temperature; Received frozen

Methodology:
Conventional Culture

Clinical Use:
Detection of Legionella organisms confirms the diagnosis of Legionnaire's Disease. Its identification is important for the management and treatment of legionellosis.

LIPASE LIP

Testing performed daily.

CPT Code(s): 83690

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

LIPID PROFILE LIPD

Testing performed daily.

CPT Code(s): 80061

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Lipoprotein (a) 34604X

CPT Code(s): 83695

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.3 mL minimum)

Transport Temperature:

Refrigerated

Methodology:
Immunoprecipitin

Reference Range:
30 or less mg/dL

Clinical Use:
Elevated Lp(a) levels are an independent risk factor for coronary artery disease and stroke.

LITHIUM LITH

Testing performed daily

CPT Code(s): 80178

Specimen Container:
Gold

Preferred Specimen:
Serum

Instructions:
Draw 8-12 hours after dose

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to date reference range

Liver Kidney Microsome (LKM-1) Antibody (IgG) 15038X

CPT Code(s): 86376

Preferred Specimen:
1 mL serum

Transport Temperature:
Refrigerated, stable 2 weeks

Methodology:
Enzyme Linked Immunosorbent Immunoassay

Reference Range:

<=20 Units:	Negative
20.1-24.9 Units:	Equivocal
>=25.0 Units:	Positive

Clinical Use:
The 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).

Luteinizing Hormone (LH) LH

Testing performed daily

CPT Code(s): 83002

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to date reference range

Lyme Disease Antibody (IgG), Western Blot 29477X

CPT Code(s): 86617

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.1 mL minimum).

Transport Temperature:
Refrigerated

Methodology:
Western Blot

Reference Range:
Negative
IgG Western Blot strips that show reactivity 5 (or more) of the 10 significant bands are considered positive for specific antibody to B. burgdorferi. (Proceedings of the Second Conference of Lyme Disease, Dearborn, Michigan, 1994).

Clinical Use:
Western blot testing is appropriate for confirming a positive (detected) EIA or IFA test result. IgG Western Blot strips which have 5 (or more) of the 10 significant bands are considered positive for specific antibody to B. burgdorferi.

Lyme Disease Antibody, Total, EIA with Reflex to Western Blot (IgG, IgM) 6646Z

If Lyme Disease Antibody, Total is positive or equivocal, Lyme Disease Antibodies (IgG, IgM), Western Blot will be performed at an additional charge (CPT code(s): 86617 X2).

CPT Code(s): 86618

Specimen Container:
No additive (red-top)

Preferred Specimen:
2 mL serum (0.8 mL minimum).

Transport Temperature:
Room temperature

Methodology:
EIA/Western Blot

Reference Range:

< or = 0.90	Negative
0.91-1.09	Equivocal
> or = 1.10	Positive

Clinical Use:

Lyme disease is caused by a bacterium Borrelia burgdorferi and is transmitted by ticks. EIA is the screening test with high sensitivity for antibody detection. Western blot testing is appropriate for confirming the EIA test result.

Lyme Disease DNA, Real-Time PCR, Blood 34287X

This test was developed and its performance characteristics have been determined by Quest Diagnostics. Performance characteristics refer to the analytical performance of the test.

CPT Code(s): 87476

Specimen Container:
ACD solution B (yellow-top)

Preferred Specimen:
5 mL whole blood (2 mL minimum).

Instructions:
Keep refrigerated.

Transport Temperature:
Refrigerated

Methodology:
Real-Time Polymerase Chain Reaction

Reference Range:
Not detected
50 orgs/mL

Clinical Use:
Lyme Disease is caused by a bacterium Borrelia burgdorferi and is transmitted by ticks. PCR is highly specific for identification of the organism.

Lyme Disease DNA, Real-Time PCR, CSF or Synovial Fluid 30297X

This test was developed and its performance characteristics have been determined by Quest Diagnostics. Performance characteristics refer to the analytical performance of the test.

CPT Code(s): 87476

Specimen Container:
Sterile, screw-cap container

Preferred Specimen:
CSF or Synovial fluid

Instructions:
Shipping room temp and shipping frozen acceptable

Transport Temperature:
Refrigerated

Methodology:
Real-Time Polymerase Chain Reaction

Reference Range:
Not Detected 50 orgs/mL

Clinical Use:
Lyme disease is caused by a bacterium Borrelia burgdorferi and is transmitted by ticks. PCR is highly specific for identification of the organism.

Lymphocyte Subset Panel 4 7924X

Includes:Absolute Lymphocytes, Percentage CD4, Absolute CD4, Percentage CD8, Absolute CD8, CD4/CD8 Ratio (calculated)

CPT Code(s): 86360

Specimen Container:
EDTA (lavender-top)

Preferred Specimen:
8 mL whole blood (0.5 mL minimum)

Instructions:
Do not freeze. Volumes less than 1 mL should be submitted in a Pediatric EDTA tube.

Transport Temperature:
Room temperature, stable 72 hours

Reject Criteria:
Received frozen

Methodology:
Flow Cytometry

Reference Range:
See individual assays.

Clinical Use:
Assists in evaluating helper and suppressor cell immune status in immunodeficiency diseases such as AIDS.

MAGNESIUM MG

Testing performed daily.

CPT Code(s): 83735

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

MAGNESIUM, 24 HR URINE MG24

Testing performed daily.

CPT Code(s): 83735

Specimen Container:
24 hr urine container

Preferred Specimen:
Urine

Instructions:
No preservatives.

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

MAGNESIUM, RANDOM URINE MGRU

Testing performed daily.

CPT Code(s): 83735

Specimen Container:
Sterile Container

Preferred Specimen:
Urine

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Magnesium, RBC 623Z

CPT Code(s): 83735

Specimen Container:
EDTA (lavender-top)-whole blood

Preferred Specimen:
1 mL whole blood (0.5 mL minimum).

Instructions:
Patient should refrain from taking vitamins, or mineral herbal supplements for at least one week before sample collection. Do not centrifuge whole blood.

Transport Temperature:
Refrigerated, stable 4 days

Reject Criteria:
Received room temperature; Received frozen; Gross hemolysis; Clotted

Methodology:
Atomic Absorption

Reference Range:

Adults:	4.0-6.4 mg/dL
Detection Limit:	0.1 mg/dL

Clinical Use:
RBC Magnesium reflects intracellular concentration of magnesium. RBC Magnesium may have an inverse relationship with hypertension.

Manganese, Serum / Plasma 951X

CPT Code(s): 83785

Specimen Container:
Royal blue-top (no additive) in trace element collection package

Preferred Specimen:
2 mL serum (1 mL minimum).

Instructions:
Patient should refrain from taking mineral supplements at least three days prior to sample collection.

Transport Temperature:
Refrigerated

Reject Criteria:
Received room temperature; Hemolysis

Methodology:
Graphite Furnace Atomic Absorption Spectrometry

Reference Range:
1.1 or less mcg/L

Clinical Use:
Manganese is an essential trace metal. Toxicity that can result from excessive exposure can cause serious organ damage. Manganese can be measured in a variety of body fluids and tissues.

Maternal Serum Screen 1 5059X

Includes: AFP; Maternal Risk Interpretation

Not available for California patients.

CPT Code(s): 82105

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.2 mL minimum)

Instructions:
Maternal date of birth (mm/dd/yyyy), Estimated Date of Delivery by US/LMP/PE, weight, race, insulin-dependent diabetes status, repeat sample (Y/N), number of fetuses, and neural tube defect history must be provided for interpretation of results.

Transport Temperature:
Room temperature

Methodology:
Immunochemiluminometric Assay

Reference Range:
Interpretive Cutoffs:

< 2.50 Adjusted	MOM
< 1.90 Adjusted	MOM for insulin-dependent diabetes
< 4.00	MOM for Twins
< 3.50	Adjusted MOM for Twins insulin-dependent

	diabetes
< 4.50	Adjusted MOM for Triplets

Clinical Use:
Maternal serum Alpha-Fetoprotein (AFP) elevation is associated with an increased risk for open neural tube defects, multiple gestation, placental anomalies, ventral abdominal wall defects, congenital nephrosis, and oligohydramnios. Follow-up for abnormal AFP results include genetic counseling, level II or III ultrasound examination, and consideration of amniocentesis for chromosome and AFP analysis. Normal levels do not ensure birth of a normal infant; In addition, 2-3% of newborns have some type of physical or mental defect, many of which may be undetectable with current prenatal diagnostic procedures.

Maternal Serum Screen 4 — 30294X

Includes: AFP; unconjugated Estriol; hCG; Dimeric Inhibin A; Maternal Risk Interpretation

Not available for California patients. For NY patient testing, call the lab.

CPT Code(s): 82677; 84702; 82105; 86336

Specimen Container:
No additive (red-top)

Preferred Specimen:
2 mL serum (1 mL minimum)

Instructions:
Maternal date of birth (mm/dd/yyyy), Estimated Date of Delivery by US/LMP/PE, weight, race, insulin-dependent diabetes status, repeat sample (Y/N), number of fetuses, and neural tube defect history must be provided for interpretation of results.

Transport Temperature:
Refrigerated, stable 1 week

Methodology:
See individual assays

Reference Range:
Interpretive Cutoffs:

< 2.50	Adjusted MOM
< 1.90	MOM for insulin-dependent diabetes
< 4.00	Adjusted MOM for Twins
< 3.50	Adjusted MOM for Twins insulin-dependent diabetes
< 4.50	Adjusted MOM for Triplets

Clinical Use:
Prenatal risk assessment for neural tube defects, Down syndrome, and Trisomy 18.

Measles Antibody (IgG) — 964X

CPT Code(s): 86765

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.1 mL minimum).

Instructions:
Separate serum from cells as soon as possible.

Transport Temperature:

Room temperature

Methodology:
Enzyme Immunoassay

Reference Range:

0.91 - 1.09 Equivocal Index
> or = 1.10 Positive-Rubeola (Measles) IgG Antibody Detected Index

Clinical Use:
Measles, also known as rubeola, causes fever, irritability, respiratory illness, and the characteristic skin rash. Immunization has greatly diminished the incidence of measles. The presence of IgG is consistent with immunity or prior exposure. IgM is consistent with current or recent infection. IgM tests can generate false positive results and low levels of IgM can persist for longer than 12 months.

Mercury, Blood 636X

For states requiring demographic information, call the lab.

CPT Code(s): 83825

Specimen Container:
EDTA (royal blue-top)

Preferred Specimen:
4 mL whole blood (2 mL minimum).

Instructions:
To avoid contamination, use powderless gloves. DO NOT ALIQUOT SPECIMEN. See Specimen Collection Section, Toxicology. Patient should refrain from eating predatory fish such as swordfish, tuna and shark at least three days prior to specimen collection.

Transport Temperature:
Refrigerated

Reject Criteria:
Received frozen; Clotted; Gross hemolysis; Capillary tubes

Methodology:
Inductively-Coupled Plasma/Mass Spectrometry

Reference Range:
10 or less mcg/L

Clinical Use:
The primary clinical utility of blood mercury is the determination of abnormal exposures seen at levels over 20 mcg/L. Mercury is absorbed via the respiratory tract (mercury vapors), skin, and gastrointestinal tract. Mercury poisoning can cause kidney damage. The chronic effect of mercury poisoning includes inflammation of mouth and gums, loosening of the teeth, kidney damage, nervousness, depression, and spasms.

Metanephrines, Fractionated, HPLC 641X

Includes: Metanephrine; Normetanephrine; Total Metanephrine (calculated)

CPT Code(s): 83835

Specimen Container:
Plastic, leakproof container

Preferred Specimen:

10 mL 24-hour urine (3 mL minimum)

Instructions:
Collect with boric acid or 25 mL 6N HCl or 25 mL 50% acetic acid to maintain pH of 3.
It is preferable for the patient to be off medications for 3 days before specimen collection. However, common antihypertensives (diuretics, ACE inhibitors, calcium channel blockers, alpha and beta blockers) cause minimal or no interference. Please specify on the request form and on the urine container the total 24-hour urine volume and time of collection.
Record patient's age on test request form and urine vial.

Transport Temperature:
Room temperature, stable 1 week

Methodology:
High Performance Liquid Chromatography

Reference Range:

Normetanephrines, 24-Hour Urine:	
0 - 3 years:	Not established
3 - 8 years:	20 - 186 mcg/24 hours
9 - 12 years:	10 - 319 mcg/24 hours
13 - 17 years:	71 - 395 mcg/24 hours
Adult Males:	44 - 540 mcg/24 hours
Adult Females:	52 - 310 mcg/24 hours
Metanephrines, 24-Hour Urine:	
0 - 3 years:	Not established
3 - 8 years:	9 - 86 mcg/24 hours
9 - 12 years:	26-156 mcg/24 hours
13 - 17 years:	31 - 156 mcg/24 hours
Adult Males:	26 - 230 mcg/24 hours
Adult Females:	19 - 140 mcg/24 hours
Total Metanephrines (M + N):	
0 - 2 years:	Not established
3 - 8 years:	47 - 260 mcg/24 hours
9 - 12 years:	72 - 410 mcg/24 hours
13 - 17 years:	130 - 520 mcg/24 hours
Adult Males:	90 - 690 mcg/24 hours
Adult Females:	95- 475 mcg/24 hours

Clinical Use:
To help diagnose or rule out a pheochromocytoma or other neuroendocrine tumor

Metanephrines, Fractionated, LC/MS/MS, 24-Hour Urine — 14962X

Includes: Metanephrine; Normetanephrine; Total Metanephrine (calculated)

CPT Code(s): 83835

Specimen Container:
24-hour urine container

Preferred Specimen:
5 mL 24-hour urine (1.5 mL minimum)

Instructions:
After urine collection, add 25 mL of 6N HCl to maintain a pH below 3.
Please note: Boric acid and Conc. Glacial acetic acid as a preservative are no longer acceptable.

Transport Temperature:
Room temperature preferred; Refrigerated acceptable; Frozen acceptable

Methodology:
Liquid Chromatography Tandem Mass Spectrometry

Reference Range:
Pediatric ranges:

Metanephrines, Total, Fractionated, 24-hour urine		
3 months-4.9 years	79-345 mcg/24 hours	246-827 mcg/g creat
5-9.9 years	49-408 mcg/24 hours	205-777 mcg/g creat
10-13.9 years	110-714 mcg/24 hours	100-628 mcg/g creat
14-17.9 years	107-741 mcg/24 hours	113-483 mcg/g creat
Metanephrine, 24-hour Urine		
3 months-4.9 years	25-117 mcg/24 hours	75-188 mcg/g creat
5-9.9 years	49-408 mcg/24 hours	58-271 mcg/g creat
10-13.9 years	51-275 mcg/24 hours	34-249 mcg/g creat
14-17.9 years	40-189 mcg/24 hours	28-214 mcg/g creat
Normetanephrine, 24-hour urine		
3 months-4.9 years	54-249 mcg/24 hours	171-601 mcg/g creat
5-9.9 years	31-398 mcg/24 hours	123-576 mcg/g creat
10-13.9 years	67-503 mcg/24 hours	67-442 mcg/g creat
14-17.9 years	69-531 mcg/24 hours	63-328 mcg/g creat

Clinical Use:
Measurement of fractionated urinary metanephrines by liquid chromatography-tandem mass spectrometry (LC/MS/MS) overcomes interference issues frequently encountered by immunoassays, with a much shorter run time than high performance liquid chromatography (HPLC). The high analytical sensitivity, specificity, accuracy, and precision of LC/MS/MS provides a gold standard reference method for measurement of metanephrine and normetanephrine.

Metanephrines, Fractionated, LC/MS/MS, Plasma 19548X

Includes: Metanephrine; Normetanephrine; Total Metanephrine (calculated)

CPT Code(s): 83835

Specimen Container:
EDTA Lavender-top

Preferred Specimen:
2.5 mL plasma

Transport Temperature:
Refrigerated, stable 2 weeks

Methodology:
Liquid Chromatography Tandem Mass Spectrometry

Reference Range:

Metanephrine, LC/MS/MS:	<=57 pg/mL
Normetanephrine, LC/MS/MS:	<=148 pg/mL
Total Metanephrine, LC/MS/MS:	<=205 pg/mL

Clinical Use:
Normetanephrine (NM) and metanephrine (MN) are the extra-neuronal catechol-o-methyl transferase (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.g., antihypertensive agents, alcohol, cocaine) and other pre-analytical factors (e.g., stress, severe congestive heart failure, myocardial infarction) that influence release of catecholamines and metanephrines.

Metanephrines, Fractionated, LC/MS/MS, Random Urine — 14961X

Includes: Metanephrine; Normetanephrine; Total Metanephrines (calculated); Creatinine

CPT Code(s): 83835; 82570

Specimen Container:
Plastic, leakproof container

Preferred Specimen:
5 mL 24-hour urine (1.5 mL minimum)

Instructions:
After urine collection, add 25 mL of 6N HCl to maintain a pH below 3.

Transport Temperature:
Room temperature, stable 1 week

Reject Criteria:
Urine collected with boric acid is unacceptable.

Methodology:
Liquid Chromatomagraphy Tandem Mass Spectrometry, Kinetic Alkaline Picrate

Reference Range:

Metanephrine:	
3 months-4 years:	Not Established
5-9 years:	106-527 mcg/g creat
10-13 years:	34-357 mcg/g creat
14-17 years:	24-302 mcg/g creat
18-29 years:	39-146 mcg/g creat
30-39 years:	32-134 mcg/g creat
40-49 years:	33-192 mcg/g creat
>=50 years:	21-153 mcg/g creat
Normetanephrine:	
3 months-4 years:	Not Established
5-9 years:	149-781 mcg/g creat
10-13 years:	38-523 mcg/g creat
14-17 years:	14-302 mcg/g creat
18-29 years:	91-365 mcg/g creat
30-39 years:	67-390 mcg/g creat
40-49 years:	85-514 mcg/g creat
>=50 years:	108-524 mcg/g creat
Metanephrines, Total:	
3 months-4 years:	Not Established
5-9 years:	255-1167 mcg/g creat
10-13 years:	86-845 mcg/g creat
14-17 years:	39-578 mcg/g creat
18-29 years:	156-442 mcg/g creat
30-39 years:	94-445 mcg/g creat
40-49 years:	155-608 mcg/g creat
>=50 years:	149-603 mcg/g creat
Creatinine, Random Urine:	
0-6 Months:	2-32 mg/dL
7-11 Months:	2-36 mg/dL
1-2 Years:	2-128 mg/dL
3-8 Years:	2-149 mg/dL
9-12 Years:	2-183 mg/dL
>12 Years:	Males: 20-370 mg/dL Females: 20-320 mg/dL

Clinical Use:
Measurement of fractionated urinary metanephrines by liquid chromatography-tandem mass

spectrometry (LC/MS/MS) overcomes interference issues frequently encountered by immunoassays, with a much shorter run time than high performance liquid chromatography (HPLC). The high analytical sensitivity, specificity, accuracy, and precision of LC/MS/MS provides a gold standard reference method for measurement of metanephrine and normetanephrine.

Methylenetetrahydrofolate Reductase (MTHFR), DNA Mutation Analysis 17911X

Use test code 17911X for samples sent to San Juan Capistrano, CA and 36165X for Chantilly, VA

For New York patient testing, use Test Code 17912X.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. 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 Code(s): 83891; 83900; 83909; 83896 (x4); 83914 (x2); 83912

Specimen Container:
EDTA (lavender-top)

Preferred Specimen:
5 mL whole blood (3 mL minimum).

Instructions:
Normal phlebotomy procedure. Specimen stability is crucial. Store and ship ambient immediately. Do not freeze.

Methodology:
Polymerase Chain Reaction, Oligonucleotide Ligation Assay, Fluorescent Microspheres

Reference Range:
Hyperhomocysteinemia has been indicated as a risk factor for arterial disease and venous thrombosis. Homocysteine levels are affected by nutritional and genetic factors. A common mutation in the gene for 5,10-methylene- tetrahydrofolate reductase (MTHFR) causes production of a thermolabile enzyme and reduced enzyme activity. About 10% of Caucasians are homozygous for this mutation while about 40% are heterozygous for its presence. Since MTHFR is involved in remethylation of homocysteine to methionine, patients homozygous for the mutation may develop hyperhomocysteinemia and thus be at elevated risk for vascular disease. Heterozygosity has not been associated with increased homocysteine levels. The mutation is a C to T transition (C677T) that leads to replacement of alanine by valine (A223V) in the protein and the mutation is detected by restriction enzyme digestion after DNA amplification. Since genetic variation and other problems can affect the accuracy of direct mutation testing, the results should always be interpreted in light of clinical and familial data. This test is performed pursuant to a license agreement with Roche Molecular Systems, Inc

Clinical Use:
The Methylenetetrahydrofolate Reductase (MTHFR) enzyme plays a major role in homocysteine metabolism and contains several known polymorphisms, of which the most common is C677T. This mutation is reported to reduce MTHFR activity, resulting in hyperhomocysteinemia. This condition is a risk factor for cardiovascular disease, increased risk for arterial and venous thrombosis, and an increased risk for obstetrical complications, e.g., preeclampsia, abruptio placentae, fetal growth retardation, and stillbirth.

Methylmalonic Acid 34879X

CPT Code(s): 83921

Specimen Container:
No additive (red-top)

Preferred Specimen:
2 mL serum (0.6 mL minimum)

Instructions:
Red top tubes: Place the specimen in a refrigerator or ice bath for 30 minutes after collection. Centrifuge the specimen as soon as possible after complete clot formation has taken place. Transfer the serum to a plastic screw-capped vial. Serum must be transported frozen. Barrier gel separator tubes: Place the specimen in a refrigerator for 30 minutes after collection. Centrifuge the specimen as soon as possible after complete clot formation has taken place. Do not place barrier tubes in an ice bath as freezing may prevent the barrier gel from adequately separating serum from cells. Transfer the serum to a plastic screw-capped vial. Serum must be transported frozen. Other acceptable specimens: Heparin tubes: Place the specimen in a refrigerator or ice bath until the specimen can be centrifuged. Centrifuge the specimen as soon as possible (within one hour after collection) and transfer the plasma to a plastic screw-capped vial. Plasma must be transported frozen.

Transport Temperature:
Refrigerated

Reject Criteria:
Received room temperature

Methodology:
Tandem Mass Spectrometry

Reference Range:
87 – 318 nmol/L

MICROALBUMIN, RANDOM URINE MALRU

Testing performed daily.

CPT Code(s): 82043

Specimen Container:
Sterile Container

Preferred Specimen:
Urine

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Mitochondria M2 Antibody (IgG), EIA 30321X

CPT Code(s): 83520

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.3 mL minimum).

Transport Temperature:
Refrigerated, stable 2 weeks

Methodology:
Enzyme Immunoassay

Reference Range:
Negative:

Clinical Use:
Mitochondrial Antibody is present in approximately 95% of patients with primary biliary cirrhosis (PBC). Occasionally, mitochondrial M3 antibodiy is depleted in a PBC patient who is negative for mitochondrial antibody by IFA.

Mitochondrial Antibody w/Reflex to Titer 259X

If Mitochondrial Antibody Screen is positive, Mitochondrial Antibody Titer will be performed at an additional charge (CPT code(s): 86256).

CPT Code(s): 86255

Specimen Container:
No additive (red-top)

Preferred Specimen:
0.5 mL serum (0.1 mL minimum)

Transport Temperature:
Room temperature, stable 7 days

Reject Criteria:
Hemolysis; Lipemia

Methodology:
Indirect Immunofluorescence Assay

Reference Range:
Negative:

Clinical Use:
A high anti-mitochondrial (AMA) titer supports the diagnosis of primary biliary cirrhosis; low titers of AMA may be detected in other liver disorders which include chronic active hepatitis and cryptogenic cirrhosis.

MONO SCREEN (INFECTIOUS MONO) MONT

Testing performed daily.

Specimen Container:
Gold

Preferred Specimen:
Serum

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Mumps Virus Antibodies (IgG, IgM) 36564X

CPT Code(s): 86735 (x2)

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.4 mL minimum).

Transport Temperature:
Refrigerated

Methodology:
Enzyme Immunoassay/ Immunofluorescence Assay

Reference Range:
See individual assays.

Mumps Virus Antibody (IgG) 8624X

CPT Code(s): 86735

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.2 mL minimum).

Instructions:
Allow specimen to clot at room temperature and then centrifuge. Separate serum from cells as soon as possible. Refrigerate 2-8 degrees C.

Transport Temperature:
Room temperature

Methodology:
Enzyme Immunoassay

Reference Range:

<=0.90 Index	Negative
0.91-1.09 Index	Equivoca
>=1.10 Index	Positive

Positive results suggest recent or previous infection with Mumps Virus and imply immunity. Patients exhibiting equivocal results should be retested in one month, if clinically indicated. A measurable antibody titer may also reflect a positive response to vaccination. Antibody response to vaccination is typically lower than that of a natural infection.

Mumps Virus Antibody (IgM) 36565X

CPT Code(s): 86735

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.2 mL minimum).

Instructions:
Allow specimen to clot at room temperature and then centrifuge. Separate serum from cells as soon as possible. Refrigerate 2-8 degrees C.

Transport Temperature:
Refrigerated

Methodology:
Immunofluorescence Assay

Reference Range:
< 1:10 Titer
Results from any one IgM assay should not be used as a sole determinant of a current or recent infection. Because an IgM test can yield false positive results and low level of IgM antibody may persist for more than 12 months post infection, reliance on a single test result could be misleading. If an acute infection is suspected, consider obtaining a new specimen and submit for both IgG and IgM testing in two or more weeks.

Mycophenolic Acid 10662Z

Includes: Mycophenolic Acid and MPA Glucuronide

CPT Code(s): 83789

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.5 mL minimum)

Instructions:
Serum: Collect blood in plain red top evacuated tube. Allow blood to clot at 15-28 C for 20-30 min. Centrifuge at 20-25 C (2500-2800 rpm, 800-1000 g) for 8-10 min. Transfer serum to polypropylene or polyethylene transport tube. Ship refrigerated (2 to 8 degrees C). Samples left at room temperature for more than 3 days are unacceptable. Plasma: Collect blood in Lavender top evacuated tube. Separate cells by centrifuge at 20-25 C (2500-2800 rpm, 800-1000 g) for 8-10 min. Transfer serum or polypropylene or polyethylene transport tube. Ship refrigerated (2 to 8 degrees C). Samples left at room temp for more than 3 days are unacceptable. 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).

Transport Temperature:
Frozen

Reject Criteria:
Do not collect specimen in Gel Barrier tubes.

Methodology:
Liquid Chromatography Tandem Mass Spectrometry

Reference Range:
Mycophenolic Acid: (TROUGH) 1.0-3.5 mcg/mL
MPA Glucuronide: (TROUGH) 35.0-100.0 mcg/mL

Clinical Use:
Mycophenolic acid is an immunosuppressant used in tissue transplants. It prevents graft rejection by the host's immune system. It is very important to monitor its level. Too little of this drug will cause graft rejection, while too much will lead to infection. Monitoring its level is essential to optimize therapeutic effects, avoid toxicity, and assure compliance.

Mycoplasma pneumoniae Antibodies (IgG, IgM) 34127X

CPT Code(s): 86738 (x2)

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.2 mL minimum).

Transport Temperature:
Refrigerated

Methodology:
Enzyme Immunoassay

Reference Range:

IgM	
<770 U/mL	Negative
770-950 U/mL	Low Positive
>950 U/mL	Positive
IgG	
<=0.90 ISR	Negative
0.91-1.09 ISR	Equivocal
>=1.10 ISR	Positive

Clinical Use:
Mycoplasma are the smallest of the free-living organisms. M. pneumoniae causes approximately 10-20% of all cases of pneumonia. These pneumonias that can affect otherwise healthy individuals, are commonly referred to as ''walking'' and ''atypical'' pneumonias.

Mycoplasma pneumoniae Antibody (IgG), EIA 659X

CPT Code(s): 86738

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.1 mL minimum).

Transport Temperature:
Refrigerated

Methodology:
Enzyme Immunoassay

Reference Range:

<=0.90 ISR	Negative
0.91-1.09 ISR	Equivocal
>1.10	Positive

Clinical Use:
Mycoplasma are the smallest of the free-living organisms. M. pneumoniae causes approximately 10-20% of all cases of pneumonia. These pneumonias that can affect otherwise healthy individuals, are commonly referred to as "walking" and "atypical" pneumonias.

Mycoplasma pneumoniae Antibody (IgM) 21130X

CPT Code(s): 86738

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.1 mL minimum).

Transport Temperature:
Refrigerated

Methodology:
Enzyme Immunoassay

Reference Range:

<770 U/mL	Negative
770-950 U/mL	Positive
>950 U/mL	Positive

Clinical Use:
Mycoplasma are the smallest of the free-living organisms. M. pneumoniae causes approximately 10-20% of all cases of pneumonia. These pneumonias that can affect otherwise healthy individuals, are commonly referred to as "walking" and "atypical" pneumonias.

Mycoplasma pneumoniae Culture 34270X

CPT Code(s): 87109

Specimen Container:
VCM - Viral-Chlamydial-Mycoplasma transport medium (green-cap) available from client supplies

Preferred Specimen:
Throat swab in VCM Sputum, Bronchial lavage/wash or Lower respiratory tract specimen are acceptable specimen types.

Instructions:
All specimens must be submitted in mycoplasma transport. Keep refrigerated or freeze at -70 degrees C to extend stability. Note: Do not use M4RT; the room temperature formula cannot be used for mycoplasma.

Transport Temperature:
Frozen, stable 30 days

Reject Criteria:
Received room temperature; Specimen not in mycoplasma trasnport

Methodology:
Conventional Culture

Clinical Use:
Mycoplasma are the smallest of the free-living organisms. M. pneumoniae causes approximately 10-20% of all cases of pneumonia. These pneumonias that can affect otherwise healthy individuals, are commonly referred to as "walking" and "atypical" pneumonia

Mycoplasma/Ureaplasma Culture 871X

Includes: Mycoplasma hominis and Ureaplasma urealyticum

CPT Code(s): 87109

Specimen Container:
VCM - Viral-Chlamydial-Mycoplasma transport medium (green-cap) available from client supplies

Preferred Specimen:
Vaginal, cervical, urethral swabs, semen, urine, trans-tracheal aspirate (neonates), CSF (neonates).

Instructions:
All specimens must be submitted in mycoplasma transport. Urine - centrifuge at 600x g for 15 minutes and transfer pellet to VCM medium. Do not submit room temperature.

Transport Temperature:
Frozen, stable 1 month

Reject Criteria:
Received room temperature; Inappropriate transport medium; No transport medium

Methodology:
Conventional Culture

Clinical Use:
Mycoplasma hominis and Ureaplasma urelyticum have been associated with genital infections, postpartum fever, non-specific urethritis, and various infections of the newborn.

Myelin Basic Protein 663X

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. 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 Code(s): 83873

Specimen Container:
Sterile, screw-cap container

Preferred Specimen:
1.2 mL CSF (0.5 mL minimum).

Transport Temperature:
Room temperature

Methodology:
Radioimmunoassay

Reference Range:

0- 4.0 mcg/L:	Negative
4.1-6.0 mcg/L:	Weak Positive
> 6.0 mcg/L:	Positive

Clinical Use:
The concentration of MBP is often increased in patients with demyelinating diseases such as multiple sclerosis and may be increased in patients with head injury, CNS trauma, tumor, stroke, and viral encephalitis.

Myoglobin, Serum 660X

CPT Code(s): 83874

Specimen Container:
No additive (red-top)

Preferred Specimen:
2 mL serum (1 mL minimum).

Transport Temperature:
Refrigerated

Methodology:
Latex, Fixed Rate Time Nephelometry

Reference Range:
Males: 50 or less mcg/L
Females: 30 or less mcg/L

Clinical Use:

The breakdown of skeletal muscle (rhabdomyolysis) releases myoglobin.

Myoglobin, Urine 661X

CPT Code(s): 83874

Specimen Container:
Sterile, screw-cap container

Preferred Specimen:
3 mL urine (0.5 mL minimum).

Transport Temperature:
Frozen

Reject Criteria:
Received room temperature

Methodology:
Latex, Fixed Rate Time Nephelometry

Reference Range:

Clinical Use:
The breakdown of skeletal muscle (rhabdomyolysis) releases myoglobin. Very high concentrations of myoglobin may increase the risk of acute renal failure.

NASAL SCREEN FOR S. AUREUS (MRSA) NASC

Testing performed daily.

Specimen Container:
Culturette

Preferred Specimen:
NP Swab

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

Neuron Specific Enolase (NSE) 34476X

This test was 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 Code(s): 86316

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.2 mL minimum)

Instructions:
NSE is high in platelets and RBC. Therefore, plasma and hemolyzed specimens are not acceptable.

Transport Temperature:

Refrigerated

Methodology:
Enzyme Immunoassay

Reference Range:

Males and females:	Less than 8.6 mcg/L
Pediatric:	
Cord blood	4.8-19.5 mcg/L
12-17 years	12.0 mcg/L or Less

Pediatric data from Clin Chem Lab Med (1998) 36:245-247 and Clin Chem (1997) 43:542. NSE is not to be used as a diagnostic procedure without confirmation of the diagnosis by another established product or procedure. Values obtained with different assay methods or kits cannot be used interchangeably. This test was performed using the Can Ag, EIA method.

Clinical Use:
This test is used to monitor disease progression and therapy in individuals with small cell lung cancer (SCLC) and in other cancers (e.g., prostate).

Neuronal Nuclear (Hu) Antibody w/Reflex to Titer & Western Blot 37053X

If Neuronal Nuclear (Hu) Antibody Screen is positive, Western Blot will be performed (CPT code(s): 84181). If the Western Blot is positive, Neuronal Nuclear (Hu) Antibody Titer, will be performed at an additional charge (CPT code(s): 86256).

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. 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 Code(s): 86255

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.3 mL minimum).

Instructions:
Overnight fasting is preferred.

Transport Temperature:
Room temperature, stable 7 days

Methodology:
Immunofluorescence Assay, Western Blot

Reference Range:

Hu Ab, IFA:	Negative
Hu Ab Titer:	Less than 1:40
Hu Ab, WB:	Negative

Clinical Use:
Antineuronal Nuclear Antibody (Anti-Hu) is found in 5-10% of patients with small cell carcinoma of the lung. Anti-Hu antibodies are associated with paraneoplastic encephalomyelitis and sensory neuropathy.

NOSOCOMIAL CULTURE NOSO

Testing performed daily.

Specimen Container:
Culturette

Preferred Specimen:
Culturette

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

OB URINE DRUG SCREEN OBTOX

Testing performed daily.

Specimen Container:
Sterile Container

Preferred Specimen:
Urine

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

OCCULT BLOOD OCBL

Testing performed daily.

Specimen Container:
Sterile Container

Preferred Specimen:
Stool

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

Oligoclonal Bands (IgG), CSF 674X

Also see Multiple Sclerosis Panels.

CPT Code(s): 83916

Specimen Container:
Sterile, screw-cap container-CSF; No additive (red-top)-serum

Preferred Specimen:
1 mL Serum and CSF (0.5 mL minimum). 1 mL Serum and CSF (0.5 mL minimum).

Instructions:
It is preferred that the collection date and time be the same for both specimens. Clients must be called if no serum has been supplied. Client can draw serum up to 72 hours after the CSF tap. If client cannot send patient serum, only then will CSF be tested with control serum.

Transport Temperature:

Refrigerated

Reject Criteria:
Received room temperature

Methodology:
Isolectric Focusing

Reference Range:
No bands
The clinical significance of a numerical band count, determined by isoelectric focusing, has not been definitively defined. The data should be interpreted in conjunction with all pertinent clinical and laboratory data for this patient.

Clinical Use:
This test is used to assist in the diagnosis of Multiple Sclerosis. Presence of oligoclonal bands in CSF is an indication that the patient has had at least one attack of demyelination in the past.

OPIATE SCREEN, URINE — OPIU

Testing performed daily.

Specimen Container:
Sterile Container

Preferred Specimen:
Urine

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

OSMOLALITY, SERUM — OSMO

Testing performed daily

CPT Code(s): 83930

Specimen Container:
Gold

Preferred Specimen:
Serum

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to date reference range

Clinical Use:
.

OSMOLALITY, URINE — OSMOU

Testing performed daily.

CPT Code(s): 83935

Specimen Container:

Sterile Container

Preferred Specimen:
Urine

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

OVA & PARASITES EXAM OP

Testing performed daily.

Specimen Container:
Sterile Container

Preferred Specimen:
Stool

Instructions:
1 specimen per day. Unfixed vial.

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

Oxalic Acid, 24-Hour Urine (with Creatinine) 682X

CPT Code(s): 83945; 82570

Specimen Container:
24-hour urine container

Preferred Specimen:
10 mL urine (2 mL minimum).

Instructions:
Mix well before aliquotting. Acidify urine to maintain a pH below 3 with 6N HCl Refrigerate during and after collection.
Patient should refrain from taking excessive amounts of Ascorbic Acid or Oxalate-rich foods (i.e.,spinach, coffee, tea, chocolate, rhubarb) for at least 48 hours prior to the collection period.

Transport Temperature:
Room temperature

Methodology:
Spectrophotometry

Reference Range:
1.6-37.0 mg/24 hr
Creatinine, 24-hour urine:
<3 years not established
3-8 years 0.11-0.68 g/24 hours
9-12 years 0.17-1.41 g/24 hours
13-17 years 0.29-1.87 g/24 hours
Adults 0.63-2.50 g/24 hours

Clinical Use:

Diagnostic for hyperoxaluria in stone disease and ileal resection.

Oxcarbazepine Metabolite, Serum/Plasma 36637Z

CPT Code(s): 83789

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum

Instructions:
Do not collect specimen in Gel Barrier tubes.

Transport Temperature:
Refrigerated, stable 2 weeks

Methodology:
Liquid Chromatography Tandem Mass Spectrometry

Reference Range:
8.0 - 35.0 mcg/mL (Therapeutic)
>35.0 mcg/mL (Toxic)

Clinical Use:

Oxcarbazepine (10, 11-dihydro-10-oxo-5H-dibenz (bf) azepine-5-carboxamide, Trileptal), a 10-keto analogue of carbamazepine, is an anticonvulsant for the treatment of both generalized tonic-clonic and partial seizures in children and adults. It can be administered alone or as adjunct to other anticonvulsants. Clinically significant effects of oxcarbazepine are observed when plasma levels of its active metabolite, 10-OH-carbazepine, are between 15 and 35 ug/mL. Toxic symptoms may occur when plasma levels exceed 35 ug/mL. The therapeutic mornitoring of oxcarbazepine and its active metabolite are important for achieving proper serum/plasma concentration to inhibit epileptic seizures and avoid adverse effects. The precise mechanism of the action by which oxcarbazepine and its active metabolite exert their antiseizure effect is unknown. However, in vitro electrophysiological studies indicate that they produce blockade of voltage-sensitive sodium channels, resulting in the stabilization of hyperexcited neural membranes, inhibition of repetitive neuronal firing, and diminution of propagation of synaptic impulses. These are important in prevention of seizure spread in the brain. In addition, the increased potassium conduction and calcium channel activities may contribute to the antiseizure treatment effects.

After oral administration, oxcarbazepine is readily absorbed in the body, followed by rapid and almost
complete metabolization to 10-OH-carbazepine, active metabolite. The half-life of oxcarbazepine is only 1 to 2.5 hours, while that of 10-OH-carbazepine is 11 to 15 hours. The protein binding of oxcarbazepine is about 67%, whereas that of the metabolite is about 38%. The clearance of oxcarbazepine and its active metabolite from the body is mainly through ketone reduction and O-site conjugation with glucuronic acid rather than oxidative processes via cytochrome P450 system. More than 95% of the treatme

Pancreatic Elastase-1 14693Z

CPT Code(s): 82656

Specimen Container:
Sterile screw cap container

Preferred Specimen:
1 gm stool (0.3 gm minimum)

Instructions:
Collect undiluted feces in clean, dry, sterile leak proof container. Do not add fixative or preservative.

Transport Temperature:
Frozen

Reject Criteria:
Specimen stored at room temperature >5 days.

Methodology:
Immunoassay

Reference Range:

Normal:	>480.0 mcg/g stool
Low Normal:	201.0-480.0 mcg/g stool
Moderate Pancreatic Insufficiency:	100.0-200.0 mcg/g stool
Severe Pancreatic Insufficiency:	<100.0 mcg/g stool

Clinical Use:
The Elastase-1 is a quantitative enzyme linked immunsorbent assay for measuring concentrations if elastase-1 in feces as an aid in diagnosis of the exocrine pancreatic function.

PAP (Prostatic Acid Phosphatase) 208X

CPT Code(s): 84066

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.3 mL minimum)

Instructions:
Samples should be obtained before rectal examination, biopsy, prostatectomy or prostatic massage, since manipulating the prostate gland may lead to elevated PAP levels persisting up to 24-48 hours. Specimen must be frozen if received by the laboratory greater than 24 hours after collection.

Transport Temperature:
Refrigerated

Reject Criteria:
Received room temperature

Methodology:
Microparticle Enzyme Immunoassay

Reference Range:
< 2.8 ng/mL
PAP values from different assay methods cannot be used interchangeably. This assay was performed using the DPC Chemiluminescence method.

Clinical Use:
For diagnosis and monitoring of prostatic carcinoma

PARTIAL THROMBOPLASTIN TIME (PTT) PTT

Testing performed daily.

Specimen Container:
Blue (sodium citrate)

Preferred Specimen:
Whole Blood

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

Parvovirus B-19 Antibodies (IgG, IgM) 8946

CPT Code(s): 86747 (x2)

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.2 mL minimum).

Transport Temperature:
Room temperature

Methodology:
Enzyme Immunoassay

Reference Range:

<0.9 Index	Negative
0.9-1.1Index	Equivocal
>1.1 Index	Positive

IgG persists for years and provides life-long immunity. Results from any one IgM assay should not be used as a sole indicator 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, consider obtaining a new specimen and submit for both IgG and IgM testing in two or more weeks. To diagnose current infection, consider Parvovirus B19 DNA, PCR test 34296X.

Clinical Use:
Parvovirus B19 is also known as "Fifth Disease," affects primarily children and causes a rash on the face, trunk, and limbs. Joint pain and swelling is more common in adults. Although one-fifth of those affected have only mild disease, patients with sickle cell anemia or similar types of chronic anemia can suffer from acute anemia. Infection during pregnancy can lead to complications.

Parvovirus B-19 DNA, Qualitative PCR 34296X

This test was developed and its performance characteristics have been determined by Quest Diagnostics. Performance characteristics refer to the analytical performance of the test.

CPT Code(s): 87798

Specimen Container:
PPT-Potassium EDTA (white-top)

Preferred Specimen:
1 mL plasma

Instructions:
CSF and synovial fluid are not acceptable specimen types.Plasma: Collect blood in sterile tubes containing EDTA or ACD as anticoagulant or in Plasma Preparation Tubes (PPTs). Store collected whole blood at room temperature and separate plasma from cells within 2 hours of collection. Transfer plasma to sterile, plastic, screw-capped tubes and store

refrigerated or frozen. If blood is collected in a PPT tube, centrifuge within 2hours of collection and store refrigerated or frozen. It is not necessary to transfer the plasma from a PPT tube to aliquot tubes. Whole blood and bone marrow: Collect whole blood or bone marrow in sterile tubes containing EDTA or ACD as anticoagulant. Store and ship refrigerated. Do not freeze.Amniotic fluid: Collect in a sterile container and refrigerate for storage and transport. Avoid repeated freezing and thawing of specimens.Tissue: Collect in a sterile container. Store and ship frozenSerum: Collect blood in sterile tubes without anticoagulants; (SS, serum separator tube) is recommended. 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. Store refrigerated up to 7 days or frozen -18 degrees C or lower for up to 30 days. Avoid repeated freezing and thawing of specimen.

Transport Temperature:
Frozen: Plasma, tissue Frozen: Plasma, tissue Refrigerated: Whole blood, bone marrow, amniotic fluid, serum

Methodology:
Polymerase Chain Reaction

Reference Range:
Not Detected 400 copies/mL

Clinical Use:
Parvovirus B19 is also known as "Fifth Disease" affects primarily children and causes a rash on the face, trunk, and limbs. Joint pain and swelling is more common in adults. Although one-fifth of those affected have only mild disease, patients with sickle cell anemia or similar types of chronic anemia can suffer from acute anemia. Infection during pregnancy can lead to complications. DNA testing provides the most reliable evidence of a recent infection.

PERIPHERAL SMEAR PSMEAR

Testing performed daily.

Specimen Container:
Lavender EDTA

Preferred Specimen:
Whole Blood

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

PHENOBARBITAL PHNO

Testing performed daily

CPT Code(s): 80184

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Instructions:
Draw 1-3 hours after dose

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to date reference range

PHENYTOIN (DILANTIN) PTN

Testing performed daily.

CPT Code(s): 80185

Specimen Container:
LIGHT GREEN

Preferred Specimen:
Plasma

Instructions:
Draw 4-8 hours after dose.

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Phenytoin, Free 3189X

CPT Code(s): 80186

Specimen Container:
No additive (red-top)

Preferred Specimen:
2 mL serum (0.7 mL minimum).

Instructions:
Do not use gel barrier tubes. Optimum time to collect sample: 4 hours post oral dose See Specimen Collection Section, Toxicology.

Transport Temperature:
Refrigerated

Reject Criteria:
Gel barrier tube; Gross hemolysis

Methodology:
Fluorescent Polarization Immunoassay

Reference Range:
1.0-2.0 mcg/mL

Clinical Use:
Phenytoin is used singly or in combination with other anticonvulsants to treat grand mal epilepsy. Monitoring the serum levels of antiepileptic drugs has increased the efficiency and safety of drug therapy in epilepsy. It facilitates individualization of

Phosphatidylserine Antibodies (IgG, IgM) 36595X

CPT Code(s): 86148 (x2)

Specimen Container:
3.2% Sodium Citrate (light blue-top)

Preferred Specimen:

1 mL plasma (0.2 mL minimum).

Transport Temperature:
Room temperature

Methodology:
Enzyme Immunoassay

Clinical Use:
Phosphatidylserine Antibody is used to assist in the diagnosis, management, and possible prevention of thrombotic complications as part of the Phospholipid Syndrome. This Antibody Panel provides a more specific measurement of antibodies useful in the confirmation of Antiphospholipid syndrome.

PHOSPHOROUS PHOS

Testing performed daily.

CPT Code(s): 84100

Specimen Container:
LIGHT GREEN

Preferred Specimen:
Plasma

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

PHOSPHOROUS, 24 HR URINE GROUP PHOS24

Testing performed daily.

CPT Code(s): 84105

Specimen Container:
24 Urine Container

Preferred Specimen:
Urine

Instructions:
No preservatives.

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

PHOSPHOROUS, RANDOM URINE PHOSRU

Testing performed daily.

CPT Code(s): 84105

Specimen Container:
Sterile Container

Preferred Specimen:

Urine

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

PINWORM PREP PINW

Testing performed daily.

Specimen Container:
PINWORM PADDLE

Preferred Specimen:
See instruction sheet

Instructions:
See instruction sheet.

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

Plasma Renin Activity 10537X

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. 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 Code(s): 84244

Specimen Container:
EDTA (lavender-top)

Preferred Specimen:
3 mL plasma (0.4 mL minimum)

Instructions:
Centrifuge and separate blood at room temperature. Avoid refrigerated temperatures. When submitting catheterization studies, it is recommended that the referring laboratory retain a portion of each sample. Patient should refrain from taking medications, preferably 3 weeks prior to draw. Patient should be ambulatory for 30 minutes prior to draw. Patient should be on a moderate sodium diet during collection.

Transport Temperature:
Frozen, stable 6 months

Reject Criteria:
Received refrigerated

Methodology:
Angiotensin I Generation, Radioimmunoassay

Reference Range:
Approximately 1/3 of subjects with essential hypertension have low-renin (PRA

Nonhypertensive adults (upright/sitting):	0.65 - 5.0 ng/mL/h
Nonhypertensive children supine:	(ng/mL/hr)
3-12 months	15.0 or Less

1-3 years	10.0 or Less
4-6 years	7.5 or Less
7-9 years	5.9 or Less
10-12 years	5.3 or Less
13-15 years	4.4 or Less
Nonhypertensive children upright/sitting:	(ng/mL/hr)
3-12 months	15.0 or less
1-3 years	10.0 or less
4-6 years	15.0 or less
7-9 years	17.0 or less
10-15 years	16.0 or less

Pediatric data from J Pediatrics (1976) 89:256; Pediat Res (1979) 13:817; and Eur J Pediatr (1994) 153:284.

Clinical Use:
The measurement of plasma renin activity (PRA) is useful in evaluating hypertension. A normal or high PRA rules out primary aldosteronism, whereas a normal or low PRA helps rule out renal hypertension. Additionally, an elevated PRA may indicate renovascular hypertension due to renal artery stenosis.

Plasminogen Activator Inhibitor (PAI-1) Activity 10491

CPT Code(s): 85415

Specimen Container:
3.2% Sodium Citrate (light blue-top)

Preferred Specimen:
1 mL plasma (0.2 mL minimum)

Instructions:
See specimen collection section. Morning fasting is required.

Transport Temperature:
Frozen

Methodology:
Chromogenic Assay

Reference Range:
Adult males:

Clinical Use:
Increased activity is associated with increased risk of arterial thrombosis, such as with unexplained premature myocardial infarction. Levels are increased in association with an acute phase reaction. Studies suggest PAI-1 may be a prognostic marker in early stage breast cancer.

PLATELET AGGREGATION - ADP PACOL

Testing performed daily.

Specimen Container:
Blue (sodium citrate)

Preferred Specimen:
Whole Blood

Transport Temperature:
Ambient

Reference Range:

Call Lab for up-to-date reference range.

PLATELET AGGREGATION - EPINEPHRINE PAEPI

Testing performed daily.

Specimen Container:
Blue (sodium citrate)

Preferred Specimen:
Whole Blood

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

PLATELET ALLOIMMUNIZATION SCREEN PLXM

Testing performed Monday - Thursday.

Specimen Container:
Red top no gel

Preferred Specimen:
Serum

Instructions:
Testing performed by the American Red Cross.

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

PLATELET COUNT PLT

Testing performed daily.

Specimen Container:
Lavender EDTA

Preferred Specimen:
Whole Blood

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

PNEUMOCYSTIS STAIN PCP

Testing performed daily.

Specimen Container:
Sterile Container

Preferred Specimen:
Resp secretion

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

Poliovirus Antibody, Neutralization 988X

Includes: Poliovirus Types 1, 2, and 3

CPT Code(s): 86382 (x3)

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.5 minimum)

Transport Temperature:
Refrigerated, stable 2 weeks

Methodology:
Neutralization

Reference Range:
The presence of neutralizing serum antibodies (titers 1:8 up to >1:128) against polioviruses implies lifelong immunity. The serum neutralization test is type specific; antibodies detected against one type does not indicate immunity against other types.

Porphyrins, Fractionated, Quantitative & Porphobilinogen, 24-Hour Urine 17198X

Includes: Coproporphyrins, Heptacarboxyporphyrin, Hexacarboxylporphyrin, Pentacarboxyporphyrin, Total Porphyrins, Uroporphyrins, Porphobilogen

CPT Code(s): 84120; 84110

Specimen Container:
24-hour urine container

Preferred Specimen:
12 mL urine (3 mL minimum).

Instructions:
Refrigerate during and after collection. Total 24-hour volume must be provided on the test request form. Wrap tube in aluminum foil or use amber tube to protect from light. Protect from high temperature.

Transport Temperature:
Refrigerated

Reject Criteria:
Received room temperature; Not protected from light

Methodology:
High Performance Liquid Chromatography

Reference Range:
See individual assays.

Clinical Use:
Urinary Porphobilinogen is the first step in the diagnosis of acute intermittent prophyria

(AIP). Porphyria is a group of distinct disorders characterized by the abnormal accumulation of porphyrins or porphyrin precursors. Porphyrin Fractionation of Urine is useful in diagnosing porphyrin cutanea tarda, hereditary coproporphyria, and variegate porphyria.

Porphyrins, Fractionated, Quantitative, Random Urine 36592X

Includes: Coproporphyrins, Heptacarboxyporphyrin, Hexacarboxylporphyrin, Pentacarboxyporphyrin, Total Porphyrins, Uroporphyrins

CPT Code(s): 84120

Specimen Container:
Sterile, screw-cap container

Preferred Specimen:
2 mL urine (1 mL minimum)

Instructions:
Refrigerate after collection. Wrap tube in aluminum foil or use amber tube to protect from light.

Transport Temperature:
Refrigerated

Reject Criteria:
Received room temperature; not protected from light; ph

Methodology:
High Performance Liquid Chromatography

Reference Range:

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 Creat
Hexacarboxyporphyrin	
>=1 YEAR:	Not detected mcg/g Creat
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

Clinical Use:
Porphyria is a group of distinct disorders characterized by the abnormal accumulation of porphyrins or porphyrin precursors. Porphyrin Fractionation of Urine is useful in diagnosing porphyrin cutanea tarda, hereditary coproporphyria, and variegate porphyria.

POST INCUBATION PTT MIX4

Testing performed daily.

Specimen Container:
Blue (sodium citrate)

Preferred Specimen:
Whole Blood

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

POTASSIUM K

Testing performed daily.

CPT Code(s): 84132

Specimen Container:
LIGHT GREEN

Preferred Specimen:
Plasma

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

POTASSIUM, 24 HOUR URINE GRP K24

Testing performed daily.

CPT Code(s): 84133

Specimen Container:
24 Urine Container

Preferred Specimen:
Urine

Instructions:
No preservatives.

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

POTASSIUM, RANDOM URINE POTRU

Testing performed daily.

CPT Code(s): 84133

Specimen Container:
Sterile Container

Preferred Specimen:
Urine

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

PREALBUMIN PREA

Testing performed daily

CPT Code(s): 84134

Specimen Container:
Gold

Preferred Specimen:
Serum

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to date reference range

PREGNANCY TEST, PLASMA HCGP

Testing performed daily.

CPT Code(s): 84703

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Pregnenolone, LC/MS/MS 31493X

CPT Code(s): 84140

Specimen Container:
No additive (red-top)

Preferred Specimen:
5 mL serum (0.2 mL minimum)

Transport Temperature:
Refrigerated

Reject Criteria:
Serum in SST tube and plasma are unacceptable. Light hemolysis is acceptable. Moderate and gross hemolysis is unacceptable.

Methodology:
Liquid Chromatography/Tandem Mass Spectrometry

Reference Range:

Males (18-58 years):	13-208 ng/dL
Premenopausal Females (18-51 years):	7-188 ng/dL

Postmenopausal Females (59-81 years):	13-111 ng/dL
Pediatrics	
1 day – 59 days:	12-1331 ng/dL
60 days – 1 year:	< or = 170 ng/dL
2 – 6 years:	< or = 107 ng/dL
7 – 9 years:	< or = 114 ng/dL
10 – 12 years:	< or = 163 ng/dL
13 – 17 years:	< or = 325 ng/dL

PRO B-Type NATRIURETIC PEPTIDE (pro-BNP) BNP

Testing performed daily

CPT Code(s): 83880

Specimen Container:
LIGHT GREEN

Preferred Specimen:
Plasma

Instructions:
Specimen must be in the lab immediately after collection.

Transport Temperature:
Refrigerated (up to 8 hours); Frozen (greater than 8 hours)

Reference Range:
Call Lab for up-to date reference range

PROGESTERONE PROG

CPT Code(s): 84144

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for updated reference ranges.

Proinsulin 760X

This test was 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 Code(s): 84206

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.8 mL minimum).

Instructions:
Allow blood to fully clot (about 1/2 hour) at room temperature (20-25 degrees C).

Centrifuge in a refrigerated centrifuge and separate serum immediately. Specimens collected in serum separation tubes should be removed from the gel after centrifugation. Overnight fasting is required.

Transport Temperature:
Frozen, stable 4 weeks

Reject Criteria:
Received room temperature; Grossly lipemic serum; Grossly hemolyzed serum

Methodology:
Immunoassay

Reference Range:
Males and Females:

Clinical Use:
Proinsulin is used to detect and monitor excessive hormone production from insulinomas.

PROLACTIN PROL

Testing performed daily

CPT Code(s): 84146

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to date reference range

PROSTATE SPECIFIC ANTIGEN (PSA) PSA

Testing performed daily.

CPT Code(s): 84153

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Prostate Specific Antigen (PSA), Free and Total 31348X

CPT Code(s): 84153; 84154

Specimen Container:
No additive (red-top)

Preferred Specimen:
2 mL serum (0.6 mL minimum)

Instructions:
Do not collect specimen after a transrectal biopsy; results may be falsely elevated.

Transport Temperature:
Frozen

Reject Criteria:
Received room temperature or refrigerated; plasma; gross hemolysis, gross lipemia, gross icterus

Methodology:
Chemiluminescence

Reference Range:
PSA, Total: < or = 4.0 ng/mL
PSA, % Free: >25 %
For more information see report.

Clinical Use:
In men over age 50 years with total PSA between 4.0 and 10.0 ng/mL, those with prostate cancer tend to have lower % free PSA than those with benign prostatic hypertrophy (BPH), although there is considerable overlap in results for the two populations. % free PSA may aid in avoiding unnecessary biopsies in these circumstances.

PROSTATE SPECIFIC ANTIGEN SCREEN PSAS

Testing performed daily.

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Protein C Activity 1777X

CPT Code(s): 85303

Specimen Container:
3.2% Sodium Citrate (light blue-top)

Preferred Specimen:
1 mL plasma (0.5 mL minimum)

Instructions:
See specimen collection section.

Transport Temperature:
Frozen

Methodology:
Clotting Assay

Reference Range:

70-180 % of normal

Clinical Use:
Protein C Deficiency is a risk factor for recurrent venous thrombosis and may be hereditary or acquired. Acquired deficiencies are associated with warfarin therapy, vitamin K deficiency, liver disease, consumptive coagulopathies (i.e. DIC, surgery, trauma), and hepatic immaturity of the newborn.

Protein C Antigen 4948X

CPT Code(s): 85302

Specimen Container:
3.2% Sodium Citrate (light blue-top)

Preferred Specimen:
1 mL plasma (0.4 mL minimum)

Instructions:
See specimen collection section.

Transport Temperature:
Frozen

Methodology:
Enzyme Immunoassay

Reference Range:
70-140 % of normalDecreased levels of Protein C antigen may be found in congenital deficiency, treatment with oral anticoagulants, liver disease, D.I.C. and post surgery.

Clinical Use:
Protein C Deficiency is a risk factor for recurrent venous thrombosis and may be hereditary or acquired. Protein C Antigen assesses the quantitative Protein C levels and is complimentary to the Protein C Activity.

PROTEIN ELECTROPHORESIS PE

Testing performed daily.

Specimen Container:
Gold

Preferred Specimen:
Serum

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Protein S Activity 1779X

CPT Code(s): 85306

Specimen Container:
3.2% Sodium Citrate (light blue-top)

Preferred Specimen:
1 mL plasma (0.2 mL minimum)

Instructions:

See specimen collection section.

Transport Temperature:
Frozen

Methodology:
Clot Detection

Reference Range:
Males: 70-150 % of normalFemales: 60-140 % of normal

Clinical Use:
Protein S Activity measures the functional anticoagulant activity of Protein S. Protein S Deficiency is a risk factor for recurrent venous thrombosis and may be hereditary of acquired. Acquired deficiencies are associated with warfarin therapy, vitamin K deficiency, liver disease, acute phase reactions, consumptive coagulopathies (i.e. DIC, surgery, trauma), and hepatic immaturity of the newborn.

Protein S, Free 10170X

CPT Code(s): 85306

Specimen Container:
3.2% Sodium citrate (light blue-top)

Preferred Specimen:
1 mL plasma (0.5 mL minimum)

Instructions:
See specimen collection section.

Transport Temperature:
Frozen, stable 3 weeks

Methodology:
Immuno-turbidimetric Assay

Reference Range:
Males: 57-171%Females: 50-147%

Clinical Use:
Free Protein S Antigen assesses the quantitative amount of Protein S that is physiologically active. It may be used as a screen for Protein S Deficiency. Protein S Deficiency is a risk factor for recurrent venous thrombosis and may be hereditary of acquired. Acquired deficiencies are associated with warfarin therapy, vitamin K deficiency, liver disease, acute phase reactions, consumptive coagulopathies (i.e. DIC, surgery, trauma), and hepatic immaturity of the newborn. Interpretation of low levels is usually performed in the context of the other Protein S studies.

Protein S, Total Antigen 5165X

CPT Code(s): 85305

Specimen Container:
3.2% Sodium Citrate (light blue-top)

Preferred Specimen:
1 mL plasma (0.4 mL minimum)

Instructions:
See specimen collection section.

Transport Temperature:

Frozen

Methodology:
Microlatex particle-mediated Immunoassay

Reference Range:
70-140 % of normal

Clinical Use:
Total Protein S Antigen assess both free and bound Protein S levels. It is helpful in classifying the type of Protein S deficiency (I, II, or III). Protein S Deficiency is a risk factor for recurrent venous thrombosis and may be hereditary of acquired. Acquired deficiencies are associated with warfarin therapy, vitamin K deficiency, liver disease, acute phase reactions, consumptive coagulopathies (i.e. DIC, surgery, trauma), and hepatic immaturity of the newborn.

PROTEIN, TOTAL 24 HR URINE GRP TP24

Testing performed daily.

CPT Code(s): 84156

Specimen Container:
24 Urine Container

Preferred Specimen:
Urine

Instructions:
No preservatives.

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

PROTEIN, TOTAL, RANDOM URINE TPRU

Testing performed daily.

CPT Code(s): 84156

Specimen Container:
Sterile Container

Preferred Specimen:
Urine

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

PROTHROMBIN TIME PROFILE PT

Testing performed daily.

Specimen Container:
Blue (sodium citrate)

Preferred Specimen:

Whole Blood

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

PTH, Intact and Calcium 8837

CPT Code(s): 83970; 82310

Preferred Specimen:
2 mL serum (1 mL minimum)

Instructions:
Spin to separate serum and transfer to plastic transport tube. Freeze immediately and submit to laboratory frozen. Do not submit glass tubes. Sodium or lithium heparin plasma is no longer acceptable.

Transport Temperature:
Frozen

Reject Criteria:
Gross hemolysis, lipemia, icterus

Methodology:
Immunoassay/Spectrophotometry

Reference Range:

PTH, Intact:	10-65 pg/mL
To convert pg/mL to pmol/L multiply the result by 0.106.	
Calcium, Serum:	8.8-10.1 mg/dL
Pediatric:	
6-9 years:	9 – 59 pg/mL
10-13 years:	11 – 74 pg/mL
14-17 years:	9 – 69 pg/mL

Clinical Use:
Useful in making the diagnosis of primary hyperparathyroidism, secondary hyperparathyroidism, and a differential diagnosis of hypercalcemia

PTH-Related Protein (PTH-rP) 34478X

CPT Code(s): 83519

Specimen Container:
PTH-Related Protein and Releasing Factors tube

Preferred Specimen:
1.5 mL plasma (1 mL minimum)

Instructions:
Store cocktail tube in the freezer at -20 degrees C. (Tubes can be stored for up to one year.) The cocktail tube is a heparin tube with protease inhibitor (aprotinin, leupeptin) added (glass or plastic collection tubes are acceptable). Prior to drawing samples, place PTHrP cocktail tubes on ice. Collect the whole blood into a syringe and transfer the sample into the cocktail tube. Alternatively, if a syringe is not available, collect the blood in a plain red-top tube and immediately transfer the sample into the cold cocktail tube. Mix thoroughly by inversion. Immediately separate the plasma from the cells in a refrigerated centrifuge and transfer to a plastic test tube. Freeze immediately at -20 degrees C or colder. If a refrigerated centrifuge is not available, chill the tubes and the centrifuge tube holders for 5 minutes in an ice slurry. Ship frozen.

Transport Temperature:
Frozen

Reject Criteria:
Received room temperature; Received refrigerated

Methodology:
Immunoassay

Reference Range:

Clinical Use:
Parathyroid Hormone-related peptide (PTHrP) is structurally and functionally similar to human parathyroid hormone (hPTH). Hypercalcemia of malignancy is due either to local osteolysis at the site of bone metastases or to PTHrP production by the malignant cells.

Pyruvic Acid (Pyruvate), Blood 765Z

CPT Code(s): 84210

Specimen Container:
EDTA (lavender-top)

Preferred Specimen:
2 mL whole blood mixed with 2 mL perchloric acid

Instructions:
Collect 4 mL random whole blood (L, lavender-top tube, EDTA) and immediately mix with 4 mL ice cold 7% or 8% Perchloric Acid. Let mixture stand for 10 minutes; then, centrifuge. Separate and submit 4.5 mL supernatant fluid for assay, refrigerated 2-8 degrees C. Transport refrigerated (cold packs). Please specify on the request form volumes of blood and Perchloric Acid used.

Transport Temperature:
Refrigerate, stable 1 month

Methodology:
Enzymatic

Reference Range:
Protein-free Filtrate 0.30-1.50 mg/dL

QuantiFERON® -TB Gold In-Tube 16603X

CPT Code(s): 86480

Instructions:

QuantiFERON®-TB Gold IT uses the following collection tubes:
• Nil Control (Grey cap with white ring)
• TB Antigen (Red cap with white ring)
• Mitogen Control (Purple cap with white ring)

The following procedures should be followed for optimal results:
1. For each subject collect 1 mL of blood directly into each of 3 QuantiFERON®-TB Gold IT blood collection tubes.
2. Mix the tubes by SHAKING VIGOROUSLY for 5 seconds to ensure that the entire inner surface of the tube has been coated with the blood.
3. Label tubes appropriately.

4. The tubes must be transferred to a 37°C ± 1ºC (36-38ºC) incubator as soon as possible (must be transferred within 16 hours of collection). Prior to incubation, maintain tubes at room temperature (22°C ± 5ºC). Do not refrigerate or freeze the blood samples. If the blood is not incubated immediately after collection, re-mixing of the tubes by vigorous shaking for 5 seconds must be repeated immediately prior to incubation, as described above.

CLIENT INCUBATION STEPS
5. Incubate the 3 tubes UPRIGHT at 37º+ 1ºC (36-38ºC) for 16 to 24 hours. The incubator does not require CO2 or humidification.
6. Following incubation, the 3 transport tubes (blood collection tubes) may be kept between 2º and 27ºC for up to 3 days prior to centrifugation. Transport to Quest Diagnostics immediately (preferred method).
7. Alternatively, plasma may be collected from each of the 3 transport tubes (blood collection tubes). Centrifuge the incubated tubes for 15 minutes at 2000 to 3000 RCF (g). The gel plug will separate the cells from the plasma. If this does not occur, the tubes should be re-centrifuged at a higher speed.
8. Plasma samples can be stored in transport tubes (blood collection tubes) or aliquoted into plasma storage tubes and delivered to Quest Diagnostics. Care must be taken to properly label and identify plasma storage tubes as the Nil Control, TB Antigen, and Mitogen Control. Plasma samples can be stored for up to 28 days at 2-8ºC or below -20ºC (preferably less than -70ºC for extended periods).

RENAL FUNCTION PANEL RFP

Testing performed daily.

CPT Code(s): 80069

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

RESPIRATORY SYNCYTIAL VIRUS DETECTION (RSV) RSV

Testing performed daily.

Specimen Container:
Sterile tube in saline on ice

Preferred Specimen:
NP Swab

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

RETICULOCYTE COUNT RETC

Testing performed daily.

Specimen Container:
Lavender EDTA

Preferred Specimen:
Whole Blood

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

RHEUMATOID FACTOR (RF) RA

Testing performed daily.

CPT Code(s): 86431

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Ristocetin Cofactor 4459X

CPT Code(s): 85245

Specimen Container:
3.2% Sodium citrate (light blue-top)

Preferred Specimen:
1 mL plasma (0.5 mL minimum)

Instructions:
See specimen collection section.

Transport Temperature:
Frozen

Methodology:
Platelet Aggregation

Reference Range:
42-200 % of normal

Clinical Use:
von Willebrand Disease is the most common hereditary bleeding disorder. 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 categorizing the type of von Willebrand Disease.

ROUTINE AEROBIC CULTURE ANERC

Testing performed daily.

Specimen Container:
Culturette

Preferred Specimen:
Exudate

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

RPR / VDRL — RPR

Testing performed daily.

Specimen Container:
Gold

Preferred Specimen:
Serum or Plasma

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Rubella Antibodies (IgG, IgM) — 37673X

CPT Code(s): 86762 (x2)

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.4 mL minimum)

Instructions:
Allow specimen to clot at room temperature and then centrifuge. Separate serum from cells as soon as possible. Refrigerate 2-8 degrees C.

Transport Temperature:
Room temperature

Methodology:
See individual assays

Reference Range:

IgG:	
<=0.90	Negative Index
0.91-1.09	Equivocal Index
>=1.10	Positive Index
IgM:	
<0.600	Negative Index Value
0.600-0.799	Equivocal Index Value
>0.799	Positive Index Value

A positive IgG result indicates the presence of rubella virus specific antibody in the patients serum due to immunization or past infection, and indicates immunity to clinically significant current or future infection. The results of a

single IgG determination should not be used to diagnose recent infection. Acute and convalescent sera collected 2-4 weeks apart should be tested together to look for significant rise (>30%) in antibody index for seroconversion. Positive IgG results in neonates or in immunocompromised patients need to be interpreted with caution. A negative result indicates that no detectable antibody to rubella virus is present, and that this individual should be considered susceptible to primary rubella virus infection. An equivocal result should be resolved by testing a second specimen. If results remain equivocal upon repeat testing, a third sample should be tested in 2-4 weeks time.

Clinical Use:
Rubella (German measles) is a usually benign childhood viral infection for which a vaccine is available. IgM Antibody is detectable 11-25 days after the onset of exanthem, 15-25 days after vaccination, and in most infants with congenital rubella between 2 weeks and 3 months after birth. A positive IgG antibody indicates successful immunization or past exposure.

RUBELLA ANTIBODY IgG — RUB

Testing performed daily.

CPT Code(s): 86762

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

RUBEOLA ANTIBODY IgG — RUBO

Testing performed daily.

Specimen Container:
Gold

Preferred Specimen:
Serum

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

SALICYLATE — SAL

Testing performed daily

CPT Code(s): 80196

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to date reference range

Scleroderma Antibody (Scl-70) 4942X

CPT Code(s): 86235

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.5 mL minimum)

Instructions:
Overnight fasting is preferred.

Transport Temperature:
Room temperature

Reject Criteria:
Bacterial contamination; Gross hemolysis; Lipemia

Methodology:
Enzyme Immunoassay

Reference Range:

Clinical Use:
Scl-70 antibody is present in approximately 40% of patients with Progressive Systemic Sclerosis (PSS).

Selenium 5507X

CPT Code(s): 84255

Specimen Container:
Royal blue-top (no additive) in trace element collection package

Preferred Specimen:
2 mL serum (0.7 mL minimum).

Instructions:
Centrifuge serum or plasma specimens within 1 hour of collection. Immediately separate serum or plasma specimens from the cells into trace element collection vials(s).

Transport Temperature:
Refrigerated

Reject Criteria:
Received room temperature; Moderate hemolysis; Lipemic

Methodology:
Atomic Spectroscopy

Reference Range:
Screen: Not Detected
Titer:

Clinical Use:
Selenium is an element of parenteral nutrition. Monitoring the selenium concentration is useful in assessing parenteral nutrition, especially recent intake. Concentratons are also monitored in children with proprionic acidemia who require special diets with supplements.

SEMEN ANALYSIS SAC

Testing performed daily.

Specimen Container:
Sterile Container

Preferred Specimen:
Semen

Instructions:
Scheduled 7am-11am, Mon-Fri Must be delivered to the Hematology Department within 1 hr.

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

SEMEN ANALYSIS, POST-VASECTOMY SAPV

Testing performed daily.

Specimen Container:
Sterile Container

Preferred Specimen:
Semen

Instructions:
Scheduled 7am-11am, Mon-Fri Must be delivered to the Hematology Department within 1 hr.

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

Serotonin Release Assay (SRA) 14627X

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. 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 Code(s): 86022

Specimen Container:
No additive (red-top)

Preferred Specimen:

1 mL serum

Transport Temperature:
Frozen, stable 6 months

Methodology:
Radiobinding 14C Serotonin Radiolabel

Reference Range:

Clinical Use:
The Serotonin Release Assay is a heparin dependent platelet activation assay used in the evaluation of Heparin-inducted Thrombocytopenia (HIT/HITT).

Serotonin, Serum 29851X

CPT Code(s): 84260

Specimen Container:
No additive (red-top)

Preferred Specimen:
2 mL serum (1 mL minimum).

Instructions:
Spin and freeze serum below -20 c within 2 hours after collection. 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.

Transport Temperature:
Frozen

Reject Criteria:
Received room temperature; Received refrigerated

Methodology:
High Performance Liquid Chromatography, Fluorescence Detection

Reference Range:
Adult: 26-165 ng/mL
1-12 Years: 81-349 ng/mL
Pediatric reference range from Brazilian J Med Biol Res (1993) 26:309-317.

Clinical Use:
Serotonin concentrations are greatly increased in patients with carcinoid syndrome. Carcinoid tumors are associated with multiple endocrine neoplasia (MEN) types I and II. These tumors are associated with flushing, diarrhea, pain, and other symptoms.

Sex Hormone Binding Globulin 30740X

CPT Code(s): 84270

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.5 mL minimum).

Instructions:
Specify age and sex on test request form. Collect blood by venipuncture in a 5 or 10 mL vaccutainer. Allow the blood to clot at room temperature (18-25 degress C). Centrifuge for 15 minutes using approximately 760 x g to obtain hemolysis-free serum. No additives or preservatives are required to maintain integrity of the sample. Transfer to a plastic

transport tube and send at refrigerated temperatures (2-8 degrees C).

Transport Temperature:
Refrigerated

Reject Criteria:
Received room temperature

Methodology:
Immunoassay

Reference Range:

< 3 years:	Not Established	
3 - 9 years:	18 – 136 nmol/L	
10 – 13 years:	17 – 123 nmol/L	
14 – 17 years:	11 – 71 nmol/L	
Tanner Stages (7-17 years)	Male	Female
Tanner I:	39 – 155 nmol/L	38 – 114 nmol/L
Tanner II:	33 – 135 nmol/L	24 – 90 nmol/L
Tanner III:	21 – 72 nmol/L	22 – 112 nmol/L

Clinical Use:
The majority of circulating gonadal hormones are protein bound. Testosterone, dihydrotestosterone and estrogen are bound to circulating sex hormone binding globulin (SHBG or testosterone-binding globulin, TEBG) which is produced by the liver. Consequently, not only alterations in these hormone secretions but also alterations in SHBG concentrations may lead to variations in the total circulating steroid hormone levels. Approaches to this system include measurements of total serum testosterone, dihydrotestosterone or estrogen, measurements of the free hormones and direct assessment of SHBG concentration. SHBG concentrations are increased by estrogens and pregnancy and decreased by testosterone.

Sirolimus (Rapamycin) 36712X

CPT Code(s): 80195

Specimen Container:
EDTA (lavender-top)-whole blood

Preferred Specimen:
2 mL whole blood (1 mL minimum).

Instructions:
Draw 2-3 mL of whole blood into lavender-top tube. Ship and store refrigerated. Shipping at ambient temperature (

Transport Temperature:
Refrigerated

Reject Criteria:
Clotted; Gel barrier tube

Methodology:
Liquid Chromatography-Tandem Mass Spectrometry

Reference Range:
Trough: 3.0-18.0 ng/mL

Clinical Use:
Sirolimus is an immunosuppressant drug used to prevent organ graft rejection. Therapeutic drug monitoring is used to optimize dose and avoid toxicity.

Sm and Sm/RNP Antibodies 7448X

CPT Code(s): 86235 (x2)

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.1 mL minimum).

Instructions:
Avoid hemolysis. Overnight fasting is preferred.

Transport Temperature:
Refrigerated

Reject Criteria:
Bacterial contamination; Gross hemolysis; Lipemia

Methodology:
Enzyme Immunoassay

Reference Range:
Index Values
<= 1.00: Negative
> 1.00: Positive

Clinical Use:
Antibodies to Sm are highly specific for systemic lupus erythematosus (SLE) and when present are considered a marker antibody. However, these antibodies are found in only 20% of patients with SLE. RNP antibodies (also known as anti-u1 or ribonucleoprotein antibodies) are found in 45% of SLE patients but are also observed in numerous other disease states such as Sjögren's syndrome, scleroderma and polymyositis. Elevated levels of antibodies to RNP are seen in mixed connective tissue disease. In SLE, RNP antibodies have been associated with a relatively benign disease course with lower incidence of renal and central nervous system involvement. Patients may be considered positive for RNP antibodies when the RNP antibody result is significantly higher than the Sm antibody result.

SODIUM NA

Testing performed daily.

CPT Code(s): 84295

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

SODIUM, 24 HOUR URINE GRP NA24

Testing performed daily.

CPT Code(s): 84300

Specimen Container:
24 Urine Container

Preferred Specimen:
Urine 24 hour collection

Instructions:
No preservatives.

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

SODIUM, RANDOM URINE SODRU

Testing performed daily.

CPT Code(s): 84300

Specimen Container:
Sterile Container

Preferred Specimen:
Urine

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

SPUTUM CULTURE SPUT

Testing performed daily.

Specimen Container:
Sterile Container

Preferred Specimen:
Sputum

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

StoneRisk® Diagnostic Profile 442Z

Research use only

CPT Code(s): 82340, 83945, 84560, 82507, 83986, 84300, 84392, 84105, 83735, 82570, 84133, 82140

Preferred Specimen:
60 mL urine (30 mL minimum)

Instructions:
Use only Quest 24-hour Urine Collection Kits specific for renal stone formation diagnosis. Follow instructions in the kit.
1) Upon completion of 24-hour collection in the large orange collection container, tighten the cap on the container and mix contents in the container vigorously for one minute. A good mix will ensure accurate test results.

2) Carefully fill the two plastic white vials with urine collected in the large orange container. The two white vials must be filled within two to four hours of completion of 24-hour collection. Fill, and cap vials one at a time. Cap both vials tightly, write patient's name on each vial and place in zip-lock bags provided (do not remove absorbent sheets).
3) Complete the patient information section.
4) Place specimen in mail-back box and mail to the laboratory. DO NOT MAIL LARGE ORANGE COLLECTION CONTAINER. For High Urine Output: Patient with a high urine output (greater than 3.8L) will require more than one large container. Collect urine in the first container until it is 3/4 full and then begin filling the second container to complete the 24-hour collection. Carefully follow steps 1-4 for each jug and mark one as box 1 of 2 the other box 2 of 2.
Note: Urine must only be collected and stored in the large orange collection container. Do not remove sponge from the orange collection container. Do not remove wool from white container. Do not collect the first urination at the beginning of 24-hour collection. During collection process store large orange container in a cool location.

Transport Temperature:
Room temperature, stable 7 days

Methodology:
Ion Coupled Plasma Optical, Emission Spectrophotometery, Ion Chromatography, Spectrophotometery, Calculation

Reference Range:
Ammonium: 14-62 meq/day
Potassium: 19-135 meq/day
Creatinine
Males: 800-2000 mg/day
Females: 600-1800 mg/day

Stool Culture STOLC

Testing performed daily

Specimen Container:
Sterile Container

Preferred Specimen:
Stool

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to date reference range

STOOL REDUCING SUBSTANCE SRED

Testing performed daily.

Specimen Container:
Sterile Container

Preferred Specimen:
Stool

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

STOOL, Ph — STPH

Testing performed daily.

Specimen Container:
Sterile Container

Preferred Specimen:
Stool

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

Stool Leukocytes — WBCS

CPT Code(s): 89055

Specimen Container:
Plastic, leakproof feces container

Preferred Specimen:
Fecal specimen

Instructions:
Do not freeze

Transport Temperature:
Refrigerate, stable 3 days

Methodology:
Microscopic Examination, Smear

Streptococcus pneumoniae IgG AB (14 Serotypes) MAID — 19564X

Includes: Serotypes 1, 3, 4, 5, 8, 9 (9N), 12 (12F), 14, 19 (19F), 23 (23F), 26 (6B), 51 (7F), 56 (18C), 68 (9V)

CPT Code(s): 86317 (x14)

Specimen Container:
No additive (red-top)

Preferred Specimen:
0.5 mL serum (0.25 mL minimum)

Transport Temperature:
Refrigerated, stable 2 months

Methodology:
Multiple Analyte Immuno Detection

T. VAGINATIS EXAM — TRIC

Specimen Container:
swab in saline tube

Preferred Specimen:
Vaginal Secretion

Transport Temperature:
A

T3, Free 34429X

CPT Code(s): 84481

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.5 mL minimum)

Transport Temperature:
Room temperature and Refrigerated: 7 days
Frozen: 28 days

Methodology:
Immunochemiluminometric Assay

Reference Range:
< 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
> 18 years: 230 - 420 pg/dL

Clinical Use:
Free T3 is used to diagnosis and monitor the treatment of hyperthyroidism. Free T3 assays can differentiate most cases of nonthyroidal illness from TSH-dependent hyperthyroidism.

T3, Reverse 967X

This test was 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 Code(s): 84482

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.2 mL minimum).

Transport Temperature:
Refrigerated

Methodology:
Radioimmunoassay

Reference Range:
11-32 ng/dL

Clinical Use:
Reverse T3 (rT3) has limited application. The assay may be useful in the diagnosis of nonthyroidal illness (NTI). Patients with NTI have low T3 concentrations and increased concentrations of rT3. RT3 may be useful in neonates to distinguish euthyroid sick syndrome from central hypothyroidism.

T3, Total (Triiodothyronine) 859X

CPT Code(s): 84480

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.5 mL minimum).

Instructions:
Allow samples to clot adequately before centrifugation.

Transport Temperature:
Refrigerated

Methodology:
Immunochemiluminometric Assay

Reference Range:
60-181 ng/dL

Clinical Use:
For diagnosis of T3 thyrotoxicosis.

TESTOSTERONE TEST

Testing performed daily.

CPT Code(s): 84403

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Testosterone, Free and Total, LC/MS/MS 36170X

Includes: Total Testosterone, Free Testosterone (calculated), and % Free Testosterone

CPT Code(s): 84403; 84402

Specimen Container:
No additive (red-top)

Preferred Specimen:
0.9 mL serum

Instructions:
Collect blood in a no additive red-top Vaccutainer. Do not send serum collected in serum separator tubes (SST).

Transport Temperature:
Refrigerated

Reject Criteria:
Received room temperature

Methodology:
Liquid Chromatography Tandem Mass Spectrometry, Tracer Equilibrium Dialysis, Calculation

Reference Range:
Testosterone, Total ng/dL Adult Reference Ranges for Testosterone, Total LC/MS/MS:
Males:
18-69 years: 250-1100 ng/dL
70-89 years: 90-890 ng/dL
Females:
18-69 years: 2-45 ng/dL
70-94 years: 2-40 ng/dL

Aging men with clinically significant hypogonadal symptoms and testosterone values repeatedly in the range of the 200-300 ng/dL or less, may benefit from testosterone treatment after adequate risk and benefits counseling.

Pediatric Reference Ranges for Testosterone, Total LC/MS/MS:
Age Males (ng/dL) Females (ng/dL)
**Cord Blood: 17-61 16-44
**1-10 days: 187 or less 24 or less
**1-3 months: 72-344 17 or less
**3-5 months: 201 or less 12 or less
**5-7 months: 59 or less 13 or less
**7-12 months 16 or less 11 or less
1-5.9 years: 5 or less 8 or less
6-7.9 years: 25 or less 20 or less
8-10.9 years: 42 or less 35 or less
11-11.9 years: 260 or less 40 or less
12-13.9 years: 420 or less 40 or less
14-17.9 years: 1000 or less 40 or less

**Data from J Clin Invest 1974;53:819-828 and J Clin Endocrinol Metab 1973;36:1132-1142.

Pediatric Reference Ranges by Pubertal Stage for Testosterone, Total LC/MS/MS (ng/dL):
Tanner Stage Males Females
Stage I 5 or less 8 or less
Stage II 167 or less 24 or less
Stage III 21-719 28 or less
Stage IV 25-912 31 or less
Stage V 110-975 33 or less
Total Testosterone was measured by LCMSMS. The LCMSMS method correlates well with our extraction/RIA method.

% Free Testosterone % Adult Reference Ranges for Testosterone, Free-LCMSMS-Percent:
Age Males Females
18-89 years 1.5-2.2 0.5-2.0

Pediatric Reference Ranges for Testosterone, Free-LCMSMS-Percent:
Age Males Females
5-9.9 years 0.44-1.78 0.28-1.81
10-13.9 years 0.53-3.33 0.36-3.16
14-17.9 years 1.05-2.91 0.41-2.34

Testosterone, Free pg/mL Adult Reference Ranges for Testosterone, Free-LCMSMS (pg/mL):

Age	Males	Females
18-69 years	35.0-155.0	0.1-6.4
70-89 years	30.0-135.0	0.2-3.7

Pediatric Reference Ranges for Testosterone, Free-LCMSMS (pg/mL):

Age	Males	Females
5-9.9 years	5.3 or less	0.2-5.0
10-13.9 years	0.7-52.0	0.1-7.4
14-17.9 years	18.0-111.0	0.5-3.9

Clinical Use:
Helpful in assessing testicular function in males and managing hirsutism, virilization in females.
Measurement of testosterone by liquid chromatography-tandem mass spectrometry (LC/MS/MS) overcomes interferences and the known limitations of direct immunoassays in measurement of testosterone values in the lower range. Matching or exceeding the performance (analytical sensitivity, specificity, accuracy and precision) of organic solvent extraction/ chromatography/ radioimmunoassays, LC/MS/MS provides a gold standard reference method for measurement of steroid hormones. These advantages are particularly relevant for assessment of testosterone in women, children/infants, and men on testosterone reduction therapy for prostate cancer.

Testosterone, Total, LC/MS/MS 15983X

CPT Code(s): 84403

Specimen Container:
No additive (red-top)

Preferred Specimen:
0.5 mL serum (0.18 mL minimum)

Instructions:
Collect blood in a no additive red-top vaccutainer. Do not send serum collected in serum separator tubes (SST). Serum separator tubes are unacceptable.

Transport Temperature:
Refrigerated

Methodology:
Liquid Chromatography Tandem Mass Spectrometry

Reference Range:

Males:	
18-69 years:	250-1100 ng/dL
70-89 years:	90-890 ng/dL
Females:	
18-69 years:	2-45 ng/dL
70-94 years:	2-40 ng/dL

Pediatric Reference Ranges

	Males	Females
**Cord Blood:	17-61 ng/dL	16-44 ng/dL
**1-10 days:	187 or less ng/dL	24 or less ng/dL
**1-3 months:	72-344 ng/dL	17 or less ng/dL
**3-5 months:	201 or less ng/dL	12 or less ng/dL
**5-7 months:	59 or less ng/dL	13 or less ng/dL

**7-12 months	16 or less ng/dL	11 or less ng/dL
1-5.9 years:	5 or less ng/dL	8 or less ng/dL
6-7.9 years:	25 or less ng/dL	20 or less ng/dL
8-10.9 years:	42 or less ng/dL	35 or less ng/dL
11-11.9 years:	260 or less ng/dL	40 or less ng/dL
12-13.9 years:	420 or less ng/dL	40 or less ng/dL
14-17.9 years:	1000 or less ng/dL	40 or less ng/dL

**Data from J Clin Invest 1974;53:819-828 and J Clin Endocrinol Metab 1973;36:1132-1142.

Pediatric Reference Ranges by Pubertal Stage

Tanner Stage	Males	Females
Stage I	5 or less ng/dL	8 or less ng/dL
Stage II	167 or less ng/dL	24 or less ng/dL
Stage III	21-719 ng/dL	28 or less ng/dL
Stage IV	25-912 ng/dL	31 or less ng/dL
Stage V	110-975 ng/dL	33 or less ng/dL

Notice: Due to interferences of blood drawn in Serum Separator Tubes (SSTs) when using LCMSMS methodology, it is required that only serum collected from a plain Red Top Tube with no additives be submitted. Please update specimen requirements as needed. This is a general notice attached to all reports and it does not imply the result from this report is obtained from an SST tube. The following message will be applied to all reports for male patients over the age of 60, as well as when it is appropriate if age and/or gender are not provided: "Aging men with clinically significant hypogonadal symptoms and testosterone values repeatedly in the range of the 200-300 ng/dL or less, may benefit from testosterone treatment after adequate risk and benefits counseling."

Clinical Use:
Helpful in assessing testicular function in male and managing hirsutism, virilization in females.
Measurement of testosterone by liquid chromatography-tandem mass spectrometry (LC/MS/MS) overcomes interferences and the known limitations of direct immunoassays in measurement of testosterone values in the lower range. Matching or exceeding the performance (analytical sensitivity, specificity, accuracy and precision) of organic solvent extraction/ chromatography/ radioimmunoassays, LC/MS/MS provides a gold standard reference method for measurement of steroid hormones. These advantages are particularly relevant for assessment of testosterone in women, children/infants, and men on testosterone reduction therapy for prostate cancer.

Tetanus Antitoxoid Antibody 4862X

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. 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 Code(s): 86774

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.2 mL minimum)

Transport Temperature:
Refrigerated

Methodology:
Enzyme Immunoassay

Reference Range:
>0.15 IU/mL is protective level of Tetanus Antitoxoid Antibody

THEOPHYLLINE LEVEL THEO

Testing performed daily.

CPT Code(s): 80198

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

THROAT CULTURE THR

Testing performed daily.

Specimen Container:
Culturette

Preferred Specimen:
Throat Swab

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

THROMBIN TIME TT

Testing performed daily.

Specimen Container:
Blue (sodium citrate)

Preferred Specimen:
Whole Blood

Instructions:
Freeze immediately at (-70 C) or colder.

Transport Temperature:
Frozen

Reference Range:
Call Lab for up-to-date reference range.

Thyroglobulin Antibody 267X

CPT Code(s): 86800

Specimen Container:
No additive (red-top)

Preferred Specimen:
2 mL serum (0.3 mL minimum).

Transport Temperature:
Refrigerated

Methodology:
Immunochemiluminometric Assay

Reference Range:
Less than 20 IU/mL

Clinical Use:
Measurement of thyroglobulin antibodies is useful in the diagnosis and management of a variety of thyroid disorders including Hashimoto's thyroiditis, Graves Disease and certain types of goiter.

Thyroglobulin Panel 30278X

Includes: Thyroglobulin Antibody and Thyroglobulin.

CPT Code(s): 84432; 86800

Specimen Container:
No additive (red-top)

Preferred Specimen:
2 mL serum (0.5 mL minimum).

Instructions:
Collect blood in a red-top tube containing no additives and allow the blood to clot according to your laboratory procedures ensuring that the sample integrity is maintained. Centrifuge the sample and then separate the serum into 12X75 mm plastic tube(s).

Transport Temperature:
Refrigerated

Methodology:
Immunochemiluminometric Assay

Reference Range:
Less than 20 IU/mL
If the sample contains Thyroglobulin Ab of greater than 2 IU/mL, the antibody could interfere in the determination of Thyroglobulin. Please interpret with caution.
Thyroglobulin
Adults: 2.0-35.0 ng/mL

Thyroid Peroxidase Antibody (Anti-TPO) 5081X

CPT Code(s): 86376

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.5 mL minimum).

Transport Temperature:
Room temperature

Methodology:
Immunochemiluminometric Assay

Reference Range:
Children and adults: IU/mL: < 2.0 IU/mL
The thyroid microsomal fraction is an impure preparation of the enzyme Thyroid Peroxidase (TPO). TPO is the antigen recognized by anti-thyroid microsomal antibodies (AMA) in 98% of patients with elevated AMA. The Anti-TPO assay is a technically superior and more specific method for measuring the antibody.

Clinical Use:
Assists in the diagnosis of thyroid diseases such as endemic goiter, Graves Disease, autoimmune thyroiditis, Addison's Disease, insulin-dependent diabetes mellitus, Hashimoto's Disease and polyendocrine auto-immunopathies.

Thyroid Stimulating Hormone TSH

see Test Code(s) '36577X TSH Antibody; '899X TSH, 3rd Generation; 39463X TSH, Ultrasensitive w/Reflex to T4 Free; 19537X TSH with HAMA Treatment

Testing performed daily

Specimen Container:
Gold

Preferred Specimen:
Serum

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to date reference range

THYROXINE, FREE (FREE T4) FT4

Testing performed daily.

CPT Code(s): 84439

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

THYROXINE, TOTAL T4

Testing performed daily.

CPT Code(s): 84436

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Tissue Transglutaminase Antibodies (IgG, IgA) 11073X

CPT Code(s): 83516 (x2)

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.5 minimum)

Transport Temperature:
Room temperature, stable 4 days

Methodology:
Enzyme Immunoassay

Reference Range:

IgA:	
< 5 U/mL	Negative
5 - 8 U/mL	Equivocal
> 8 U/mL	Positive
IgG:	
< 7 U/mL	Negative
7 - 10 U/mL	Equivocal
> 10 U/mL	Positive

Clinical Use:
Tissue Transglutaminase Antibody, IgA, is useful in diagnosing gluten-sensitive enteropathies, such as Celiac Sprue Disease, and an associated skin condition, dermatitis herpetiformis. The IgG test is useful in patients who are IgA-deficient. The IgG test also provides support for gluten-sensitive enteropathies in IgA deficient patients.

Tissue Transglutaminase Antibody (IgA) 8821X

CPT Code(s): 83516

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.1 mL minimum)

Instructions:
Grossly hemolyzed specimens are unacceptable. Avoid lipemia.

Transport Temperature:
Room temperature, stable 4 days

Reject Criteria:
Microbially contaminated serum

Methodology:
Enzyme Immunoassay

Reference Range:
8 U/mL Positive

Clinical Use:
Tissue Transglutaminase Antibody, IgA, is useful in diagnosing gluten-sensitive enteropathies, such as Celiac Sprue Disease, and an associated skin condition, dermatitis herpetiformis.

Tissue Transglutaminase Antibody (IgG) 11070X

CPT Code(s): 83516

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.5 minimum)

Transport Temperature:
Room temperature, stable 4 days

Methodology:
Enzyme Immunoassay

Reference Range:

<7 U/mL	Negative
7-10 U/mL	Equivocal
>10 U/mL	Positive

Clinical Use:
Tissue Transglutaminase Antibody, IgG, is useful in diagnosing gluten-sensitive enteropathies, such as Celiac Sprue Disease, and an associated skin condition, dermatitis herpetiformis in patients who are IgA-deficient.

TOBRAMYCIN, PEAK TOBP

Testing performed daily.

CPT Code(s): 80200

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

TOBRAMYCIN, RANDOM — TOBRAR

Testing performed daily.

CPT Code(s): 80200

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

TOBRAMYCIN, TROUGH LEVEL — TOBT

Testing performed daily.

CPT Code(s): 80200

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Topiramate — 30965X

CPT Code(s): 80201

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.5 mL minimum)

Instructions:
Draw at peak (2-4 hours after dose) or trough (0.5-1 hour before dose) at steady state. See Specimen Collection Section, Toxicology.

Transport Temperature:
Room temperature

Reject Criteria:
Gel barrier tube; Gross hemolysis; Lipemic sample

Methodology:
Flourescent Polarization Immunoassay

Reference Range:

Daily Dose (mg)	Peak	Trough

1006	5-9.2 mcg/mL	4.5-6.6 mcg/mL
200	12-16 mcg/mL	8-12 mcg/mL
400	20-30 mcg/mL	14-20 mcg/mL

Clinical Use:
Topiramate is an antidepressant used as an adjunctive treatment of partial-onset epilepsy and Lennox-Gastaut syndrome in children. Therapeutic drug monitoring is useful to optimize dose and avoid toxicity.

TOTAL IRON BINDING CAPACITY (TIBC) TIBC

Testing performed daily.

CPT Code(s): 83550

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

TOTAL PROTEIN TP

Testing performed daily.

CPT Code(s): 84155

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

TOTAL THYROXINE T4

CPT Code(s): 84436

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
R

Toxoplasma Antibodies (IgG, IgM) 8636X

This test is not FDA approved for use in screening blood or plasma donors.

CPT Code(s): 86777; 86778

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.5 mL minimum)

Instructions:
Allow specimen to clot at room temperature and then centrifuge. Immediately separate from cells and refrigerate at 2-8 degrees C. If not tested within 1 week, store frozen at -20 degrees C. Avoid freezing and thawing.

Transport Temperature:
Room temperature

Methodology:
Enzyme Immunoassay; Enzyme Immunoassay Capture

Reference Range:

IgG:	
<=0.90	Negative
0.91-1.09	Equivocal
>=1.10	Positive
IgM:	Negative

Clinical Use:
Toxoplasmosis is caused by infection by the parasite Toxoplasma gondii. Approximately 23% of the population carry the parasite but remain healthy while not immunocompromised. Transmission from a pregnant woman to her fetus can cause serious disease. A high Antibody IgG and Antibody IgM together support infection within the previous three months. A high Antibody IgG with a low-to-medium Antibody IgM together support infection within three to six months.

Toxoplasma gondii, DNA, Qualitative Real-time PCR 34451X

CPT Code(s): 87798

Specimen Container:
EDTA

Preferred Specimen:
1 mL amniotic fluid or CSF (0.3 mL minimum) is preferred. Tissue and EDTA (lavendar-top) plasma are acceptable sample types.

Instructions:
Do not freeze whole blood

Transport Temperature:
Refrigerated, stable 1 week

Methodology:
Real-time Polymerase Chain Reaction

Reference Range:
Not Detected

TRANSFERRIN TRANS

Testing performed daily

CPT Code(s): 84466

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to date reference range

Clinical Use:
.

TRICHOMONAS VAGINALIS EXAM TRIC

Testing performed daily.

Specimen Container:
Swab in saline tube

Preferred Specimen:
Vaginal Secretion

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

TRIGLYCERIDES TRIG

Testing performed daily

CPT Code(s): 84478

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to date reference range

TROPONIN I TROP

Testing performed daily

Specimen Container:
Light Green (lithium heparin)

Preferred Specimen:
Whole blood or plasma

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to date reference range

Tryptase 34484X

This test was 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 Code(s): 83520

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.5 mL minimum)

Instructions:
Separate serum from cells as soon as possible.

Transport Temperature:
Refrigerated

Methodology:
Fluorenzyme Immunoassay

Reference Range:
2-10 ng/mL
The Tryptase test, enzyme immunoassay (FEIA), measures both the Alpha and Beta forms of Tryptase. Measuring both forms of Tryptase increases sensitivity for the diagnosis of mastocytosis, and mast cell degranulation as a cause of anaphylaxis.

Clinical Use:
Tryptase concentrations are increased with immediate hypersensitivity (anaphylaxis), acute allergen challenge, and mastocytosis.

TSH W/REFLEX TO FT4 (QUEST) TSHQUEST

Testing performed daily.

Specimen Container:
Gold

Preferred Specimen:
Serum

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

TSI (Thyroid Stimulating Immunoglobulin) 30551X

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. 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 Code(s): 84445

Specimen Container:

No additive (red-top)

Preferred Specimen:
1 mL serum (0.2 mL minimum)

Transport Temperature:
Refrigerated

Methodology:
In Vitro Bioassay/Luciferase

Reference Range:
Adults: 125 or less % baseline

Clinical Use:
Graves Disease is a classic form of hyperthyroid disease, affecting approximately 0.4% of the population in the United States. It is caused by IgG immunoglobulins, collectively known as thyroid stimulating immunoglobulins (TSI). Patients who are candidates for antithyroid drug therapy may not respond to this treatment when TSI levels are markedly elevated. The determination of TSI can also assist in predicting hyperthyroidism in neonates due to placental transmission of the immunoglobulins from a mother with hyperthyroidism.

Tysabri® Antibodies, ELISA 19215X

CPT Code(s): 83516

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.5 mL minimum)

Transport Temperature:
Refrigerated, stable 60 days

Methodology:
ELISA

Clinical Use:
Tysabri® (natalizumab) is a monoclonal antibody therapy used to treat multiple sclerosis (MS), a serious autoimmune disease that results in damage to the brain and spinal cord. Patients being treated with Tysabri can develop Tysabri-specific antibodies that may block the therapeutic effect of the treatment.

UREA NITROGEN CLEARANCE UNCLR

Testing performed daily.

CPT Code(s): 84545

Specimen Container:
24 hr urine container

Preferred Specimen:
Urine

Instructions:
No preservatives.

Transport Temperature:
Refrigerated

Reference Range:

Call Lab for up-to-date reference range.

UREA RANDOM URINE — UREARU

Testing performed daily.

CPT Code(s): 84540

Specimen Container:
Sterile Container

Preferred Specimen:
Urine

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

URIC ACID — UA

Testing performed daily

CPT Code(s): 84550

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to date reference range

Clinical Use:
.

URIC ACID, 24 HOUR URINE GRP — URIC24

Testing performed daily.

CPT Code(s): 84560

Specimen Container:
24 hr urine container

Preferred Specimen:
Urine

Instructions:
No preservatives.

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

URIC ACID, RANDOM URINE — URICRU

Testing performed daily

CPT Code(s): 84560

Specimen Container:
Sterile Container

Preferred Specimen:
Urine

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to date reference range

URINALYSIS — UMAC

Testing performed daily.

Specimen Container:
Sterile Container

Preferred Specimen:
Urine

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

URINE CALCIUM, 24 HOUR GRP — UCAL24

Testing performed daily.

CPT Code(s): 82340

Specimen Container:
24 hr urine container

Preferred Specimen:
Urine

Instructions:
No preservatives.

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

URINE CALCIUM, RANDOM — UCAL

Testing performed daily.

CPT Code(s): 82310

Specimen Container:
Sterile Container

Preferred Specimen:
Urine

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

URINE CHLORIDE, 24 HOUR GRP CL24

Testing performed daily.

CPT Code(s): 82436

Specimen Container:
25 hr urine container

Preferred Specimen:
Urine

Instructions:
No preservatives.

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

URINE CHLORIDE, RANDOM CLRU

Testing performed daily.

Specimen Container:
Sterile Container

Preferred Specimen:
Urine

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

URINE CREATININE, 24 HOUR GRP CREA24

Testing performed daily.

CPT Code(s): 82570

Specimen Container:
24 hr urine container

Preferred Specimen:
Urine

Instructions:
No preservatives.

Transport Temperature:

Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

URINE CREATININE, RANDOM — CREATRU

Testing performed daily.

CPT Code(s): 82570

Specimen Container:
Sterile Container

Preferred Specimen:
Urine

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

URINE CULTURE — CVDU

Testing performed daily.

Specimen Container:
Sterile Container

Preferred Specimen:
Urine

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

URINE CULTURE, CATHETERIZED — CATU

Testing performed daily.

Specimen Container:
Sterile Container

Preferred Specimen:
Urine

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

URINE MAGNESIUM, 24 HOUR GRP — MG24

Testing performed daily.

CPT Code(s): 83735

Specimen Container:

24 hr urine container

Preferred Specimen:
Urine

Instructions:
No preservatives.

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

URINE MAGNESIUM, RANDOM MGRU

Testing performed daily.

CPT Code(s): 83735

Specimen Container:
Sterile Container

Preferred Specimen:
Urine

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

URINE MICROALBUMIN MALRU

Testing performed daily.

CPT Code(s): 82043

Specimen Container:
Sterile Container

Preferred Specimen:
Urine

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

URINE PHOSPHOROUS, 24 HOUR GRP PHOS24

Testing performed daily.

CPT Code(s): 84105

Specimen Container:
24 Urine Container

Preferred Specimen:
Urine

Instructions:

No preservatives.

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

URINE PHOSPHOROUS, RANDOM PHOSU

Testing performed daily.

CPT Code(s): 84105

Specimen Container:
Sterile Container

Preferred Specimen:
Urine

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

URINE POTASSIUM, 24 HOUR GRP K24

Testing performed daily.

CPT Code(s): 84133

Specimen Container:
24 Urine Container

Preferred Specimen:
Urine

Instructions:
No preservatives.

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

URINE POTASSIUM, RANDOM POTRU

Testing performed daily.

CPT Code(s): 84133

Specimen Container:
Sterile Container

Preferred Specimen:
Urine

Transport Temperature:
Refrigerated

Reference Range:

Call Lab for up-to-date reference range.

URINE SODIUM, 24 HOUR GRP NA24

Testing performed daily.

CPT Code(s): 84300

Specimen Container:
24 Urine Container

Preferred Specimen:
Urine 24 hour collection

Instructions:
No preservatives.

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

URINE SODIUM, RANDOM SODRU

Testing performed daily.

CPT Code(s): 84300

Specimen Container:
Sterile Container

Preferred Specimen:
Urine

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

VAG/REC TREP SCREEN VCBS

Testing performed daily.

Specimen Container:
Culturette

Preferred Specimen:
Vag/Rec swab

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

VALPROIC ACID VALP

Testing performed daily.

CPT Code(s): 80164

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

VANCOMYCIN, PEAK VANCOP

Testing performed daily.

CPT Code(s): 80202

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

VANCOMYCIN, RANDOM VANR

Testing performed daily.

CPT Code(s): 80202

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:
Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

VANCOMYCIN, TROUGH VANT

Testing performed daily.

CPT Code(s): 80202

Specimen Container:
LIGHT GREEN

Preferred Specimen:
PLASMA

Transport Temperature:

Refrigerated

Reference Range:
Call Lab for up-to-date reference range.

Varicella Zoster Virus Antibody (IgG) 4439X

The VZV antibody assay is unsuitable for the determination of postvaccination immune status.

CPT Code(s): 86787

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.1 mL minimum).

Instructions:
Separate serum from cells as soon as possible.

Transport Temperature:
Room temperature

Methodology:
Enzyme Immunoassay

Reference Range:

0.91 - 1.09 Equivocal Index
> or = 1.10 Positive- VZV IgG Antibody Detected Index

Clinical Use:
Varicella-Zoster Virus (VZV) is a DNA virus of the herpes virus group that causes chicken pox (varicella) and shingles (zoster). Serologic screening of direct health care providers and individuals in high risk groups is needed to avoid spread of infection. Demonstration of VZV antibody in a single serum is consistent with immunity. This test should not be used to determine the efficacy of immunization.

Varicella Zoster Virus Antibody (IgM) 8683X

CPT Code(s): 86787

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (0.2 mL minimum)

Instructions:
Allow specimen to clot at room temperature and then centrifuge. Separate serum from cells as soon as possible. Refrigerate 2-8 degrees C.

Transport Temperature:
Room temperature

Methodology:
Enzyme Immunoassay

Reference Range:

0.00 - 0.90: Negative

0.91 - 1.09: Equivocal
>=1.10: Positive

Results from any one IgM assay should not be used as a sole determinant of a current or recent infection. Because an IgM test can yield false positive results and low level of IgM antibody may persist for more than 12 months post infection,
reliance on a single test result could be misleading. If an acute infection is suspected, consider obtaining a new specimen and submit for both IgG and IgM testing in two or more weeks.

Clinical Use:
Varicella-Zoster Virus (VZV) causes chicken pox and when reactivated, potentially decades later, causes shingles. Twenty percent of adults will develop shingles, a rash or blister of the skin that may cause severe pain.

Varicella Zoster Virus DNA, Qualitative Real-Time PCR 34052X

This test was developed and its performance characteristics have been determined by Quest Diagnostics. Performance characteristics refer to the analytical performance of the test.

CPT Code(s): 87798

Specimen Container:
PPT potassium EDTA (white-top) or sterile screw-cap container

Preferred Specimen:
Whole blood or CSF

Instructions:
Whole blood must be shipped refrigerated. Frozen whole blood is not acceptable for this assay. Swabs on M4, sterile or dry are acceptable refrigerated for 8 days or frozen for 30 days.

Transport Temperature:
Refrigerated, stable 8 days

Reject Criteria:
Frozen samples. Aliquot returned to original container. Specimen in leaking, uncapped or broken containers. Tissue sections preserved in formalin, embedded in paraffin. Specimen older than 8 days from date of collection received at 2 – 8 °C.

Methodology:
Real-time Polymerase Chain Reaction

Reference Range:
Not detected

Clinical Use:
Detect the varicella zoster virus (VZV DNA) in skin lesions, cerebrospinal fluid (CSF) and specimens from respiratory tract. Active detection of viral DNA in CSF usually indicates active, not latent, infection. Detection of VZV DNA in appropriate clinical specimens permits rapid and sensitive patient testing.

VDRL, CSF 4128X

CPT Code(s): 86592

Specimen Container:
Sterile, screw-cap container

Preferred Specimen:
1 mL CSF (0.5 mL minimum)

Transport Temperature:
Refrigerated

Methodology:
Slide Micro-Flocculation

Reference Range:
Nonreactive

Clinical Use:
Positive results are suggestive of neurosyphilis.

Virus Culture, Body Fluids, Tissues 689X

Includes isolation and identification

CPT Code(s): 87252

Specimen Container:
VCM - Viral-Chlamydial-Mycoplasma transport medium (green-cap) available from client supplies; Sodium or Lithium heparin (green-top); Sterile, screw-cap container

Preferred Specimen:
Swabs, lavages, fluids, biopsy, urine, 3 mL VCM media (Chlamydia, Mycoplasma, viral transport), 3 mL sterile screw cap container, 7 mL sodium or lithium heparin (green-top) whole blood, or 1 mL (0.6 mL minimum) CSF
Bone marrow and semen are now acceptab

Instructions:
Specimens for viral, Chlamydia, mycoplasmal or ureaplasmal investigation should be collected and handled following industry standard protocols. To maintain optimum viability, transport the specimen to the laboratory as soon as possible. Best recovery is obtained when the specimens are refrigerated at 2-8 degress C or kept on wet ice following collection and while in transit. If there will be a long delay before processing, specimens should be frozen at -70 degrees C or colder and transported on dry ice. Storage at -20 degrees C is less satisfactory than storage at 4 degrees C or -70 degrees C and can result in the loss of infectivity. For shipping and handling of specimens, follow state and federal regulations. Institutional guidelines should be followed to handle samples within the laboratory. All specimens should be processed as soon as they are received in the laboratory. Specimen Collection: Proper specimen collection from the patient is extremely critical for successful isolation and identification of infectious organisms. For specific guidance regarding specimen collection procedures follow industry standards for collecting infectious organisms. Specimens should be collected as soon as possible after clinical onset of disease. Highest viral titers are present during the acute illness. For V-C-M Medium Vials: 1. Aseptically remove cap from vial. 2. Aseptically place sample into the vial with medium. 3. Replace cap on vial and close tightly. 4. Label with appropriate patient information. 5. Send to the laboratory for immediate analysis.

Transport Temperature:
Refrigerated, stable 72 hours

Reject Criteria:
Received room temperature

Methodology:
Tissue Culture, Immunofluorescence Assay

Reference Range:
No virus isolated

Clinical Use:
Viral isolation in tissue culture remains the most sensitive method or "Gold Standard" for the detection of many common viruses. Successful isolation depends on the selection of the

appropriate cell lines based on provisional diagnosis or symptoms and source of infection.

Vitamin A (Retinol) 921X

CPT Code(s): 84590

Specimen Container:
No additive (red-top)

Preferred Specimen:
2 mL serum (0.7 mL minimum)

Instructions:
Send serum in an amber tube. If amber tube is not available, wrap tube in aluminum foil to protect from light. Overnight fasting is preferred.

Transport Temperature:
Refrigerated

Reject Criteria:
Received room temperature; Received refrigerated but not protected from light

Methodology:
High Performance Liquid Chromatography

Reference Range:

1- 6 years:	20-43 mcg/dL
7-12 years:	26-49 mcg/dL
13-19 years:	26-72 mcg/dL
Adults:	38-98 mcg/dL

Clinical Use:
Vitamin A is critical for vision, growth, and many cell functions. High concentrations of vitamin A are seen with renal failure. High concentrations are associated with bone fractures. Low concentrations of vitamin A are consistent with fat malabsorption and rarely due to inadequate diet.

Vitamin B1, Plasma 922X

CPT Code(s): 84425

Specimen Container:
EDTA (lavender-top)

Preferred Specimen:
3.0 mL plasma (1.1 mL minimum).

Instructions:
Wrap tube in aluminum foil to protect from light. Freeze immediately after separating from cells.

Transport Temperature:
Frozen

Reject Criteria:
Received room temperature; Received refrigerated

Methodology:
High Performance Liquid Chromatography

Reference Range:
Adults: 9-44 nmol/L

Clinical Use:
Vitamin B1 is required for branched-chain amino acid and carbohydrate metabolism. Vitamin B1 deficiency is most often due to alcoholism or chronic illness. In the early stage, patients with Vitamin B1 deficiency exhibit anorexia, irritability, apathy, and generalized weakness. Prolonged deficiency causes beriberi.

Vitamin B1, Whole Blood 5042X

CPT Code(s): 84425

Specimen Container:
EDTA (lavender-top)

Preferred Specimen:
3 mL whole blood (1.1 mL minimum).

Instructions:
Transfer whole blood to a plastic shipping vial to prevent breakage. Wrap tube in aluminum foil to protect from light. Freeze immediately.

Transport Temperature:
Frozen

Reject Criteria:
Received room temperature; Received refrigerated

Methodology:
High Performance Liquid Chromatography

Reference Range:
Adults: 87-280 nmol/L

Clinical Use:
Vitamin B1 is required for branched-chain amino acid and carbohydrate metabolism. Vitamin B1 deficiency is most often due to alcoholism or chronic illness. In the early stage, patients with vitamin B1 deficiency exhibit anorexia, irritability, apathy, and generalized weakness. Prolonged deficiency causes Beriberi.

VITAMIN B12 B12

Testing performed daily

CPT Code(s): 82607

Specimen Container:
Gold

Preferred Specimen:
Serum

Transport Temperature:
Refrigerated

Methodology:
Immunoassay

Vitamin B12 Binding Capacity, Unsaturated (Transcobalamin) 928X

CPT Code(s): 82608

Specimen Container:
No additive (red-top)

Preferred Specimen:
1 mL serum (minimum: 0.2 mL)

Transport Temperature:
Refrigerated preferred; Room temperature acceptable; Frozen acceptable

Methodology:
Radiobinding Assay

Reference Range:
Adults: 650-1340 pg/mL

Clinical Use:
Vitamin B12 Binding Capacity, Unsaturated (Transcobalamin), binds and transports vitamin B12 in the circulation. Increased concentrations are associated with patients with myeloproliferative disorders. Decreased concentrations are seen in individuals with megaloblastic anemia or Transcobalamin deficiency.

Vitamin B2 36399X

CPT Code(s): 84252

Specimen Container:
EDTA (lavender-top)

Preferred Specimen:
2 mL plasma (0.5 mL minimum).

Instructions:
Wrap tube in aluminum foil to protect from light.

Transport Temperature:
Frozen

Reject Criteria:
Received room temperature; Received refrigerated

Methodology:
High Performance Liquid Chromatography, Fluorometric Detection

Reference Range:
6.2-39.0 nmol/L

Clinical Use:
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.

Vitamin B6 926X

CPT Code(s): 84207

Specimen Container:
EDTA (lavender-top)

Preferred Specimen:
1 mL plasma (0.5 mL minimum).

Instructions:
Plasma collected in EDTA (royal blue-top), Sodium heparin (green-top), Lithium heparin (green-top) is not acceptable. Draw blood into light protected lavender top evacuated tube, following an overnight fast. Patient must be restricted from alcohol and vitamins for at least

24 hours before a sample collection. If separation of cells can't be performed immediately after collection, keep the whole blood refrigerated and protect from light. The separation of cells must be completed within 6 hours. Separate cells by centrifugation at 2-8 C (2200-2500 rpm, 800-1000g) for 5-10 minutes. Transfer plasma to dark brown polypropylene or polyethylene transport tubes 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.Patient follows an overnight fast, restricted from alcohol and vitamins for at least 24 hrs.

Transport Temperature:
Frozen: -20 degrees, stable 6 days; -70 degrees. stable 6 weeks

Reject Criteria:
Received room temperature; Received refrigerated

Methodology:
Liquid Chromatography, Tandem Mass Spectrometry

Reference Range:

2-17 Years:	3.0-35.0 ng/mL
Adults:	2.1-21.7 ng/mL

Conversion Factor: Nanograms/mL x 4.046 = nanomoles/L

Clinical Use:
Vitamin B6 is a cofactor in many metabolic pathways including heme synthesis. Vitamin B6 deficiency may be observed in patients with metabolic disorders, secondary to therapeutic drug use, or alcoholism. Deficiency affects the function of the immune system.

Vitamin D, 1, 25-Dihydroxy 4729X

CPT Code(s): 82652

Specimen Container:
No additive (red-top)

Preferred Specimen:
3 mL serum (1.1 mL minimum).

Instructions:
The preferred specimen transport temperature for this test is frozen. Specimens transported refrigerated are acceptable within the refrigerated stability (3 days). Room temperature transportation of specimens for this test is not acceptable.

Transport Temperature:
Frozen

Reject Criteria:
Received room temperature

Methodology:
Extraction, Chromatography, Radioreceptor Assay

Reference Range:

3-17 years:	27-71 pg/mL
>=18 years:	15-60 pg/mL

Clinical Use:
Vitamin D originating from dietary and endogenous sources is converted to 25-hydroxyvitamin D in the liver, and subsequently to 1-, 25-dihydroxyvitamin D in the kidney. Deficiencies of 1-, 25-dihydroxyvitamin D, the most active form, cause hypocalcemia, osteomalacia, and related disorders. Measurement is useful in: differentiating primary hyperparathyroidism from hypercalcemia of cancer; distinguishing between vitamin D dependent and vitamin D resistant rickets; monitoring vitamin D status of patients with

chronic renal disease; and, assessing compliance to therapy.

VITAMIN D, 25-Hydroxy D25

Testing performed Monday - Friday.

CPT Code(s): 82306

Specimen Container:
Gold.

Preferred Specimen:
Serum.

Transport Temperature:
Ambient.

Reference Range:
Call Lab for up-to-date reference range.

Vitamin E (Tocopherol) 931X

Includes: Alpha-Tocopherol, Beta- Gamma-Tocopherol

CPT Code(s): 84446, 84591

Specimen Container:
No additive (red-top)

Preferred Specimen:
2 mL serum (0.7 mL minimum).

Instructions:
Send serum in an amber tube. If amber tube is not available, wrap tube in aluminum foil to protect from light. Overnight fasting is preferred.

Transport Temperature:
Refrigerated

Reject Criteria:
Received room temperature; Received refrigerated but not protected

Methodology:
High Performance Liquid Chromatography

Reference Range:
Levels of alpha-tocopherol <5 mg/L are consistent with Vitamin E deficiency in adults.

Males and Females	5.7-19.9 mg/L
Pediatric Term Infants (Cord Blood)	1.8-5.8 mg/L
4 Mos-1 Year	9.1 mg/L or Less
1-2 Years	2.9-16.6 mg/L
3-5 Years	5.5-11.8 mg/L
6-8 Years	4.6-14.8 mg/L
9-11 Years	6.2-14.3 mg/L
12-17 Years	3.7-12.4 mg/L
Beta, Gamma-Tocopherol, Serum	
Males and Females:	4.3 mg/L or Less
Pediatric	
3-17 Years:	0.5-3.8 mg/L

Includes data from Acta Paediatr Scand (1975) 64:446-448 and Int J Epidemiol

(1993) 22:237-246.

Clinical Use:
Deficiency Of Vitamin E May Cause Extensive Neuropathy In Young Children And, In Addition, Is Suspect As A Possible Cause Of Motor And Sensory Neuropathy In Older Children And In Adults. One Likely Cause Of Vitamin E Deficiency Is Intestinal Malabsorption, Resulting From Bowel Disease, Pancreatic Disease, Or Chronic Cholestasis. Other Causes Of Malabsorption Of Vitamin E Include Celiac Disease, Cystic Fibrosis, and Intestinal Lymphangiectasia.

Vitamin K 36585X

CPT Code(s): 84597

Specimen Container:
Sodium heparin (green-top)

Preferred Specimen:
4 mL plasma (2 mL minimum).

Instructions:
Separate and freeze immediately in plastic vial. Wrap tube in aluminum foil to protect from light. Overnight fasting is preferred.

Transport Temperature:
Frozen

Reference Range:
80-1160 pg/mL

Clinical Use:
Deficiencies of Vitamin K may cause decreased levels of Factors (II, VII, IX, X), Protein C, S, and Z.

VMA (Vanillylmandelic Acid), 24-Hour Urine 39517X

Includes creatinine.

CPT Code(s): 84585; 82570

Specimen Container:
24-hour urine container

Preferred Specimen:
10 mL urine (5 mL minimum).

Instructions:
10 mL urine: ph adjusted to

Transport Temperature:
Room temperature, stable 10 days

Methodology:
High Performance Liquid Chromatography, Electrochemical Detection

Reference Range:

3-8 years:	2.3 or less
9-12 years:	3.4 or less
13-17 years:	3.9 or less
Adults:	6.0 or less
Creatinine, Urine	
3-8 years:	0.11-0.68 g/24 hours
9-12 years:	0.17-1.41 g/24 hours

13-17 years:	0.29-1.87 g/24 hours
Adults:	0.63-2.50 g/24 hours

Clinical Use:
Urinary Vanillylmandelic Acid is useful in diagnosing neuroblastoma, one of the most common tumors in the pediatric population.

VMA (Vanillylmandelic Acid), 24-Hour Urine (without Creatinine) 934X

CPT Code(s): 84585

Preferred Specimen:
10 mL aliquot of a 24-hour collection. Collect urine with 25 mL of 6N HCl to maintain a Ph below 3.

Instructions:
10 mL urine: ph adjusted to

Transport Temperature:
Room temperature, stable 10 days

Methodology:
High Performance Liquid Chromatography (Electrochemical Detection)

Reference Range:

3-8 years:	<2.3 mg/24 hours
9-12 years:	<3.4 mg/24 hours
13-17 years	<3.9 mg/24 hours
Adults:	<6.0 mg/24 hours

Clinical Use:
Vanillylmandelic acid (VMA) is the major urinary product resulting from the metabolic degradation of catecholamine, norepinephrine and epinephrine. Elevated concentrations of VMA are commonly found in cases of catecholamine secreting tumors such as pheochromocytoma, neuroblastoma, and ganglioneuroma. Drugs which can interfere with testing due to physiologic response: clonidine, L-dopa, methocarbamol, monoamine oxidase inhibitors, reserprine, salicylates.

VMA (Vanillylmandelic Acid), Random Urine 1710X

Includes creatinine.

CPT Code(s): 84585; 82570

Specimen Container:
Sterile, screw-cap container

Preferred Specimen:
10 mL urine (5 mL minimum).

Instructions:
10 mL urine: ph adjusted to

Transport Temperature:
Room temperature, stable 10 days

Methodology:
High Performance Liquid Chromatography, Electrochemical Detection

Reference Range:

Birth-6 months:	5.5-26 mg/g creatinine
7-11 months	6.1-20 mg/g creatinine

1-2 years:	2.5-21 mg/g creatinine
3-8 years:	1.7-6.5 mg/g creatinine
9-12 years:	1.4-5.1 mg/g creatinine
13-17 years:	1.5-3.6 mg/g creatinine
Adults:	1.1-4.1 mg/g creatinine
Creatinine, Random Urine	
0-6 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:	0.02-1.49 g/L
9-12 years:	0.02-1.83 g/L
Adults:	0.27-3.00 g/L

Clinical Use:
Urinary Vanillylmandelic Acid is useful in diagnosing neuroblastoma, one of the most common tumors in the pediatric population.

von Willebrand Antigen, Multimeric Analysis 5168X

CPT Code(s): 85247

Specimen Container:
3.2% Sodium Citrate (light blue-top)

Preferred Specimen:
1 mL plasma (0.2 mL minimum)

Instructions:
See specimen collection section.

Transport Temperature:
Frozen

Methodology:
Electrophoresis

Reference Range:
Normal

Clinical Use:
von Willebrand Factor Multimeric analysis is used to further categorize the subtype of von Willebrand Disease, particularly type 2 (qualitative) abnormalities. It is considered a complimentary test to other von Willebrand Factor Studies.

von Willebrand Factor Antigen 4919X

This test is also available in Menorrhagia Screen test codes 19649X and 19651X. This test is also available in von Willebrand Panels 19790X, 19681X, 19735X.

CPT Code(s): 85246

Specimen Container:
3.2% Sodium Citrate (light blue-top)

Preferred Specimen:
2 mL plasma (1 mL minimum)

Instructions:
See specimen collection section. Overnight fasting is preferred.

Transport Temperature:
Frozen

Methodology:
Immunoturbidimetric Assay

Reference Range:
50 or greater % of normal

Clinical Use:
The von Willebrand Factor Antigen is a quantitative measurement of the total circulating von Willebrand Factor.

West Nile Virus Antibodies (IgG, IgM), CSF 36597Z

CPT Code(s): 86788; 86789

Specimen Container:
Sterile, plastic leak-proof container

Preferred Specimen:
2 mL CSF (0.7 mL minimum)

Transport Temperature:
Refrigerated, stable 1 week

Methodology:
Enzyme-Linked Immunosorbent Assay

Reference Range:
Reference Range, IgG and IgM Index Value IgG =1.50 Index Value - Positive IgM 1.10 Index Value - Positive West Nile Virus (WNV) IgM Antibodies, in blood or cerebrospinal fluid, 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. Antibodies to WNV may cross-react with other viruses (e.g., dengue, St. Louis encephalitis, Eastern equine encephalitis, yellow fever, enterovirus, CMV).

Clinical Use:
The West Nile Virus (WNV) is a single-stranded RNA virus of the Flaviviridae family. Like other arboviruses (e.g., St. Louis Encephalitis, Dengue Fever, and Yellow Fever), its main route of transmission to humans is through mosquitoes (primarily culex species) that have acquired the virus from infected birds. A single elevated WNV result, including IgM that may persist for many months, could represent past infection with WNV or infection with another flavivirus including Dengue and St. Louis Encephalitis. Diagnosis of suspected WNV infection is confirmed by isolation of WNV or detection of WNV antigen or nucleic acid sequences in clinical samples or detection of WNV-specific IgM in blood or spinal fluid, confirmed with detection of WNV-specific neutralizing antibody in the same or a subsequent sample. See "West Nile Virus: Detection with Immunologic and RT-PCR Assays" in the Infectious Disease chapter, Interpretive Information section.

West Nile Virus Antibodies (IgG, IgM), Serum 36596X

CPT Code(s): 86788; 86789

Specimen Container:
No additive (red-top)

Preferred Specimen:
2 mL serum (0.7 mL minimum)

Transport Temperature:
Refrigerated, stable 1 week

Methodology:
Enzyme Linked Immunosorbent Immunoassay

Clinical Use:
The West Nile Virus (WNV) is a single-stranded RNA virus of the Flaviviridae family. Like other arboviruses (e.g., St. Louis Encephalitis, Dengue Fever, and Yellow Fever), its main route of transmission to humans is through mosquitoes (primarily culex species) that have acquired the virus from infected birds. A single elevated WNV result, including IgM that may persist for many months, could represent past infection with WNV or infection with another flavivirus including Dengue and St. Louis Encephalitis. Diagnosis of suspected WNV infection is confirmed by isolation of WNV or detection of WNV antigen or nucleic acid sequences in clinical samples or detection of WNV-specific IgM in blood or spinal fluid, confirmed with detection of WNV-specific neutralizing antibody in the same or a subsequent sample.

West Nile Virus RNA, Qualitative PCR (CSF) 17563X

This test was developed and its performance characteristics have been determined by Quest Diagnostics. Performance characteristics refer to the analytical performance of the test.

CPT Code(s): 87798

Specimen Container:
Sterile, screw-cap container

Preferred Specimen:
0.7 mL CSF

Instructions:
Plasma: Collect blood in sterile tubes containing EDTA as anticoagulant or in Plasma Preparation Tube (PPT, preferred). Store collected whole at room temperature and separate plasma from cells within 2 hours of collection. Transfer plasma to sterile, plastic, screw-capped, aliquoted tubes. Do not clarify plasma by filtration or further centrifugation. If blood is collected in a PPT, centrifuge within 2 hours of collection but it is not necessary to transfer plasma to aliquot tube. Plasma can be shipped in PPT.
Serum: Collect blood in sterile tubes with no anticoagulants; serum separator tubes (SST) are recommended. Allow blood to clot at room temperature and separate serum from cells within 1 hour of collection. Transfer serum to sterile, plastic, screw-capped, aliquoted tubes.

Transport Temperature:
Refrigerated, stable 1 week

Reject Criteria:
Specimens containing heparin

Methodology:
Real-Time Polymerase Chain Reaction

Clinical Use:
This test is used to detect the presence of West Nile Virus RNA in a patient's specimen. The use of real-time PCR to assay for the presence of West Nile Virus RNA in clinical specimens allows for rapid patient testing.

WHITE BLOOD COUNT (WBC) WBC

Testing performed daily.

Specimen Container:
Lavender EDTA

Preferred Specimen:
Whole Blood

Transport Temperature:
Ambient

Reference Range:
Call Lab for up-to-date reference range.

Zinc, Plasma 945X

CPT Code(s): 84630

Specimen Container:
EDTA (royal blue-top)

Preferred Specimen:
2 mL Trace Element Collection plasma (0.5 mL minimum)

Instructions:
Be sure to gently mix the specimen promptly after phlebotomy. Centrifuge the tube at 1000G for 10 minutes, separate plasma from cells immediately, pour the plasma into a plastic trace element shipping container. Hemolysis is unacceptable. Use powder-less gloves. Firmly replace the cap on the vial and ship the specimen at room temperature. Do not use royal-blue top tube tubes containing heparin since the specimen frequently will gel or develop microclots overtime. Separate plasma from cells within 2 hours. Transfer separated plasma to a plastic transfer vial from Quest Diagnostics trace element collection system.

Transport Temperature:
Room temperature, stable 5 days

Reject Criteria:
Gel barrier tube; Moderate to gross hemolysis

Methodology:
Inductively-Coupled Plasma/Optical Emission Spectroscopy

Reference Range:
Pediatrics

<6 months:	26 - 141 mcg/dL
6-11 months:	29 - 131 mcg/dL
1 year:	31 - 120 mcg/dL
2-3 years:	29 - 115 mcg/dL
4-5 years:	48 - 119 mcg/dL
6-9 years:	48 - 129 mcg/dL
10-13 years:	25 - 148 mcg/dL
14-17 years:	46 - 130 mcg/dL
Adult:	60 - 130 mcg/dL

Clinical Use:
This assay may be useful in supporting or ruling out a diagnosis of Sjögren's syndrome.

Zonisamide (Zonegran®) 37852Z

CPT Code(s): 80299

Specimen Container:
No-additive red-top

Preferred Specimen:
1 mL serum (0.5 mL minimum)

Instructions:
Draw sample 1/2 to 1 hour before next dose.

Transport Temperature:
Refrigerate, stable 2 weeks

Reject Criteria:

Gel barrier tubes, moderate hemolysis and improper labeling.

Methodology:
Liquid Chromatography/Tandem Mass Spectrometry

Reference Range:
10.0-40.0 mcg/mL

Clinical Use:
Zonisamide is comonly 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.