

Methodology: Enzyme Immunoassay
Performed: Referral – ARUP (Monday – Friday)
Reported: 2 – 5 days

Specimen Required: **Collect:** One 4 mL SST. Also acceptable: 3 mL lavender (EDTA) or green (sodium or lithium heparin)
Transport: 0.5 mL serum or plasma at 2-8°C. (Min: 0.2 mL)
Pediatric Minimum/Transport (single test with no repeat): 0.1 mL serum or plasma at 2-8°C.
Remarks: Separate serum from cells ASAP. Acute and convalescent samples must be labeled as such; parallel testing is preferred and convalescent samples **must** be received within 30 days from receipt of the acute samples. **Please mark sample plainly as “acute” or “convalescent”**. No reference intervals for CSF or plasma.
Unacceptable Conditions: Heat inactivated, hyperlipemic, hemolyzed, icteric or contaminated serum samples.
Stability: After separation from clot: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

Reference Interval:

Components	Reference Interval
*Parvovirus B19 IgG Index	≤ 0.90- IV: Negative – No significant level of detectable Parvovirus B19 IgG antibody 0.91 – 1.09 IV: Equivocal – Repeat testing in 10 – 14 days may be helpful. ≥ 1.10 IV: Positive – IgG antibody to Parvovirus B19 detected which may indicate a current or previous infection.
*Parvovirus B19 IgM Index	≤ 0.90- IV: Negative – No significant level of detectable Parvovirus B19 IgM antibody 0.91 – 1.09 IV: Equivocal – Repeat testing in 10 – 14 days may be helpful. ≥ 1.10 IV: Positive – IgM antibody to Parvovirus B19 detected which may indicate a current or recent infection.

*For additional information refer to individual test.

Interpretive Data: IV = Index Value Optical density (OD) of patient serum divided by the OD of the cutoff value.

CPT Code(s): 86747 Parvovirus IgG; 86747 Parvovirus IgM..

Pas/Digestion Stain Only

CPT Code: 88313

Pasuals Grimelius Stain

CPT Code: 88313

Periodic Acid Schiff Stain Only (PAS STAIN)

CPT Code: 88313

Periodic Acid Schiff/Digestion (PAS STAIN)

CPT Code: 88313

Performed: Referral Lab - Blood Bank (Monday - Friday)
Reported: 8 hours

Specimen Required: **Remarks:** Appointment needed. Contact Blood Bank.

Peroxidase Stain

Refer to Myeloperoxidase Stain.

Pertussis Antibody Panel

Refer to Bordetella pertussis.

Pertussis DFA

Refer to Bordetella pertussis.

PG, Amniotic Fluid

Refer to Phosphatidylglycerol, Amniotic Fluid

Test Code 4401**pH, Body Fluid****PH-BF**

Methodology: pH Electrode
Performed: Sunday – Saturday
Reported: 1 hour

Specimen Required: **Collect:** Body fluid in clean plastic or glass container with secured lid. (Min: 1 mL)
Transport: Body fluid immediately at ambient temperature, or refrigerate and transport at 2 – 8°C.
Remarks: Specify source of fluid.
Stability: Refrigerated: 24 hours; Frozen: Indefinitely

Reference Interval: Not defined.

CPT Code: 83986

Test Code 2880**pH, Urine****U-PH**

Methodology: Reagent Dipstick
Performed: Sunday – Saturday
Reported: Same day

Specimen Required: **Collect:** Random urine.
Transport: 10 mL aliquot from a well-mixed random collection at 2 – 8°C. (Min: 5 mL)
Remarks: Record total volume and collection time on test request form.
Stability: Ambient: 1 hour; Refrigerated: 24 hours; Frozen: Indefinitely

Reference Interval: 5.0 – 7.5

CPT Code: 81003

Test Code 4400**pH, Venous Blood****PH**

Methodology: pH Electrode
Performed: Sunday – Saturday
Reported: Immediate

Specimen Required: **Collect:** One green (heparin). (Min: 3 mL)
Transport: Whole blood immediately at ambient temperature. Place on ice if delivery will be delayed more than 30 min.

Reference Interval: 7.31 – 7.41

CPT Code: 82800

Test Code 4405 **Phenobarbital, Serum** **PHENOBARB**

Methodology: Particle enhanced turbidimetric immunoassay (PETINIA)
Performed: Sunday – Saturday
Reported: 2 – 4 hours (STAT: 1 hour)

Specimen Required: **Collect:** One plain red. (Min: 3 mL) Avoid SST (gold) tubes.
Transport: Plain red or 1 mL serum or plasma (Min: 0.5 mL) at ambient or 2-8°C.
Remarks: Avoid use of serum separator tubes and gels. Draw trough level just prior to dose.
Stability: Ambient: 2 days; Refrigerated: 2 days; Frozen: 3-12 months

Reference Interval: Therapeutic: 15.0 – 40.0 µg/mL
Toxic: > 40.0 µg/mL

CPT Code: 80184

Test Code 4204 **Phenytoin** **DILANTIN**

Methodology: Particle enhanced turbidimetric inhibition immunoassay (PETINIA)
Performed: Sunday – Saturday
Reported: 2 – 4 hours (STAT: 1 hour)

Specimen Required: **Collect:** One plain red. (Min: 3 mL) Avoid SST (gold) tubes.
Transport: 1 mL serum at 2-8°C. (Min: 0.5 mL)
Remarks: Draw 1 hour after IV or 24 hour after PO loading dose; Trough – Before next dose.
Separate serum from cells ASAP. Avoid use of serum separator tubes and gels.
Stability: Ambient: 4 hours; Refrigerated: 24 hours; Frozen: 1 month

Reference Interval: Therapeutic: 0 – 12 wks: 6.0 – 14.0 µg/mL Toxic: > 20.0 µg/mL
12 wks & over: 10.0 – 20.0 µg/mL Toxic: > 40.0 µg/mL

CPT Code: 80185

Test Code 5294 (ARUP # 0090141) **Phenytoin, Free & Total** **FDIL**

Methodology: Immunoassay
Performed: Referral – ARUP (Sunday – Saturday)
Reported: 2 – 5 days

Specimen Required: **Collect:** One 5 mL plain red.
Transport: 2 mL serum at 2-8°C. (Min: 1 mL)
Pediatric Minimum/Transport (single test with no repeat): 1 mL serum or plasma at 2-8°C.
Remarks: Separate serum from cells ASAP. Avoid use of serum separator tubes and gels.
Stability: Ambient: 4 days; Refrigerated: 4 days; Frozen: 1-2 months

Reference Interval:

Components	Reference Interval
Total Phenytoin	10.0 – 20.0 µg/mL
Free Phenytoin	1.0 – 2.0 µg/mL
Percent Free Phenytoin	8.0 – 14.0%

CPT Code(s): 80186 Phenytoin Free; 80185 Phenytoin, Total

Test Code 1703 **Phlebotomy – Therapeutic** **PHLEB**

Methodology:
Performed: Blood Bank – Monday thru Friday
Reported: 2 hours

Specimen Required: **Remarks:** Contact Blood Bank. Patient needs an appointment.

CPT Code:

Test Code 5040 **Phosphatidylglycerol (PG), Amniotic Fluid** **PG**

Methodology: Immunologic agglutination
Performed: Sunday – Saturday
Reported: 2 hours

Specimen Required: **Collect:** Amniotic fluid. Amniocentesis or vaginal pool acceptable. Do not centrifuge.
Transport: 1 mL amniotic fluid (Min: 0.3 mL) immediately at ambient temperature.
Remarks: Freeze (-20°C) and transport frozen if delivery will be delayed.

Reference Interval: Mature Fetal Lung: Positive
Immature Fetal Lung: Negative

Note: Available for fetal lung maturity testing by latex agglutination.

CPT Code: 84081

Phosphate, Serum

Refer to Phosphorus, Serum

Phospholipid Antibodies

Refer to Cardiolipin Antibodies, IgG & IgM.

Test Code 4410 **Phosphorus, Serum** **PHOS**

Methodology: Spectrophotometric
Performed: Sunday – Saturday
Reported: 2 – 4 hours

Specimen Required: **Collect:** One gold or red top tube. (Min: 6 mL)
Transport: Centrifuged gold or 1 mL serum at 2 - 8°C. (Min: 0.5 mL)
Remarks: If transport will be delayed, separate serum promptly and refrigerate.
Stability: Ambient: 4 hours; Refrigerated: 24 hours; Frozen: 2 months

Reference Interval: 0 - 10 days : 3.7 – 9.0 mg/dL
10 days – 2 yrs: 4.5 – 6.7 mg/dL
2 yrs – 12 yrs: 4.5 – 5.5 mg/dL
12 yrs & over: 2.2 – 4.5 mg/dL

CPT Code: 84100

Test Code 4413 **Phosphorus, Urine (24-Hour)** **U-PHOS24**

Methodology: Spectrophotometric
Performed: Monday – Saturday
Reported: Next day

Specimen Required: **Collect:** 24-hour urine collection. Refrigerate during collection.
Transport: Entire urine collection at 2 - 8°C. Specify hours of collection.
Remarks: If necessary, adjust pH to 1.5-2.0 by adding 6M HCl in 1 mL increments.
Stability: Ambient: 6 hours; Refrigerated: 2 days; Frozen: 6 months

Reference Interval: 500 – 1500 mg/24 hours

CPT Code: 84105

Test Code 3590	Pinworm Exam	PINWORM
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Methodology: Microscopic Examination
Performed: Microbiology (Monday – Friday)
Reported: 24 – 48 hours

Specimen Required: **Collect:** Pinworm paddle. Perianal material.
Transport: Place pinworm paddle in transport sleeve, snap close and deliver to laboratory.
Remarks: Stool preserved is not the optimal choice to detect pinworm eggs. Clear tape or clean slide can be used as a substitute for a pinworm paddle.
Unacceptable Conditions: Frosted tape.
Stability: Refrigerated: 24 hours

Reference Interval: Negative

CPT Code: 87172

Test Code 5296	PKU (Neonatal Screening Panel) State of Illinois	PKU STATE
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(includes Phenylketonuria, Hypothyroidism, Galactosemia, Biotinidase, Congenital Adrenal Hyperplasia, and Sickle Cell testing)

Methodology: Filter paper blood collection
Performed: Referral – State of Illinois (IDPH)
Reported: 3 – 4 weeks

Specimen Required: **Collect:** Capillary blood, saturating circles of filter paper (refer to IDPH test request form). Min: 3 circles fully saturated. (If collection is performed before infant is 24 hours old, testing must be repeated again after 24 hours of age.)
Transport: Completed request form with dried blood samples in biohazard bag at ambient temperature.
Remarks: Pre-warm foot prior to capillary collection. Infant should be at least 24 hours old (collect specimen before discharge even if infant is less than 24 hours old). Protect from moisture and heat.

Reference Interval: By report

CPT Code: 82136

Test Code 5303	Plasma (Free) Hemoglobin	PLASMA HB
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Methodology: Spectrophotometric
Performed: Sunday – Saturday
Reported:

Specimen Required: **Collect:** One lt. blue (sodium citrate), hemolysis-free, drawn with 20 gauge needle. (Min: 5 mL)
Transport: Deliver whole blood immediately, or promptly separate plasma; transport at ambient temperature.
Remarks: Plasma in contact with cells and icteric samples may give falsely elevated results.
Unacceptable Conditions: Serum or other anticoagulants.
Stability: Ambient: 24 hours

Reference Interval: 0 – 2.5 mg/dl

CPT Code: 83051

Methodology: Aggregation
Performed: Monday – Friday (8 a.m. – p.m.)
Reported: 4 – 8 hours (Not available STAT)

Specimen Required: **Collect:** Special collection technique must be used; laboratory must be called (672-4911) to schedule testing before sample is drawn.
Remarks: **Patient must be fasting.** Patient should not have taken drugs with salicylate (Aspirin) compounds 7 days prior to testing. **Must be scheduled by Hematology.** Include list of current medications and most recent platelet count.
Unacceptable Conditions: Samples more than 1 hour from collection. Samples that have been centrifuged or refrigerated.

Reference Interval: ADP: Normal
 Collagen: Normal
 Arachidonic: Normal
 Ristocetin: Normal

CPT Code: 85576 x 4

Methodology: Enzyme-Linked Immunosorbent Assay
Performed: Referral – ARUP (Monday – Friday)
Reported: 2 – 5 days

Specimen Required: **Collect:** One 7 mL plain red, one 5 mL lavender (EDTA) or one 10 mL yellow (ACD).
Transport: 1 mL serum or plasma (lavender, EDTA or yellow, ACD); frozen.
Pediatric Minimum/Transport (single test with no repeat): 0.5 mL serum or plasma, frozen. Samples from babies < 1month need to be from mother.
Remarks: Separate serum/plasma from cells ASAP and freeze. Frozen serum/plasma is specimen of choice. However, samples that have been maintained at 2 – 8°C for 48 hours or less will be accepted.
Unacceptable Conditions: Microbially contaminated, hemolyzed, lipemic or heat inactivated samples.
Stability: Refrigerated: 48 hours; Frozen: 1 month

Reference Interval: Negative for HLA alloantibodies and platelet specific antibodies.

Interpretive Data: An enzyme-linked immunosorbent assay (ELISA) method is used for the detection of platelet-specific antibodies. Results of this test should be used in conjunction with clinical findings and other serological tests.

This is the primary test for detection of platelet-specific antibodies. Antibodies directed to antigens found on platelets are associated with many different clinical situations. Immune thrombocytopenia purpura (ITP) is a destructive thrombocytopenia caused by autoantibodies. Neonatal alloimmune thrombocytopenia (NAT) and post-transfusion purpura (PTP) are diseases where thrombocytopenia is caused by platelet specific alloantibodies. HLA alloantibodies do not cause thrombocytopenia, but are commonly associated with refractoriness to platelet transfusions.

This test is designed to detect antibodies to platelet glycoproteins IIb/IIIa (HPA-1a/1b [P1^{A1} and P1^{A2}], HPA-3a/3b, and HPA-4a), Ia/IIA (HPA-5a/5b), Ib/IX, and IV. In addition, this test will also detect antibodies to HLA class I antigens (HLA-A-B).

Note: Further characterization of antibodies directed to platelet glycoproteins IIb/IIIa may be performed at client request by ordering Platelet Antibody Identification. Unbound platelet antibody may not be detected in neonatal serum; therefore, testing for neonatal thrombocytopenia should be performed using a maternal sample.

CPT Code: 86022

Methodology: Flow Cytometry
Performed: Referral – ARUP (Sunday – Saturday)
Reported: 2 – 5 days

Specimen Required: **Collect:** Two 5 mL lavender (EDTA). (Min: one 5 mL)
Transport: 10 mL whole blood (lavender, EDTA) at 20-25°C. (Min: 5 mL)
Pediatric Minimum/Transport (single test with no repeat): 5 mL whole blood (lavender, EDTA) at 20-25°C.
Remarks: **CRITICAL AMBIENT. Samples must be received at referral lab within 48 hours of collection.** Required amount of blood may be dependent on platelet count.
Unacceptable Conditions: Clotted, hemolyzed, refrigerated or frozen samples. Samples >48 hours old.
Stability: Ambient; 48 hours

Reference Interval: IgG: Negative
 IgM: Negative

Interpretive Data: Negative: IgG and/or IgM values are not elevated. There is no indication that immune mechanisms are involved in the thrombocytopenia. Other etiologies should be considered.

Weakly Positive: The moderately elevated IgG and/or IgM value suggests that immune mechanisms could be involved in the thrombocytopenia. Other etiologies should also be considered.

Positive: The elevated IgG and/or IgM value suggests that immune mechanisms are involved in the thrombocytopenia.

Strongly Positive: The IgG and/or IgM value is greatly elevated and indicates that immune mechanisms are involved in the thrombocytopenia.

Analyte Specific Reagents (ASRs) are used in many laboratory tests necessary for standard medical care, and generally do not require FDA approval. This test was developed and its performance characteristics determined by ARUP laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration. This test should not be regarded as investigational or for research use.

Note: Detection of platelet associated IgG and/or IgM may be used to separate thrombocytopenia of immune origin from non-immune origin. Most patients with ITP have abnormally high levels of IgG associated with their platelets. Occasionally patients will have normal IgG levels but abnormally high levels of IgM. Dual staining and flow cytometric analysis ensures that only platelets are analyzed and relatively small volumes of blood are required. This assay does not detect platelet specific alloantibodies. Refer to Platelet Antibody Detection (Indirect Assay).

CPT Code(s): 86023 IgG; 86023 IgM

Methodology: Automated Cell Count
Performed: Hematology - Daily
Reported: 1 Hour

Specimen Required: **Collect:** One lavender (EDTA) (Min: 0.5 mL blood drawn in 3 mL lavender)
Transport: Whole blood, lavender (EDTA).
Unacceptable Conditions: Hemolyzed or clotted samples.
Stability: Ambient; 24 hours

Reference Interval: Adults: 140 – 400 K/ μ L

CPT Code: 85595

Availability: Varies from 1 hour to several hours

Specimen Required: **Collect:** Any color tube if blood type is unknown (Min: 3.0 mL blood)

CPT Code: 36430

Test Code 1742 **Plateletpheresis, Irradiated** **RO PLTPH**

Availability: Varies from 1 hour to several hours

Specimen Required: **Collect:** Any color tube if blood type is unknown (Min: 3.0 mL blood)

CPT Code: 36430

Test Code 6570 **Porphyrins, Urine** **POR URINE**

Methodology: High Performance Liquid Chromatography

Performed: Referral – ARUP (Monday – Thursday)

Reported: 3 – 5 days

Specimen Required: **Collect:** Random or 24-hour urine in clean container with secure lid. 24-hour samples should be refrigerated during collection.
Transport: Entire collection or 5 mL aliquot of a well-mixed 24 hour collection at 2-8°C. **Protect from light.** (Min: 2 mL)
Pediatric Minimum/Transport (single test with no repeat): 2 mL aliquot of urine at 2-8°C. Referral Services Representative at MMCI will take of transport (Amber ARUP Standardized Transfer Tube).
Remarks: The most important aspect of specimen preservation is adequate refrigeration during collection, storage, and transport. Protect from strong light.
Stability: Ambient: Unacceptable; Refrigerated: 4 days; Frozen: 1 month

Reference Interval:

Components	Reference Interval
Uroporphyrin	0 – 4 µmol/mol crt
Heptacarboxylate Porphyrin	0 – 2 µmol/mol crt
Coproporphyrin	0 - 22µmol/mol crt
Creatinine (24- hour)	By report (reports may vary based on instrumentation).

Note: Urine porphyrins are useful for the evaluation of cutaneous photosensitivity to exclude porphyria cutanea tarda (PCT). Evaluation of neurologic and/or psychiatric symptoms associated with acute attack forms of porphyrias requires urine porphobilinogen (PBG) testing. Refer to Porphobilinogen (PBG), Urine – CPT Code 84110.

CPT Code: 84120

Porphyrins, Whole Blood (ZPP)

Refer to Zinc Protoporphyrin (ZPP), Whole Blood.

Test Code 4424 **Potassium, Serum or Plasma** **POTASSIUM**

Methodology: Ion Selective Electrode

Performed: Sunday – Saturday

Reported: 2 – 4 hours (STAT: 1 hour)

Specimen Required: **Collect:** One gold or red top tube. (If STAT: one green, heparin) (Min: 3 mL)
Transport: Gold, red, or green (heparin) immediately, or separate and refrigerate 1 mL serum or plasma (Min: 0.5 mL) and transport at 2-8°C.
Remarks: **Separate serum or plasma from cells within 2 hours of collection.**
Unacceptable Conditions: Hemolyzed samples. Serum/plasma in prolonged contact with cells.
Stability (separated from cells): Ambient: 24 hours; Refrigerated: 2 weeks; Frozen: 6 months

Reference Interval: 3.5 – 5.3 mEq/L Critical: < 3.0 and > 6.0

CPT Code: 84132

Test Code 4427 **Potassium, Urine (Random)** **U-POT/L**

Methodology: Ion selective electrode
Performed: Monday – Saturday
Reported: Next day

Specimen Required: **Collect:** Random or 24-hour urine in clean container with secure lid. Refrigerate urine during collection.
Transport: Entire collection or 5 mL aliquot from a well-mixed random collection at 2-8°C.

Reference Interval: Not available

CPT Code: 84133

Test Code 4553 **Potassium, Urine (Timed)** **U-POT-TM**

Methodology: Ion selective electrode
Performed: Monday – Saturday
Reported: Next day

Specimen Required: **Collect:** 24-hour urine or timed urine in clean container with secure lid. Refrigerate urine during collection.
Transport: Entire collection or 5 mL aliquot from a well-mixed 24-hour or timed collection at 2-8°C. Specify total volume and collection time.

Reference Interval: 25 – 100 mEq/24 hour

CPT Code: 84133

Test Code 4432 **Pre-albumin, Serum** **PREALB**

Methodology: Particle-enhanced Turbidimetric Immunoassay (PETIA)
Performed: Sunday – Saturday
Reported: 2 – 4 hours

Specimen Required: **Collect:** One gold or plain red. (Min: 6 mL) Acceptable: green (heparin) or lavender (EDTA)
Transport: Centrifuged gold top or 1 mL serum or plasma (heparin or EDTA) at ambient or 2-8°C. (Min: 0.5 mL)
Remarks: Separate serum or plasma from cells ASAP.
Unacceptable Conditions: Severely lipemic, contaminated or hemolyzed samples.
Stability: Ambient: 8 hours ; Refrigerated: 3 days; Frozen: 2 weeks

Reference Interval: 18.0 – 36.0 mg/dL

Note: This protein is also known as transthyretin

CPT Code: 84134

Pregnancy Test

Refer to hCG, Serum, Quantitative
Refer to hCG, Urine, Qualitative

Prenatal Panel

Refer to Obstetric Panel.

Test Code 4379

Primidone (Mysoline) & Phenobarbital Metabolite

PRIMIDONE

Methodology: Immunoassay
Performed: Referral – ARUP (Sunday – Saturday)
Reported: 2 – 4 hours (STAT: 1 hour)

Specimen Required: **Collect:** One plain red. (Min: 7 mL) Avoid SST (gold) tubes.
Transport: Plain red or 1 mL serum (Min: 0.5 mL) at ambient or 2-8°C.
Remarks: Avoid use of serum separator tubes and gels.
Stability: Ambient: 2 days; Refrigerated: 2 days; Frozen: 4-6 months

Reference Interval:

Components	Reference Interval
Primidone	5 – 12 µg/mL
Phenobarbital	Adult: 15.0 – 40.0 µg/mL Toxic: > 41.0 µg/mL
*For additional information, refer to individual test.	

CPT Code: 80188 Primidone; 80184 Phenobarbital

Test Code 4434

Procainamide & NAPA (Metabolite)

PROCAN

Methodology: Fluorescence Polarization Immunoassay
Performed: Sun – Sat
Reported: 2 – 4 hours (STAT: 1 hour)

Specimen Required: **Collect:** One plain red. (Min: 3 mL) Avoid SST (gold) tubes.
Transport: Plain red or 1 mL serum (Min: 0.5 mL) at ambient or 2-8°C.
Remarks: Avoid use of serum separator tubes and gels. For routine monitoring, draw trough levels immediately before next dose.
Stability: Ambient: 7 days; Refrigerated: 2 weeks; Frozen: 6 months

Reference Interval:

Components	Reference Interval
N-acetylprocainamide (NAPA)	5.0 – 10.0 µg/mL Toxic: > 16 µg/ml
Procainamide	4.0 – 10.0 µg/mL Toxic: > 12.0 µg/mL

CPT Code: 80192

Test Code 6585

Progesterone

PROGEST

Methodology: Chemiluminescent Immunoassay
Performed: Sunday – Saturday
Reported: Same day

Specimen Required: **Collect:** One gold or red top tube. (Min: 6 mL)
Transport: Centrifuged gold top or 1 mL serum at ambient or 2-8°C. (Min: 0.5 mL)
Remarks: Separate serum from cells promptly after collection. Refrigerate if transport will be delayed.
Unacceptable Conditions: Plasma samples.
Stability: Ambient: 8 hours; Refrigerated: 48 hours; Frozen: 3 months

Reference Interval:
Male: 0.3 – 1.2 ng/mL
Female: Follicular: 0.2 – 1.4 ng/mL
Luteal: 3.3 – 25.6 ng/mL
Mid-luteal: 4.4 – 28.0 ng/mL
Postmenopausal: 0.0 – 0.7 ng/mL
Pregnant 1st Trimester: 11.2 – 90.0 ng/mL
Pregnant 2nd Trimester: 25.6 – 89.4 ng/mL
Pregnant 3rd Trimester: 48.4 – 422.5 ng/mL

CPT Code: 84144

Progesterone Receptor Assay

Refer to Estrogen/Progesterone Receptor Assay.

Progesterone Receptor Assay (Frozen)

Refer to Estrogen/Progesterone Receptor Assay (Frozen).

Progesterone Receptor Assay (Paraffin)

Refer to Estrogen/Progesterone Receptor Assay, Paraffin.

Prograf

Refer to Tacrolimus.

Test Code 6590	Prolactin	PROLACTIN
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Methodology: Chemiluminescent Immunoassay
Performed: Sunday – Saturday
Reported: Same day

Specimen Required: **Collect:** One 6 mL gold or plain red. (Min: 4 mL SST)
Transport: Centrifuged gold or 1 mL serum (Min: 0.5 mL) at ambient or 2-8°C.
Unacceptable: Plasma samples.
Stability: Ambient: 8 hours; Refrigerated: 48 hours; Frozen: 3 months

Reference Interval: Female: Non-pregnant: 2.8 – 29.2 ng/ml
Pregnant: 9.7 – 208.5 ng/ml
Postmenopausal: 1.8 – 20.3 ng/ml
Male: 2.1 – 17.7 ng/ml

CPT Code: 84146

Pronestyl

Refer to Procainamide & NAPA.

Test Code 6592	Prostate Specific Antigen (PSA) for Screening purposes	PROST AG
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Test Code 6588	Prostate Specific Antigen (PSA) for Diagnostic purposes	PSA-DIAG
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Methodology: Chemiluminescent Immunoassay
Performed: Sunday – Saturday
Reported: Same day

Specimen Required: **Collect:** One gold or red top tube. (Min: 6 mL)
Transport: Centrifuged gold or red promptly at ambient temperature. If transport will be delayed, separate and refrigerate 1 mL serum (Min: 0.5 mL) and transport at 2-8°C.
Unacceptable: Plasma samples.
Stability: Ambient: 8 hours; Refrigerated: 48 hours; Frozen: 3 months

Reference Interval: 0.0 – 4.0 ng/mL

Interpretive Data: The Bayer Centaur Equimolar PSA assay is used. Results obtained with different assays methods or kits cannot be used interchangeably.

CPT Code: 84153

Test Code 6523	Prostate Specific Antigen, Complexed	C PSA
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Methodology: Chemiluminescent Immunoassay
Performed: Sunday – Saturday
Reported: Same day

Specimen Required: **Collect:** One 6 mL gold or red top tube.
Transport: Centrifuged gold or 1.0mL serum. Refrigerate until testing.
Unacceptable Conditions: Plasma; samples that have been at room temperature for no longer than 8 hours.
Stability: : Ambient: 8 hours; Refrigerated: 48 hours; Frozen: 3 months

Reference Interval: Complexed PSA: 0 – 3.8 ng/mL

Interpretive Data: CPSA (Complexed PSA) is performed by Bayer chemiluminescent immunoassay. Interpretation of results should be made in the context of family history, results of DRE, patient history, and patient age.

CPT Code(s): 84152

Test Code 6549 (ARUP #0080206)	Prostate Specific Antigen, Free Percentage (Includes Free PSA & Total PSA)	PSA FP
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Methodology: Enzyme Immunoassay
Performed: Referral – ARUP (Monday – Saturday)
Reported: 2 – 4 days

Specimen Required: **Collect:** One 4 mL plain red. Also acceptable: green (sodium or lithium heparin) and lavender (EDTA).
Transport: 1 mL serum or plasma, frozen. (Min: 0.5 mL)
Pediatric Minimum/Transport (single test with no repeat): 0.3 mL serum, frozen.
Unacceptable Conditions: Hemolyzed samples.
Stability: Ambient: 8 hours; Refrigerated: 48 hours; Frozen: 3 months

Reference Interval: By report; Results include: PSA-Free, PSA, PSA-percent Free

The Roche Modular E170 PSA method is used. Results obtained with different assay methods or kits cannot be used interchangeably. The Roche Modular E170 PSA method is approved for use as an aid in the detection of prostate cancer when used in conjunction with a digital rectal exam in men age 50 and older. The Roche Modular E170 PSA method is also indicated for the serial measurement of PSA to aid in the prognosis and management of prostate cancer patients. Elevated PSA concentrations can only suggest the presence of prostate cancer until biopsy is performed. PSA concentrations can also be elevated in benign prostatic hyperplasia or inflammatory conditions of the prostate. PSA is generally not elevated in healthy men or men with non-prostatic carcinoma.

ARUP uses the Roche Modular E170 Free PSA method in conjunction with the Roche Modular E170 PSA method to determine the free PSA percentage. The free PSA percentage is an aid in distinguishing prostate cancer from benign prostatic conditions in men age 50 and older with a total PSA between 3 and 10 ng/mL and negative digital rectal examination findings. Prostatic biopsy is required for the diagnosis of cancer. (Refer to: JAMA 1998; 279: 1542-1547)

Probability of finding prostate cancer on needle biopsy by age in years:

% Free PSA ratio 50-59 60-69 70 and older

10% 49.2 57.5 64.5

11-18% 26.9 33.9 40.8

19-25% 18.3 23.9 29.7

>25% 9.1 12.2 15.8

Other factors may help determine the actual risk of prostate cancer in individual patients.

CPT Code(s): 84153 PSA, total; 84154 PSA, free

Test Code 4436	Protein, Body Fluid	BF-PROT
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Methodology: Spectrophotometric
Performed: Sunday – Saturday
Reported: 2 – 4 hours

Specimen Required: **Collect:** Body fluid in **clean** glass or plastic container with secure lid.
 Transport: 1 mL body fluid immediately at ambient, or refrigerate and transport at 2- 8°C. (Min: 0.5 mL)
 Remarks: Specify source of fluid.
 Stability: Ambient: 4 hours; Refrigerated: 3 days ; Frozen: Indefinitely

Reference Interval: Not established.

CPT Code: 84155

Test Code 6593	Protein C, Total Antigen	PROT C
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Methodology: Enzyme Immunoassay
Performed: Referral – ARUP (Tuesday – Saturday)
Reported: 2 – 5 days

Specimen Required: **Collect:** One 5 mL lt. blue (sodium citrate). Refer to Hemostasis/Thrombosis section in this User’s Guide for specimen collection instructions. (Min: 3 mL lt. blue)
 Transport: 2 mL platelet-poor plasma (lt. blue, sodium citrate), frozen. (Min: 1 mL)
 Pediatric Minimum/Transport (single test with no repeat): 1 mL platelet-poor plasma (lt. blue, sodium citrate), frozen.
 Remarks: Frozen plasma is specimen of choice, however, samples that have been maintained at 2-8°C for 24 hours or less will be accepted
 Unacceptable Conditions: Serum or hemolyzed samples.
 Stability: Ambient: 4 hours; Refrigerated: 24 hours; Frozen: 2 weeks

Reference Interval: 63 – 153%

Interpretive Data: Patients on oral anticoagulants may have decreased values. Patients should be off oral anticoagulant therapy for 2 weeks for accurate measurement of Protein C/S levels.

Reference intervals listed are for normal adults. Since this is a liver-dependent clotting factor, there is age-dependent variability in the normal ranges for younger patients.

CPT Code(s): 85302

Test Code 4195	Protein, CSF	CSF-PROT
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Methodology: Spectrophotometric
Performed: Sunday – Saturday
Reported: 1 – 2 hours

Specimen Required: **Collect:** CSF in clean glass or plastic container with secure lid.
 Transport: 0.5 mL CSF immediately at ambient temperature. If transport will be delayed, refrigerate and transport at 2-8°C.
 Remarks: Presence of blood in CSF sample will falsely elevate results.

Reference Interval: 15 – 45 mg/dL

CPT Code: 84155

Test Code 4235	Protein Electrophoresis, Serum (SPE)	SPE
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Methodology: Gel Electrophoresis
Performed: Monday – Friday
Reported: 1 – 3 days

Specimen Required: **Collect:** One gold or red top tube. (Min: 6 mL)
Transport: Centrifuged gold or 1 mL serum at ambient or 2-8°C. (Min: 0.5 mL)
Remarks: Separate serum from cells ASAP.
Unacceptable Conditions: Plasma samples.
Stability: Ambient: 8 hours; Refrigerated: 7 days; Frozen: 1 month

Reference Interval:

Total Protein:	6.0 – 8.3 g/dL	Alpha-2:	0.50 – 0.85 g/dL
Albumin:	3.50 – 5.00 g/dL	Beta:	0.65 – 1.13 g/dL
Alpha-1:	0.10 – 0.32 g/dL	Gamma:	0.70 – 1.20 g/dL

Interpretive Data: Serum protein electrophoresis, when used as a screening procedure, is useful in the detection of various pathophysiologic states such as inflammation, protein loss, gammopathies and other dysproteinemias. However, immunofixation electrophoresis (IFE) is a more sensitive technique for the identification of small M-proteins found in patients with amyloidosis, early or treated myeloma or macroglobulinemia, solitary plasmacytoma or extramedullary plasmacytoma.

Note: A copy of the graph will follow final report.

CPT Code(s): 84165

Protein Electrophoresis, Urine

Refer to Bence-Jones Protein, Quantitative.

Test Code 6586	Protein S, Total Antigen	PROT S
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Methodology: Enzyme Immunoassay
Performed: Referral – ARUP (Tuesday – Saturday)
Reported: 2 – 5 days

Specimen Required: **Collect:** One 5 mL lt. blue (sodium citrate). Refer to Hemostasis/Thrombosis section in this User's Guide for specimen collection instructions. (Min: 3 mL lt blue)
Transport: 2 mL platelet-poor plasma (lt. blue, sodium citrate), frozen. (Min: 1 mL)
Pediatric Minimum/Transport (single test with no repeat): 1 mL platelet-poor plasma (lt. blue, sodium citrate), frozen.
Remarks: Frozen plasma is specimen of choice, however, samples that have been maintained at 2-8°C for 24 hours or less will be accepted.
Unacceptable Conditions: Serum or hemolyzed samples.
Stability: Ambient: 4 hours; Refrigerated: 24 hours; Frozen: 2 weeks

Reference Interval: 58 – 146%

Interpretive Data: Patients on oral anticoagulants may have decreased values. Patient should be off oral anticoagulant therapy for 2 weeks for accurate measurement of Protein C/S levels.

Reference ranges listed are for normal adults. Since this is a liver dependent clotting factor, there is age-dependent variability in the normal ranges for younger patients.

CPT Code: 85305

Test Code 4437	Protein, Total, Serum	T PROT
Methodology:	Spectrophotometric	
Performed:	Sunday – Saturday	
Reported:	2 – 4 hours	
Specimen Required:	<p>Collect: One gold or plain red. (Min: 6 mL)</p> <p>Transport: Centrifuged gold or plain red promptly at ambient temperature; or separate, refrigerate 1 mL serum (Min: 0.3 mL) and transport at 2-8°C.</p> <p>Stability: Ambient: 4 hours; Refrigerated: 24 hours; Frozen: 6 months</p>	
Reference Interval:	<p>Newborn: 4.6 – 7.0 g/dL</p> <p>1 day – 1 week: 4.4 – 7.6 g/dL</p> <p>1 week & over: 6.0 – 8.3 g/dL</p>	
CPT Code:	84155	
Test Code 4440	Protein, Urine, Quantitative (24-Hour)	U-PROT-24
Methodology:	Spectrophotometric	
Performed:	Monday – Saturday	
Reported:	1 – 2 days	
Specimen Required:	<p>Collect: 24-hour urine in clean container with secure lid. Urine must be refrigerated during collection.</p> <p>Transport: Entire collection or 5 mL aliquot from a well-mixed 24-hour collection at 2-8°C.</p> <p>Remarks: Specify total volume and collection time.</p> <p>Unacceptable Conditions: Urine specimens containing acid preservatives, blood or fecal matter.</p> <p>Stability: Refrigerated: 2 days; Frozen: Indefinitely</p>	
Reference Interval:	0 – 200 mg/d	
CPT Code:	84155	
Test Code 2883	Protein, Urine, Qualitative	U-PROTEIN
Methodology:	Reagent Dipstick	
Performed:	Urinalysis (Sunday – Saturday)	
Reported:	1 hour	
Specimen Required:	<p>Collect: First morning voided specimen most desirable</p> <p>Transport: 2 – 10 mL of urine</p> <p>Remarks: Testing should be done within 1 hour; if not, refrigerate specimen. Test within 4 hours of collection.</p>	
Reference Interval:	Negative	
CPT Code:	81003	
Test Code 4549	Protein, Urine, Quantitative (Random)	U-PROT/DL
Methodology:	Spectrophotometric	
Performed:	Sunday – Saturday	
Reported:	Same day	
Specimen Required:	<p>Collect: Random urine in clean, dry container with secure lid.</p> <p>Transport: 5 mL urine promptly at ambient temperature, or refrigerate and transport at 2-8°C.</p> <p>Remarks: Presence of blood or stool in urine will falsely elevate results.</p> <p>Stability: Refrigerated: 2 days; Frozen: Indefinitely</p>	
Reference Interval:	Not available for random urine	
CPT Code:	84155	

Methodology: Polymerase Chain Reaction/Fluorescence Monitoring
Performed: Referral – ARUP (Tuesday, Thursday, Saturday)
Reported: 7 – 10 days

Specimen Required: **Collect:** One 5 mL lavender (EDTA). Also acceptable yellow (ACD), lt. blue (sodium/citrate). (Min: 3 mL)
Transport: 5 mL whole blood (lavender, EDTA) at 2-8°C. **Do not freeze.** (Min: 3 mL)
Pediatric Minimum/Transport (single test with no repeat): 1 mL lavender (EDTA) at 2-8°C. **Do not freeze.**
Unacceptable Conditions: Serum, frozen whole blood or severely hemolyzed samples.
Stability: Ambient: 24 hours; Refrigerated: 5 days; Frozen: Unacceptable.

Reference Interval: **Negative:** The patient is negative for the Factor II, prothrombin 20210A mutation. Other causes of elevated prothrombin levels and hereditary forms of venous thrombosis are not ruled out.

Interpretive Data:

The factor II, prothrombin G20210A mutation is a common genetic risk factor for thrombosis and is associated with elevated prothrombin levels. Higher concentrations of prothrombin lead to increased rates of thrombin generation, resulting in excessive growth of fibrin clots. It is an autosomal dominant disorder, with heterozygotes being at a three- to eleven-fold greater risk for thrombosis in both men and women for all age groups. Although homozygosity is rare, inheritance of two 20210A alleles would increase the risk for developing thrombosis. If a patient is heterozygous for both the prothrombin 20210A and the factor V Leiden mutation, the combined heterozygosity leads to an earlier onset of thrombosis and tends to be more severe than single-gene heterozygotes.

Mutations in other genes or other mutations in the prothombin gene that may cause elevated prothrombin and hereditary forms of venous thrombosis are not ruled out.

Patient DNA was assayed for the G20210A mutation in the prothombin gene by Polymerase Chain Reaction (PCR), and fluorescence monitoring using hybridization probes. Sensitivity and specificity for detection of this mutation is 99.9%

This test uses a commercial kit or reagent that has not been approved or cleared by the FDA. Its performance characteristics were determined by ARUP Laboratories.

*This test is performed pursuant to an agreement with Roche Molecular Systems, Inc.

Note: Due to the unique nature of genetic susceptibility testing, patients should receive genetic counseling and give informed consent before DNA testing. Informed consent forms are available upon request. We recommend that patients receive genetic counseling along with DNA test results. Counseling should aid the patient in understanding the strengths and limitations of DNA testing and the medical implications for the patient as well as for other family members.

CPT Code(s): 83890 Isolation; 83898 Amplification; 83896 x 2 Nucleic Acid Probe; 83912 Interpretation

Test Code 2483 **Prothrombin Time** **PROTIME**

Methodology: Photo optical Measurement
Performed: Coagulation (Sunday –Saturday)
Reported: 1 hour

Specimen Required: **Collect:** One 5 mL light blue (3.2% sodium citrate). Draw a red top tube prior to drawing blue top. Tube must fill as far as vacuum will allow. Refer to Hemostasis/Thrombosis section in the front of this User's Guide for specimen collection instructions. (Min: 3 mL lt. blue)
Transport: Blue top tube or 1 mL platelet-poor plasma from sodium citrate tube.
Remarks: If specimen is being drawn from cath line, discard 10 mL of blood prior to draw. Tube must fill as far as vacuum will allow for accuracy of results.
Unacceptable Conditions: Partially filled tubes, Serum, non-frozen or hemolyzed samples.
Stability: Samples can be used for up to 24 hours if stored at room temperature without loss of factors. Samples should not be stored for prolong periods in the cold (4°C). If specimen cannot be tested with 24 hours, freeze platelet poor plasma.

Reference Interval: 11.5 – 13.7 sec.

CPT Code: 85610

Protoporphyrin, Zinc

Refer to Zinc Protoporphyrin (ZPP), Whole Blood.

PSA

Refer to Prostate Specific Antigen, Screening purposes
Refer to Prostate Specific Antigen, Diagnostic purposes

PSA, Free

Refer to Prostate Specific Antigen, Free.

Test Code 4137 **Pseudocholinesterase, Total** **PCHE**

Methodology: Enzymatic
Performed: Sunday – Saturday
Reported: 2 – 4 hours (STAT: 1 hour)

Specimen Required: **Collect:** One gold or red top tube. (Min: 6 mL) Acceptable: green (heparin) or lavender (EDTA).
Transport: Centrifuged gold or 1 mL serum or plasma at ambient or 2-8°C.
Remarks: Separate serum from cells ASAP (maximum: 30 minutes). Sample must be drawn prior to surgery or 2 days post. Do not draw in recovery room. (Plasma acceptable if removed from cells ASAP.) Plasma values slightly lower than serum.
Stability: Ambient: 24 hours; Refrigerated: 60 days

Reference Interval: 7 – 19 U/mL

CPT Code: 82480

PT

Refer to Prothrombin Time.

PT Inhibitor Assay

Refer to Inhibitor Screen, PT 1:1 Mix

PTAH/Neuropathology Stain

CPT Code: 88313

PTH, Intact Molecule (with Calcium)

Refer to Parathyroid Hormone Intact Molecule, with Calcium.

PTT

Refer to APTT (Activated Partial Thromboplastin).

PTT Inhibitor Assay

Refer to Inhibitor Assay, PTT 1:1 Mix

Putchlers Congo Red

CPT Code: 88313
