The Pathology Manual was prepared by the:

Department of Pathology at
University Hospital,
SUNY Upstate Medical University, Syracuse, NY

Its purpose is to serve as a reference for health care providers. The handbook includes general guidelines, policies, and other information.

Your comments and suggestions are welcome and may be addressed to the Chair of Pathology.

The tests listed in this compendium have been approved by the Department of Pathology at University Hospital.

REVISED JUNE 2016
Pathology Manual is available on the Upstate website at
http://www.upstate.edu/intra/forms/pdf/F90000.pdf

IMPORTANT PHONE NUMBERS

Clinical Pathology ...................................................... 464-4460
Anatomic Pathology ................................................... 464-4750
Cytology ..................................................................... 464-4270

Note: Cytopathology Clinical Reference Manual is available on the Upstate website at
http://www.upstate.edu/forms/documents/intra/F88588.pdf
PATHOLOGY MANUAL

June 2016

Department of Pathology
SUNY Upstate Medical University
750 East Adams Street
Syracuse, NY 13210
www.upstate.edu/pathology

MISSION STATEMENT

To provide state-of-the-art services in Pathology and Laboratory Medicine through research, educational programs and diagnostic support.
DEPARTMENT OF PATHOLOGY ORGANIZATION

Chair ..................................................................................................... Robert Corona, DO, MBA
Director of Anatomic Pathology ............................................................ Gustavo de la Roza, MD
Director of Clinical Pathology .............................................................. Robert E. Hutchinson, MD
Director of Clinical Laboratories ........................................................... Sophia Lustrinelli, BS, MT(ASCP), SH, C
Assistant Director of Clinical Laboratories ............................................. Kathleen M. Sayles, MS
Assistant to the Chair ................................................................................ Christine McGivney
Assistant to the Director of Anatomic Pathology ........................................ Susan Jakubowski
Assistant to the Director of Clinical Pathology ........................................... Linda Underwood
Assistant to the Director of Clinical Laboratories ....................................... Brenda Poehlman
Director of Laboratory Information System ........................................... Sam (Saverio) Carello
Director of Quality Assurance/Improvement ........................................ Matthew Elkins, MD, PhD
Quality Assurance & Safety Officer ......................................................... Larry Brown
Quality Assurance ..................................................................Karen MacKnight, MT (ASCP)SV

PATIENT CARE DIVISIONS/SECTIONS

**Anatomic Pathology**
Medical Director .................................................................................. Gustavo de la Roza, MD
Autopsy Pathology ................................................................................ Robert Stoppacher, MD
Cytopathology ....................................................................................... Kamal Khurana, MD
Gustavo de la Roza, MD
Ola El-Zammar, MD
Alfredo Valente, MD

Dermatopathology ................................................................................. Ramsay Farah, MD
Electron Microscopy ............................................................................. Paul Shanley, MD
Environmental/Occupational Pathology ................................................. Jerrold L. Abraham, MD
Molecular Pathology ............................................................................ Shengle Zhang, MD
Ola El-Zammar, MD

Next Generation Sequencing Director .................................................... Wei Song, MD, PhD
Neuropathology .................................................................................... Robert Corona, DO, MBA
Joseph Fullmer, MD, PhD
Ophthalmic Pathology .......................................................................... Ann Barker-Griffith, MD
Renal Pathology .................................................................................... Paul Shanley, MD
Surgical Pathology .............................................................................. Gustavo de la Roza, MD
Jerrold L. Abraham, MD
Christopher M. Curtiss, MD
Ola El-Zammar, MD
Jospeh Fullmer, MD, PhD
Kamal Khurana, MD
Steve K. Landas, MD
Alfredo Valente, MD
Shengle Zhang, MD
Clinical Pathology
Medical Director ................................................................. Robert E. Hutchison, MD
Andrology .................................................................................. Kazim R. Chohan, MD
Apheresis ........................................................................ Matthew Elkins, MD, PhD
Core Laboratory .......................................................... Katalin Banki, MD
Automated Procedures and Specimen Processing ............ Katalin Banki, MD
Hematopathology Consultation Service ..................... Robert E. Hutchison, MD
Sylva Bem, MD
Neerja Vajpayee, MD
Elizabeth Ruckdeschel, MD
Microscopy ......................................................... Katalin Banki, MD
Morphology/Bone Marrows .................................... Robert E. Hutchison, MD
Sylva Bem, MD
Neerja Vajpayee, MD
Elizabeth Ruckdeschel, MD
Special Chemistry .................................................. Katalin Banki, MD
Special Testing (Coagulation/Hemostasis) ................. Katalin Banki, MD
Robert E. Hutchison, MD
Sylva Bem, MD
Neerja Vajpayee, MD
Elizabeth Ruckdeschel, MD
Cytogenetics ............................................................. Constance K. Stein, PhD
Antony Shrimpton, PhD
Immunology ......................................................................... Sylva Bem, MD
Flow Cytometry .......................................................... Robert E. Hutchison, MD
Microbiology/Virology .................................................. Scott Riddell, PhD
Deanna L. Kiska, PhD
Molecular Diagnostics .................................................. Antony Shrimpton, PhD
Constance K. Stein, PhD
Transfusion Medicine, Stem Cell & Histocompatibility ........ Matthew Elkins, MD, PhD
Zhanna Spektor, MD
Amy Hahn, PhD
Executive Director/Tissue Bank Director ...................... Nichaolas Greco, MD
Outreach Lab ........................................................................ Steve Landas, MD
UPL Director ........................................................................ Neerja Vajpayee, MD
DEPARTMENT OF PATHOLOGY FACULTY

Professor of Pathology and Chair
- Robert Corona, DO, MBA

Professor
- Jerrold L. Abraham, MD
- Ann Barker-Griffith, MD
- Gustavo de la Roza, MD
- Robert E. Hutchison, MD
- Kamal Khurana, MD
- Steve K. Landas, MD
- Paul F. Shanley, MD
- Constance K. Stein, PhD

Associate Professor
- Katalin Banki, MD
- Antony Shrimpton, PhD
- Neerja Vajpayee, MD
- Alfredo Valente, MD
- Shengle Zhang, MD

Clinical Associate Professor
- Robert Stoppacher, MD

Clinical Professor
- Kazim Chohan, PhD

Assistant Professor
- Christopher Curtiss, MD
- Matthew Elkins, MD, PhD
- Ola El-Zammar, MD
- Ramsay Farah, MD
- Joseph Fullmer MD, PhD
- Deanna L. Kiska, PhD
- Scott Riddell, PhD
- Wei Song, MD, PhD
- Zhanna Spektor, MD

Clinical Assistant Professor
- Sylva Bem, MD
- Nicholas Greco, PhD
- Elizabeth Ruckdeschel, MD

Pathologist at MEO
- Robert Stoppacher, MD
EDUCATIONAL PROGRAMS

B.S. in Medical Technology
  • Robert E. Hutchison, MD
  • Susan Graham, MS, MT(ASCP)SH
Pathology Residency Program Director
  • Paul Shanley, MD
Anatomic Pathology Assistant Residency Program Director
  • Joseph Fullmer, MD, PhD
Clinical Pathology Assistant Residency Program Director
  • Matthew Elkins, MD, PhD
Pathology Residency Program Coordinator
  • Susan Phillips
TELEPHONE REFERENCE

Toll-free Physician/Patient Telephone Inquiries.......................................................(800)541-9890

Chair
  Robert Corona, DO, MBA ................................................................. 464-5739
  Administrative Assistant to the Chair
  Christine McGivney ................................................................. 464-6780

Anatomic Pathology Medical Director
  Gustavo de la Roza, MD ................................................................. 464-7126
  Administrative Assistant to AP Medical Director
  Susan Jakubowski ................................................................. 464-7125

Clinical Pathology Medical Director
  Robert E. Hutchison, M.D ................................................................. 464-6771
  Administrative Assistant to CP Medical Director
  Linda Underwood ................................................................. 464-6755

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  Sophia Lustrinelli, BS,MT(ASCP),SH,C ........................................... 464-6709
  Administrative Assistant to Director of Clinical Laboratories
  Branda Poehlman ................................................................. 464-5738

Business Administrator
  Elizabeth Rosaschi, MS ................................................................. 464-6751
  Administrative Assistant to Business Administrator
  Candy Flock ................................................................. 464-9385

Outreach Customer Service Manager
  David Latour ................................................................. 464-7139

Courier Services - Dispatch Manager
  Bill Miller ................................................................. 464-6704

Laboratory Information System Director
  Sam (Saverio) Carello ................................................................. 464-9547
Anatomic Pathology ................................................................................................. (315) 464-4750
Fax ............................................................................................................................. (315) 464-7130

Medical Director
Gustavo de la Roza, M.D .......................................................... 464-7126

Anatomic Pathology Manager
Kathleen M. Sayles, MS .......................................................... 464-7147

Autopsy Pathology Director
Robert Stoppacher, MD .......................................................... 464-3163
Technical Director
Donald Jaeger .......................................................... 464-5123

Cytopathology Director
Kamal Khurana, MD .......................................................... 464-4270
Cytopathology Supervisor
Cindy Steele, BS,SCT(ASCP),CM(IAC) .................................................. 464-7149

Dermatopathology Director
Ramsay Farah, MD .......................................................... 464-5737

Electron Microscopy Director
Paul Shanley, MD .......................................................... 464-7171

Environmental/Occupational Pathology Director
Jerrold L. Abraham, MD .......................................................... 464-7143

Molecular Pathology Director
Shengle Zhang, MD .......................................................... 464-7131
Molecular Pathology Assistant Director
Ola ElZammar, MD .......................................................... 464-7119

Next Generation Sequencing Director
Wei Song, MD, PhD .......................................................... 464-7151

Neuropathology Director
Robert Corona, MO, MBA .......................................................... 464-4750
Neuropathology Assistant Director
Joseph M. Fullmer, MD, PhD .......................................................... 464-8668

Ophthalmic Pathology Director
Ann Barker-Griffith, MD .......................................................... 464-4750
Renal Pathology Director
Paul Shanley, MD ................................................................. 464-7171

Surgical Pathology Director
Gustavo de la Roza, MD .......................................................... 464-7126
Histology/Special Procedures Supervisor
Julie Lippa ................................................................. 464-5469
Medical Director
Robert E. Hutchison, MD ................................................................. 464-6771

Director of Clinical Laboratories
Sophia Lustrinelli, BS,MT(ASCP), SH,C ........................................ 464-6709

Andrology Director
Kazim R. Chohan, PhD ................................................................. 464-5688

Apheresis Director
Matthew Elkins, MD, PhD ............................................................ 464-6754
Nurse Manager
Kelly Dolan, RN ................................................................. 464-9024

Core Laboratory:
Director
Katalin Banki, MD ................................................................. 464-6790
Core Laboratory Supervisor
Stephen Gwilt, MS,MT(ASCP)SH,SC ........................................ 464-6840

Automated Procedures & Specimen Processing Director
Katalin Banki, MD ................................................................. 464-6790
Supervisor
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Hematopathology Consultation Service Director
Robert E. Hutchison, MD ................................................................. 464-6771
Coordinator
Donna Barrett ................................................................. 464-6770

Microscopy Director
Katalin Banki, MD ................................................................. 464-6790
Supervisor
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Morphology/Bone Marrows Director
Robert E. Hutchison, MD ................................................................. 464-6771
Coordinator Morphology
Sharon Currie ................................................................. 464-6842
Special Chemistry Director
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Special Testing (Coagulation/Hemostasis) Director
Katalin Banki, MD ................................................................. 464-6790
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Customer Service Director
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Michael Franz ................................................................. 464-6862

Cytogenetics Director
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Supervisor
Lori Plaisted, BS(ASCP)(CM) .................................................. 464-4716

Flow Cytometry Director
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Supervisor
Theresa Haven, MLS(ASCP) .................................................... 464-6766

Immunology Director
Sylvia Bem, MD ................................................................. 464-6715
Supervisor
Theresa Haven, MLS(ASCP) .................................................... 464-6766

Microbiology & Virology Director
Scott Riddell, PhD ................................................................. 464-6708
Assistant Director
Deanna L. Kiska, PhD ............................................................. 464-6713
Supervisor
Carol Matkoski, MS,MT(ASCP)SM .............................................. 464-6798

Molecular Diagnostics Director
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Associate Director
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Supervisor
Celeste Lamberson, MS,MT(ASCP) ........................................... 464-6806
Outpatient Phlebotomy Director
Robert Corona, DO, MBA ................................................................. 464-5739
Supervisor
David Latour ................................................................. 464-7139

Point of Care Testing Director
Robert E. Hutchison, MD ................................................................. 464-6771
Supervisor
Jean Sgroi ................................................................. 464-6725

Specimen Receipt Director
Robert Corona, DO, MBA ................................................................. 464-5739
Supervisor
Jean Sgroi ................................................................. 464-6725
Coordinator (Day)
Jean McNeil ................................................................. 464-4460
Coordinator (Evening)
Rachel Neupert ................................................................. 464-4460

Transfusion Medicine and Stem Cell Director
Matthew Elkins, MD, PhD ................................................................. 464-6754
Assistant Director Transfusion Medicine
Zhanna Spektor, MD ................................................................. 464-6775
Director Blood Bank
Zhanna Spektor, MD ................................................................. 464-6775
Supervisor of Transfusion Medicine/Blood Bank
Linda S. Dehority, BS,MT(ASCP)SBB ................................................................. 464-6699
Director Histocompatibility
Amy Hahn, PhD................................................................. 464-5775
Supervisor of Histocompatibility/Stem Cell
Charleen Hubbell, BS,MT(ASCP)SBB ................................................................. 464-4775

Evening Shift Supervisor
Mohammed Abuadia ................................................................. 464-4460
Night Shift Supervisor
P. Michael Ball, BS,MT(ASCP) ................................................................. 464-4460

UPL (Upstate Pathology Laboratories) Director
Neerja Vajpayee, MD................................................................. 464-6719
UPL (Upstate Pathology Laboratory) Supervisor
Timothy McElroy, MS, NCA(CLS) ................................................................. 464-4820
The Department of Pathology, comprised of Anatomic Pathology and Clinical Pathology, is staffed by Board certified pathologists and residents, medical technologists, cytotechnologists, histotechnologists, cytogeneticists, and support staff.

Anatomic Pathology provides cytology, surgical pathology, eye pathology, environmental/occupational pathology, neuropathology, electron microscopy and autopsy services.

Clinical Pathology provides services in hematology, blood banking, medical chemistry, cytogenetics, microbiology, molecular biology, immunology, microscopy, histocompatibility, stem cell banking, and virology.

The Department of Pathology is staffed to handle the bulk of work on weekdays, Monday through Friday. Weekends, evenings, and holidays are covered by a reduced staff as laboratory personnel rotate weekends and holidays. A staff Clinical and Anatomic Pathologist and a Resident are "on call" at all times. For Anatomic Pathology call extension 464-4750 before 5:00 p.m. (1700) or the appropriate beeper listed on the night-call schedule and for Clinical Pathology extension 464-4460 or the hospital operator for the beeper number(s).

LABORATORY MODEL COMPLIANCE PROGRAM

Introduction:

The Department of Pathology has developed a compliance plan to meet the requirements set by the Office of Inspector General (OIG) of the Department of Health and Human Services (HHS). This plan adheres as closely as possible to the Federally proposed Model Compliance Plan for Clinical Laboratories. The purpose of this plan was to provide some guidance to health care providers that supply clinical laboratory testing services for Medicare and Medicaid beneficiaries.

The OIG stresses using a well-developed requisition form and developing policies that promote the physician's right to order only medically necessary tests. The OIG states that it has a zero tolerance policy toward fraud and abuse and will use its extensive statutory authorities to reduce fraud in Medicare and other federally funded health care programs.

Medical Necessity:

The Department of Pathology will make every reasonable effort to ensure that claims will be submitted for services that are medically necessary. Documentation of medical necessity may include a written narrative as to "why" a laboratory test(s) is required for a Diagnosis Code. It is the responsibility of the ordering health care practitioner to provide this information.

Each laboratory request must include the reason(s) why the test(s) is ordered and/or appropriate history. If the patient is "pre-op", then state the reason for surgery. Please indicate SIGNS, SYMPTOMS, ILLNESS, OR DISEASE.

The Department will send an annual memorandum to remind ordering health care practitioners that Medicare will only pay for tests that meet the Medicare definition of "medical necessity" and that Medicare may deny payment for a test that the physician believes is appropriate, such as a screening test. Physicians may be contacted if diagnostic information is not received as part of the laboratory requisition.
• **Requisition Design**: A standardized requisition form that lists the most frequently ordered tests is used. The forms additionally provide adequate physician choice so as to encourage doctors to order only those tests that they believe are medically appropriate for each patient. Creation of organ or disease panels has been discouraged. Each laboratory test ordered must be supported by a diagnosis code.

• **Advanced Beneficiary Notice (ABN)**: An ABN must be obtained when a physician is aware that the services to be furnished to a patient will not be covered as indicated in the National Coverage Determinations (NCD) and Local Coverage Determinations (LCD) for that specific test. In general, any laboratory test that is used to "screen" for a specific disease without any symptoms must have an ABN signed by the patient. To be valid, the patient (or legal representative) must be notified that Medicare may not pay for that service. The physician may be contacted if adequate information is not provided.

• **Panels**: The creation of disease or organ panels has been discouraged. Only those panels identified on the requisition will be recognized. These panels are not intended to limit the performance of other tests that are medically necessary. If other tests are required to obtain a patient's diagnosis, provide treatment, or monitor a previous diagnosis then the additional tests should be ordered individually. When organ/disease panels are ordered, each component must be medically relevant to the treatment or diagnosis of the patient.

• **Education sessions and update letter**: The Department in conjunction with the Hospital and Institutional Compliance Officers, present updates to health care providers and laboratory staff on a regular basis. It is mandatory that all ordering practitioners be made aware of Compliance Regulations and that they actively participate in meeting the intent of these regulations. The Department takes every incidental opportunity to educate, instruct, and enforce compliance practices.

The Department of Pathology is committed to providing comprehensive, high-quality, cost-effective pathology services to patients and staff at University Hospital and the Central New York community. This commitment is reflected through our established core values and code of ethics and addresses the Department's desire to meet the intent of the Model Compliance Guidelines and address areas for potential fraud, such as billing, marketing, and claims processing. The Department of Pathology has always attempted to be fair, honest, and responsible for its actions and will strive toward meeting the proposed requirements. The Department is committed to this plan and will work with staff, administration, and others to ensure the model does not work against those policies as established by HCFA, New York State, or Upstate Medical University.

**PATIENT CONFIDENTIALITY**

University Hospital has a zero-tolerance policy about staff looking at patient information that is unrelated to their job. Such actions may be considered a breach with termination as the MINIMUM action taken.

Any patient, whether or not they are an Upstate Medical University employee, can obtain copies of laboratory results and other medical record information by contacting their healthcare provider.

Upstate is offering patients the ability to sign up for MyChart which gives a patient access to their Medical Records. Contact the MyChart staff at 800-231-6899.
SUBMISSION OF SPECIMENS

Clinical Pathology can only process specimens that are properly labeled and received with a completely filled out requisition or appropriate electronic order (EPIC).

Specimens submitted on ice or cold packs should not be placed directly in contact with the ice, water, or pack. Protect the specimen and label by placing sample in a sealed bag that is then put on ice or a cold pack.

All labels attached to a Vacutainer and other specimen containers must be filled out completely with the patient's name, date of birth, the date and time specimen is collected. Identity of collector and collection date and time may be captured electronically (EPIC). The label must be attached to the specimen by the individual obtaining the specimen at the bedside immediately after collection. That individual will be responsible for verifying the accuracy of the information on the label and is to initial each label to indicate that this has been done. The specimen and electronically released order or appropriately filled out requisition bearing the physician's name, date, etc., should be immediately sent to Clinical Pathology. The electronic order or paper requisition must also bare the name of the person who collected the specimen.

A specimen submitted without an order will be held until it is corrected. The appropriate hospital unit will be notified as soon as possible.

An improperly labeled or unlabeled specimen will not be processed. The originating unit will be notified that a new specimen and order are required. On rare occasions an unlabeled or mislabeled specimen is considered irretrievable. In those situations the individual responsible for collecting the specimen will be asked to come to the laboratory to correctly label the specimen and complete the appropriate Pathology Specimen Identification - Correction Form, F90056. The form should only be signed by a physician, member of the Vascular Access Team, Registered Nurse, or Hospital Clinical Technician who collected the specimen. Hospital attendants, aides, or ward clerks cannot be sent to label the specimen and fill out the form. The requested testing will then be performed and reported. The report will state that the specimen was received mislabeled/unlabeled, was relabeled and will give the name of the individual who relabeled it.

Mislabeled/unlabeled specimens cannot be used in Blood Bank. A new specimen must be drawn.

Mislabeled/unlabeled specimens received by the laboratory and not corrected by the appropriate personnel cannot be processed. If there are any questions concerning this policy, please call the Clinical Pathology Resident On-call or the Attending Clinical Pathologist at extension 464-4460.

The same policy holds true for Anatomic Pathology and problems/concerns should be directed to the Anatomic Pathology Resident or Attending Pathologist at extension 464-4750.

Improper Specimens:
There are several potential basic defects in specimen collection which preclude furnishing reliable and meaningful data. A laboratory result cannot be better than the specimen obtained.
Chronic problems:

- Blood specimens that are hemolyzed due to faulty technique in drawing the blood, (excess vacuum, needle taper in vein wall, squirting of blood through small needles, forceful shaking of the tube, etc.)
- Bloods for prothrombins, CBC, etc., that clot due to faulty specimen collection techniques being used. Citrate tubes filled insufficiently for protimes, PTT, TT, etc.
- Bloods taken inappropriately, such as non-fasting, proximal to IV fluid administration, prolonged tourniquet application with resultant hemoconcentration, etc.
- Urine cultures taken incorrectly, contaminated, or not preserved properly by immediate cooling in transit to the laboratory. Urines must be delivered promptly to the laboratory for culture and/or routine microscopy. If they cannot be delivered to the laboratory, they must be refrigerated in the specimen collection station which is located on each hospital unit. Specimens for urinalysis can be stored no longer than 4 hours.
- Timed urine specimens not collected correctly, i.e., timed inaccurately, incomplete collection.
- Bloods for therapeutic drugs not collected at appropriate times.

These and other faulty techniques and oversights cause wasted resources, time, fallacious results and contribute to poor patient care and less than optimal education. The priority of Pathology is to achieve and insure superior quality. Refer to on-line policy CM P-25, Pathology Specimen Submission.
**PANIC VALUES**

Panic values represent test results that are potentially life-threatening and are immediately communicated to the patient's physician directly. If the patient's physician is unavailable, test results are immediately communicated to the charge nurse or the patient's primary nurse.

**Hematology:**

<table>
<thead>
<tr>
<th>Test</th>
<th>Critical Value</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hematocrit</td>
<td>&lt;21 or &gt;55 %</td>
<td>first result in 10 days*</td>
</tr>
<tr>
<td>Platelet Count</td>
<td>&lt;40 or &gt;999 K/µL</td>
<td>first result in 10 days*</td>
</tr>
<tr>
<td>WBC</td>
<td>&lt;2.0 or 30.0 K/µL</td>
<td>first result in 10 days*</td>
</tr>
<tr>
<td>WBC clozapine monitor</td>
<td>&lt;3.0 K/µL</td>
<td></td>
</tr>
<tr>
<td>ANC clozapine monitor</td>
<td>&lt;1.5 K/µL</td>
<td></td>
</tr>
<tr>
<td>Fibrinogen</td>
<td>&lt;100 mg/dL</td>
<td></td>
</tr>
<tr>
<td>INR</td>
<td>&gt;5</td>
<td></td>
</tr>
<tr>
<td>PTT</td>
<td>&gt;90 seconds</td>
<td></td>
</tr>
</tbody>
</table>

*No call for repeat critical values if no significant change.

**Chemistry:**

<table>
<thead>
<tr>
<th>Test</th>
<th>Critical Value</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bicarbonate</td>
<td>&lt;10 or &gt;40 mmol/L</td>
<td></td>
</tr>
<tr>
<td>Bilirubin, total</td>
<td>&gt;15.0 mg/dL</td>
<td>&lt;6 months old</td>
</tr>
<tr>
<td>Calcium</td>
<td>&lt;6.0 or &gt;13 mg/dL</td>
<td></td>
</tr>
<tr>
<td>Calcium, free</td>
<td>&lt;0.8 or &gt;1.6 mmol/L</td>
<td></td>
</tr>
<tr>
<td>Glucose</td>
<td>&lt;50 or &gt;450 mg/dL</td>
<td></td>
</tr>
<tr>
<td>HIV</td>
<td>Preliminary Positive</td>
<td></td>
</tr>
<tr>
<td>Lactate</td>
<td>&gt;3.9 mmol/L</td>
<td></td>
</tr>
<tr>
<td>Lead, blood</td>
<td>&gt;25 µg/dL</td>
<td></td>
</tr>
<tr>
<td>Magnesium</td>
<td>&lt;0.9 or &gt;5.0 mg/dL</td>
<td></td>
</tr>
<tr>
<td>Osmolality</td>
<td>&lt;250 or &gt;340 mOsm/kg</td>
<td></td>
</tr>
<tr>
<td>Phosphorus</td>
<td>&lt;1 mg/dL</td>
<td></td>
</tr>
<tr>
<td>Potassium</td>
<td>&lt;3.0 or &gt;6.0 mmol/L</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>&lt;7.2 or &gt;7.60</td>
<td></td>
</tr>
<tr>
<td>pO₂ arterial</td>
<td>&lt;50 mmHg</td>
<td></td>
</tr>
<tr>
<td>pCO₂ arterial</td>
<td>&lt;20 or &gt;65 mmHg</td>
<td></td>
</tr>
<tr>
<td>Sodium</td>
<td>&lt;120 or &gt;160 mmol/L</td>
<td></td>
</tr>
<tr>
<td>Troponin T</td>
<td>&gt;0.1 ng/mL</td>
<td>first result in 48 hours</td>
</tr>
</tbody>
</table>
Toxicology:

<table>
<thead>
<tr>
<th>Test</th>
<th>Critical Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetaminophen</td>
<td>&gt;50 µg/mL</td>
</tr>
<tr>
<td>Amikacin trough</td>
<td>&gt;10 µg/mL</td>
</tr>
<tr>
<td>Amikacin random</td>
<td>&gt;30 µg/mL</td>
</tr>
<tr>
<td>Amikacin peak</td>
<td>&gt;30 µg/mL</td>
</tr>
<tr>
<td>Carbamazepine</td>
<td>&gt;15 µg/mL</td>
</tr>
<tr>
<td>Digoxin</td>
<td>&gt;2.4 µg/mL</td>
</tr>
<tr>
<td>Ethanol</td>
<td>&gt;400 µg/mL</td>
</tr>
<tr>
<td>Gentamycin trough</td>
<td>&gt;2.0 µg/mL</td>
</tr>
<tr>
<td>Gentamycin peak</td>
<td>&gt;8.0 µg/mL</td>
</tr>
<tr>
<td>Heparin, unfractionated</td>
<td>&gt;1.1 U/mL</td>
</tr>
<tr>
<td>Heparin, LMW</td>
<td>&gt;2.0 U/mL</td>
</tr>
<tr>
<td>Lithium</td>
<td>&gt;1.8 mmol/L</td>
</tr>
<tr>
<td>Phenobarbital</td>
<td>&gt;60 µg/mL</td>
</tr>
<tr>
<td>Phenytoin</td>
<td>&gt;30 µg/mL</td>
</tr>
<tr>
<td>Salicylate</td>
<td>&gt;30 mg/dL</td>
</tr>
<tr>
<td>Tacrolimus</td>
<td>&gt;15.0 mg/mL</td>
</tr>
<tr>
<td>Theophylline</td>
<td>&gt;30 µg/mL</td>
</tr>
<tr>
<td>Tobramycin trough</td>
<td>&gt;2.0 µg/mL</td>
</tr>
<tr>
<td>Tobramycin peak</td>
<td>&gt;10.0 µg/mL</td>
</tr>
<tr>
<td>Valproic Acid</td>
<td>&gt;120 µg/mL</td>
</tr>
<tr>
<td>Vancomycin trough</td>
<td>&gt;20.0 µg/mL</td>
</tr>
<tr>
<td>Vancomycin random</td>
<td>&gt;50 µg/mL</td>
</tr>
<tr>
<td>Vancomycin peak</td>
<td>&gt;60 µg/mL</td>
</tr>
</tbody>
</table>

Cytology:

Initial diagnosis of a malignancy.

Microbiology:

NOTE: Sterile samples are defined here as normally sterile body fluids (except urine) and surgical tissues of internal organs.

<table>
<thead>
<tr>
<th>Positive direct smear or PCR result from sterile samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive culture or smear from PCR-negative sterile samples</td>
</tr>
<tr>
<td>Positive blood culture - initial positive result only</td>
</tr>
<tr>
<td>Initial positive malaria smear</td>
</tr>
<tr>
<td>Initial positive acid-fast smear</td>
</tr>
<tr>
<td>Initial detection of <em>Mycobacterium tuberculosis</em> complex</td>
</tr>
<tr>
<td>Detection of <em>Bordetella pertussis</em></td>
</tr>
<tr>
<td>Stool positive for <em>E. coli</em> O157:H7 or shiga-toxin</td>
</tr>
<tr>
<td>Detection of unusual or particularly virulent organisms</td>
</tr>
<tr>
<td>Amended reports with potential clinical impact</td>
</tr>
</tbody>
</table>
Due to the nature of Point of Care Testing, the results, including panic values, are immediately available to the caregiver/provider. The caregiver determines the validity of the results and will repeat the test, and/or act on the results according to department protocol. Panic values from Point of Care Testing are not covered by the laboratory panic value policy.
Obtaining Laboratory Results:
1. Before calling the laboratory, check in the EPIC EMR for results. All results on inpatients and outpatients are transmitted from the Laboratory Information System (LIS) to EPIC as soon as they are completed. If results are not in EPIC, the test has not been completed.
2. When requesting reports in Clinical Pathology:
   a. State who you are. Appropriate identification is necessary.
   b. Give full name of the patient and hospital number.
   c. Identify the patient as in-patient or out-patient.
   d. State test results you are interested in.
   e. Indicate date the test was ordered or specimen submitted.
This information is necessary in order for us to look up results and respond promptly to your request.

Laboratory Report:
1. Results are available for viewing in the Lifetime Clinical Record (LCR) or EPIC EMR.
2. The Laboratory Information System will remain operational for all functions 24 hour/day.

Laboratory Reports Description:
1. Client Report - Printed on Green Paper:
   • Contains new activity since last client report.
   • This report is PERMANENT and must never be removed from the medical record.
2. Cumulative Report, Chart Copy - Printed on Blue Paper:
   • Blue bar for recurring outpatients.
   • Contains all laboratory result activity since admission or since beginning of outpatient episode, up to 12 pages.
   • Replaces previous chart copy report.
3. Cumulative Report, Final Copy - Printed on Pink Paper:
   • Pink bar for outpatients.
   • Sent to location of patient's medical record.
   • This report is PERMANENT and must never be removed from the medical record.

The system will permit statistical retrieval of patient data, development of computer assisted diagnosis for Clinical Pathology education and research, improved quality control, effective use of our staff and more prompt reporting of accurate, legible data.
Please let us know if we can assist you in any way to better utilize our resources.
**Confirmation Request:**

The final level of quality control rests with the physician at the bedside. Hence, if the value of the measurement does not fit the clinical picture, please call this to our attention in the following manner:

- Collect another specimen and send it with a request form marked "Confirmation Request" to the Clinical Pathology suite.

Such requests will be performed on an emergency basis if necessary and analysis will be performed on the new specimen submitted, and if available and appropriate, on the original specimen. The results of both analyzes can be telephoned to the physician. No charge is made to the patient for this confirmation request service.

**REQUESTS FOR CONFIRMATION SERVICE MUST BE MADE WITHIN 24 HOURS OF THE ORIGINAL MEASUREMENT IN QUESTION.**
ANATOMIC PATHOLOGY

Location.................................................................6 South University Hospital
AP Manager.........................................................Kathleen M. Sayles - Room UH6808............ 464-7147
                                      Cell.................................................... 436-5008
Administrative Assistant..................Susan Jakubowski - Room UH6805................. 464-7125
Receptionist/Front Desk.........................Room UH6803.......................... 464-4750
                                      (Hours: 0800 to 1700, Monday through Friday)
Autopsy...........................................................Donald Jaeger - Room UH 6819........... 464-5123
                                      Pager.................................................. 467-2271
Cytopathology.................................................Cindy Steele - Room UH6723.............. 464-4270
Electron Microscopy........................................Joyce Qi - Room WH2157............... 464-6844
Histology..........................................................Julie Lippa - Room UH6816............. 464-7157
Molecular Pathology.................................Jamie Tull - Room UH6818............... 464-7134
Renal Pathology..................................................Room WH2141................. 464-4750

Hours of Operation:
Routine surgical pathology services and cytopathology services are available from 0800
to 1700 (8:00 a.m. - 5:00 p.m.), Monday through Friday. Contact on-call staff by pager after
hours. Call operator for pager numbers.

Turn Around Time:
Small biopsies (less than 3 mm) received before 1200 (12:00 p.m.) are routinely
microwave processed for same day results. Please notify Pathology if a final report is desired the
same day. Other small biopsies or those received after 1200 (12:00 p.m.) require overnight
processing and are reported the following weekday. Special requests are to be directed to the AP
Front Office (464-4750).

Specimen Submission:
All specimens must be accompanied by a Surgical Pathology or Cytopathology
Requisition Form (Form #41610, 40349, 40351, F81121). Regulatory requirements include
complete patient history, date of service, ordering clinician and his/her signature and name of
person who collected the specimen. Patient demographic information including the patient's full
name, date of birth, and/or medical record number are required. Specimens from outside
locations (other than SUNY Upstate) also require complete patient demographic information
including all applicable Diagnosis Codes and patient billing information. If testing does not
meet guidelines set by Medicare for medical necessity, the ABN (Advanced Beneficiary Notice)
must be signed by the patient.

Specimens not available for the final pickup at 1600 (4:00 p.m.) (5E Operating Room)
should be placed in formalin and delivered directly to UH 6706, Anatomic Pathology, if before
1700 (5:00 p.m.) or dropped off in UH 3702, Clinical Pathology, if after 1700 (5:00 p.m.).
Specimens taken between 1700 (5:00 p.m.) and 1830 (6:30 p.m.) for which a diagnosis is
desired the next day, can be included in the overnight processor by paging the Pathology
Resident On-call.
Specimens from patient floors, clinics or off-site that are not directly delivered to UH 6706, Anatomic Pathology, before 1700 (5:00 p.m.) can be delivered to UH 3702, 3rd floor Clinical Pathology, in formalin.

**After 1700 (5:00 p.m.) and before 1830 (6:30 p.m.), all specimens for which a diagnosis is desired the next day, please page the Pathology Resident On-call.**

For further information regarding specimen requirements, collection and handling, and availability of service, please contact the Gross Room at extension 464-7121 or the resident on-call or staff on-call, if evening or weekend.

<table>
<thead>
<tr>
<th>TEST</th>
<th>SUBMISSION</th>
<th>HANDLING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frozen Section</td>
<td>FRESH and STAT with Intraoperative Consultation Requisition</td>
<td>Immediate transport to UH6706 by HA</td>
</tr>
<tr>
<td>Lymph Node Protocol</td>
<td>FRESH and STAT</td>
<td>Immediate transport to UH6706 by HA</td>
</tr>
<tr>
<td>Muscle Biopsy</td>
<td>FRESH and STAT</td>
<td>Immediate transport to UH6706 by HA</td>
</tr>
<tr>
<td>Nerve Biopsy</td>
<td>FRESH and STAT</td>
<td>Immediate transport to UH6706 by HA</td>
</tr>
<tr>
<td>Microbiology</td>
<td>STERILE</td>
<td>Transport to Microbiology on 3rd floor</td>
</tr>
<tr>
<td>Routine Surgical</td>
<td>FORMALIN</td>
<td>Transport to UH6706 before 5 p.m.</td>
</tr>
<tr>
<td>ONCOTECH</td>
<td>FRESH and STAT</td>
<td>Immediate transport to UH6706 by HA</td>
</tr>
</tbody>
</table>

All tissue removed before 1700 (5:00 p.m.) should be delivered directly to UH6706. Do not transport to UH 3rd floor before that time. Any questions, page the On-call Pathology Resident.

**Mislabeled or Unlabeled Specimens:**

Please refer to Submission of Specimens on Page 15 of this manual.

**Specimen Handling:**

Special handling procedures are necessary for certain tissue studies:

**Frozen Section:**

- *SUNY Upstate University Hospital Operating Room:*
  - **Scheduled**
    - The operating room staff will indicate on the operating room schedule which cases will require frozen section or special handling.
  - **Unscheduled:**
    - During normal operating hours, the staff pathologist may be contacted for an unscheduled frozen section through the Anatomic Pathology Front Desk at extension 464-4750.
    - After hours, nights and weekends the AP (Anatomic Pathology) Resident On-call may be contacted through the hospital operator or through the OR Central Desk.
• **Harrison Center Outpatient Surgery:**
  - **Scheduled and Unscheduled**
    - The operating room staff at HCOS will notify UPL at 464-4820 of all frozen sections.
  - **All Areas:**
    - **Decalcification**
      - Certain specimens may require decalcification which adds 24-48 hours or more to processing time.
    - **Special Stains**
      - Special histochemical and immunohistochemical stains are appropriate in the evaluation of certain types of biopsies or when specific situations or questions are present.
    - **Bone Marrow Biopsy**
      - Call the Clinical Pathology Laboratory at extension 464-6842 or 464-4460.
    - **Muscle Biopsy**
      - Submitted fresh (not in formalin) on saline moistened gauze for specialized muscle enzyme studies and/or electron microscopy.
      - Pathology (extension 464-4750) **MUST** be notified within 24 hours in advance for optimal handling/processing of specimens.
    - **Nerve Biopsy**
      - Submitted fresh (not in formalin) on saline moistened gauze.
      - Pathology must be notified within 24 hours in advance (464-4750) for proper handling and processing of specimen.
      - For more details on proper handling call Pathology at 464-4750.
    - **Kidney Biopsy**
      - Biopsy cores should be immediately placed in a vial of Zamboni's fixative for light and electron microscopic examination and in a vial of Michel's transport solution for immunofluorescent microscopy.
      - These materials are available in the Pathology Department Frozen Specimen/Gross Room 6706 UH, in the Specimen Room in the 5th Floor Operating Room Suite and from the Electron Microscopy Laboratory Room 2157 in Weiskotten Hall, extension 464-6844.
      - Please request these materials well in advance if you need to have them sent to you.
      - A properly completed Surgical Pathology Requisition Form 41610 must accompany each specimen when it is delivered to the Electron Microscopy Laboratory Room 2157 in Weiskotten Hall.
        - It must include the reason EM was requested (patient history/diagnostic information), identification of the patient as having either In or Out-patient status and date of procedure.
        - For further information, please call one of the following:
          - Dr. Arthur Tatum, 464-6781 (office), 441-2210 (pager), or 315-317-8172 (cell)
Lymph Node Protocol
- Specimens of potential lymphoreticular diseases that may require immunophenotyping to ensure accurate diagnostic interpretation and appropriate treatment are to be submitted to Anatomic Pathology, UH 6706, FRESH and STAT.
- Be sure to use the Intra-operative Consultation Requisition F86106 and check off Lymph Node Protocol.
- Any further questions, contact 464-7121 or 464-4750 or after hours the AP Resident On-call.

Dermatopathology Biopsy
- When only light microscopic diagnosis is required, submit the biopsy in 10% formalin labeled with the patient's name along with a completed Dermatopathology Requisition Form F86340.
- If immunofluorescence microscopy is desired, part of the specimen should also be placed in Michel's transport fluid in a vial labeled with the patient's name.
- The solutions may be obtained from Histology Laboratory (Room 6816 UH).

Electron Microscopy (EM)
- Diagnostic Electron Microscopy Service is available from 0800 to 1600, Monday through Friday.
- All specimens must be accompanied by a properly completed Surgical Pathology Requisition Form 41610 with the Electron Microscopy box checked under the request for special studies section, and also the reason for that request, as well as patient history, date of procedure, and identification of patient as having either In or Out-patient status.
- Results are available in one week.
- For further information, contact the EM Laboratory at extension 464-6844 or the Anatomic Pathology Resident On-call.

Tumor Biopsy
- Fresh tissue should be cut into 1 mm thick slices with a clean, new razor blade and placed immediately in a vial of 2.5% buffered glutaraldehyde fixative labeled with the patient's name and hospital number.
- Fixative is available in the EM Laboratory (Room 2157 Weiskotten Hall), the Pathology Department Frozen Section/Gross Room (Room 6706 UH) or the Specimen Room in the 5th floor Operating Room Suite.
- Tissue in fixative can be kept at room temperature for transport, although refrigeration is recommended for overnight storage.
- Specimens, accompanied by properly completed Surgical Pathology Requisition Form 41610 (including patient history/diagnostic information, date of procedure and with the EM box checked under Special Requests), should be delivered to the Pathology Department EM Laboratory Room 2157 in Weiskotten Hall.

Cilia Biopsy
- The EM Laboratory should be notified at least 24 hours prior to the biopsy so that the fixative (2.5% buffered glutaraldehyde) can be made available.
Refrigerate fixative for overnight storage, but use at room temperature.

- Excised tissue blocks containing nasal epithelium or epithelium which has been removed by brushing (with tissue clinging to brush bristles) or scrapings are all suitable specimens.
- Tissue, including brush if that method was used, should be placed into fixative immediately after removal.
- Specimens should be accompanied by a properly completed Surgical Pathology Requisition Form 41610 (including patient history/diagnostic information and date of procedure) when delivered to the Pathology Department EM Laboratory Room 2157 in Weiskotten Hall.

**Autopsy Service**

- The Autopsy Service provides consultative medical services to hospital physicians who refer their patients to us, as well as to members of the patient's family.
- Rules and regulations and hospital policy require that the attending physician and/or resident request permission from the appropriate next of kin for an autopsy for all hospital deaths. See University Hospital Administrative Policy A-11 for further details.
- The Technical Director of the Autopsy Service is Mr. Donald Jaeger.
  - During the hours the Pathology Office is open (0800 to 1700, Monday through Friday), please call Mr. Jaeger at extension 464-5123.
  - At other times, please call Mr. Jaeger's beeper at 467-2271 or the Anatomic Pathology Resident On-call.
- Scheduling is done at the mutual convenience of the referring physician, pathologists and the funeral director involved.
- As a general rule, autopsies will be performed the same day if requested before 1600 (4:00 p.m.), or the next morning if after 1600 (4:00 p.m.). Delay of the autopsy often causes undue duress on the family.

**Autopsies will be completed within 60 days.**

**Molecular Pathology**

- Information and requisitions may be located at the following link: [http://www.upstate.edu/pathology/healthcare/anatomic_path/molecular_diagnostics.php](http://www.upstate.edu/pathology/healthcare/anatomic_path/molecular_diagnostics.php)

**Surgical and Cytopathology Forms:**

- Surgical Pathology Requisition - **41610**
- In and Outpatient Cytopathology Pap Smear Requisition - **40349**
- Cytopathology Non-Gynecologic Requisition - **40351**
- Fine Needle Aspiration Biopsy Consultation - **F81121**
- FNA Cytopathology Consultation Request for Pathologist On-Site Interpretation - **F88577**
- Molecular Diagnostic Requisition Form
- Pathology Dermatopathology Requisition OP - **F86340**
- Pathology Intra-Operative Consultation - **F86106**
CLINICAL PATHOLOGY

Emergency (STAT) Services

Emergency requests are processed as follows:

- **"CODE" Orders:**
  - For patients in extremis ("codes", diabetic ketoacidosis, etc.) the word "CODE" should be written on the requisition and circled.
  - Call Clinical Pathology (464-4460) to alert them of the "CODE" sample.
  - Always inform laboratory staff of "CODE" specimens being delivered.
    - This will denote specimen should be done before other stats.
    - This should only be done when absolutely necessary as it is disruptive to other emergency requests.

- **STAT Orders:**
  - Requests for emergency analyses are performed promptly.
  - Results are available to the requesting unit either by stat printer or in EPIC.
  - Remember that an emergency order pull technologists out of the regular assignment and therefore may delay other results.
  - Some special procedures require prior approval from the Clinical Pathology Resident On-call.

Available Emergency Clinical Pathology Procedures

Performance of emergency procedures other than those listed below require prior approval of the Director of the Clinical Pathology section concerned. We invite consultation at any time concerning these and other complex problems.

**During the evening and night shifts (1430 - 0700 hours [2:30 p.m. - 7:00 a.m.]), on weekends and holidays there is reduced staffing in Clinical Pathology. Please take this into consideration when ordering emergency services.**

**Blood Bank:**

1. Crossmatch
   - Leukocyte Reduced Red Cells
   - Frozen Washed Red Blood Cells *
   - Washed Red Blood Cells *
2. Platelet Concentrates *
3. Leukophoresis *▲
4. HLA matched plateletpheresis *
5. Leukoreduced Platelet Pheresis *
6. Plasma (FFP, Thawed Plasma)
7. Cryoprecipitate
8. Transfusion Reaction Evaluation
9. Rh Immune Globulin (Rheogram) Evaluation
10. ABO, Rh, Direct and Indirect Coombs
11. Type and Screen
   - Initial requests require approval by Clinical Pathology Resident.
   *All requests for these components should be made well in advance.
Some components must be ordered from Red Cross and require varying periods of time for preparation and shipment.

**HLA**
- HLA typing and crossmatching are available as emergency services for the Organ Transplant Service.
- Requests from other services for emergency services must be cleared by the Clinical Pathologist On-call.
- Routine requests are processed Monday through Friday for all services.

**Chemistry**

<table>
<thead>
<tr>
<th>No.</th>
<th>Test</th>
<th>No.</th>
<th>Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Acetaminophen</td>
<td>22.</td>
<td>Glucose, blood and CSF</td>
</tr>
<tr>
<td>2.</td>
<td>Albumin</td>
<td>23.</td>
<td>HCG, serum (pregnancy test)</td>
</tr>
<tr>
<td>3.</td>
<td>Alcohol</td>
<td>24.</td>
<td>Iron, total</td>
</tr>
<tr>
<td>4.</td>
<td>ALT (SGPT)</td>
<td>25.</td>
<td>Lactic Acid</td>
</tr>
<tr>
<td>5.</td>
<td>Amikacin</td>
<td>26.</td>
<td>Lactic Dehydrogenase (LD)</td>
</tr>
<tr>
<td>6.</td>
<td>Ammonia</td>
<td>27.</td>
<td>Lipase</td>
</tr>
<tr>
<td>7.</td>
<td>Amylase</td>
<td>28.</td>
<td>Lithium</td>
</tr>
<tr>
<td>8.</td>
<td>AST (SGOT)</td>
<td>29.</td>
<td>Magnesium</td>
</tr>
<tr>
<td>10.</td>
<td>Bilirubin, total and conjugated</td>
<td>31.</td>
<td>Phenobar</td>
</tr>
<tr>
<td>11.</td>
<td>Blood gases</td>
<td>32.</td>
<td>Phenytoin (Dilantin)</td>
</tr>
<tr>
<td>12.</td>
<td>BUN</td>
<td>33.</td>
<td>Phosphatase, alkaline</td>
</tr>
<tr>
<td>13.</td>
<td>Calcium, total and ionized</td>
<td>34.</td>
<td>Phosphorus</td>
</tr>
<tr>
<td>14.</td>
<td>Carbamazepine (Tegretol)</td>
<td>35.</td>
<td>Pro-BNP</td>
</tr>
<tr>
<td>15.</td>
<td>Carboxyhemoglobin</td>
<td>36.</td>
<td>Protein, total and CSF</td>
</tr>
<tr>
<td>16.</td>
<td>CKMB</td>
<td>37.</td>
<td>Salicylate</td>
</tr>
<tr>
<td>17.</td>
<td>Creatine phosphokinase (CK)</td>
<td>38.</td>
<td>Theophylline</td>
</tr>
<tr>
<td>18.</td>
<td>Creatinine</td>
<td>39.</td>
<td>Tobramycin</td>
</tr>
<tr>
<td>19.</td>
<td>Digoxin</td>
<td>40.</td>
<td>Troponin</td>
</tr>
<tr>
<td>20.</td>
<td>Electrolytes (Na, K, Cl, CO₂)</td>
<td>41.</td>
<td>Uric Acid</td>
</tr>
<tr>
<td>21.</td>
<td>Gamma glutamyl transferase (GGT)</td>
<td>42.</td>
<td>Valproic Acid (Depakene)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>43.</td>
<td>Vancomycin</td>
</tr>
</tbody>
</table>

Emergency requests other than those stated above must be cleared by the Clinical Pathologist On-call.

**Microscopy**

<table>
<thead>
<tr>
<th>No.</th>
<th>Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Fluid Cell Count</td>
</tr>
<tr>
<td>2.</td>
<td>Osmolality</td>
</tr>
<tr>
<td>3.</td>
<td>Urinalysis</td>
</tr>
<tr>
<td>4.</td>
<td>Urine Creatinine</td>
</tr>
<tr>
<td>5.</td>
<td>Urine Myoglobin</td>
</tr>
<tr>
<td>6.</td>
<td>Urine Pregnancy (HCG) Test</td>
</tr>
<tr>
<td>7.</td>
<td>Urine Sodium and Potassium</td>
</tr>
</tbody>
</table>
Hematology
1. Hematocrit
2. White Cell Count (WBC)
3. Differential Count
   a. You must call to notify us that a diff is STAT (including platelet estimate and RBC morphology).
4. CBC (WBC, RBC, Hgb, Hct, MCV, MCH, MCHC, Plat)
5. Prothrombin Time (PT)
6. Partial Thromboplastin Time (PTT)
7. Sed Rate (ESR)
8. Thrombin Time (TT)
9. Platelet Count
10. Fibrinogen
11. D-Dimer

Immunology
1. Mono Screen
2. Cryptococcal Antigen (CSF) *
   *Approval by Clinical Pathologist or Resident On-call required.

Microbiology/Virology

<table>
<thead>
<tr>
<th>TEST</th>
<th>TEST OFFERED</th>
<th>STAT APPROVALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pneumocystis DFA</td>
<td>5 days/week - day shift</td>
<td>BALs only if received by 2:00 p.m.</td>
</tr>
<tr>
<td></td>
<td>7 days/week</td>
<td></td>
</tr>
<tr>
<td></td>
<td>BALs - day shift</td>
<td></td>
</tr>
<tr>
<td>AFB smear</td>
<td>7 days/week (same day result if received by 7:00 a.m.)</td>
<td>No STATs</td>
</tr>
<tr>
<td>Gram stain</td>
<td>7 days/week - all shifts</td>
<td>NA</td>
</tr>
<tr>
<td>KOH prep</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wet prep</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malaria smears</td>
<td>7 days/week - all shifts</td>
<td>NA</td>
</tr>
<tr>
<td>Legionella urine antigen</td>
<td>7 days/week - day shift (until 2:30 p.m.)</td>
<td>No STATs</td>
</tr>
<tr>
<td>Cryptococcal antigen</td>
<td>7 days/week (7:00 a.m. - 10:30 p.m.)</td>
<td>NA</td>
</tr>
</tbody>
</table>
Hematopathology Consultation Service (Phone 464-6770)

In order to ensure proper specimen handling, all specimens should be received no later than 1530 (3:30 p.m.).

The following types of specimens can be utilized for immunophenotyping:

- Heparinized peripheral blood or bone marrow
- Heparinized body fluids
- Blood or bone marrow smears/touch imprints (must be less than 7 days old)
- Cytocentrifuge preparations (must be less than 7 days old)
- Fresh or frozen tissue samples
- Paraffin embedded tissue samples

Antibody panels vary with specimen type.

When ordering tests to be performed in this laboratory, the following is essential:

- A Hematopathology Requisition Form F91021 must be filled out, especially date of birth (or age), billing information, Surgical Pathology/Bone Marrow number, the type of fixative used (when appropriate), and a brief clinical history.
- Specimens on outpatients not from the Upstate Medical University should also be accompanied by a "Non-body Admission Record" (can be obtained from Clinical Pathology).

Prior notification of 24 hours for surgical specimens to be submitted to the laboratory helps eliminate confusion and expedites the test results.

Referral specimens/slides to this laboratory from outside the Upstate Medical University should be accompanied by:

- Bone marrow report (if available), bone marrow slide, a copy of a current CBC with platelet count, when bone marrow samples are submitted.
- A copy of a current CBC/platelet count and peripheral blood smear if blood is submitted. Alternatively, a blood sample collected in EDTA may be sent instead.
- A Pathology Report and H&E stained slide(s) if a surgical specimen is submitted.

Surgical specimens destined for cell markers should be received fresh, on a sterile, saline soaked gauze pad, in a container labeled with the patient's name, hospital number, date and type of specimen. The Hematopathology Consultation Service should be notified immediately (464-6770). In addition, a Hematopathology Requisition Form F91021 should be completed (available on-line or in AP and CP). Tissue specimens can be snap frozen with liquid nitrogen and stored at -20°C or less for an indefinite period of time (can be kept in -70°C freezer), or stored at 4°C in culture media for 24 hours.

Likewise, peripheral blood, bone marrow, and other body fluids can be added to 50 mL culture media tubes (diluted with sterile media at least 1:2 or greater) and stored at room temperature for up to 48 hours.
**Outpatient Phlebotomy Service**

When patients need to have blood drawn at a future date, you can refer them to one of our eight (8) draw sites listed below:

<table>
<thead>
<tr>
<th>Draw Site</th>
<th>Operating Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>University Hospital</td>
<td>Monday - Friday 0730-1900 (7:30 a.m. - 7:00 p.m.) and Saturday 0800-1300 (8:00 a.m. - 1:00 p.m.)</td>
</tr>
<tr>
<td>UPL Laboratory and PSC</td>
<td>Monday - Friday 0830-1700 (8:30 a.m. - 5:00 p.m.)</td>
</tr>
<tr>
<td>UHCC</td>
<td>Monday - Friday 0800-1800 (8:00 a.m. - 6:00 p.m.)</td>
</tr>
<tr>
<td>Madison Irving Medical Center</td>
<td>Monday - Friday 0830-1730 (8:30 a.m. - 5:30 p.m.) and Saturday 1000-1300 (10:00 a.m. - 1:00 p.m.)</td>
</tr>
<tr>
<td>Hill Medical Center</td>
<td>Monday - Friday 0830-1700 (8:30 a.m. - 5:00 p.m.)</td>
</tr>
<tr>
<td>Crouse Physician's Office Building</td>
<td>Monday - Friday 0830-1700 (8:30 a.m. - 5:00 p.m.)</td>
</tr>
<tr>
<td>Upstate Bone and Joint Center</td>
<td>Monday - Friday 0830-1700 (8:30 a.m. - 5:00 p.m.)</td>
</tr>
<tr>
<td>Baldwinsville-Belgium Meadows</td>
<td>Monday - Friday 0830-1700 (8:30 a.m. - 5:00 p.m.)</td>
</tr>
</tbody>
</table>

An order can be set up in EPIC, or by giving the patient a written lab order. Written orders, whether Upstate University Hospital downtime requisitions or prescription forms, must include the following:
- Patient's name and date of birth
- Ordering physician's full name and location
- List of tests to be performed
- Written diagnosis or diagnosis code

For more information, please see our website at: [http://www.upstate.edu/pathology/healthcare/patient_info.php](http://www.upstate.edu/pathology/healthcare/patient_info.php)

Limited outpatient phlebotomy service is available during hours not listed in the table above on weekends and holidays (day shift only). When the Outpatient Phlebotomy is closed, the patient should report to Patient Access Services to be registered. Additional phlebotomy is available from 1300 to 1430 (1:00 p.m. to 2:30 p.m.) on Saturday and Sunday on the third floor of the hospital in Clinical Pathology. In addition, Outpatient Phlebotomy and Specimen Processing are offered to outpatients at UHCC between the hours of 0800 - 1800 (8:00 a.m. - 6:00 p.m.) on Monday through Friday.
**Pending Discharge Testing**

Clinical pathology has established a procedure for ordering laboratory work on patients who are intended to be discharged by 1130 (11:30 a.m.) that day. The following protocol should be employed for such patients.

1. When placing orders in the Hospital Information System, use priority code "P" for Pending Discharge. Upon receipt of the order through the interface, the Laboratory Information System (LIS) will print this priority code on all labels and worksheets notifying laboratory staff of the morning pending discharge on this patient. The pending discharge notification will also appear on all laboratory reports.

2. Procedures for such patients will be performed on a priority basis and will be treated, as much as possible as a STAT. Results will be expeditiously entered into the LIS.
TRANSFUSION MEDICINE

The Transfusion Medicine Service consists of the Blood Bank, Histocompatibility Laboratory, Stem Cell Laboratory, and Hemapheresis Service. The laboratories are located as follows:

<table>
<thead>
<tr>
<th>SECTION</th>
<th>LOCATION</th>
<th>PHONE</th>
<th>SUPERVISOR/DIRECTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Director</td>
<td>3809A</td>
<td>464-6754</td>
<td>Matthew Elkins, M.D., PhD.</td>
</tr>
<tr>
<td>Assistant Director</td>
<td>4750</td>
<td>464-6775</td>
<td>Zhanna Spektor, M.D.</td>
</tr>
<tr>
<td>Blood Bank Supervisor</td>
<td>3713</td>
<td>464-6701</td>
<td>Linda DeHority</td>
</tr>
<tr>
<td>Histocompatibility Supervisor</td>
<td>4724</td>
<td>464-4775</td>
<td>Charlene Hubbell</td>
</tr>
<tr>
<td>Stem Cell Laboratory Supervisor</td>
<td>4725</td>
<td>464-4775</td>
<td>Charlene Hubbell</td>
</tr>
<tr>
<td>Hemapheresis Service</td>
<td>8124</td>
<td>464-9024</td>
<td>Kelly Dollan, RN</td>
</tr>
</tbody>
</table>

Blood Bank/Transfusion Medicine Policy

Blood Transfusion Consent

Patients requiring non-emergent transfusion of blood or blood components must have a current, signed Consent to Transfuse form (41485) in the medical record. Hospital Administration Policy Manual contains current guidelines on how frequently consent is required. For surgical procedures, a Consent to Transfuse form should be obtained in all procedures requiring either a Type and Screen or Type and Crossmatch. Patient education material on blood transfusion is available on the Upstate University Hospital Website under Health Information for You, Patient and Family Education - Blood Transfusion.

Patient Refusing Blood Transfusion

A patient refusing blood transfusion against the advice of their physician must sign a Refusal of Blood Transfusion at the bottom of the Consent to Transfuse Form #41485.

Specimens for Blood Bank Procedures and Tests

Specimens for Blood Bank testing must be labeled with the patient's full name, medical record number and the initials of the phlebotomist and have a corresponding order entered in EPIC. For locations not on EPIC, a completed Blood Component Order form (on-line) must be submitted with the specimen. The specimen label must include the date and time the sample was drawn if this information is not entered in the collection information field of the EPIC generated order. UNLABELED OR MISLABELED SPECIMENS WILL NOT BE ACCEPTED. The Blood Bank does not recognize "one of a kind" specimens. A new order must be entered into EPIC or a Blood Component Order form (on-line) filled out if not EPIC and a new specimen MUST be drawn and sent if a mislabeled or unlabeled specimen is received.

Ordering Blood and Blood Products

An appropriate EPIC generated Blood Product Prepare order or Blood Component Order form, if not on EPIC, is required for all blood product orders. The order must contain the patient's full name, medical record number, date of birth, the type of product ordered, the number of units ordered and the clinical justification or rationale for transfusion. The order must be signed by the ordering physician. In an emergency, the form may be signed by a nurse,
indicating the ordering physician. The Blood Bank should be called in advance for orders of fresh frozen plasma, cryoprecipitate, platelets, or special blood products (see Blood Components, Special Blood Products).

**Picking Up Blood and Blood Components**

The Blood Bank dispensary area is located on the 3rd floor of Upstate University Hospital, room 3713. The appropriate EPIC generated Blood Product Prepare Order or Blood Component Order form, if not on EPIC, with the patient's full name, medical record number, date of birth, and specific product requested is necessary at the time of pickup to confirm the ordering information with the product to be dispensed. Other forms are not acceptable for picking up blood products.

**Blood Delivery via Pneumatic Tube**

The pneumatic tube system may be used to transport blood and blood products to approved nursing units that have direct access to a tube station. A Blood Product Delivery Request Form (F90081) must be completed and faxed with a copy of the appropriate EPIC generated Blood Product Prepare Order directly to the Blood Bank (fax 4-6707) at the time the transfusion is ready to be initiated. Pneumatic tube delivery will NOT be used for situations requiring large volumes of blood products in a short period of time.

**Returning Blood and Blood Components**

Unopened units may be returned to the Blood Bank within 30 minutes of issue. If unopened or over 30 minutes, the unit cannot be reissued to the patient and must be discarded. Platelets can be out longer than 30 minutes and still be acceptable for return.

**Monitored Refrigerators**

Blood may only be stored in monitored refrigerators located in the Emergency Department, Operating Room, and Cardiopulmonary Surgical Intensive Care Unit. **BLOOD MAY NOT BE PLACED IN UNMONITORED REFRIGERATORS ON NURSING UNITS.** Storage of blood in unmonitored refrigerators can result in bacterial contamination, freezing or hemolysis.

**Blood for Emergency Transfusion**

A sample for a Type and Crossmatch should be immediately drawn and sent to the Blood Bank for ABO/Rh typing. Uncrossmatched, ABO/Rh group-specific blood can be available within 10 minutes of receiving a blood specimen. Release of uncrossmatched blood requires a signed release statement by the ordering physician. Compatibility testing will be completed after release of blood.

In extreme situations, uncrossmatched group O, Rh(D) negative red cell units may be released **pending** ABO/Rh typing. Uncrossmatched, group O, Rh negative red cells require a signed release statement by the ordering physician. It is imperative that a sample for Type and Crossmatch be sent as soon as possible to the Blood Bank since transfusion of group O, Rh negative red cells may interfere with ABO/Rh typing.

In acute emergencies, the supply of Rh negative blood may become exhausted. It may be necessary to transfuse Rh positive blood to an Rh negative patient. The decision to switch from
Rh negative to Rh positive blood will be determined by the Transfusion Medicine Attending based on regional availability of Rh negative blood and clinical information.

**Release of Platelet Products Not Tested for Bacterial Contamination**

Platelet products must be tested for possible bacterial contamination. Platelepheresis products and pooled platelet products received from Red Cross are tested by the Red Cross prior to their release. Random donor platelet concentrates must be tested on site by the Blood Bank prior to releasing them for transfusion. If the time it takes to complete testing will compromise patient care, then products may be released prior to testing. In these situations the physician will sign a release indicating the nature of the emergency.

** Massive Transfusion**

A massive transfusion occurs when a patient has bled more than one blood volume or a blood loss of approximately 5 liters in 24 hours (average 70 kg adult). Most cases of massive transfusion are in the Operating Room, Emergency Room or Intensive Care Unit setting. The Blood Bank will automatically contact the Pathology Resident On-call or any adult patient requiring >10 units of red cells or a child requiring >5 units of red cells within the last 24 hours. The Pathologist on-call will review recent laboratory test results (PT, PTT, fibrinogen, TT, platelet count) and the total number of blood products dispensed and transfused. If the patient is at risk for or shows evidence of a dilutional coagulopathy, the Pathologist On-call will contact the clinician regarding additional blood product support and laboratory monitoring. A Massive Transfusion Protocol has been established specifically for Downtown Campus. Please refer to Clinical Manual Procedure [CM T-25](#) for specific details.

**Ordering Guidelines for Elective Surgery**

Guidelines for ordering blood for elective surgery have been established (see Table: Guidelines for Ordering Blood for Elective Surgery on 37-40). Orders in excess of the guidelines will be referred to the Transfusion Medicine Resident or the Clinical Pathology Resident On-call. The resident will contact the ordering physician for additional information.

In general, a type and screen is appropriate when the likelihood of blood transfusion is less than 10%. If transfusion is subsequently required, a type and screen can be quickly converted to a type and crossmatch.

If a patient has a negative antibody screen and blood is requested, crossmatch compatible blood will usually be available within 15 to 20 minutes. If the antibody screen is positive, it will take longer to provide crossmatch compatible blood. For procedures requiring a type and screen, 2 units of antigen negative blood are found and held for the patient on the day of surgery. These units will be available in 45 to 60 minutes. Additional units will take longer to obtain. The time needed to find additional units varies depending on the antibody specificity and the units may not be available during the immediate need.

**Transfusion Reaction Evaluation**

Suspected transfusion reactions should be reported to the Blood Bank. Please see Immunohematology: Transfusion Reaction Evaluation for detailed information regarding the necessary specimens. An allergic reaction in which the only signs/symptoms are hives or urticaria, which responds to Benadryl, may be assessed clinically and infusion resumed within 15
minutes. A transfusion reaction workup does not need to be ordered in this situation. All other suspected reactions must be worked up.

**Hemapheresis Service**

Therapeutic Hemapheresis is provided by the Hematology/Oncology and Transfusion Medicine Services. Normal working hours for Hemapheresis are Monday through Friday, 7:00 a.m. to 4:00 p.m. Therapeutic Hemapheresis is also available 24 hours, 7 days a week, for medical emergencies. All initial requests for Therapeutic Hemapheresis should be directed to the Hemapheresis Physician On-call. If the Hemapheresis Physician cannot be reached, please call the Blood Bank (464-6701). The Hemapheresis Attending will evaluate the patient and make appropriate arrangements for the procedure (i.e. replacement fluids, exchange volume, time of initial procedure, frequency and number of procedures).

**Recognized medical emergencies which may require therapeutic hemapheresis:**

- Hematologic Emergencies
  - Sickle Cell Anemia
  - Acute Chest Syndrome
  - Thrombotic Thrombocytopenia Purpura
  - Hemolytic Uremic Syndrome
  - Hyperviscosity Syndrome

**Transfusion and Blood Bank Forms:**

Consent to Transfuse - **41485**  
Spanish Version Consent to Transfuse - **F81852**  
Blood Product Delivery Request Form - **F90081**  
Blood Bank Preadmission Testing & Blood Bank History - **F81184**  
[Health Information for You, Patient and Family Education - Blood Transfusion.](#)
GUIDELINES FOR ORDERING BLOOD FOR ELECTIVE SURGERY

Priapism
Hyperleukocytosis
Stroke
Thrombocytosis-severe
Post-Transfusion Purpura
Familial Hypercholesterolemia

**Neurologic Emergencies**
Myasthenic Crises
Acute Guillain Barré Syndrome

**Renal/pulmonary Emergencies**
Goodpasture's Syndrome
Acute Renal Rejection
Myeloma
Acute Renal Failure

**CARDIOPULMONARY**
Angioplasty........................................... T&S
Aortic or Ventricular
Aneurysm Repair................................. 4
Aortic Dissection..................................... 6
B.T. Shunt............................................. 1
Bidirectional Glenn Shunt..................... 2
Closure of Patent Ductus Arteriosi....... T&S
Coarctation Repair................................. 3
Esophagastrectomy............................... 2
Esophageal Hernia.................................. T&S
Esophagoscopy....................................... 0
Fontan Procedure.................................. 3
Great Vessel Switch.............................. 3
Lobectomy........................................... 1
Mediastinoscopy................................. 0
Open Heart Procedures:
   Adult................................................ 3
   Pediatric.......................................... 3
Open Lung Biopsy.................................. T&S
Pacemaker Insertion............................ 0
PDA Ligation........................................ T&S
Pericardectomy..................................... 2
Pericardial Window................................ 0
Pneumonecctomy.................................. 2
Pulmonary Valvulotomy.......................... 3
Redo and Repair................................... 6
Septectomy......................................... 2
   Sternal Wire Removal.......................... 0
   Thoracotomy...................................... 0
   Thoracoscopy.................................... 0
   Wedge Resection............................... T&S

**GENERAL SURGERY**
Abdominal - Perineal Resection.............. 2
Amputations......................................... T&S
Appendectomy...................................... 0
Bronchoscopy...................................... 0
Catheter Insertion/Removal (Hickman, Life Port Tenckhoff, Infuse - a port)......... 0
Cholecystojejunostomy......................... T&S
Cholecystectomy.................................. T&S
Colon Resection.................................... T&S
Colostomy Closure/Takedown................... T&S
Debridement (wound, burn).................... AO
Denver Peritoneal Shunt Insertion............. 0
Denver Shunt Revision......................... 0
Dressing Change................................... 0
Exploratory Laparotomy....................... 2
Gastric Bypass..................................... T&S
Gastroplasty........................................ T&S
Gastrostomy......................................... 0
Gastrostomy Tube Insertion................... 0
Hemicolectomy..................................... 2
Hemorrhoidectomy............................... 0
Hepatic Lobectomy............................... 6
Hernia Repair, Incisional Inguinal, (inguinal herniorrhaphy)....................... 0
Ileostomy........................................... T&S
Iliac Profunda Bypass......................... 1
Jejunostomy Tube Placement................... 0
Laparoscopic Cholecystectomy................ 0
Laparotomy.......................................... 0
Lumpectomy, Breast Mass Excision........... 0
Mastectomy:
   Simple............................................ 0
   Modified Radical.............................. T&S
Mediastinoscopy.................................. 0
Myotomy (Pyloric)............................... 0
Oophorectomy..................................... T&S
Parotidectomy..................................... T&S
<table>
<thead>
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<tbody>
<tr>
<td>Pilonidal Cyst</td>
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<td>Porto-Caval Shunt</td>
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<tr>
<td>Pseudo-Aneurysm Repair</td>
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<td>Rib Resection</td>
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<td>Sigmoidectomy</td>
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<td>Sigmoidoscopy</td>
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<td>Small Bowel Resection</td>
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<td>Splenectomy</td>
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<td>Sympathectomy</td>
<td>T&amp;S</td>
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<td>Thyroidectomy:</td>
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<tr>
<td>Para</td>
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<td>Partial, total</td>
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<tr>
<td>Total Large Colon Resection</td>
<td>T&amp;S</td>
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<tr>
<td>Tracheostomy</td>
<td>0-T&amp;S</td>
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<tr>
<td>Vagotomy</td>
<td>0</td>
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<tr>
<td>Vein Stripping</td>
<td>T&amp;S</td>
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<tr>
<td>Whipple Procedure</td>
<td>2</td>
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</table>

**GYNECOLOGY**

**AP**
- Repair .................................................. 1
- Cone Biopsy (CO₂ Laser) .......................... 0
- D&C ......................................................... 0
- Ectopic Pregnancy ................................... 2
- Endometrium Ablation ................................ 0
- Examination Under Anesthesia (EUA) .......... 0
- Exploratory Laparotomy .......................... T&S-2
- Exenteration Procedure .......................... 4
- Hysterectomy, Total Abdominal .............. T&S-2
- Hysteroscopy ........................................ 0
- Groshong Catheter Insertion .................. 0
- Laparoscopy ........................................... 0
- Laser Vaporization ................................ 0
- Neosalpingostomy .................................. T&S
- Ovarian Wedge Resection ......................... T&S
- Salpingo & Oophorectomy ......................... 0
- Uterine Suspension ................................ 0
- Tubal Ligation ....................................... 0
- Tuboplasty ............................................. T&S
- Vaginectomy ........................................... T&S
- Vulvectomy ............................................ T&S
- Vaginal Sling .......................................... T&S

**ORTHOPEDICS**

- Acromioplasty .......................................... 0
- Amputation ............................................. T&S
- Arthroscopy ........................................... 0
- Arthroplasty ........................................... T&S
- Arthroscopy ........................................... 0
- Biopsy, Excisional ................................... 0
- Bipolar Transfer ..................................... T&S
- Carpal Tunnel Release .............................. 0
- Closed Reduction ..................................... 0
- Corpectomy ............................................ T&S
- Debridement .......................................... A0
- Decompression Laminectomy ..................... T&S
- Discectomy ............................................. T&S
- Fractures ............................................... 0
- Fusions, Other ........................................ 1
- Hardware Removal ..................................... 0
- Hemiarthroplasty .................................... T&S
- Hip Revision .......................................... 3
- Hip Screw & Nailing ................................ T&S
- Kyphoplasty ............................................ 0
- Lumbar Laminectomy ................................ T&S
- Meniscectomy ......................................... 0
- Nerve Transposition ................................ 0
- Neuroma Excision ..................................... 0
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<td>Posterior Rod Fusion</td>
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<tr>
<td>Prosthesis Removal</td>
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<tr>
<td>Releases</td>
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<td>Revascularization &amp; Exploration</td>
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<td>Rodding (Grosse &amp; Kempf)</td>
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<td>Rotator Cuff Repair</td>
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<td>Shoulder Replacement</td>
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<td>Total Knee</td>
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**OTOLARYNGOLOGY (ENT)**

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<td>Adenoidectomy</td>
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<tr>
<td>Antrotomy</td>
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<td>Atticoantrotomy</td>
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<td>Bronchotomy</td>
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<td>Caldwell-LUC</td>
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<td>Cochlear Implant</td>
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<td>Composite Resection</td>
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<tr>
<td>Dissecting Laryngoscopy</td>
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</tr>
<tr>
<td>Endoscopy</td>
<td>0</td>
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<td>Esophageal Reconstruction</td>
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<td>Esophagoscope</td>
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<tr>
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<td>Laryngoscopy</td>
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<td>Mandibullectomy</td>
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<td>Neck Dissection</td>
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<td>Panendoscopy</td>
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<td>Parotidectomy</td>
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<td>Plate Removal</td>
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<tr>
<td>Tracheoscopy</td>
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<tr>
<td>Tracheostomy Tube Insertion</td>
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<tr>
<td>Tracheotomy</td>
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**PLASTIC SURGERY**

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</table>

**TRANSPLANTATION**

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>AV Fistula</td>
<td>0</td>
</tr>
<tr>
<td>Donor Nephrectomy</td>
<td>T&amp;S</td>
</tr>
<tr>
<td>Laparoscopic Donor Nephrectomy</td>
<td>T&amp;S</td>
</tr>
<tr>
<td>Pancreas Transplant (leukoreduced)</td>
<td>4</td>
</tr>
<tr>
<td>Permanent Vascular Catheter Insertion/Removal (Tenckhoff)</td>
<td>0</td>
</tr>
<tr>
<td>Renal Artery - Vein Patch</td>
<td>3</td>
</tr>
<tr>
<td>Renal Transplant (recipient)</td>
<td>2</td>
</tr>
<tr>
<td>(leukoreduced products)</td>
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</tr>
</tbody>
</table>

**UROLOGY**

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Count</th>
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<tbody>
<tr>
<td>Adrenalectomy</td>
<td>2</td>
</tr>
<tr>
<td>Bladder Resection</td>
<td>T&amp;S</td>
</tr>
<tr>
<td>Circumcision</td>
<td>0</td>
</tr>
<tr>
<td>Cystectomy</td>
<td>2</td>
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<tr>
<td>Cystoscopy</td>
<td>0</td>
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<tr>
<td>Cystotomy</td>
<td>T&amp;S</td>
</tr>
<tr>
<td>Fulguration, Bleeding Bladder</td>
<td>0</td>
</tr>
<tr>
<td>Hydrocelectomy</td>
<td>0</td>
</tr>
<tr>
<td>Ileal Conduit</td>
<td>1</td>
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<tr>
<td>Laparoscopic Prostatectomy</td>
<td>T&amp;S</td>
</tr>
<tr>
<td>Lithotomy, Utero</td>
<td>T&amp;S</td>
</tr>
<tr>
<td>Lithotripsy, Shock Wave</td>
<td>0</td>
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<tr>
<td>Meatotomy</td>
<td>T&amp;S</td>
</tr>
<tr>
<td>Needle Biopsy of Prostate</td>
<td>0</td>
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<tr>
<td>Nephrectomy, Donor</td>
<td>1</td>
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<tr>
<td>Nephrectomy, Radical</td>
<td>2</td>
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Nephrolithotripsy................................. 1
Nephrostomy........................................ T&S
Orchiopexy......................................... 0
Orchitectomy....................................... 0
Penectomy.......................................... 2
Penile Prosthesis Insertion............... 0
Prostatectomy..................................... 1
Pyelolithotomy.................................. T&S
Reimplantation of Ureter................... T&S
Stamey Procedure............................ 0-T&S
TUR.................................................. T&S
Ureterectomy.................................... 0
Ureterolithotomy.............................. T&S
Ureteroscopy.................................... 0
Urethral Fistulas, Excision............... T&S
Vasectomy........................................ 0
Vasovasostomy.................................. 0

VASCULAR SURGERY
Abdominal/Aortic Surgery.................... 2
Aneurysm Repair................................. 2
AV Fistula.......................................... 0
Bifemoral Bypass.............................. T&S
Carotid Endarterectomy...................... T&S
Catheter Insertion/Removal.................. 0
Femoral Bypass................................. T&S
Iliac Profunda Bypass....................... 1
Permanent Vacular Renal Artery Repair... 3
Spleno-Renal Artery Bypass............... T&S
Key:
0 - If no specimen is received, Blood Bank will not call the floor to request sample.
T&S - ABO/Rh and antibody screen performed. If no specimen received, Blood Bank will call and notify floor.
#Units - Number of units usually ordered. If no specimen received, Blood Bank will call and notify floor.

If more units are requested than indicated on this schedule, a technologist or resident will call the physician to determine why additional units are needed.

Autologous blood - If the patient has donated blood, these units will be crossmatched even if the procedure only requires a type and screen. If the patient donates more units than indicated on this schedule, all units will be crossmatched. If a mixture of autologous and homologous units are setup to meet the patient's surgical needs, only the autologous units will be taken to the OR.

**Blood and Blood Components**

- **Red Blood Cells - LIS Code: XM**

  Red blood cells are transfused to restore oxygen-carrying capacity in patients with symptomatic anemia, anemia and risk/history of cardiovascular or cerebrovascular disease and actively bleeding patients. A post-transfusion hemoglobin and hematocrit should be performed to assess the efficacy of transfusion.

  - **Indications for transfusion (audit criteria):**
    - **Pediatric and Adult Patients**
      - Hemoglobin <7 g/dL or Hematocrit <20%
      - Hemoglobin 7-10 g/dL with signs/symptoms of anemia
      - Hemoglobin 7-10 g/dL and risk factors/history of cardiovascular or cerebrovascular disease
      - Hemoglobin >10 g/dL and documented increased O₂ consumption (O₂ extraction ratio >0.50)
    - **Neonates (<4 months)**
      - Symptomatic anemia: Hemoglobin <8 g/dL or Hematocrit <25%
      - Major surgery: Hemoglobin <10 g/dL or Hematocrit <30%
      - Moderate cardiopulmonary disease: Hemoglobin <10 g/dL or Hematocrit <30%
      - Severe cardiopulmonary disease: Hemoglobin <13 g/dL or Hematocrit <40%
  - **RBC Volume:**
    - CPDA - 1 RBCs: 250 mL/unit (Hct 70-80%)
    - AS (Adsol) RBCs: 350 mL/unit (Hct 50-60%)
  - **Dose:**
    - Adults: 1 unit for each 1 g rise in hemoglobin or 3% rise in hematocrit desired.
    - Neonates and pediatrics: 10 mL/kg body weight to raise hemoglobin 1 g.
  - **Administration:**
Filter: Standard 170 micron (standard blood administration set) (For Leukoreduced red cells, see Special Blood Products, Leukoreduced Red Cells).

Suggested Rate:
Average 2-4 mL/minute or about 1-2 hours per unit
A unit of blood must be transfused within 4 hours from release/issue from the Blood Bank.
A slower rate may be required in pediatric patients or adult patients with chronic heart failure, renal failure or chronic anemia. In these patients, a single unit of red cells may need to be split and transfused one-half unit at a time to meet the 4 hour expiration.

Preparation Time:
- STAT: 60 minutes*
- Routine: <4 hours* (average approximately 2 hours)
Routine requests are batched with other work and performed after STAT requests are completed. For children less than 1 year old, fresh units (10 days of age) are ordered for transfusion. In an emergency, the freshest units in inventory will be used to avoid delay in providing blood.

*Patients with irregular antibodies will require additional time to identify antibody and obtain antigen negative units. Extra time may also be necessary to obtain specialized red blood cell products including CMV seronegative red cells, frozen deglycerolized red cells and washed red cells. See Special Blood Products for additional information.

Specimen:
- Volume: 5 mL EDTA whole blood per 3 units ordered (maximum of 15 mL)
- Container: Lavender (purple top) - EDTA
- Transport: Room Temperature
- Other: Appropriate EPIC generated Prepare RBC order or Red Cell Order form (online) if not on EPIC. Specimens for Blood Bank testing must be labeled with the patient's full name and medical record number and the initials of the phlebotomist. The specimen label must include the date and time the sample was drawn if this information is not entered in the collection information field of the EPIC generated order or in the Collected by field of the Red Cell Order form.

Ordering:
The patient must have a current type and crossmatch or type and screen specimen, drawn within the last 3 days. An appropriate EPIC generated Prepare RBC order or a signed and completed Red Cell Order form (on-line), indicating the type of red cell product required, total number of units, and the rationale for transfusion, is required at the time blood is ordered and released. The patient should also have a signed, current Consent to Transfuse in the medical record. Orders for red cells are reviewed prospectively at the time of the order and may be referred to the Transfusion Medicine Resident for clarification.
Plasma (Fresh Frozen Plasma, Plasma Frozen within 24 hours of collection, Thawed Plasma used interchangeably): LIS code: TFFP (call Blood Bank when ordering)

Fresh frozen plasma (FFP) is prepared from whole blood or apheresis collection and frozen at -18°C or colder within 8 hours of collection and contains all of the coagulation factors. FFP contains normal levels of the labile coagulation Factors V and VIII. FFP is used in the management of patients with selected coagulation factor deficiencies, for which no specific coagulation concentrates are available, that have a prolonged coagulation testing (PT 1.5 times mid range of normal (INR>1.5) or PTT 1.5 times the mid range of normal) and active bleeding or prior to invasive procedure.

Plasma Frozen within 24 hours of collection (PF24, PF24RT24) is prepared from whole blood or apheresis collection and frozen at -18°C or colder between 8 and 24 hours of collection. It contains all the stable coagulation factors found in FFP. This component, however, contains reduced levels of the labile Factors V and VIII.

Thawed Plasma is prepared from FFP, PF24 or PF24RT24 and is stored at 4°C for up to 5 days. Thawed plasma contains all of the same coagulation factors as FFP except for Factors V and VIII (labile factors), which are reduced. The reduction in Factor VIII is clinically significant. Thawed plasma may be used to treat coagulation factor deficiencies other than Factor V and Factor VIII.

Patients with slightly prolonged coagulation testing (INR 1.5 or less) have sufficient coagulation factor levels for hemostasis. Plasma should NOT be prophylactically transfused in a stable, non-bleeding patient with prolonged coagulation studies (e.g. liver failure, acute pancreatitis), as a volume expander, or for nutritional support. A post-transfusion PT/PTT (10-20 minutes) should always be performed to assess the efficacy of the transfusion.

- Indications (audit criteria):
  - INR > 1.5 and active bleeding or prior to surgery/invasive procedure
  - Active bleeding/trauma, coagulation studies pending
  - Documented coagulation factor deficiency with bleeding or prior to surgery/invasive procedure
  - DIC with bleeding or prior to surgery/invasive procedure
  - Post cardiac or cardio-pulmonary bypass with microvascular bleeding
  - Protein S, C, or Antithrombin III deficiency

NOTE: For emergent reversal of warfarin anticoagulation, contact Pharmacy regarding administration of Kcentra.

- Volume: 200-300 mL/unit
- Dose:
  - Adults: 10-15 mL/kg body weight
  - Neonates and Pediatrics: 10-15 mL/kg body weight
- Administration:
  - Filter: Standard 170 micron (standard blood administration set)
- **Suggested Rate:**
  - Prior to surgery/invasive procedure: 1 unit/hour or 3-4 mL/minute, immediately prior to surgery/procedure.
  - Bleeding patient: As fast a rate as the patient can tolerate.
- **Preparation Time:** 20-25 minutes
- **Specimen:**
  - Volume: 5 mL EDTA whole blood if patient's ABO type unknown
  - Container: Lavender (purple top) - EDTA
  - Transport: Room temperature
  - Other: Appropriate EPIC generated Prepare Plasma order or Plasma and Cryoprecipitate Order from (on-line) if not on EPIC. Specimen for ABO/Rh type must have patient's full name, medical record number, and initials of phlebotomist. The specimen label must include the date and time the sample was drawn if this information is not entered in the collection information field of the EPIC-generated order or in the Collected by field of the Blood Bank requisition.
- **Ordering:**
  Please call the Blood Bank at the time order is placed. If the product is not used, it will be released from allocation for other transfusion requests. An appropriate EPIC-generated Prepare Plasma order or a signed and completed Plasma and Cryoprecipitate Order form (on-line) if not on EPIC, must be completed and signed at the time the product is ordered and released. In addition, the patient should have a signed, current Blood Transfusion Consent Form in the medical record. All orders for plasma are reviewed prospectively at the time of the initial order. If the results of coagulation studies are normal or pending, the Transfusion Medicine physician will confer with the ordering clinician regarding the order.

- **Cryoprecipitate: LIS code: TCRY (call Blood Bank when ordering)**
  Cryoprecipitate is prepared from fresh frozen plasma which is allowed to thaw at 4°C and is enriched in fibrinogen, von Willebrand factor and Factor VIII. Each unit of cryoprecipitate contains approximately 250 mg of fibrinogen and 80-120 units of Factor VIII coagulant activity. Each unit of cryoprecipitate should raise the fibrinogen level approximately 5 mg/dL. If treating a patient with von Willebrand Disease or Hemophilia A, please consult the Hematology Service regarding other pharmacologic alternatives.
  - **Indications (audit criteria):**
    - Hypofibrinogenemia (fibrinogen <100 mg/dL and bleeding)
    - von Willebrand Disease (consult Hematology)
    - Hemophilia A (consult Hematology)
    - Uremia with bleeding, unresponsive to DDAVP and dialysis (Hematology consult suggested)
  - **Volume:** 10-15 mL/unit
  - **Dose:** Hypofibrinogenemia (fibrinogen <100 mg/dL)
    - Adults: 8-10 units (or 1 unit per 7 kg body weight)
    - Neonates and pediatrics: 1 unit per 5-7 kg body weight
• von Willebrand's Disease, Hemophilia A or uremic bleeding: Contact Hematology Service for consult.
  - Administration:
    - Filter: standard 170 micron (standard blood administration set)
    - Rate: 1-4 ml/min.
  - Preparation Time: 30-40 minutes
  - Specimen:
    - Volume: 5 mL EDTA whole blood if patient's ABO type unknown
    - Container: Lavender (purple top) - EDTA
    - Transport: Room temperature
    - Other: Appropriate EPIC generated Prepare Cryoprecipitate order or Plasma and Cryoprecipitate Order form (on-line) if not on EPIC.
      Specimen for ABO/Rh type must have patient's full name, medical record number, and initials of phlebotomist. The specimen label must include the date and time the sample was drawn if this information is not entered in the collection information field of the EPIC generated order or in the Collected by field of the Blood Bank laboratory requisition.
  - Ordering:
    Please call the Blood Bank when ordering Cryoprecipitate. Cryoprecipitate has a 4 hour shelf life after thawing and pooling and should only be ordered when it is going to be transfused. An appropriate EPIC generated Prepare Cryoprecipitate order or a signed and completed Plasma and Cryoprecipitate Order form (on-line) if not on EPIC, must be completed and signed at the time the product is ordered and released. The patient should also have a current, signed Blood Transfusion Consent Form in the medical record. All initial orders for cryoprecipitate are reviewed by the Transfusion Medicine Resident or Pathologist on-call.

• Platelets: LIS code: TPLT (call Blood Bank when ordering)
  Platelets may be required to treat or prevent bleeding in thrombocytopenic patients. Platelet products are available as pooled, "whole blood-derived" platelet concentrates or as single donor, apheresis platelet products. Plateletpheresis products may be used in place of pooled platelets. Our primary platelet supply from the Red Cross is in the form of single donor, apheresis platelet products. A small supply of pooled "whole blood-derived" platelets (pool of 5 units) are also produced. With the exception of bone marrow transplant and oncology patients, all initial requests for apheresis platelet products must be approved by the Transfusion Medicine Resident or Pathologist on-call. A 10 minute to 1 hour post-transfusion platelet count should be performed after each platelet transfusion to measure the efficacy of transfusion. This is particularly important in multitransfused patients or multiparous females who may develop immune refractoriness to platelets. If a patient is not responding clinically to platelets (a post-transfusion increment <10K), please contact the Transfusion Medicine Resident regarding an evaluation for HLA or crossmatched platelets (see Special Blood Product Requests). A specimen should also be sent to the HLA Laboratory to test for the presence of lymphocytotoxic antibodies (anti-HLA).
  - Indications (audit criteria):
- Platelet count <10,000 µL
- Platelet count 10-20,000/µL and outpatient or additional risk factors for bleeding
- Platelet count <50,000/µL and currently bleeding, prior to surgery/invasive procedure
- Platelet count <100,000/µL on ECMO, neurosurgery, eye or airway surgery
- Platelet function defect and bleeding (ex. inherited platelet defect, recent administration of monoclonal anti-IIb/IIIa)

- Volume:
  - Whole Blood-derived: 50 mL/unit (10.1 x 10^10 platelets total)
  - Apheresis: 200-500 mL/unit (3.0-5.0 x 10^11 platelets)

- Dose:
  - Adults: 5 pooled platelet concentrates (~5.0 x 10^11 platelets/250-300 mL)
  - 1 unit apheresis platelet (~4.0 x 10^11 platelets/350 mL)
  - Pediatrics: 10 mL/kg body weight
  - Neonates: 10 mL/kg body weight

- Administration:
  - Filter: Standard 170 micron (standard blood administration set)
    (For Leukoreduced platelets, a Pall leukoreduction filter may be necessary. See Special Blood Products, Leukoreduced Platelets and red cells).
  - Suggested Rate: 2-4 mL/minute or approximately 1 unit/hour
  - Preparation Time: 20 minutes (pooled platelet concentrate)

- Specimen:
  - Volume: 5 mL EDTA whole blood if patient ABO/Rh type unknown
  - Container: Lavender (purple top) - EDTA
  - Transport: Room temperature

- Other:
  - Appropriate EPIC generated Prepare Platelet order or Platelet Order form (on-line) if not on EPIC. Specimens for ABO/Rh type must have patient's full name, medical record number, date and initials of phlebotomist. The specimen label must include the date and time the sample was drawn if this information is not entered in the collection information field of the EPIC generated order or in the Collected by field of the Blood Bank laboratory requisition.

- Ordering:
  - Please call the Blood Bank when ordering platelet products. An appropriate EPIC generated Prepare Platelet order or a signed and completed Platelet Order form (on-line) if not on EPIC, must be completed and signed at the time the product is ordered and released. The patient should also have a current, signed Blood Transfusion Consent Form in the medical record. All orders for platelets are reviewed at the time of the order and may be referred to the Transfusion Medicine Resident and ordering physician for clarification.
  - Because platelets have a short shelf life (5 days), platelets should be ordered at the time when a decision to transfuse has been made by the responsible physician. A small inventory of platelets is kept in stock. Therefore, it is not necessary or
appropriate to request platelets "on call". If an order is canceled, please call the Blood Bank so that the product can be used for another patient.

- **Albumin**
  Albumin is frequently used as a volume expander in patients. Albumin is available through Pharmacy as a 5% and 25% solution. 5% albumin solution is osmotically and oncotically equivalent to plasma. A 25% albumin solution is hypertonic and hyperosmotic relative to blood.
  - Indications:
    - Hypovolemia/Hypotension unresponsive to 20-50 mL/kg crystalloid
    - Burn patient >24 hours
    - Paracentesis >4 Liters ascitic fluid
    - Nephrotic syndrome (with use of a diuretic)
    - Therapeutic Plasma Exchange
  - Volume:
    - 5% Albumin: 250 mL (12.5 g protein total)
    - 25% Albumin: 50 mL (12.5 g protein total)
  - Comments:
    Patients with hypovolemia/hypotension should initially be resuscitated with crystalloid solutions (normal saline, lactated Ringers) or Hespan (6% Hetastarch in 500 mL NS, up to 20 mL/kg/24 hours).

  NOTE: Do not use Hespan in patients with underlying bleeding disorders.

Prior to transfusion, 25% albumin may be diluted with an isotonic solution such as normal saline. Intravascular hemolysis has been reported following transfusion to albumin diluted with water.

**Special Blood Product Requests**

- **Autologous Red Blood Cells:**
  Patients undergoing elective surgery may predeposit autologous blood prior to surgery. Patients suitable for autologous donation are those patients undergoing procedures in which blood transfusion is likely; i.e. **Type and Crossmatch > 2 units**. Autologous blood should **not** be collected in patients undergoing procedures requiring on a Type and Screen.
  Autologous blood is collected by the New York-Penn Region American Red Cross. Autologous units collected by the Red Cross are automatically shipped to the hospital prior to surgery. Patients are charged an initial fee per unit donated at the time of collection. The patient will also be charged a processing fee at a later date. Units collected for patients are labeled "Autologous Use Only" and may only be transfused to the patient. Units must be crossmatched prior to transfusion.
  - Indications:
    - Type and Crossmatch >2 units
    - Estimated surgical blood loss >1000 mL or 10% total blood volume
    - Patients with multiple red cell alloantibodies
- Patients with alloantibodies too high incidence antigens
  - Collection Instructions/Ordering:
    - **An order for autologous blood collection must be initiated by the requesting physician.** Forms can be obtained by calling the American Red Cross at 1-800-634-9069.
  - Patient Requirements:
    - 12-70 years of age
    - Hematocrit >33%
    - Absence of infection
    - More then 72 hours following dental procedure or other surgical manipulation (ex. cystoscopy)
    - Absence of a significant underlying medical condition predisposing to a cardiovascular event or vasovagal reaction following removal of 500 mL blood.
    - Adequate venous access (blood cannot be drawn from central lines/catheters)
  - Dates Performed: Monday through Saturday, American Red Cross (ARC) hours. Patients should call ARC to schedule appointments at 1-800-634-9069.
  - Turn-around Time: One unit a week, up to 5 working days prior to surgery.
  - Comments: Patients should start oral ferrous sulfate supplementation prior to donation and surgery. Recommended adult dose is 300 mg po TID.

- **Directed Donor Red Blood Cells**
  Patients in whom autologous donation is not possible due to illness, age or low hematocrit, may have blood donated for them by select individuals. Directed donors must be ABO/Rh and crossmatch compatible with the patient. In addition, directed donors must meet the same eligibility requirements for whole blood donation as volunteer blood donors. Because of the time required to schedule, collect and test donor units, directed donor red cells are not available in emergency situations.
  The New York-Penn Region American Red Cross has a program for collecting directed donor units. Potential donors **must** have proof of their ABO/Rh type at the time of initial donation. Directed donor units will only be used by the patient for whom it was donated. Directed donor red cell units must be crossmatched prior to transfusion.
  - Collection Instructions/Ordering:
    - An order for directed donor blood collection must be initiated by the requesting physician. Forms can be obtained by calling the American Red Cross at 1-800-634-9069. The completed forms and a patient specimen for a Type and Screen must be sent to the Blood Bank. If the potential donor(s) does not have documentation of their ABO/Rh type, a specimen for a Type and Screen on the donor should also be sent.
  - Donor Requirements:
    - Same as volunteer blood donors. Documented proof of ABO/Rh type at initial donation.
  - Dates performed:
    - Monday through Saturday, American Red Cross (ARC) hours. Potential donors should call ARC to schedule appointments, 1-800-634-9069.
  - Turn-around Time:
5 working days minimum

- **Specimen:**
  - Volume: 5 mL EDTA whole blood
  - Container: Lavender (purple top) - EDTA
  - Transport: Room temperature
  - Other: Completed form by requesting physician. Specimens for ABO/Rh typing must have patient's full name, medical record number, date and initials of phlebotomist.

- **Comments:**
  A directed donor may only donate 1 unit whole blood each 56 days. A patient requiring more than one unit of blood will require multiple donors to fulfill their transfusion requirements.

- **CMV Seronegative/CMV Safe Red Cells and Platelets:**
  CMV seronegative blood products may be indicated in certain patients. CMV seronegative patients at risk for transfusion-associated CMV infection may require transfusion with CMV seronegative blood products. Alternatively, such patients may be transfused with leukoreduced red cell and platelets. The latter were shown to be "CMV safe" and equivalent to CMV seronegative in a large, prospective, randomized study. Products capable of transmitting CMV are red blood cells and platelets: Plasma and cryoprecipitate do not contain viable lymphocytes and are unable to transmit CMV. Overall, the risk of transfusion-associated CMV infection from a (non-leukoreduced) CMV seropositive red cell or platelet product is <0.03% per unit.

  - **Indications for CMV seronegative:**
    - Pregnant and CMV seronegative
    - Intrauterine transfusions
    - Neonates <4 months of age and <1200 grams of CMV seronegative mothers
    - CMV seronegative allogenic bone marrow transplant candidates
    - CMV seronegative allogenic bone marrow transplant recipient transplanted with bone marrow from a CMV seronegative donor
    - Other (Pathology Resident approval required)

  - **Patients receiving CMV safe (pre-storage leukoreduced):**
    - CMV seronegative autologous bone marrow transplant recipients
    - CMV seropositive allogenic bone marrow transplant candidates
    - CMV seronegative allogenic bone marrow transplant recipients transplanted with bone marrow from a CMV positive donor
    - CMV seronegative renal transplant recipient/candidate
    - CMV seronegative oncology patients
    - Other (Pathology Resident approval required)

  - **Preparation Time:** Dependent on product availability
  - **Specimens:** Same as for platelets or red cells. If CMV status of patient unknown, a CMV serology must be ordered.
  - **Ordering:** If CMV seronegative are not available for patients requiring CMV seronegative products, the Transfusion Medicine Resident or Pathologist on-call will contact the ordering physician regarding the urgency of the transfusion and
other options. All initial orders for CMV seronegative are reviewed by the Transfusion Medicine Resident.

- **Leukocyte-Reduced Blood Products:**
  Pre-storage leukoreduced blood products have been shown to prevent cytomegalovirus infections and are considered "CMV-safe". Prestorage leukoreduction has also been shown to reduce the incidence of febrile transfusion reactions by preventing the accumulation of leukocyte-derived inflammatory cytokines. In 2001, the Red Cross converted to 100% prestorage leukoreduced blood products.

- **Irradiated Red Cells and Platelets:**
  Certain patients may require irradiated blood products to prevent transfusion-associated graft versus host disease (GVHD). Products that require irradiation include red cells and platelets: plasma and cryoprecipitate do not contain viable lymphocytes and therefore, do not require irradiation.
  
  - Indications (audit criteria):
    - Bone marrow transplant recipients
    - Hematologic malignancy
    - Congenital immunodeficiency
    - Aplastic anemia
    - Intrauterine transfusions
    - Neonates <1200 grams and <4 months of age
    - HLA-matched platelets
    - Solid organ malignancy undergoing intense, multiagent chemotherapy
    - Directed-donor blood products from relatives
    - Other (Pathology Resident approval required)

  NOTE: In general, solid organ transplant recipients and patients with AIDS do NOT require irradiated blood products.

  - Preparation Time: 15 minutes
  - Ordering: Contact the Blood Bank when an order for irradiated products is initiated. All initial orders for irradiated products will be reviewed by the Transfusion Medicine Resident.

- **HLA-matched Platelets:**
  Some patients may fail to respond appropriately to platelet transfusion. On average, a pool of 5 whole blood-derived platelet concentrates or a single apheresis platelet concentrate should result in a 30-60K rise in the platelet count by 1 hour post transfusion. A patient who fails to increment by 10 K should be evaluated for platelet refractoriness. Refractoriness may be due to nonimmune factors (febrile, septic, DIC, ALG administration) or may reflect immune refractoriness due to anti-HLA antibodies. Patients who are at particular risk for immune platelet refractoriness due to HLA antibodies are multiparous females and multitransfused patients. All orders for HLA-matched platelets must be referred to the Transfusion Medicine Resident or Pathologist on-call.
Criteria for HLA-matched Platelets:
- Bone marrow transplant recipient with a known anti-HLA antibody
- The absence of nonimmune etiologies for refractoriness AND a **CCI <7 in 3 consecutive platelet transfusions or CCI <7 in the majority of 5 platelet transfusions.
- Preparation Time (Initial Order): 1-48 hours depending on product availability
- Specimen Requirements (Initial Order): Contact the HLA Laboratory, 464-4775

Ordering: To order HLA-matched platelets, please call the Transfusion Medicine Resident (0800 -1700 weekdays) or Clinical Pathology Resident on-call (evenings and weekends). The Resident and Attending will review the patient's transfusion record, clinical course and history to determine whether HLA-matched platelets are appropriate in the patient. Refractoriness must be documented by a 1 hour post transfusion platelet count and a post transfusion **Corrected Count Increment (CCI) less than 7.

In order to receive HLA-matched platelets, the patient must have an HLA type on file. A screen for HLA antibodies should also be sent on all initial requests for HLA-matched platelets. If an HLA type is not known, a specimen should be sent for typing to the HLA laboratory. If a HLA type cannot be performed for technical reasons (blast crises, leukopenia), antigen negative products or crossmatched platelets may be provided as determined by the Transfusion Medicine Fellow or Attending and Ordering Physician.
PANELS

ACUTE HEPATITIS PANEL
Tests........................................................HAAB, IgM, HBcAb, IgM, HBsAg, and HepcAb
Specimen........................................................2 mL whole blood (1 mL serum), Gold-SST

ARTHRITIS PANEL
Tests....................................................................................................UA, ESR, ANA, RFT
Specimen....................5 mL Gold top (serum separator tube), 5 mL EDTA (lavender tube)

BASIC METABOLIC PANEL
Tests...........................................................CO₂, CL, CRE, GLUC, K, NA, BUN, Ca, GFR
Specimen.......................................................................................1.0 mL serum, Gold-SST

CELIAC PANEL
Tests.......................................................................................IgA, TTG-IgA, DGP IgG/IgA
Reflexes to TTG-IgG if IgA is <7 mg/dL
Specimen.......................................................................................0.5 mL serum, Gold-SST

COMPREHENSIVE METABOLIC PANEL
Tests...........ALB, BILT, CA, CL, CRE, GLUC, ALP, K, TP, NA, BUN, CO₂, ALT
Specimen.......................................................................................1.0 mL serum, Gold-SST

ELECTROLYTE PANEL
Tests............................................................................................................CO₂, CL, K, NA
Specimen..........................................................................................0.5 mL serum, Gold-SST

HEPATIC FUNCTION PANEL
Tests........................................................ALB, Bili Total and Direct, ALP, AST, ALT, TP
Specimen.......................................................................................1.0 mL serum, Gold-SST

LIPID PANEL
Tests...............................................................................................CHO, HDL, TRIG, LDL
Specimen..........................................................................................2 mL serum, Gold-SST

RENAL PANEL
Tests........................................................ALB, NA, K, CL, CO₂, GLUC, BUN, CREA, CA, PHOS
Specimen.......................................................................................1.0 mL serum, Gold-SST
5-HYDROXYINDOLEACETIC ACID (HIAA), QUANTITATIVE, 24 HOUR URINE -
Sent to Reference Laboratory
Test Code: LHIAA
Synonyms: 5-HIAA, Quantitative, 24 Hour Urine
Serotonin Metabolite, 24 Hour Urine
Specimen Type: Aliquot of 30 mL (1.0 mL minimum)
Urine (plastic container with no preservative)
NOTE: 1 g/L boric acid may be added as a preservative for other tests
without harming 5-HIAA.
Method: Liquid Chromatography/Tandem Mass Spectrometry (LC/MS-MS)
TAT: Set up Monday through Friday on 1st shift.
Reported within 4 working days.
Collection: Instruct the patient to void at 8:00 a.m. and discard the specimen. Then
collect all urine including the final specimen voided at the end of the 24
hour collection period (i.e., 8:00 a.m. the next morning) into the plastic
urine container. Screw the lid on securely. Label the container with the
patient's full name, date and time collection started, and date and time
collection finished. Measure and record total volume, mix well and send
aliquot.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Frozen: 14 days
Reference Interval: 0.0-14.9 mg/24 hours
Causes for Rejection: pH <2
Special Instructions: Measure and record total 24 hour urine volume on the request form.
Avoid avocado, bananas, eggplant, kiwi fruit, nuts (hickory nuts, pecans,
walnuts), pineapple, plums, tomato products, and interfering drugs for a
72-hour period prior to and during the collection.
Performed by: Sent to Reference Laboratory - LabCorp (Order #004069)

11-DEOXYCORTISOL - Sent to Reference Laboratory
Test Code: LDCOR
Synonyms: Compound S for Metyrapone Test
Specimen Type: 0.5 mL (0.2 mL minimum)
Serum, Gold-top, SST, red-top
Method: Liquid Chromatography/Tandem Mass Spectrometry (LC/MS-MS) after
Chromatography and Solvent Extraction
TAT: Set up and reported Monday and Thursday on 1st shift.
Reported within 7 working days.
Collection: Transfer the serum into a LabCorp PP transpak frozen purple tube with
screw cap. Freeze immediately and maintain frozen until tested.
Transport: Frozen
Specimen Stability: Frozen: 2 years
Causes for Rejection: Recently administered isotopes
Special Instructions: No isotopes administered 24 hours prior to venipuncture.
Comment: Please submit separate frozen specimens for each test requested.
**17-HYROXYPREGNENOLONE - Sent to Reference Laboratory**

**Test Code:** LPRE

**Specimen Type:** 1 mL (0.3 mL - Adult; 0.1 mL - Pediatric minimum)

Serum, Gold-top, SST, red-top or EDTA (lavender top)

**Method:** High-pressure Liquid Chromatography/Tandem Mass Spectrometry (LC/MS-MS)

**TAT:** Set up and reported once a week on 1st shift.

**Collection:** Transfer the serum into a LabCorp PP transpak frozen purple tube with screw cap. Freeze immediately and maintain frozen until tested.

**Transport:** Frozen

**Specimen Stability:** Frozen: 2 years

**Cause for Rejection:** Nonserum or non-EDTA plasma specimen received.

**Reference Interval:**
- Premature (26 to 28 weeks): day 4: 375-3559 ng/dL
- Premature (31 to 35 weeks): day 4: 64-2380 ng/dL
- 3 days: 10-829 ng/dL
- 1 to 5 months: 36-763 ng/dL
- 6 to 11 months: 42-540 ng/dL
- 12 to 23 months: 14-207 ng/dL
- 24 months to 5 years: 10-103 ng/dL
- 6 to 9 years: 10-186 ng/dL
- Pubertal: 44-235 ng/dL
- Adults: 53-357 ng/dL

**Comment:** To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested.

**Special Instructions:** The patient need not be fasting.

**Performed by:** Sent to Reference Laboratory - LabCorp (Order #140715)

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**17-HYROXYPROGESTERONE - Sent to Reference Laboratory**

**Test Code:** L17HP

**Specimen Type:** 1 mL (0.5 mL minimum)

Serum, Gold-top, SST, red-top

**Method:** Liquid Chromatography/Tandem Mass Spectrometry (LC/MS-MS)

**TAT:**
- Set up and reported Monday through Friday on 1st shift.
- Reported within 5 working days.

**Collection:** If tube other than gel-barrier is used, transfer separated serum to a plastic transport tube.

**Transport:** Refrigerated

**Specimen Stability:** Refrigerated: 7 days

Frozen: 14 days

**Reference Interval:** Sent with results. Refer to Reference Laboratory Website.

**Comment:** Include patient's age on the test request form.

**Performed by:** Sent to Reference Laboratory - LabCorp (Order #070085)
ABG (See Blood Gas)

ABO/Rh TYPE
Test Code: ABRH
Specimen Type: 5 mL blood, EDTA (lavender top)
Method: Immune Hemagglutination to detect ABO and D Antigens
TAT: Performed 24/7
Collection:
Specimens for Blood Bank testing must be labeled with the patient's full name and medical record number and the initials of the phlebotomist. The specimen label must include the date and time the sample was drawn if this information is not entered in the collection information field of the EPIC generated order or in the Collected by field of the Blood Bank requisition.
Transport: Room temperature
Specimen Stability: Refrigerated: 3 days at 2-8°C
Comments: Results are reported with an additional blood bank comment noting if a clinical situation, such as multiple transfusions with non-type specific blood or an allogenic bone marrow transplant, results in alternation of the patient's ABO/Rh type.
Performed by: Blood Bank

ACE (See Angiotensin Converting Enzyme)

ACE - CSF (See Angiotensin Converting Enzyme - CSF)

ACETAMINOPHEN (Random)
Test Code: ACETR
Synonym: Tylenol
Specimen Type: 0.5 mL serum, Gold-SST/Red top
Method: Colorimetric
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: If time of ingestion is unknown, 2 specimens should be drawn 4 hours apart. Normally, by the time the second specimen is taken, the body has started to eliminate the drug and the second level should be lower than the first.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 8 hours
Refrigerated: 2 days at 2-8°C
Avoid repeated freezing and thawing.
Reference Interval: 10.0-30.0 µg/mL
Performed by: Core Laboratory

ACETAMINOPHEN (4 hour)
Test Code: ACET4
Synonym: Tylenol  
Specimen Type: 0.5 mL serum, Gold-SST/Red top  
Method: Colorimetric  
TAT: STAT: 90 minutes  
Routine: 4 hours  
Performed 24/7  
Collection: Drawn 4 hours after ingestion. If a 4 hour specimen results < 15, there is no need to obtain further specimens.  
Transport: Room temperature, ASAP  
Specimen Stability: Room temperature: 8 hours  
Refrigerated: 2 days 2-8°C  
Reference Interval: 10.0-30.0 µg/mL  
Toxic level: >150 µg/mL at 4 hours after ingestion  
Performed by: Core Laboratory

**ACETAMINOPHEN (12 hour)**

Test Code: ACE12  
Synonym: Tylenol  
Specimen Type: 0.5 mL serum, Gold-SST/Red top  
Method: Colorimetric  
TAT: STAT: 90 minutes  
Routine: 4 hours  
Performed 24/7  
Collection: Drawn 12 hours post-ingestion.  
Transport: Room temperature, ASAP  
Specimen Stability: Room temperature: 8 hours  
Refrigerated: 48 hours at 2-8°C  
Reference Interval: 10.0-30.0 µg/mL  
Toxic level: >50 µg/mL at 12 hours after ingestion  
Performed by: Core Laboratory

**ACETOACETATE - Sent to Reference Laboratory**

Test Code: RAC  
Specimen Type: 2 mL serum, Gold-SST  
(Minimum 1.2 mL)  
Method: Gas Chromatography (GC)  
TAT: 5-7 business days  
Collection: Collect specimen using standard laboratory procedures.  
Transport: Room temperature, ASAP  
Specimen Stability: Room temperature: Unacceptable  
Refrigerated: 4 days  
Frozen:  
• 4 days at -20°C  
• 29 days at -70°C  
Reference Interval: Sent with result.
Causes for Rejection: Drawn in a SST/gel separation tube. Received at room temperature or refrigerated.
Special Instructions: Ship: Frozen
Performed by: Sent to Reference Laboratory (National Medical Services)

ACETYLCHOLINE RECEPTOR (AChR) - BINDING ANTIBODIES - Sent to Reference Laboratory
Test Code: LARAB
Synonyms: AChR-binding Antibodies
ACRAB
Myasthenia Gravis Antibody
Specimen Type: 1 mL (0.3 mL minimum)
Serum, Gold/SST, red-top tube
Method: This assay measures antibodies that precipitate solubilized muscle AChR that has been complexed with radiolabeled alpha-bungarotoxin (aBTX). Antibodies that bind to the receptor regions that are not sterically blocked by the aBTX are detected.
TAT: Set up and reported Monday through Friday.
Reported within 4 working days.
Collection: If a red-top tube is used, transfer separated serum to a plastic transport tube.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Frozen: 14 days
Cause of Rejection: Excessive hemolysis; chylous serum; recently administered radioisotopes; plasma specimen.
Reference Interval: Negative: 0.00-0.24 nmol/L
Borderline: 0.25-0.40 nmol/L
Positive: >0.40 nmol/L
Special Instructions: No isotopes administered 24 hours prior to venipuncture.
Performed by: Sent to Reference Laboratory - LabCorp (Order #085902)

ACETYLCHOLINE RECEPTOR (AChR) - BLOCKING ANTIBODIES - Sent to Reference Laboratory
Test Code: LARBA
Synonyms: AChR-binding Antibodies
ACRAB
Anti-AChR Antibody
Myasthenia Gravis Antibody
Specimen Type: 1 mL (0.3 mL minimum)
Serum, Gold/SST, red-top tube
Method: This assay measures antibodies that inhibit the binding of radiolabeled alpha-bungarotoxin (a-BTX) to solubilized muscle AChR.
TAT: Set up and reported Tuesday and Thursday.
Reported within 5 working days.
Collection: If a red-top tube is used, transfer separated serum to a plastic transport tube.
Transport: Refrigerated
Specimen Stability: Refrigerated: 13 days
Frozen: 13 days
Cause for Rejection: Excessive hemolysis; chylous serum; recently administered isotopes; plasma specimen.
Special Instructions: No isotopes administered 24 hours prior to venipuncture.
Performed by: Sent to Reference Laboratory - LabCorp (Order #085926)

**ACETYLCHOLINE RECEPTOR (AChR) - MODULATING ANTIBODIES - Sent to Reference Laboratory**

Test Code: LMRMA
Synonyms: Acetylcholine Receptor Complete Antibody Profile
Myasthenia Gravis Evaluation Complete Profile
Specimen Type: 0.5 mL (0.3 mL minimum)
Serum, Gold/SST, red-top tube
Method: Cell Culture-based Radioimmunoassay (RIA)
TAT: Reported within 8 working days.
Collection: Separate serum from cells within 45 minutes of collection. Send serum in plastic transport tube.
Transport: Refrigerated (cool pack) preferred.
Specimen Stability: Refrigerated: 14 days
Frozen: 2 months
Cause for Rejection: Improper labeling; gross microbial contamination; specimen contaminated with anticoagulants; chylous serum; plasma specimen; excessive hemolysis.
Performed by: Sent to Reference Laboratory - LabCorp (Order #085933)

**ACETYLCHOLINESTERASE - Sent to Reference Laboratory**

Test Code: LACAF
Synonyms: AChE
Amniotic Fluid with Reflex to Hb F
Specimen Type: 3 mL
Amniotic Fluid, Sterile plastic conical tube
Method: Acrylamide Gel Electrophoresis; Isoelectric Focusing (IEF)
TAT: Set up and reported Monday through Friday.
Collection: Avoid contamination of amniotic fluid with maternal or fetal blood. As little as one drop of fetal blood can cause false-positive results during assay of amniotic fluid. Amniotic fluid should be collected by the attending physician.
Transport: Refrigerated
Specimen Stability: Refrigerated: 1 month
Cause for Rejection: Specimen found not to be amniotic fluid; gross contamination of amniotic fluid with maternal or fetal blood; quantity not sufficient for analysis.
Special Instructions: The patient's gestational age must be at least 13 weeks for accurate AChE detection. Optimal gestational age is 14 to 18 weeks. Include the gestational age by ultrasound and/or last menstrual period (LMP) on the request form.

Comment: Do not use urine containers or tubes with rubber stoppers. Rubber is toxic to amniocytes.

Performed by: Sent to Reference Laboratory - LabCorp (Order #510354)

**ACID ELUTION - Sent to Reference Laboratory**

**Test Code:** KBET  
**Synonyms:** Kleihauer Betke Test  
**Specimen Type:** 3 mL blood, EDTA (lavender top)  
**Method:** Elution  
**TAT:** Performed: 24 hours, Monday through Friday  
**Collection:** Collect specimen using standard laboratory procedures.  
**Transport:** Room temperature, ASAP  
**Specimen Stability:** Room temperature: 8 hours  
Refrigerated: 24 hours  

**Reference Interval:** No fetal cells seen  
**Special Instructions:** Send: Room Temperature  
**Performed by:** Sent to Reference Laboratory

**ACID HEMOGLOBIN ELECTROPHORESIS (See Hb electrophoresis-agar)**

**ACTH (See Adrenocorticotropic Hormone)**

**ACTIVATED PARTIAL THROMBOPLASTIN TIME (APTT)**

**Test Code:** PTT  
**Synonyms:** APTT/PTT  
**Specimen Type:** One full 3.2% citrate (blue top)  
**Method:** Automated Clotting Assay  
**TAT:** STAT: 45 minutes  
Routine: 4 hours  
**Collection:** Specimens must reach the laboratory within 4 hours of blood draw. Specimens that cannot reach the lab within the time frame should be double spun at 2500 g for 15 minutes to obtain platelet poor plasma. 0.5mL aliquots should be frozen in plastic at -20°C.  
**NOTE:** Tubes must be full to obtain proper blood to anticoagulant ratio or the specimen will be rejected.  
**Transport:** Specimens scheduled to arrive in lab in less than 4 hours should be sent at room temperature. Platelet poor specimens should be frozen before transport and placed in an insulated container on dry ice to insure that the specimen does not thaw.  
**Specimen Stability:** Room temperature: 4 hours 18-24°C  
Refrigerated: 4 hour at 2-8°C  
**Reference Interval:** Results dependent upon reagent lot number  
**Performed by:** Core Laboratory
ACYLCARNITINE PROFILE, QUANTITATIVE, PLASMA - Sent to Reference Laboratory
Test Code: LACYL
Specimen Type: 0.5 mL (Minimum 0.1 mL)
   Plasma, sodium heparin (green top)
Method: Flow Injection/Tandem Mass Spectrometry
TAT: Reported within 6 working days.
Collection: Transfer plasma to a plastic transport tube and freeze.
Transport: Frozen
Specimen Stability: Frozen: 30 days
Cause for Rejection: Specimen thawed or not frozen; gross hemolysis; specimen type other than frozen plasma.
Comments: To avoid delays in turnaround time when requesting multiple tests on frozen specimens, please submit separate frozen specimens for each test requested.
Performed by: Sent to Reference Laboratory - LabCorp (Order #070228)

ADRENOCORTICOTROPIC HORMONE (ACTH) - Sent to Reference Laboratory
Test Code: LACTH
Synonyms: ACTH
   Adrenal Corticotropin
   Corticotropin
Specimen Type: 0.8 mL (Minimum 0.3 mL)
   Plasma, EDTA (lavender top)
Method: Electrochemiluminescence Immunoassay (ECLIA)
TAT: Set up Sunday through Friday on 1st and 3rd shifts.
   Reported within 2 working days.
Collection: ACTH should be drawn between 7:00 and 10:00 a.m. Collect into iced plastic or siliconized glass lavender-top (EDTA) tube, noting time of collection. After venipuncture, immediately immerse the tubes in an ice bath. Separate plasma from cells by centrifugation within one hour after venipuncture. Transfer the plasma into a LabCorp PP transpak frozen purple tube with screw cap immediately. Freeze immediately and maintain frozen until tested.
Transport: Frozen
Specimen Stability: Frozen: 14 days
Cause for Rejection: Thawed specimen; serum or heparinized plasma specimen; specimen collected in nonsiliconized glass tube.
Reference Interval: 7.2-63.3 pg/mL
Comment: Separate plasma from cells as soon as possible or within 2 hours of collection. To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested. Instructions for suppression/stimulation tests involving ACTH measurement can be found in the on-line Endocrine Appendices: ACTH Stimulation and Corticotropin-releasing Hormone Stimulation.
Performed by: Sent to Reference Laboratory - LabCorp. (Order #004440)
ALANINE AMINOTRANSFERASE
Test Code: ALT  
Synonyms: ALT/SGPT  
Specimen Type: 0.5 mL serum, Gold-SST/Red top  
Method: Photometric assay using Alpha-ketoglutarate and L-alanine  
TAT:  
STAT: 90 minutes  
Routine: 4 hours  
Performed 24/7  
Collection: Collect specimen using standard laboratory procedures.  
Transport: Room temperature, ASAP  
Specimen Stability: After separation from cells:  
- Room temperature: 3 days at 15-25°C  
- Refrigerated: 7 days 2-8°C  
- Frozen: 7 days at -70°C  
Reference Interval: Male: <41 U/L  
Female: <31 U/L  
Performed by: Core Laboratory

ALBUMIN
Test Code: ALB  
Specimen Type: 0.5 mL serum, Gold-SST  
Method: Colorimetric Assay using bromcresol green  
TAT:  
STAT: 90 minutes  
Routine: 4 hours  
Performed 24/7  
Collection: Collect specimen using standard laboratory procedures.  
Transport: Room temperature, ASAP  
Specimen Stability: Room temperature: 2.5 months at 15-25°C  
Refrigerated: 5 months at 2-8°C  
Frozen: 4 months at -15 to -25°C  
Reference Interval: >18 years 3.4-4.8 g/dL  
15-18 years 3.2-4.5 g/dL  
5 days - 14 years 3.8-5.4 g/dL  
0-4 days 2.8-4.4 g/dL  
Comment: Avoid hemolysis  
Performed by: Core Laboratory

ALBUMIN, URINE (See Microalbumin)

ALDOLASE, SERUM - Sent to Reference Laboratory
Test Code: LALD3  
Specimen Type: 0.5 mL (0.2 mL minimum)
Serum, Gold/SST, red-top tube

Method: Kinetic - 340 nm at 37°C
TAT: Set up and reported Sunday through Friday on 1st and 3rd shifts. Reported within 3 working days.
Collection: Separate serum or plasma immediately after coagulation (30 minutes). Not removing refrigerated specimens from the clot results in aldolase levels 12% to 46% higher.
Transport: Refrigerated
Specimen Stability: Refrigerated: 7 days
Frozen: 15 days
Cause of Rejection: Hemolysis (red cells contain aldolase)
Reference Interval: 0-30 days: Not established
31 days-1 year: 5.0-11.7 units/L
>1 year: 3.3-10.3 units/L
Performed by: Sent to Reference Laboratory - LabCorp (Order #002030)

**ALDOSTERONE - Sent to Reference Laboratory**
Test Code: LALDO
Specimen Type: 1 mL (0.5 mL minimum)
Serum, Gold/SST, red-top tube
Method: Liquid Chromatography/Tandem Mass Spectrometry (LC/MS-MS)
TAT: Reported within 5 working days
Collection: If a tube other than gel-barrier is used, transfer separated serum to a plastic transport tube.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Frozen: 14 days
Cause for Rejection: Gross hemolysis; gross lipemia
Reference Interval:
- Premature Infant:
  - 26-28 weeks, day 4: 5.0-635.0 ng/dL
  - 31-35 weeks, day 4: 19.0-141.0 ng/dL
- Full-term Infant:
  - 3 days: 7.0-184.0 ng/dL
  - 7 days: 5.0-175.0 ng/dL
  - 1-11 months: 5.0-90.0 ng/dL
  - 1 year: 7.0-54.0 ng/dL
  - 2-9 years: 5.0-80.0 ng/dL
  - 10-14 years: 4.0-48.0 ng/dL
  - >14 years: 0.0-30.0 ng/dL
Special Instructions: In order to facilitate interpretation of test results, the patient should be taken off medications for at least three weeks prior to sample collection. The patient should be ambulatory for at least 30 minutes before blood collection.
Performed by: Sent to Reference Laboratory - LabCorp (Order #004374)
ALDOSTERONE, 24 HOUR URINE - Sent to Reference Laboratory
Test Code: LALDU
Specimen Type: 10 mL (1 mL minimum)
Urine
Method: Liquid Chromatography/Tandem Mass Spectrometry (LC/MS-MS)
TAT: Set up and reported Monday through Friday on 1st shift.
Collection: Instruct the patient to void at 8 a.m. and discard the specimen. Then collect all urine including the final specimen voided at the end of the 24 hour collection period (i.e., 8 a.m. the next morning) into the plastic urine container. Screw the lid on securely. Transport the specimen promptly to the laboratory. Container must be labeled with the patient's full name, date and time collection started, and date and time collection finished. pH must be 4-8.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Frozen: 14 days
Cause for Rejection: Incomplete 24-hour collection; original container with pH<2
Reference Interval: Pediatric:
• 0-3 days: 0.00-5.00 µg/24 hours
• 4 days-10 years: 0.00-8.00 µg/24 hours
• >10 years: 0.00-19.00 µg/24 hours
Adults:
• Low sodium intake: 20.00-80:00 µg/24 hours
• Normal sodium intake: 0.00-19.00 µg/24 hours
• High sodium intake: 0.00-12.00 µg/24 hours
Performed by: Sent to Reference Laboratory - LabCorp (Order #004291)

ALDOSTERONE, RENIN RATIO - Sent to Reference Laboratory
Test Code: LALRE
Specimen Type: 1 mL Serum (0.5 mL minimum), Gold/SST, red-top tube
1 mL Plasma (0.8 mL minimum), Lavender-top (EDTA) tube
Method: See individual test descriptions.
TAT: Reported within 7 working days.
Collection: Collect blood mid morning, after the patient has been up (sitting, standing, or walking) for at least two hours and seated for 5 to 15 minutes. After collection, immediately centrifuge the lavender-top tube at room temperature, transfer plasma to a transport tube, and freeze. Label this tube "Frozen Plasma-Renin". If a red-top tube is used, transfer separated serum to a plastic transport tube. Label the serum tube "Serum-Aldosterone".
Transport: Serum: Refrigerated
Plasma: Frozen
Reference Interval: 0-30 ng/dL per ng/mL/hour
Comments: To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested.
Performed by: Sent to Reference Laboratory - LabCorp (Order #004354)

**ALKALINE PHOSPHATASE**

**Test Code:** ALP  
**Specimen Type:** 0.5 mL serum, Gold-SST/Red top  
**Method:** Photometric using p-nitrophenylphosphate as the substrate  
**TAT:** STAT: 90 minutes  
**Collection:** Collect specimen using standard laboratory procedures.  
**Transport:** Room temperature, ASAP  
**Specimen Stability:** Room temperature: 7 days at 15-25°C  
Refrigerated: 7 days at 2-8°C  
Frozen: 2 months at -15 to -25°C  
**Reference Interval:**  
- Male:  
  - >17 years 40-129 U/L  
  - 13-17 years <390 U/L  
- Female:  
  - >17 years 35-104 U/L  
  - 13-17 years <187 U/L  
- Male and Female:  
  - 7-12 years <300 U/L  
  - 4-6 years <269 U/L  
  - 1-3 years <281 U/L  
  - 7-11 months <462 U/L  
  - 6 months-6days <449 U/L  
  - 1-5 days <250 U/L  

Performed by: Core Laboratory

**ALKALINE PHOSPHATASE, BONE-SPECIFIC - Sent to Reference Laboratory**

**Test Code:** LAPBS  
**Synonyms:** Bone Alkaline Phosphatase (BAP)  
Ostase®  
Skeletal Alkaline Phosphatase (SALP)  
**Specimen Type:** 1 mL (0.5 mL minimum)  
Serum, Gold/SST, red-top tube  
**Method:** Immunochemiluminometric (ICMA)  
**TAT:** Reported within 4 working days  
**Collection:** Separate serum from cells. Transfer to a plastic transport tube and freeze.  
**Transport:** Frozen  
**Specimen Stability:** Store sample at 2-8°C if testing will be performed within 24 to 48 hours.  
Specimens held longer should be frozen at -20 to -70°C.  
**Causes for Rejection:** Gross hemolysis; quantity not sufficient for analysis.  
**Comment:** To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested.
ALKALINE PHOSPHATASE, ISOENZYME - Sent to Reference Laboratory
Test Code: LALK
Synonyms: ALP Isoenzymes
Fractionated Alkaline Phosphatase
Kasahara Isoenzymes
Nag Ao Isoenzymes
Regan Isoenzymes
Specimen Type: 2 mL (0.5 mL minimum)
Serum, Gold/SST, red-top tube
Method: Electrophoresis
TAT: Set up Monday through Friday on 1st and 3rd shifts.
Reported within 4 working days.
Collection: Separate serum from cells as soon as possible after the blood is allowed to clot.
Transport: Refrigerated
Specimen Stability: Refrigerated: 7 days
Frozen: 7 days
Causes for Rejection: Patient not fasting; hemolysis; citrate, oxalate, or EDTA anticoagulated plasma.
Reference Intervals: Sent with results. Refer to Reference Laboratory Website.
Special Instructions: State patient's age and sex on the test request form.
Performed by: Sent to Reference Laboratory - LabCorp (Order #513002)

ALPHA 1 ANTITRYPSIN SERUM LEVEL
Test Code: A1A
Specimen Type: 0.5 mL serum, Gold -SST
Method: Immunoturbidimetry
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature
Specimen Stability: Room temperature: 7 days
Refrigerated: 3 months
Frozen: 3 months
Reference Interval: 90-200 mg/dL
Performed by: Core Laboratory

ALPHA 1 FETOPROTEIN
Test Code: FETO
Specimen Type: 2 mL serum, Gold-SST and/or 1 mL CSF (please note CSF)
Method: Electrochemiluminescence Immunoassay (ECLIA)
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimens using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Refrigerated: 7 days at 2-8°C
Frozen: 3 months at -20°C
Reference Interval: <11 ng/mL
Comments: Centrifuge samples containing precipitates before performing the assay.
Do not use heat-inactivated samples. Do not use samples and controls stabilized with azide. Ensure patient samples, calibrators and controls are at room temperature (20-24°C) before measurement.
Performed by: Core Laboratory

ALPHA FETOPROTEIN (AFP) TETRA PROFILE - Sent to Reference Laboratory
Test Code: LQUAD
Synonyms: AFP Tetra
A-Fetoprotein (AFP) Tetra Profile
Specimen Type: 5 mL (3 mL minimum)
Serum, Gold/SST, red top tube, no thrombin additive
Method: Immunochemiluminometric Assay (ICMA)
Collection: Avoid hemolysis. Send complete specimen in the original tube. Do not pour off.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Frozen: 14 days
Cause for Rejection: Gross hemolysis; gross lipemia; quantity not sufficient for analysis.
Special Instructions: The following information must be provided:
- Gestational age
- Date on which the patient was the stated gestational age
- How gestational age was determined (LMP, EDD, US)
- Patient's weight
- Patient's date of birth
- Patient's race (white, black, other)
- Insulin-dependent diabetic status
Also indicate relevant patient history (e.g., prior neural tube defects, Down syndrome, ultrasound anomalies, or previous maternal serum screening specimen during this pregnancy). Complete information is necessary to interpret the test. Patient information may be provided to the lab using the Maternal Prenatal Screening Form from LabCorp (0900). Specimens must be collected before amniocentesis.
Comments: This test to be ordered only by sendout staff. Regular QUADM test should be ordered normally. This is a test ordered only in certain circumstances.
Performed by: Sent to Reference Laboratory - LabCorp (Order #017319).

ALPHA SUBUNIT, FREE - Sent to Reference Laboratory
Test Code: LASUB
Specimen Type: 1 mL (0.25 mL minimum)
Serum, Gold/SST, red-top tube
Method: Immunochemiluminometric Assay (ICMA)
TAT: Reported within 8 working days
Collection: Transfer the serum into a LabCorp PP transpak frozen purple tube with screw cap. Freeze immediately and maintain frozen until tested.
Transport: Frozen
Specimen Stability: Frozen: 200 days
Reference Intervals: Male:
  • 20-44 years: <0.55 ng/mL
  • 45-54 years: <0.86 ng/mL
  • 55-64 years: <1.37 ng/mL
  • 65-94 years: <2.13 ng/mL
Female:
  • 20-44 years (premenopausal): <1.02 ng/mL
  • 45-59 years (premenopausal): <2.34 ng/mL
  • 60-99 years (postmenopausal): <3.56 ng/mL
Comments: To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test.
Performed by: Sent to Reference Laboratory - LabCorp (Order #140269)

ALT/SGPT (See Alanine aminotransferase)

ALUMINUM, BLOOD - Sent to Reference Laboratory
Test Code: LALUM
Specimen Type: 7 mL (0.6 mL minimum)
Whole blood, plasma or serum, Royal blue (EDTA) top tube
Method: Inductively Coupled Plasma/Mass Spectrometry (ICP/MS)
TAT: 2-5 days
Collection: Submit original unopened tube or serum or plasma removed from a royal blue-top tube.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Frozen: 14 days
Causes for Rejection: Royal blue top tube not used in specimen collection.
Reference Interval: Environmental exposure: 0-9 µg/L
Patient on dialysis: <40 µg/L
Critical Values: Potentially toxic: >60 µg/24 hours
Performed by: Sent to Reference Laboratory - LabCorp (Order #071548)

AMIKACIN (Peak)
Test Code: AMIKP
Specimen Type: 0.5 mL serum, Gold-SST
Method: Homogenous Enzyme Immunoassay Technique
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 8 hours
Refrigerated: 1 week at 2-8°C
Frozen: 2 weeks at -20°C
Avoid repeated freezing and thawing.
Reference Interval: Peak: 20.0-25.0 µg/mL
Comments: Peak specimens should be obtained 30-90 minutes after administration.
Performed by: Core Laboratory

AMIKACIN (Random)
Test Code: AMIKR
Specimen Type: 0.5 mL serum, Gold-SST
Method: Homogenous Enzyme Immunoassay Technique
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimens using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 8 hours
Refrigerated: 1 week at 2-8°C
Frozen: 2 weeks at -20°C
Avoid repeated freezing and thawing.
Performed by: Core Laboratory

AMIKACIN (Trough)
Test Code: AMIKT
Specimen Type: 0.5 mL serum, Gold-SST
Method: Homogenous Enzyme Immunoassay Technique
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimens using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 8 hours
Refrigerated: 1 week at 2-8°C
Frozen: 2 weeks at -20°C
Avoid repeated freezing and thawing.
Reference Interval: Trough: 5.0-10.0 µg/mL
Comment: Trough level should be drawn 30 minutes prior to next dose.
Performed by: Core Laboratory

AMINO ACID PROFILE, QUANTITATIVE, PLASMA - Sent to Reference Laboratory
Test Code: LAA
Specimen Type: 0.5 mL (Minimum 0.25 mL)
Plasma, heparin (green top)
Method: Liquid Chromatography/Tandem Mass Spectrometry (LC/MS-MS)
TAT: Set up Sunday through Friday on 1st shift. Reported within 5 working days.
Collection: Separate plasma from cells. Transfer specimen to plastic transport tube before freezing.
Transport: Frozen
Specimen Stability: Frozen: 14 days
Causes for Rejection: Gross hemolysis; room temperature; thawed; specimens collected in yellow-top (ACD) tubes.
Reference Interval: Plasma Amino Acid Reference Intervals.
Comment: To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested.
Special Instructions: Centrifuge, remove plasma from cells, and freeze immediately.
Performed by: Sent to Reference Laboratory - LabCorp (Order #700068)

AMINO ACID PROFILE, QUANTITATIVE URINE - Sent to Reference Laboratory
Test Code: LAAU
Specimen Type: 5 mL (2 mL minimum)
Urine, Plastic urine container without preservative
Method: Liquid Chromatography/Tandem Mass Spectrometry (LC/MS-MS)
TAT: Set up Sunday through Friday on 1st shift.
Reported within 6 working days.
Collection: Collect specimen in a container with a securely fastened lid using universal precautions.
Transport: Frozen
Specimen Stability: Frozen: 14 days
Causes for Rejection: Room temperature or thawed specimens.
Comments: To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested.
Performed by: Sent to Reference Laboratory - LabCorp (Order # 700140)

AMITRIPTYLINE - Sent to Reference Laboratory
Test Code: LAMB1
Specimen Type: 1 mL (0.3 mL minimum)
Serum, Red top tube
Method: Liquid Chromatography/Tandem Mass Spectrometry (LC/MS-MS)
TAT: Set up Tuesday through Friday on 1st shift and Friday through Sunday on 3rd shift.
Reported within 1 working day.
Collection: Transfer separated serum to a plastic transport tube. For therapeutic monitoring, collect specimen immediately prior to next dose unless specified otherwise.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days  
Frozen: 14 days  
Cause for Rejection: Gel-barrier tube  
Reference Interval: Therapeutic: Amitriptyline + nortriptyline: 80-200 ng/mL  
Performed by: Sent to Reference Laboratory - LabCorp (Order #007476)

AMMONIA, BLOOD  
Test Code: AMM  
Specimen Type: 0.5 mL plasma, EDTA (lavender top)  
Method: Enzymatic Kinetic Assay  
TAT: STAT: 90 minutes  
Routine: 4 hours  
Performed 24/7  
Collection: Collect specimen using standard laboratory procedures.  
Avoid tourniquet stasis.  
Adults: Fasting sample preferred.  
Infants and children: Draw specimen prior to feeding or 2-3 hours after a meal.  
Transport: On ice, ASAP  
Specimen Stability: Analyze ASAP. If not analyzed immediately, separate plasma and store on ice. Sample is good for up to 30 minutes.  
Reference Interval: Male 15-55 umol/L  
Female 11-48 umol/L  
Comment: Serum should not be used for ammonia measurements, because ammonia is produced during the clotting process.  
Performed by: Core Laboratory

AMNIOTIC FLUID ALPHA FETOPROTEIN  
Test Code: AAFP  
Specimen Type: Amniotic fluid  
Method: Chemiluminescence Immunoassay  
TAT: Performed Monday, Wednesday, Friday  
Collection: Requires a special requisition and protocol. Contact Core Laboratory at 464-6812.  
Transport: Room temperature ASAP.  
Specimen Stability: Centrifuge at 1800 rcf or greater in a refrigerated centrifuge for 20 minutes. Remove supernatant for testing. Retain the cell pellet from the amniotic fluid until the AFP concentration in the amniotic fluid is determined and further testing is not required. Store 2-8°C if testing is within 48 hours. If longer, freeze sample at -20°C or colder. Avoid repeated freezing and thawing.  
Reference Interval: Report includes patient risk assessment.  
Comment: Maternal amniotic samples should be obtained between 15 and 21.9 weeks of gestation. Amniotic samples should be obtained between 15 and 22.9 weeks of gestation. Centrifugation and removal of the supernatant should be done immediately upon receipt of the sample.
AMNIOTIC FLUID (for Cytogenetic studies, See Chromosome Analysis)

AMNIOTIC FLUID, OPTICAL DENSITY (See Bilirubin, Amniotic Fluid)

AMPHETAMINES, CONFIRMATION - Sent to Reference Laboratory
Test Code: LAMUC
Specimen Type: 20 mL (7 mL minimum) aliquot from a fresh well-mixed random urine collection
Method: Mass Spectrometry (MS)
TAT: At least 7 days or more.
Collection: Random urine is collected in a container with a securely fastened lid with no preservatives.
Transport: Refrigerated
Comment: This is a confirmatory test based on the DABU1 screen results. Orders are available upon request.
Performed by: Sent to Reference Laboratory - LabCorp (Order #071282).

AMPHETAMINES, SCREEN
Test Code: DABU1
Specimen Type: 10 mL (10 mL minimum) aliquot from a fresh well-mixed random urine collection
Method: Kinetic Interaction of Microparticles in Solution (KIMS) and Tricyclic by Enzyme Immunoassay (EIA)
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Random urine is collected in a container with a securely fastened lid with no preservatives.
Transport: Room Temperature (ASAP)
Specimen Stability: Refrigerated: Test within 3 days and store at 2-8°C.
Reference Interval: Negative
Comment: Included in the DABU1 battery. Confirmatory test available upon request (LAMUC - Order #071282).
Performed by: Core Laboratory

AMYLASE
Test Code: AMY
Specimen Type: 0.5 mL serum, Gold-SST/Red top
Method: Enzymatic Colorimetric Assay
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimens using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 7 days  
Refrigerated: 1 month at 2-8°C  
Avoid freezing the specimen.

Reference Interval: 28-103 U/L
Performed by: Core Laboratory

**AMYLASE, URINE, RANDOM**

Test Code: UAMY  
Specimen Type: Fresh random urine  
Method: Enzymatic Colorimetric Assay  
TAT: Performed 24/7  
Collection: Random urine collected in a container with a securely fastened lid.  
Transport: ASAP  
Specimen Stability: Room Temperature: 2 days at 20-25ºC  
Refrigerated: 10 days at 2-8ºC  
Reference Interval: Reference intervals for random urine has not been established.  
Special Instructions: Assay promptly or adjust pH to alkaline range (about pH7) before storing.  
Comment: Centrifuge samples containing precipitate before performing the assay.  
Performed by: Core Laboratory

**ANA**

Test Code: ANA1  
Specimen Type: Serum, Gold-SST  
Pediatric: 1/2 ped tube, 1.5 mL blood  
Method: Indirect Fluorescent Antibody (IFA)  
TAT: 72 hours  
Reference Interval: <50  
Comments: This is a high sensitivity screening test. Patients with titers of 1:50 or greater are positive. The following antinuclear patterns will be reported with titers: homogeneous, speckled, peripheral, nucleolar, centromere, etc., or descriptively with less well characterized patterns.  
For specific ANA antibodies, order ANA specific Abs.  
Performed by: Immunology Laboratory

**ANA SPECIFIC ABS**

Test Code: ANARP  
Specimen Type: Serum  
Method: Multi-Lyte  
TAT: 3 days  
Reference Interval: 0-100 U/mL  
Comments: The ANA Specific Antibodies test is a less sensitive assay (titers 1:200 or greater) designed to detect and quantitate specific antibodies to the following antigens (SSA, SSB, SCL-70, Jo-1, dsDNA, RNP, Smith, centromere B and histone). Higher specificity tests are of lower sensitivity so some low titer values (<200) may not be detected, as well as antibodies of specificities not included above. Antibodies to these components may
be helpful in characterizing connective tissue diseases. Antibody levels to dsDNA are useful for following disease activity.

Performed by: Immunology Laboratory

ANCA (See Antineutrophil Cytoplasmic Antibody)

ANDROSTENEDIONE - Sent to Reference Laboratory

Test Code: LAND1
Synonyms: 4-androstenedione
Specimen Type: 1 mL (0.5 mL minimum)
    Serum, Red-top tube
Method: Liquid Chromatography/Tandem Mass Spectrometry (LC/MS-MS)
TAT: Set up and reported Monday through Friday on 1st shift.
    Reported within 4 working days.
Collection: Transfer separated serum to a plastic transport tube.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
    Frozen: 14 days
Causes for Rejection: Gross hemolysis; lipemia; gel-barrier tube.
Reference Interval: Male:
    • 0-30 days: Not established
    • 1-6 months: 0-50 ng/dL
    • 7 months - 1 year: 0-41 ng/dL
    • 2-5 years: 0-22 ng/dL
    • 6-8 years: 10-78 ng/dL
    • 9-14 years: 10-78 ng/dL
    • 15-60 years: 27-152 ng/dL
    • 61-80 years: 22-96 ng/dL
    • >80 years: Not established
Female:
    • 0-30 days: Not established
    • 1-6 months: 0-81 ng/dL
    • 7 months - 1 year: 0-48 ng/dL
    • 2-5 years: 0-67 ng/dL
    • 6-8 years: 0-67 ng/dL
    • 9-14 years: 28-288 ng/dL
    • 15-60 years: 41-262 ng/dL
    • 61-80 years: 17-99 ng/dL
    • >80 years: Not established

Comments: Do not use a gel-barrier tube. The use of a gel-barrier tube is not recommended due to slow absorption of the steroid by the gel. Depending on the specimen volume and storage time, the decrease in androstenedione level due to absorption may be clinically significant.

Performed by: Sent to Reference Laboratory - LabCorp (Order #004705)
ANGIOTENSIN CONVERTING ENZYME (ACE)- Sent to Reference Laboratory
Test Code: LANCE
Specimen Type: 0.5 mL (Minimum 0.2 mL)
    Serum, Gold-SST red top tube
Method: Kinetic
TAT: Set up and reported Sunday through Friday on 1st and 3rd shifts.
    Reported within 3 working days.
Collection: Separate serum from cells.
Transport: Refrigerated
Specimen Stability: Refrigerated: 7 days
    Frozen: 3 days
Causes for Rejection: Captopril, enalapril, or lisinopril administration; hemolyzed or icteric
    specimen; whole blood, cerebrospinal fluid (CSF), or EDTA plasma
    specimen received.
Reference Interval: Pediatric and Adults:
    • 0-2 years: 18-95 units/L
    • 3-14 years: 22-108 units/L
    • 15 years or older: 14-82 units/L
Performed by: Sent to Reference Laboratory - LabCorp (Order #010116)

ANGIOTENSIN CONVERTING ENZYME (ACE) - CSF - Sent to Reference Laboratory
Test Code: LACEF
Specimen Type: 1 mL (Minimum 0.3 mL)
    CSF
Method: Spectrophotometry
TAT: Reported within 4 working days.
Collection: Transfer specimen to plastic transport tube.
Transport: Refrigerated
Performed by: Sent to Reference Laboratory - LabCorp (Order #216839)

ANTI-dsDNA
Test Code: DSDNA
Specimen Type: 0.5 mL serum, Gold-SST
Method: Multi-Lyte
TAT: 3 days
Reference Interval: 0-100 U/mL
Comments: Sometimes ordered as a Native DNA.
Performed by: Immunology Laboratory

ANTI-ENA
Test Code: ASMR
Synonyms: Anti Smith Antibody
Specimen Type: 0.5 mL serum, Gold-SST
Method: Multi-Lyte
TAT: 3 days
Reference Interval: 0-100 U/mL
ANTI-HEPATITIS (See Hepatitis)

ANTIBODY IDENTIFICATION
Test Code: ABID
Synonyms: Antibody panel
Specimen Type: 15 mL blood (three 5 mL tubes), EDTA (lavender top)
Method: Immune Hemagglutination using multiple red cells of known antigenic composition to determine the specificity of red cell antibodies. Needed for selection of compatible red cells for transfusion. Also used to determine specificity and significance of antibody in pregnant women and likelihood of antibody to cause Hemolytic Disease of the Newborn (HDN).
TAT: Daily. Time to complete workup varies depending on the complexity of the antibody problem. May take several hours to resolve problem and find compatible blood. Difficult problems may require testing by a reference laboratory and can take several days.
Collection: Specimens for Blood Bank testing must be labeled with the patient's full name and medical record number and the initials of the phlebotomist. The specimen label must include the date and time the sample was drawn if this information is not entered in the collection information field of the EPIC generated order or in the Collected by field of the Blood Bank requisition.
Transport: Room temperature
Specimen Stability: Specimen can be used for 3 days.
Comments: If an antibody is detected, the antibody must be identified prior to release of red cell products. In an emergency, the Pathology Attending will consult with the patient's physician regarding the risk of transfusing the patient prior to completion of antibody identification. Sending additional specimens for this procedure may be necessary. Blood Bank staff will call and request additional specimens as needed.
Performed by: Blood Bank

ANTIBODY TITER
Test Code: ABTI
Synonyms: Antibody panel
Specimen Type: 10 mL blood (two 5 mL tubes), EDTA (lavender top)
Method: Immune Hemagglutination using multiple red cells. Serial dilutions of serum are tested to determine the highest dilution at which an antibody is still detected. Procedure is used for following antibodies in pregnant women at risk for HDN. Also used when characterizing a group of antibodies called High Titer Low Avidity (HTLA) antibodies.
TAT: Performed Monday through Friday.
Collection: Specimens for Blood Bank testing must be labeled with the patient's full name and medical record number and the initials of the phlebotomist. The
specimen label must include the date and time the sample was drawn if this information is not entered in the collection information field of the EPIC generated order or in the Collected by field of the Blood Bank requisition.

Transport: Room temperature
Specimen Stability: Refrigerated: 3 days if stored at 2-8°C.
Comments: On prenatal specimens, titers will be determined on both current and any prior samples frozen for use as controls. The current titer is compared to the control to determine whether a rise in antibody titer has occurred.

Performed by: Blood Bank

ANTICARDIOLIPIN ANTIBODIES (ACA), IgA, QUANTITATIVE - Sent to Reference Laboratory

Test Code: LCLA
Synonyms: Antiphospholipids
Cardiolipin Antibodies
Specimen Type: 1 mL (0.5 mL minimum)
Serum, Gold/SST, red-top tube
Method: Enzyme-linked Immunosorbent Assay (ELISA) detecting isotype-specific ACA binding to a microtiter plate coated with purified cardiolipin antigen.
TAT: Set up and reported Monday through Friday on 1st shift.
Reported within 2 working days.
Collection: Collect specimen using standard laboratory procedures.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Frozen: 14 days
Causes for Rejection: Hemolysis; lipemia; icteric specimen.
Reference Interval: Negative: <12 APL units/mL
Indeterminate: 12-20 APL units/mL
Low-medium positive: >20-80 APL units/mL
Positive: >80 APL units/mL
1 APL unit = cardiolipin-binding activity of purified IgA anticardiolipin (at 1 U/mL) from an international reference standard.
Performed by: Sent to Reference Laboratory - LabCorp (Order #161836)

ANTICARDIOLIPIN ANTIBODIES IgG
Test Code: ACBG
Synonyms: Cardiolipin Antibody IgM
aCL IgM Ab
ACA IgM
Specimen Type: 1 mL required (0.5 mL minimum, acceptable)
Serum, Gold/SST, red top tube
Method: Chemiluminescent Immunoassay
TAT: Testing is batched and performed 2-3 times per week (7:00 a.m. - 3:00 p.m.).
Specimen Stability: Room Temperature: 4 days
Refrigerated (2-8°C): 1 week
Frozen (-70°C): 1 month

Reference Interval: <20.0 U/mL
Technical Range: 2.6-2024.0
Performed by: Core Laboratory, Special Hematology

**ANTICARDIOLIPIN ANTIBODIES (ACA), IgG, QUANTITATIVE - Sent to Reference Laboratory**

Test Code: LCLG
Synonyms: Antiphospholipids
Cardiolipin Antibodies
Specimen Type: 1 mL (0.5 mL minimum)
Serum, Gold/SST, red-top tube
Method: Enzyme-linked Immunosorbent Assay (ELISA) detecting isotype-specific ACA binding to a microtiter plate coated with purified cardiolipin antigen.
TAT: Set up and reported Monday through Friday on 1st shift.
Reported within 2 working days.
Collection: Collect specimen using standard laboratory procedures.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Frozen: 14 days
Causes for Rejection: Hemolysis; lipemia; icteric specimen.
Reference Interval: Negative: <15 APL units/mL
Indeterminate: 15-20 APL units/mL
Low-medium positive: >20-80 APL units/mL
Positive: >80 APL units/mL
1 APL unit = cardiolipin-binding activity of purified IgA anticardiolipin (at 1 U/mL) from an international reference standard.
Performed by: Sent to Reference Laboratory - LabCorp (Order #161810)

**ANTICARDIOLIPIN ANTIBODIES IgM**

Test Code: ACBM
Synonyms: Cardiolipin Antibody IgM
aCL IgM Ab
ACA IgM
Specimen Type: 1 mL required (0.5 mL minimum, acceptable)
Serum, Gold/SST, red top tube
Method: Chemiluminescent Immunoassay
TAT: Testing is batched and performed 2-3 times per week (7:00 a.m. - 3:00 p.m.).
Specimen Stability: Room Temperature: 4 days
Refrigerated (2-8°C): 1 week
Frozen (-70°C): 1 month
Reference Interval: <20.0 U/mL
Technical Range: 1.0-774.0
Performed by: Core Laboratory, Special Hematology
ANTICARDIOLIPIN ANTIBODIES (ACA), IgM, QUANTITATIVE - Sent to Reference Laboratory
Test Code: LCLM
Synonyms: Antiphospholipids, Cardiolipin Antibodies
Specimen Type: 1 mL (0.5 mL minimum)
               Serum, Gold/SST, red-top tube
Method: Enzyme-linked Immunosorbent Assay (ELISA) detecting isotype-specific ACA binding to a microtiter plate coated with purified cardiolipin antigen.
TAT: Set up and reported Monday through Friday on 1st shift.
     Reported within 2 working days.
Collection: Collect specimen using standard laboratory procedures.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days Frozen: 14 days
Causes for Rejection: Hemolysis; lipemia; icteric specimen.
Reference Interval: IgG:
                    • Negative: <15 APL units/mL
                    • Indeterminate: 15-20 APL units/mL
                    • Low-medium positive: >20-80 APL units/mL
                    • Positive: >80 APL units/mL
                    IgM:
• Negative: <13 APL units/mL
• Indeterminate: 13-20 APL units/mL
• Low-medium positive: >20-80 APL units/mL
• Positive: >80 APL units/mL

1 APL unit = cardiolipin-binding activity of purified IgA anticardiolipin (at 1 U/mL) from an international reference standard.

Performed by: Sent to Reference Laboratory - LabCorp (Order #161802)

ANTICHRONATIN ANTIBODIES - Sent to Reference Laboratory
Test Code: LCHM
Synonyms: Antibodies to LE Cell Phenomenon
Specimen Type: 1 mL (0.5 mL minimum)
  Serum, Gold/SST, red-top
Method: Multiplex Flow Immunoassay
TAT: 3 days
Collection: If tube other than gel-barrier tube is used, transfer the separated serum to a plastic transport tube.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
  Frozen: 14 days
Causes for Rejection: Hemolysis
Comments: Separate serum from cells ASAP.
Performed by: Sent to Reference Laboratory - LabCorp (Order #012580)

ANTIDIURETIC HORMONE (ADH), PLASMA - Sent to Reference Laboratory
Test Code: LADH2
Synonyms: Arginine Vasopressin, AVP
  Vasopressin
Specimen Type: 2 mL
  Plasma, Lavender-top (EDTA) tube
Method: Radioimmunoassay (RIA)
TAT: Set up Sunday and Wednesday.
  Reported within 10 working days.
Collection: Centrifuge in a refrigerated centrifuge, separate plasma, and freeze immediately. Transfer specimen to a plastic transport tube before freezing. To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested.
Transport: Frozen
Comment: To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested.
Special Instructions: No isotopes administered within 24 hours prior to venipuncture.
Performed by: Sent to Reference Laboratory - LabCorp (Order #010447)
ANTI-DNASE B (STREPTOCOCCAL) ANTIBODIES - Sent to Reference Laboratory

Test Code: LADNA
Synonyms: ADB
Anti-DNase B Antibodies
DNase-B
DNase-B Antibodies
Streptococcal Antibodies
Streptodornase

Specimen Type: 1 mL (0.5 mL minimum)
Serum, Gold/SST, red-top tube

Method: Immunophelometry

TAT: Reported within 5 working days.

Collection: Collect specimen using standard laboratory procedures.

Transport: Refrigerated

Specimen Stability: Refrigerated:14 days.

Reference Interval:
<1 year: not established
1-6 years: <78 U/mL
7-17 years: ≤170 U/mL
18 years and older: ≤120 U/mL

Performed by: Sent to Reference Laboratory - LabCorp (Order #096289)

ANTIGLOBULIN, DIRECT

Test Code: DC
Synonyms: Direct Coombs

Specimen Type: 5 mL blood, EDTA (lavender top)

Method: Use of immune hemagglutination to detect IgG antibodies or complement attached in vivo to patient's red cells.

TAT: Performed 24/7

Collection: Specimens for Blood Bank testing must be labeled with the patient's full name and medical record number and the initials of the phlebotomist. The specimen label must include the date and time the sample was drawn if this information is not entered in the collection information field of the EPIC generated order or in the Collected by field of the Blood Bank requisition.

Transport: Room temperature

Specimen Stability: Should be performed on fresh specimen.

Interpretation: If the direct antiglobulin test is positive using broad spectrum antihuman globulin, the test is repeated using anti-IgG and anti-complement. Depending on the clinical situation, an eluate may be performed to determine the specificity of IgG antibodies coating the red cells.

Comments: The direct antiglobulin test is used to determine if a patient has autoimmune hemolytic anemia, is experiencing an immediate or delayed hemolytic transfusion reaction, and in diagnosing hemolytic disease of the newborn. In rare situations, a patient may have autoimmune hemolytic anemia with a negative direct antiglobulin test.

Performed by: Blood Bank
ANTIGLOBULIN, INDIRECT
Test Code: IDC
Synonyms: Indirect Coombs, antibody screen
Specimen Type: 5 mL blood, EDTA (lavender top)
Method: Use of immune hemagglutination to detect red cell antibodies in patient's serum.
TAT: Performed 24/7
Collection: Specimens for Blood Bank testing must be labeled with the patient's full name and medical record number and the initials of the phlebotomist. The specimen label must include the date and time the sample was drawn if this information is not entered in the collection information field of the EPIC generated order or in the Collected by field of the Blood Bank requisition.
Transport: Room temperature
Specimen Stability: Refrigerated: 3 days if stored at 2-8°C.
Comments: Testing system designed to detect antibodies which react at 37°C. Room temperature - reacting antibodies will usually not be detected. Antibodies to low frequency antigens will usually not be detected.
Performed by: Blood Bank

ANTIGLOMERULAR BASEMENT MEMBRANE ANTIBODIES - Sent to Reference Laboratory
Test Code: LAGB1
Synonyms: Anti-GBM, Goodpasture Syndrome
Specimen Type: 1 mL (0.5 mL minimum)
Serum, Gold/SST, red-top tube
Method: Enzyme Immunoassay (EIA)
TAT: Set up and reported Monday through Friday on 1st shift.
Collection: Collect specimen using standard laboratory procedures.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Frozen: 14 days
Reference Interval: 0-20 units/mL
Performed by: Sent to Reference Laboratory - LabCorp (Order #082719)

ANTIMITOCHONDRIAL ANTIBODY
Test Code: AMA
Specimen Type: 2 mL serum, Gold-SST
Method: Indirect Fluorescent Antibody (IFA)
TAT: Monday, Wednesday, Friday
Reference Interval: <50
Performed by: Immunology Laboratory

ANTIMYELOPEROXIDASE (MPO) ANTIBODIES - Sent to Reference Laboratory
Test Code: LMAQS
Synonyms: Anti-MPO Antibodies
pANCA-specific Antibody
Specimen Type: 0.6 mL (0.3 mL minimum)
Serum, Gold/SST, red-top tube
Method: Enzyme immunoassay (EIA)
TAT: Reported within 5 working days.
Collection: Collect specimen using standard laboratory procedures.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Frozen: 14 days
Causes for Rejection: Hemolysis; lipemia; gross bacterial contamination
Reference Interval: 0.0-9.0 units/mL
Performed by: Sent to Reference Laboratory - LabCorp (Order #163840)

ANTINEUTROPHIL CYTOPLASMIC ANTIBODY
Test Code: ANCA
Specimen Type: 2 mL serum, Gold-SST
Method: Indirect Fluorescent Antibody (IFA)
TAT: Monday, Wednesday, Friday
Reference Interval: Negative
Comments: Tests for both P-ANCA and C-ANCA
Performed by: Immunology Laboratory

ANTINUCLEAR ANTIBODY (See ANA and ANA specific Abs)

ANTIPANCREATIC ISLET CELLS - Sent to Reference Laboratory
Test Code: LSL
Specimen Type: 1 mL (0.5 mL minimum)
Serum, Gold/SST, red-top tube
Method: Indirect Fluorescent Antibody (IFA)
TAT: Set up Thursday on 1st shift.
Reported within 3 working days.
Collection: Collect specimen using standard laboratory procedures.
Transport: Refrigerated
Reference Interval: Negative: <1:1
Performed by: Sent to Reference Laboratory - LabCorp (Order #160721)

ANTIPARIETAL CELL ANTIBODY (APCA) - Sent to Reference Laboratory
Test Code: LAPAB
Synonyms: Gastric Parietal Cell Antibodies
Specimen Type: 1 mL (0.3 mL minimum)
Serum, Gold/SST, red top tube or gel-barrier tube
Method: Enzyme-linked Immunosorbent Assay (ELISA)
TAT: Set up and reported Tuesday through Friday on 1st shift.
Reported within 3 working days.
Collection: Collect specimen using standard laboratory procedures.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Frozen: 14 days
Cause for Rejection: Hemolysis; lipemia; gross bacterial contamination; heat-treated specimen; specimen with preservative added.
Reference Interval: Negative: 0.0-20.0
Equivocal: 20.1-24.9
Positive: >24.9
Performed by: Sent to Reference Laboratory - LabCorp (Order #006486)

ANTIPLATELET ANTIBODIES DIRECT/IgG - Sent out to Reference Laboratory
Test Code: Miscellaneous Test
Specimen Type: 10 mL blood, EDTA (lavender top)
(Minimum 5 mL)
Method: Flow cytometry
TAT: 3-5 business days.
Performed Monday through Thursday. Do not send specimens on Friday and Saturday. Specimens cannot be saved over the weekend as they will exceed specimen stability.
Collection: Must arrive at the Reference Laboratory within 48 hours of specimen collection.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 48 hours
Refrigerated: Unacceptable
Frozen: Unacceptable
Reference Interval: Sent with results.
Special Instructions: Ship: Room Temperature
Performed by: Sent to Reference Laboratory

ANTIPLATELET ANTIBODIES INDIRECT/IgG - Sent out to Reference Laboratory
Test Code: Miscellaneous Test
Specimen Type: 1 mL serum, plain red
(Minimum 0.5 mL)
Method: Semi Quantitative Enzyme Linked Immunosorbent Assay
TAT: 3-5 business days.
Do not send specimens on Friday and Saturday. They cannot be saved over the weekend as they will exceed specimen stability.
Collection: Must arrive at the Reference Laboratory within 48 hours of specimen collection.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: Unacceptable
Refrigerated: 48 hours
Frozen: 1 month
Reference Interval: Sent with results.
Special Instructions: Ship: Frozen
Performed by: Sent to Reference Laboratory
ANTIPROTEINASE 3 (PR3) ANTIBODIES - Sent to Reference Laboratory
Test Code: LPRTS
Synonyms: cANCA-specific Antibody
Specimen Type: 0.6 mL (0.3 mL minimum)
                        Serum, Gold/SST, red-top tube
Method: Enzyme Immunoassay (EIA)
TAT: Reported within 5 working days.
Collection: Collect specimen using standard laboratory procedures.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Reference Interval: 0.0-3.5 units/mL
Performed by: Sent to Reference Laboratory - LabCorp (Order #163857)

ANTIRIBOSOMAL P ANTIBODIES - Sent to Reference Laboratory
Test Code: LPPAB
Specimen Type: 1 mL (0.5 mL minimum)
                        Serum, Gold, SST, red top tube
Method: Multiplex Flow Immunoassay
Collection: Collect specimen using standard laboratory procedures.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
                        Frozen: 14 days
Cause for Rejection: Hemolysis; lipemia; gross bacterial contamination; icterus
Performed by: Sent to Reference Laboratory - LabCorp (Order #012700)

ANTISMOOTH MUSCLE ANTIBODY
Test Code: ASMA
Specimen Type: 2 mL serum, Gold-SST
Method: Indirect Fluorescent Antibody (IFA)
TAT: Monday, Wednesday, Friday
Reference Interval: <50
Performed by: Immunology Laboratory

ANTISTREPTOLYSIN O
Test Code: ASOT
Specimen Type: 0.5 mL serum, Gold-SST
Method: Immunoturbidimetry
TAT: STAT: 90 minutes
                Routine: 4 hours
                Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 2 days
                        Refrigerated: 2 days
                        Frozen: 6 months
Reference Interval: <200 IU
Comments: Centrifuge samples containing precipitates before performing the assay.
Performed by: Core Laboratory

**ANTITHROMBIN III ACTIVITY**

Test Code: AT3A
Specimen Type: 4.5 mL blood, citrate (blue top)
Method: Automated Chromogenic Assay
TAT: Testing is performed two times per week, Monday through Friday (7:00 a.m. - 3:00 p.m.). For urgent requests, call Special Hematology at 464-6826.
Collection: Specimens must reach the laboratory within 4 hours of blood draw. Specimens that cannot reach the lab within the time frame should be double spun at 2500 g for 15 minutes to obtain platelet poor plasma. 0.5mL aliquots should be frozen in plastic at -20°C.
NOTE: Tubes must be full to obtain proper blood to anticoagulant ratio or the specimen will be rejected.
Transport: Specimens scheduled to arrive in lab in less than 4 hours should be sent at room temperature. Platelet poor specimens should be frozen before transport and placed in an insulated container on dry ice to insure that the specimen does not thaw.

Specimen Stability: Frozen: 6 months at -70°C.
Reference Interval: 0  39-87 U/dL
  1 day  41-93 U/dL
  2-5 days  48-108 U/dL
  6 days - 1 month  73-121 U/dL
  2-3 months  84-124 U/dL
  4-6 months  80-138 U/dL

Comments: In addition to congenital deficiencies, low levels of AT III can be seen in heparin therapy. Increased levels of AT III can be seen during Coumadin therapy.
Performed by: Core Laboratory, Special Hematology

**APC RESISTANCE**

Test Code: APC1
Specimen Type: 4.5 mL blood, citrate (blue top)
Method: Automated Clotting Assay
TAT: Testing is batched and performed once/week (7:00 a.m. - 3:00 p.m.). For urgent requests, call Special Hematology at 464-6826.
Collection: Specimens must reach the laboratory within 4 hours of blood draw. Specimens that cannot reach the lab within the time frame should be double spun at 2500 g for 15 minutes to obtain platelet poor plasma. 0.5mL aliquots should be frozen in plastic at -20°C.
NOTE: Tubes must be full to obtain proper blood to anticoagulant ratio or the specimen will be rejected.
Transport: Specimens scheduled to arrive in lab in less than 4 hours should be sent at room temperature. Platelet poor specimens should be frozen before
transport and placed in an insulated container on dry ice to insure that the specimen does not thaw.

Specimen Stability: Frozen: 6 months at -70°C
Reference Interval: >1.9
Performed by: Core Laboratory, Special Hematology

**APTT/PTT (See Activated partial thromboplastin time)**

**ARSENIC, WHOLE BLOOD - Sent to Reference Laboratory**
Test Code: LARS
Specimen Type: 2 mL (0.6 mL minimum)
Whole blood, Royal blue-top (EDTA) tube
Method: Inductively-coupled Plasma/Mass Spectrometry (ICP/MS)
TAT: 2-5 days
Collection: Collect specimen using standard laboratory procedures.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Frozen: 14 days
Causes for Rejection: Clotted specimen
Reference Interval: 2-23 µg/L
Performed by: Sent to Reference Laboratory - LabCorp (Order #007245)

**ARTHRITIS PANEL**
Test Code: ARTHP
Specimen Type: 5 mL, Red-top
5 mL, Lavender-top (EDTA)
TAT: Results within 4 hours.
Collection: Collect specimens using standard laboratory procedures.
Transport: Ambient temperature must be received within 1 hour of receipt.
Specimen Stability: See individual components.
Comments: Individual tests are Uric Acid, Sedimentation Rate, ANA, RF Titer.
Please collect in serum separator tube and lavender tube.
Performed by: Core Laboratory

**ASPARTATE AMINOTRANSFERASE**
Test Code: AST
Synonyms: AST/SGOT
Specimen Type: 0.5 mL serum, Gold-SST/Red top
Method: Photometric Assay
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Separated serum:
- Room temperature: 24 hours at 15-25°C
Refrigerated: 7 days at 2-8°C

Reference Interval: Male: <38 U/L  
Female: <32 U/L

Comment: Hemolyzed specimens will elevate AST levels because of the AST activity in the erythrocytes.

Performed by: Core Laboratory

**ASPERGILLUS ANTIBODIES, QUANTITATIVE - Sent to Reference Laboratory**

Test Code: LASP  
Specimen Type: 1 mL  
Serum, Gold/SST, red-top tube

Method: Double Immunodiffusion (DID)

TAT: Set up Monday through Friday on 2nd shift.  
Reported within 5 working days.

Collection: Collect specimen using standard laboratory procedures.

Transport: Refrigerated

Causes for Rejection: Hemolysis; lipemia; gross bacterial contamination.

Performed by: Sent to Reference Laboratory - LabCorp (Order #164285)

**ASPERGILLUS GALACTOMANNAN ANTIGEN DETECTION, BRONCHOALVEOLAR SERUM OR LAVAGE - Sent to Reference Laboratory**

Test Code: LASPG  
Specimen Type: 2 mL (0.35 mL minimum)  
Serum, Gold/SST red-top tube or Bronchoalveolar Lavage (BAL), Sterile screw-cap, leak-proof container

Method: Enzyme Immunoassay (EIA)

TAT: Reported within 5 working days.

Collection: Specimen should be separated from cells within 2 hours of venipuncture.  
Transfer specimen to a plastic transport tube before freezing. Collect specimen using aseptic technique. Avoid opening the specimen after collection. Do not aliquot.

Transport: Frozen

Specimen Stability: Refrigerated unopened at 2-8°C for five days. 
After opening, stored at 2-8°C for 48 hours. 
Freeze at -70°C after 5 days, stable for 14 days. 
Not stable at room temperature.

Causes for Rejection: Unlabeled specimen or name discrepancy between specimen and test request form; blood collected in collection tube other than those specified; grossly hemolyzed, lipemic, or icteric blood specimens; respirator specimens other than BAL; inadequate specimen volume; specimen received after the specified time or improperly stored/transported; specimen source other than BAL or serum.

Performed by: Sent to Reference Laboratory - LabCorp (Order #183805)

**ASPIRIN** *(See Salicylate)*
AST/SGOT (See Aspartate aminotransferase)

**B2 GLYCOPROTEIN IgG**
Test Code: B2GG
Synonyms: beta 2 GPI antibody IgG  
 beta-2 glycoprotein 1 IgG  
 beta 2 glycoprotein 1 Ab IgG  
 Beta-2 GPI antibody IgG  
 Anti-Beta 2-GPI antibody IgG
Specimen Type: 1 mL required (0.5 mL minimum, acceptable)  
 Serum, Gold/SST, red top tube
Method: Chemiluminescent Immunoassay
TAT: Testing is batched and performed 2-3 times per week (7:00 a.m. - 3:00 p.m.).
Specimen Stability: Room Temperature: 4 days  
 Refrigerated (2-8°C): 1 week  
 Frozen (-70°C): 1 month
Reference Interval: <20.0 U/mL
Technical Range: 6.4-6100.0
Performed by: Core Laboratory, Special Hematology

**B2 GLYCOPROTEIN IgM**
Test Code: B2GM
Synonyms: beta 2 GPI antibody IgM  
 beta-2 glycoprotein 1 IgM  
 beta 2 glycoprotein 1 Ab IgM  
 Beta-2 GPI antibody IgM  
 Anti-Beta 2-GPI antibody IgM
Specimen Type: 1 mL required (0.5 mL minimum, acceptable)  
 Serum, Gold/SST, red top tube
Method: Chemiluminescent Immunoassay
TAT: Testing is batched and performed 2-3 times per week (7:00 a.m. - 3:00 p.m.).
Specimen Stability: Room Temperature: 4 days  
 Refrigerated (2-8°C): 1 week  
 Frozen (-70°C): 1 month
Reference Interval: <20.0 U/mL
Technical Range: 1.1-841.0
Performed by: Core Laboratory, Special Hematology

**BARBITURATES, CONFIRMATION - Sent to Reference Laboratory**
Test Code: LBAUC
Specimen Type: 20 mL (7 mL minimum) aliquot from a fresh well-mixed random urine collection
Method: Mass Spectrometry (MS)
TAT: At least 7 days or more.
Collection: Random urine is collected in a container with a securely fastened lid with no preservatives.
Transport: Refrigerated
Reference Interval: Detectability: 200 ng/mL
Comment: This is a confirmatory test based on the DABU1 screen results. Orders are available upon request.
Performed by: Sent to Reference Laboratory - LabCorp (Order #071290).

BARBITURATES, SCREEN
Test Code: DABU1
Specimen Type: 20 mL (7 mL minimum) aliquot from a fresh well-mixed random urine collection
Method: Kinetic Interaction of Microparticles in Solution (KIMS) and Tricyclic by Enzyme Immunoassay (EIA)
TAT: STAT: 90 minutes
Collection: Random urine is collected in a container with a securely fastened lid with no preservatives.
Transport: Room Temperature (ASAP)
Specimen Stability: Refrigerated: Test within 3 days and store at 2-8°C.
Reference Interval: Negative
Comment: Included in the DABU1 battery. Confirmatory test available upon request (LBAUC - Order #071290)
Performed by: Core Laboratory

BARTONELLA ANTIBODY PROFILE - Sent to Reference Laboratory
Test Code: LBART
Synonyms: Bartonella henselae
Bartonella quintana
Rochalimaea
Bacillary Angiomatosis (BA)
Cat Scratch Disease Antibody
CSD
Specimen Type: 2 mL (1 mL minimum)
Serum, Gold/SST, red-top tube
Method: Indirect Fluorescent Antibody (IFA)
TAT: Reported within 3 working days.
Collection: Collect specimen using standard laboratory procedures.
Transport: Refrigerated
Causes for Rejection: Hemolysis; lipemia; gross bacterial contamination.
Performed by: Sent to Reference Laboratory - LabCorp (Order #163162)

BARTONELLA HENSELAE ANTIBODIES- Sent to Reference Laboratory
Test Code: LBHA
Synonyms: Bartonella henselae
Bartonella quintana  
Rochalimaea  
Bacillary Angiomatosis (BA)  
Cat Scratch Disease Antibody  
CSD  
Specimen Type: 1 mL  
Serum, Gold/SST, red-top tube  
Method: Indirect Fluorescent Antibody (IFA)  
TAT: Reported within 4 working days.  
Collection: Collect specimen using standard laboratory procedures.  
Transport: Refrigerated  
Performed by: Sent to Reference Laboratory - LabCorp (Order #164075)  

BARTONELLA CULTURE (See Culture, Bartonella)

B-CELL GENE REARRANGEMENT ASSAY  
Test Code: BPCR  
Synonyms: Immunoglobulin Heavy Chain PCR  
Specimen Type: 1 mL Bone Marrow, 3 mm3 fresh tissue,  
10-20 mL peripheral blood,  
**Formalin** fixed blocks  
Method: Polymerase Chain Reaction (PCR)  
TAT: 3-7 days  
Collection: Requires completed requisition [F91021](#).  
Transport: Transport blood and bone marrow at room temperature.  
Transport fresh tissue on wet ice if sample will be received in 2 hours,  
otherwise transport tissue frozen on dry ice.  
Deliver to Molecular Diagnostics Laboratory as soon after collection as  
possible for delivery 8:00 a.m. to 5:00 p.m., Monday through Friday.  
Comments: Detects the presence of a monoclonal population of B lymphocytes.  
In conjunction with immunophenotyping this assay provides information to  
aid in diagnosis and classification of lymphoma and leukemia negative  
assay reflexes to Immunoglobulin Light Chain, Kappa Gene  
Rearrangement Assay.  
Performed by: Molecular Diagnostics Laboratory  

BCR/ABL1 p190 (Quantitative)  
Test Code: QP190  
Specimen Type: 10 mL blood, EDTA (lavender top)  
Method: Realtime Polymerase Chain Reaction (RT-PCR)  
TAT: 7-10 days  
Collection: Samples must be received within 24 hours of collection. Requires  
completed requisition [F91021](#).  
Transport: Room Temperature, ASAP.  
Deliver to Molecular Diagnostics Laboratory as soon after collection as  
possible for delivery 8:00 a.m. to 5:00 p.m., Monday through Friday.
Comments: Detects presence of the t(9:11)(q34:11) BCR/ABL1 translocation associated with Acute Lymphocytic Leukemia (ALL). Test can be used to support a diagnosis of ALL or to monitor the presence of residual disease in patients shown to carry this translocation at the time of diagnosis. Run in conjunction with p210.

Performed by: Molecular Diagnostics Laboratory

**BCR/ABL1 p210 (Quantitative)**

Test Code: QP210
Specimen Type: 10 mL blood, EDTA (lavender top)
Method: Realtime Polymerase Chain Reaction (RT-PCR)
TAT: 7-10 days
Collection: Samples must be received within 24 hours of collection. Requires completed requisition F91021.
Transport: Room temperature, ASAP.

Comments: Detects presence of the t(9:22)(q34:11) BCR/ABL1 translocation associated with Chronic Myelogenous Leukemia (CML). Test can be used to support a diagnosis of CML or to monitor the presence of residual disease. Results expressed as a normalized percent ratio and as a percent on the International Scale. Breakpoint p190 also available.

Performed by: Molecular Diagnostics Laboratory

**BENZODIAZEPINES, CONFIRMATION - Sent to Reference Laboratory**

Test Code: LBENU
Specimen Type: 20 mL (7 mL minimum) aliquot from a fresh well-mixed random urine collection
Method: Mass Spectrometry (MS)
TAT: At least 7 days or more.
Collection: Random urine is collected in a container with a securely fastened lid with no preservatives.
Transport: Refrigerated
Comment: This is a confirmatory test based on the DABU1 screen results. Orders are available upon request.
Performed by: Sent to Reference Laboratory - LabCorp (Order #071308).

**BENZODIAZEPINES, SCREEN**

Test Code: DABU1
Specimen Type: 10 mL (10 mL minimum) aliquot from a fresh well-mixed random urine collection
Method: Kinetic Interaction of Microparticles in Solution (KIMS) and Tricyclic by Enzyme Immunoassay (EIA)
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Random urine is collected in a container with a securely fastened lid with no preservatives.

Transport: Room Temperature (ASAP)

Specimen Stability: Refrigerated: Test within 3 days and store at 2-8°C.

Reference Interval: Negative

Comment: Included in the DABU1 battery. Confirmatory test available upon request (LBENU - Order #071308)

Performed by: Core Laboratory

**BETA - 2 - GLYCOPROTEIN 1 ANTIBODIES, IgA, IgG, IgM - Sent to Reference Laboratory**

Test Code: LB2G

Synonyms: Anti-β2 Glycoprotein 1
Beta-2 Glycoprotein 1 Antibodies, IgG, IgA, IgM

Specimen Type: 2 mL (1 mL minimum)
Serum, Gold/SST, red-top tube

Method: Enzyme-linked Immunosorbent Assay (ELISA) to detect antibodies binding to a microtiter plate coated with purified β2-glycoprotein 1 antigen.

TAT: Reported within 3 working days.

Collection: Collect specimen using standard laboratory procedures.

Transport: Refrigerated

Specimen Stability: Refrigerated: 7 days
Frozen: 7 days

Reference Interval: IgA = 0-25 GP1 IgA units
IgM = 0-32 GP1 IgM units
IgG = 0-20 GP1 IgG units

Comment: Test includes semiquantitative results for IgG, IgM, and IgA antibodies against β2-glycoproteins. Anti- β2-glycoprotein 1 should not be used alone as a screening test for antiphospholipid syndrome.

Performed by: Sent to Reference Laboratory - LabCorp (Order #163915)

**BETA - 2 - MICROGLOBULIN, SERUM - Sent to Reference Laboratory**

Test Code: LB2S

Specimen Type: 0.5 mL (0.3 mL minimum)
Serum, Gold/SST, red-top tube

Method: Immunochemiluminometric Assay (ICMA)

TAT: Set up and reported Monday through Friday on 1st shift.
Reported within 2 working days.

Collection: Transfer separated serum to a plastic transport tube.

Transport: Refrigerated

Specimen Stability: Refrigerated: 14 days
Frozen: 14 days

Reference Interval:

<table>
<thead>
<tr>
<th>Age</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1 month</td>
<td>1.6-4.8 mg/L</td>
<td>1.7-4.5 mg/L</td>
</tr>
<tr>
<td>1-6 months</td>
<td>1.4-3.3 mg/L</td>
<td>1.0-3.8 mg/L</td>
</tr>
</tbody>
</table>
7-11 months  0.9-3.1 mg/L  1.0-2.3 mg/L
1-3 years     0.8-2.2 mg/L  0.7-2.4 mg/L
4-6 years     0.6-2.3 mg/L  0.5-2.2 mg/L
7-9 years     0.8-1.7 mg/L  0.7-1.8 mg/L
10-12 years   0.7-1.8 mg/L  0.7-2.0 mg/L
13-15 years   0.7-2.0 mg/L  0.8-1.9 mg/L
16-18 years   0.7-1.9 mg/L  0.6-1.9 mg/L
>18 years     0.6-2.4 mg/L  0.6-2.4 mg/L

Comments: Values obtained with different assay methods should not be used interchangeably in serial testing. It is recommended that only one assay method be used consistently to monitor each patient's course of therapy. This procedure does not provide serial monitoring. It is intended for one-time use only.

Performed by: Sent to Reference Laboratory - LabCorp (Order #010181)

**BETA 2 TRANSFERRIN - Sent to Reference Laboratory**

- **Test Code:** LB2TF
- **Specimen Type:** 2 mL (1 mL minimum) fluid Nasal/Aural Fluid, Sterile container
- **Method:** Immunofixation Electrophoresis
- **TAT:** Reported within 3 working days.
- **Collection:** Collect fluid drainage in a sterile container.
- **Transport:** Refrigerated
- **Specimen Stability:** Refrigerated: 3 days (72 hours) Frozen: Unacceptable
- **Comment:** NOTE: Collect on Sunday through Wednesday only.
- **Performed by:** Sent to Reference Laboratory - LabCorp (Order #829030)/Quest when stability problems occur.

**BETA HCG, BLOOD**

- **Test Code:** BHCG
- **Synonyms:** Quantitative beta HCG, blood pregnancy
- **Specimen Type:** 0.5 mL serum, Gold-SST/Red top
- **Method:** Electrochemiluminescence Immunoassay (ECLIA)
- **TAT:** STAT: 90 minutes Routine: 4 hours Performed 24/7
- **Collection:** Collect specimen using standard laboratory procedures.
- **Transport:** Room temperature, ASAP
- **Specimen Stability:** Refrigerated: 3 days at 2-8°C Frozen: 12 months at -20°C Freeze once
- **Reference Interval:** 0-5 U/mL
- **Comment:** If samples are not run within 24 hours, store samples in freezer at -20°C until they can be run. Patients routinely exposed to animals or animal serum products can be prone to interference and anomalous values from
heterophilic antibodies. Do not use samples that have been stored at room
temperature for longer than 8 hours. HCG levels are also useful for
diagnosis of ectopic pregnancy, multiple gestation and prediction of
spontaneous abortion. Elevated levels of HCG have also been reported in
patients with trophoblastic disease, choriocarcinoma, breast cancer, and
testicular and prostatic tumors. Test code may be used for males as
needed.

Performed by: Core Laboratory

**BETAHYDROXYBUTYRATE**

Test Code: BHB  
Specimen Type: 0.5 mL serum, Gold-SST (red top)  
Method: Enzymatic  
TAT: STAT: 90 minutes  
Routine: 4 hours  
Performed: 24/7  
Collection: Collect specimen using standard laboratory procedure.  
Transport: Room temperature, ASAP  
Specimen Stability: Room temperature: 8 hours  
Refrigerated: 7 days  
Frozen: 7 days  
Reference Interval: <0.6 Normal  
0.6-1.5 May indicate the development of a problem.  
>1.5 At risk for DKA  

Performed by: Core Laboratory

**BICARBONATE**

Test Code: CO2  
Synonyms: TCO2  
Specimen Type: 0.5 mL serum, Gold-SST/Red top  
Method: Spectrophotometric assay using phosphoenolpyruvate in the presence of
PEPC  
TAT: STAT: 90 minutes  
Routine: 4 hours  
Performed 24/7  
Collection: Collect specimens using standard laboratory procedures.  
Transport: Room temperature, ASAP  
Specimen Stability: Refrigerated: 3 days at 2-8°C (tightly stoppered)  
Frozen: 6 months at -20 to -80°C  
Reference Interval: 22-29 mmol/L  
Comment: CO₂ content is increased in metabolic alkalosis and decreased in metabolic
acidosis. It is mildly increased and mildly decreased in compensatory
respiratory acidosis and alkalosis respectively.  

Performed by: Core Laboratory
BILIRUBIN, DIRECT
Test Code: BILDD
Synonyms: Conjugated bilirubin
Specimen Type: 0.5 mL serum, Gold-SST/Red top
Method: Photometric assay using diazo derivatives
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Protect from light and assay immediately.
After separation from cells and protected from light:
• Room temperature: 2 days
• Refrigerated: 1 week at 2-8°C
Reference Interval: 0.0-0.3 mg/dL
Comment: Use non-hemolyzed serum.
Performed by: Core Laboratory

BILIRUBIN, TOTAL
Test Code: BILT
Specimen Type: 0.5 mL serum, Gold-SST/Red top
Method: Photometric assay using diazo reaction
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures. Protect from light.
Transport: Room temperature, ASAP
Specimen Stability: Assay immediately
Reference Interval: >5 days 0.1-1.0 mg/dL
3-5 days 4.0-12.0 mg/dL
2 days 6.0-7.0 mg/dL
1 day 2.0-6.0 mg/dL
Comment: Use non-hemolyzed serum.
Performed by: Core Laboratory

BK VIRUS QUANTITATION, REAL-TIME DNA PCR - Sent to Reference Laboratory
Test Code: LRBKV
Synonyms: Polyomavirus BK Quantitation
Quantitation of BK Virus, DNA, Using Real-Time PCR
Specimen Type: 2 mL (0.5 mL minimum)
Plasma, Lavender-top (EDTA) tube
Method: Real-time Polymerase Chain Reaction (PCR)
TAT: Reported within 4 working days.
Collection: Centrifuge specimen within 24 hours of collection, remove plasma, transfer specimen to polypropylene screw-capped tube, and freeze.
Transport: Frozen
Specimen Stability: Frozen: 90 days
Causes for Rejection: Quantity not sufficient for analysis; leaking or broken tube; inadequate storage or transport; whole blood.
Comments: To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested.
Performed by: Sent to Reference Laboratory - LabCorp (Order #138962)

**BK VIRUS QUANTITATION, URINE - Sent to Reference Laboratory**
Test Code: LBKUR
Synonyms: Polyomavirus BK Quantitation
Quantitation of BK Virus, DNA, PCR, Urine
Specimen Type: 2 mL (0.5 mL minimum)
Urine, Sterile urine container, no preservative
Method: Real-time Polymerase Chain Reaction (PCR)
TAT: 5 days
Collection: Collect specimen in a container with a securely fastened lid using universal precautions.
Transport: Frozen
Specimen Stability: Frozen: 7 days
Causes for Rejection: Insufficient quantity for analysis; leaking or broken tube; inadequate storage or transport.
Comments: To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested.
Performed by: Sent to Reference Laboratory - LabCorp (Order #138880)

**BLASTOMYCES ANTIBODIES, QUANTITATIVE - Sent to Reference Laboratory**
Test Code: LBLSA
Specimen Type: 0.6 mL (0.3 mL minimum)
Serum, Gold/SST, red-top tube
Method: Double Immunodiffusion (DID)
TAT: Set up and reported Monday through Friday on 2nd shift. Reported within 4 working days.
Collection: Collect specimen using standard laboratory procedures.
Transport: Refrigerated
Causes for Rejection: Hemolysis; lipemia; gross bacterial contamination.
Reference Interval: Negative: ≤1.1
Performed by: Sent to Reference Laboratory - LabCorp (Order #164293)

**BLOOD ALCOHOL (See Ethanol, blood)**

**BLOOD CULTURE (See Culture, blood)**
**BLOOD GAS (Arterial)**

Test Code: BGAR
Synonyms: ABG
Specimen Type: 3 mL blood in heparinized syringe
Method: Electrode
TAT: STAT: Within 10 minutes
Performed 24/7
Collection: Use pre-heparinized syringe with dry heparin. Liquid heparin should be avoided because of errors which can occur due to dilution of the sample drawn in an anaerobic environment.
Transport: On ice, ASAP
Specimen Stability: If storage is unavoidable, store the sample horizontally at 0-4°C for no more than 30 minutes.
Comments: Mix the sample with heparin immediately after collection to prevent clotting. Samples are mixed by inverting the sample several times and then rolling between your palms. Check for clots before running the specimen.
Reference Interval:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>7.38-7.44</td>
</tr>
<tr>
<td>pCO2</td>
<td>35-40 mmHg</td>
</tr>
<tr>
<td>pO2</td>
<td>95-100 mmHg</td>
</tr>
<tr>
<td>HCO3</td>
<td>21-29 mmol/L</td>
</tr>
<tr>
<td>% Sat</td>
<td>94-100 %</td>
</tr>
</tbody>
</table>

Performed by: Core Laboratory

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**BLOOD GAS (Venous)**

Test Code: BGVN
Synonyms: ABG
Specimen Type: 3 mL blood in heparinized syringe
Method: Electrode
TAT: STAT: Within 10 minutes
Performed 24/7
Collection: Use pre-heparinized syringe with dry heparin. Liquid heparin should be avoided because of errors which can occur due to dilution of the sample drawn in an anaerobic environment.
Transport: On ice, ASAP
Specimen Stability: If storage is unavoidable, store the sample horizontally at 0-4°C for no more than 30 minutes.
Comments: Mix the sample with heparin immediately after collection to prevent clotting. Samples are mixed by inverting the sample several times and then rolling between your palms. Check for clots before running the specimen.
Reference Interval:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>7.36-7.41</td>
</tr>
<tr>
<td>pCO2</td>
<td>40-45 mmHg</td>
</tr>
<tr>
<td>pO2</td>
<td>60-85 mmHg</td>
</tr>
</tbody>
</table>

Performed by: Core Laboratory
BLOOD UREA NITROGEN (See Urea nitrogen)

BONE MARROW
Test Code: BM
Specimen Type: 1 mL of marrow fluid (containing particles) and/or biopsy core.
Method: Bone marrow aspiration and/or biopsy is usually obtained from the posterior iliac crest, or, occasionally, from sternum or anterior iliac crest. This procedure is performed by a physician or nurse practitioner.
Collection: Aspiration smears:
- Make at least 10 wedge films (made in the same fashion as peripheral blood films). If there are no particles, request another specimen.
Clot:
- Once the films are made, allow the remaining specimen to clot; and place it in a vial of the B5 fixative.
Biopsy:
- If a biopsy is obtained, gently roll the specimen along several slides and then place it into a separate vial; of the B5 mixture.
**AFTER 2 HOUR PREP TIME, SPECIMENS SHOULD BE TRANSFERRED INTO 70% ETOH. SPECIMENS MAY SIT OVERNIGHT IN ETOH.
Transport: Aspiration Smears:
- Air dry bone marrow smears. All slides must be well labeled with patient's name, date and site of aspiration.
Clot and Biopsy:
- Place specimens in B5 fixative. Label vials with patient's name, date and site of aspiration.
Performed by: Core Laboratory

BONE MARROW CULTURE (See Culture, biopsy)

BONE MARROW (For Cytogenetic studies, see Chromosome analysis and/or Fluorescence in Situ Hybridization [FISH])

BONE MARROW (For Leukemia/Lymphoma diagnosis-see Lymphocyte phenotyping)

BORDETELLA (See Respiratory Panel)

BOTULISM (Toxin) - Submit to NYSDOH
Specimen Type: Stool: 10-15 g in sterile container. Submit to NYSDOH. Contact NYSDOH prior to sending specimen for any additional requirements 518-474-4177 (Bacteriology).
Transport: On ice, overnight mail to NYSDOH.

BRUCELLA ANTIBODY, IgG - Sent to Reference Laboratory
Test Code: LBRUG
Specimen Type: 0.4 mL (0.2 mL minimum)
Serum, Gold/SST, red top tube
Method: Enzyme Immunoassay (EIA)
TAT: Reported within 4 working days.
Collection: Collect specimen using standard laboratory procedures.
Transport: Refrigerated
Cause for Rejection: Hemolysis; lipemia; gross bacterial contamination
Reference Interval: Negative
Performed by: Sent to Reference Laboratory - LabCorp (Order #164608)

BRUCELLA ANTIBODY, IgM - Sent to Reference Laboratory
Test Code: LBRUM
Specimen Type: 0.4 mL (0.2 mL minimum)
Serum, Gold/SST, red top tube
Method: Enzyme Immunoassay (EIA)
TAT: Reported within 4 working days.
Collection: Collect specimen using standard laboratory procedures.
Transport: Refrigerated
Cause for Rejection: Hemolysis; lipemia; gross bacterial contamination
Reference Interval: Negative
Performed by: Sent to Reference Laboratory - LabCorp (Order #164624)

BUN (See Urea nitrogen)

BUPRENORPHINE, SCREEN WITH CONFIRMATION, URINE - Sent to Reference Laboratory
Test Code: LBPSU
Synonyms: Suboxone
Specimen Type: 20 mL (10 mL minimum)
Urine (random), Plastic urine container
Method: Initial testing by Immunoassay (IA)
Confirmation of positives by LC/MS-MS
TAT: Reported within 6 working days.
Negatives are reported within 1 day.
Collection: Collect specimen in a container with a securely fastened lid using universal precautions.
Transport: Refrigerated
Causes for Rejection: Insufficient volume; no identification.
Comment: Confirmation test LBUPN (LabCorp Order #764400) is performed when positive with an additional charge.
Performed by: Sent to Reference Laboratory - LabCorp (Order #763400)

C3 (See Complement C3)

C4 (See Complement C4)
CA 15-3
Test Code: CA153
Specimen Type: 0.5 mL serum, Gold-SST/Red top
Method: Electrochemiluminescence immunoassay
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Refrigerated: 5 days at 2-8°C
Frozen: 3 months at -20°C
Reference Interval: <31.0 U/mL
Comments: The ROCHE CA 15-3 assay SHOULD NOT be used as a cancer screening test. Changes in serial CA 15-3 values when monitoring Stage II or Stage III breast cancer patients should be used in conjunction with other clinical methods used for monitoring breast cancer patients.
Performed by: Core Laboratory

CA125
Test Code: CA125
Specimen Type: 0.5 mL serum, Gold-SST/Red top
Method: Electrochemiluminescence Immunoassay
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Refrigerated: 5 days at 2-8°C
Frozen: 3 months at -20°C
Reference Interval: <35 U/mL
Comments: The CA125 assay SHOULD NOT be used as a screening test to detect cancer. It's used as an aid in the management of ovarian cancer has been reported. CA125 values obtained using different methodologies cannot be used interchangeably. This method is manufactured by Roche Diagnostics and is an electrochemiluminescence immunoassay.
Performed by: Core Laboratory

CALCITONIN (THYROCALTITONIN), BLOOD - Sent to Reference Laboratory
Test Code: LCALB
Synonyms: Thyrocalcitonin
Specimen Type: 1 mL (0.4 mL minimum)
Serum, Gold/SST, red-top tube
Method: Immunochemiluminometric Assay (ICMA)
TAT: Set up and reported Monday, Wednesday and Friday.
Reported within 3 working days.
Collection: Allow blood to clot for 1-4 hours in an ice bath or refrigerator. Spin in chilled centrifuge holders or refrigerated centrifuge. Transfer the serum into a LabCorp PP transpak frozen purple tube with screw cap. Freeze immediately and maintain frozen until tested.

Transport: Frozen

Specimen Stability: Frozen: 7 days

Causes for Rejection: Gross hemolysis; specimen not received frozen; lipemia; plasma specimen.

Reference Interval: Male: 0.0-8.4 pg/mL
Female: 0.0-5.0 pg/mL

Special Instructions: Patient should be fasting. State on the request form if calcium infusion or pentagastrin injection are part of the patient preparation. Values obtained with different assay methods should not be used interchangeably in serial testing. It is recommended that only one assay method be used consistently to monitor each patient's course of therapy. This procedure does not provide serial monitoring. It is intended for one-time use only.

Comment: To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested.

Performed by: Sent to Reference Laboratory - LabCorp (Order #004895)

**CALCITRIOL (See Vitamin D)**

**CALCIUM, IONIZED**

Test Code: CAI

Specimen Type: 3 mL whole blood, heparin (green top) or a dry heparinized syringe if ordered with a Blood Gas (Minimum 3 mL)

Method: Electrode

TAT: STAT: Within 10 minutes
Routine: 30 minutes
Performed 24/7

Collection: Tube:
- Collect specimen using standard laboratory procedures.
Syringe (if ordered with Blood Gas):
- Use pre-heparinized syringe with dry heparin.
- Liquid heparin should be avoided because of errors which can occur due to dilution of the sample drawn in an anaerobic environment.

Transport: On ice, ASAP (with syringe)
Room temperature (heparin tube)

Specimen Stability: If specimen is collected in a green top tube and delayed sampling is unavoidable, then the sample may be stored in a rack at 2-8°C for up to 48 hours.

Reference Interval: 1.13-1.32 mmol/L
Comment: If collected in a green top tube, mix the sample with heparin anticoagulant immediately after collection by gently inverting the tube several times to prevent clotting.
If ordered with a Blood Gas, the arterial samples are collected in a dry heparinized syringe and are mixed by inverting the sample syringe several times and then rolling the sample between your palms.

Performed by: Core Laboratory

**CALCIUM, TOTAL**

Test Code: CA4
Specimen Type: 0.5 mL serum, Gold-SST/Red top
Method: Colorimetric assay with endpoint determination
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 7 days at 15-25°C
Refrigerated: 21 days at 2-8°C
Frozen: 8 months at -15 to -25°C
Reference Interval: >90 years 8.2-9.6 mg/dL
61-90 years 8.8-10.2 mg/dL
13-60 years 8.4-10.2 mg/dL
3-12 years 8.8-10.8 mg/dL
11 days-2year 9.0-11.0 mg/dL
0-10 days 7.6-10.4 mg/dL

Performed by: Core Laboratory

**CALCIUM, URINE - RANDOM**

Test Code: CAUR
Specimen Type: 5 mL aliquot from a fresh well-mixed random urine collection (Minimum 0.5 mL)
Method: Colorimetric
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Random urine is collected in a container with a securely fastened lid with no preservatives.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 2 days at 15-25°C
Refrigerated: 4 days at 2-8°C
Frozen: 3 weeks at -15 to -25°C
Reference Interval: Not established
Comments: Acidify (<2 pH) with 6N HCL after urine collection. Do not centrifuge sample unless specimen contains precipitate.

Performed by: Core Laboratory
CALCIUM, URINE - 24 HOUR
Test Code: CAU24
Specimen Type: 5 mL aliquot from a well-mixed 24 hour urine collection (Minimum 0.5 mL)
Method: Colorimetric assay with endpoint determination
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 2 days at 15-25°C
Refrigerated: 4 days at 2-8°C
Frozen: 3 weeks at -15 to -25°C
Reference Interval: 100-300 mg/24 hour
Comments: Acidify (<2 pH) with 6N HCL after urine collection
Performed by: Core Laboratory

CALCULI, URINARY (See Stone Analysis)

CALCULI, URINARY WITH PHOTOGRAPH - Sent to Reference Laboratory
Test Code: LKST
Synonyms: Kidney Stone
Specimen Type: Kidney Stones and Urinary Calculi, Clean container or capsule (bladder stone)
Method: Optical Microscopy
TAT: Reported within 6 working days.
Collection: Calculi must be submitted completely dry. Specimens should not be submitted in liquid (formalin, urine, blood, etc.), in gauze, filters, taped, or on Q-tips. There will be delay in analyzing and reporting specimens not received completely dry.
Transport: Room Temperature
Reference Interval: Percentage of interior and exterior layers; core material stated.
Performed by: Sent to Reference Laboratory - LabCorp (Order #120691)

CALPROTECTIN, FECAL - Sent to Reference Laboratory
Test Code: LCALF
Specimen Type: 1 g (0.5 g minimum)
Stool (unpreserved, random), Clean screw-capped plastic vial
Method: Quantitative Enzyme-linked Immunosorbent Assay (ELISA)
TAT: Set up and reported on Tuesday and Thursday. Reported within 6 working days.
Collection: Do not contaminate outside of container. Do not overfill container. Loose stools are acceptable.
Transport: Frozen
Specimen Stability: Stool specimens should be received by the laboratory within 10 days of collection. Samples are stable for 4 days before testing at 2-8°C. Freeze at -20°C if samples will not be tested within 4 days. Temperature should not exceed 30°C during shipment.

Causes for Rejection: Serum or plasma received; stool contaminated with urine; sample outside of the container; specimen older than 10 days of collection before tested; samples taken from diapers unless portion taken has not been in contact with diaper material; preserved stool received.

Reference Interval: 0-120 µg/g
Performed by: Sent to Reference Laboratory - LabCorp (Order #123255)

**CANCER ANTIGEN (CA) 27.29 - Sent to Reference Laboratory**

Test Code: LCA27
Synonyms: CA27.29 Antigen
Truquant BR
Specimen Type: 1 mL (0.3 mL minimum)
Serum, Gold/SST, red-top tube
Method: Immunochemiluminometric Assay (ICMA)
TAT: Set up and reported Monday through Friday on 1st and 3rd shift. Reported within 2 working days.
Collection: If a red-top tube is used, transfer separated serum to a plastic transport tube.
Transport: Refrigerated
Specimen Stability: Refrigerated: 5 days
Frozen: >1 month
Causes for Rejection: Plasma specimen.
Reference Interval: 0-38.6 units/mL
Special Instructions: Values obtained with different assay methods should not be used interchangeably in serial testing. It is recommended that only one assay method be used consistently to monitor each patient's course of therapy. This procedures does not provide serial monitoring. It is intended for one-time use only.
Performed by: Sent to Reference Laboratory - LabCorp (Order #140293)

**CANNABINOIDs, CONFIRMATION - Sent to Reference Laboratory**

Test Code: LCAUC
Specimen Type: 20 mL (7 mL minimum)
Urine
Method: Mass Spectrometry (MS)
TAT: Random urine is collected in a container with a securely fastened lid with no preservatives.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Frozen: 14 days
Comment: This is a confirmatory test based on DABU1 screen results. Orders are available upon request.

Performed by: Sent to Reference Laboratory - LabCorp (Order #071316).

**CANNABINOIDS, SCREEN**

**Test Code:** DABU1  
**Specimen Type:** 10 mL (10 mL minimum) aliquot from a fresh well-mixed random urine collection  
**Method:** Kinetic Interaction of Microparticles in Solution (KIMS) and Tricyclic by Enzyme Immunoassay (EIA)  
**TAT:**  
**Collection:** Random urine is collected in a container with a securely fastened lid with no preservatives.  
**Transport:** Room Temperature (ASAP)  
**Specimen Stability:** Refrigerated: Test within 3 days and store at 2-8°C.  
**Reference Interval:** Negative  
**Comment:** Included in the DABU1 battery. Confirmatory test available upon request ((LCAUC - Order #071316))  
**Performed by:** Core Laboratory

**CANNABINOID, SYNTHETIC, EXPANDED PROFILE, URINE - Sent to Reference Laboratory**

**Test Code:** LSPK  
**Synonyms:** K2, Spice  
**Specimen Type:** 10 mL Urine, Plastic urine container  
**Method:** Liquid Chromatography/Tandem Mass Spectrometry (LC/MS-MS)  
**TAT:** Reported within 5 working days.  
**Collection:** Collect specimen in a container with a securely fastened lid using universal precautions.  
**Transport:** Refrigerated  
**Specimen Stability:** Refrigerated: 14 days  
**Frozen: 14 days**  
**Comment:** Confirmation test LBUPN (LabCorp Order #764400) is performed when positive with an additional charge.  
**Performed by:** Sent to Reference Laboratory - LabCorp (Order #790742)

**CARBAMAZEPINE**

**Test Code:** TEGR  
**Synonyms:** Tegretol  
**Specimen Type:** 0.5 mL serum, Gold-SST/Red top  
**Method:** Homogeneous Enzyme Immunoassay  
**TAT:** STAT: 90 minutes
CARBON MONOXIDE HEMOGLOBIN

**Test Code:** COHB  
**Synonyms:** Carbon monoxide hemoglobin  
**Specimen Type:** 3 mL whole blood, heparin (green top), or a dry heparinized syringe if ordered with a Blood Gas (Minimum 3 mL)  
**Method:** Spectrophotometric Assay  
**TAT:** STAT: Within 10 minutes  
**Routine:** 30 minutes  
**Performed:** 24/7

**Collection:**  
- Tube:  
  - Collect specimen using standard laboratory procedures.  
- Syringe (if ordered with a Blood Gas):  
  - Use pre-heparinized syringe with dry heparin.  
  - Liquid heparin should be avoided because of errors which can occur due to dilution of the sample drawn in an anaerobic environment. 

**Transport:** On ice or at room temperature, ASAP

**Specimen Stability:** If storage is unavoidable, store the sample horizontally at 0-4°C for no more than 30 minutes.

**Reference Interval:**  
- Nonsmokers: 0.21-2.1%  
- Smokers: 0.7-6.5%  
- Toxic: >20%

**Comments:** Mix the sample immediately after collection to prevent clotting. Samples are mixed by inverting the sample several times and then rolling the samples between your palms. Check for clots before running the specimen.

**Performed by:** Core Laboratory

CARBOXYHEMOGLOBIN

**Test Code:** CEA  
**Synonyms:** CEA
Specimen Type: 0.5 mL serum, Gold-SST/Red top
Method: Electrochemiluminescence Immunoassay
TAT: STAT: 90 minutes
       Routine: 4 hours
       Performed 24/7
Collection: Collect specimens using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 8 hours
                   Refrigerated: 7 days at 2-8°C
                   Frozen: 6 months at -20°C
Reference Interval: Nonsmokers 0.21-2.1%
                   Smokers 0.7-6.5%
                   Toxic >20%
Comments: Do not use samples that have been stored longer than 8 hours. Elevations in circulating CEA levels may be observed in smokers as well as patients with non-malignant disease. The CEA assay should not be used as a cancer screening test.
Performed by: Core Laboratory

CARNITINE, FREE AND TOTAL - Sent to Reference Laboratory
Test Code: LCARN
Specimen Type: 2.5 mL (1.5 mL minimum)
             Serum, Gold/SST, red-top tube
Method: High-pressure Liquid Chromatography/Tandem Mass Spectrometry (LC/MS-MS)
TAT: Set up and reported Tuesday and Thursday on 1st shift.
     Reported within 5 working days.
Collection: Transfer separated serum to a plastic transport tube and freeze.
Transport: Frozen
Specimen Stability: Frozen: 14 days
Causes for Rejection: Specimen not frozen.
Reference Interval: Sent with results. Refer to Reference Laboratory Website.
Comment: To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested.
Performed by: Sent to Reference Laboratory - LabCorp (Order #706500)

CAROTENE, BETA - Sent to Reference Laboratory
Test Code: LCARO
Synonyms: Beta Carotene
Specimen Type: 0.7 mL (minimum 0.4 mL)
             Serum, Gold/SST, red-top tube; Amber plastic transport tube with amber top.
Method: High-pressure Liquid Chromatography (HPLC)
TAT: Set up Monday through Friday on 1st and 3rd shifts.
     Reported next day.
Collection: Specimen should be free from hemolysis. Protect from light. Transfer specimen to amber plastic transport tube before freezing. To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested.

Transport: Frozen

Causes for Rejection: Hemolysis; specimen not protected from exposure to light during transit to laboratory; specimen not received frozen; any sample type other than serum received.

Reference Intervals: 3-91 µg/dL

Special Instructions: Patients must fast a minimum of eight hours. Patients should avoid foods containing carotene for 48 hours (24 hours for patients younger than six months of age).

Performed by: Sent to Reference Laboratory - LabCorp (Order #001529)

CATECHOLAMINES (FRACTIONATED), PLASMA - Sent to Reference Laboratory

Test Code: LCATP

Specimen Type: 3mL (Minimum 2.2mL)
- Plasma, Lavender-top (EDTA) tube or sodium heparin (green top)

Method: High Pressure Liquid Chromatography (HPLC) with Electrochemical (EC) Detection

TAT: Set up Monday through Friday on 1st shift. Reported within 5 working days.

Collection: Draw blood in lavender top (EDTA) tube. Invert to mix with preservatives. Centrifuge and transfer plasma to labeled plastic transport tube. Freeze immediately (within 2 hour after collection) at -20ºC and ship frozen. The time between blood collection and the preparation of plasma is quite critical. If the time exceeds 1 hour, catecholamine values increase when blood is kept refrigerated (at 4º C) or decreases (when left at 20ºC).

Transport: Frozen

Causes for Rejection: Specimen not drawn in correct tube; plasma not received frozen; thawed specimen; inadequate patient preparation.

Reference Interval: Norepinephrine, plasma:
- 0-1 years: 0-659 pg/mL
- 1-18 years: 0-611 pg/mL
- 18 years and older: 0-874 pg/mL

Epinephrine, plasma:
- 0-1 year: 0-34 pg/mL
- 1-18 years: 0-80 pg/mL
- 18 years or older: 0-62 pg/mL

Dopamine, plasma:
- 0-1 year: 0-42 pg/mL
- 1-18 years: 0-32 pg/mL
- 18 years and older: 0-48 pg/mL
Comment: To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested.

Special Instructions: Patient should be fasting for four or more hours without smoking.

Performed by: Sent to Reference Laboratory - LabCorp (Order #084152)

**CATECHOLAMINES (FRACTIONATED), 24 HOUR URINE - Sent to Reference Laboratory**

<table>
<thead>
<tr>
<th>Test Code:</th>
<th>LCATU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specimen Type:</td>
<td>30 mL aliquot (4 mL minimum)</td>
</tr>
<tr>
<td></td>
<td>24 Hour Urine, Plastic collection container with 30 mL 6N HCl preservative</td>
</tr>
<tr>
<td></td>
<td>CAUTION: Strong acid. May cause skin burns.</td>
</tr>
<tr>
<td></td>
<td>NOTE: HCl is added to 6N at end of collection to aliquot sample sent to reference laboratory.</td>
</tr>
<tr>
<td>Method:</td>
<td>Liquid Chromatography/Tandem Mass Spectrography (LC/MS-MS)</td>
</tr>
<tr>
<td>TAT:</td>
<td>Set up Monday through Friday on 1st shift. Reported within 6 working days.</td>
</tr>
<tr>
<td>Collection:</td>
<td>Instruct the patient to void at 8:00 a.m. and discard the specimen. Preservative must be added to the container prior to the start of collection. Collect all urine including the final specimen voided at the end of the 24-hour collection period (i.e., 8:00 a.m. the next morning). Label container. Keep collection on ice. Measure and record total urine volume on the test request form. Remove 20 mL aliquot. pH should be &lt;5 with 6N HCl.</td>
</tr>
<tr>
<td>Transport:</td>
<td>Refrigerated</td>
</tr>
<tr>
<td>Specimen Stability:</td>
<td>Refrigerated: 14 days</td>
</tr>
<tr>
<td></td>
<td>Frozen: 30 days at -70ºC</td>
</tr>
<tr>
<td>Causes for Rejection:</td>
<td>Specimen with no preservative; original container with pH &gt;5.</td>
</tr>
</tbody>
</table>

**Reference Interval: Adults:**

Epinephrine:
- 0-9 years: 0-11 µg/24 hours
- 10-19 years: 0-18 µg/24 hours
- >19 years: 0-20 µg/24 hours

Norepinephrine:
- 0-9 years: 0-59 µg/24 hours
- 10-19 years: 0-90 µg/24 hours
- >19 years: 0-135 µg/24 hours

Dopamine:
- 0-9 years: 0-414 µg/24 hours
- 10-19 years: 0-575 µg/24 hours
- >19 years: 0-510 µg/24 hours

Comments: Sample will be acidified with 6N HCl upon receipt in laboratory. Urine will be acidified to a pH 2-3 prior to shipping.

Special Instructions: Include 24-hour total urine volume on the test request form and date and time collection started and finished. Note: if original container is received with pH >3, but <5, adjust pH to <3 with 6N HCl.
CATHETER CULTURE (See Culture, blood - quantitative)

CAT SCRATCH DISEASE (See Culture, Bartonella)

CBC (Complete Blood Count)
Test Code: CBC
Specimen Type: Minimum 2 mL blood, EDTA (lavender top) tube
Minimum 0.75 mL fingerstick EDTA microtainer
Method: Automated Beckman Coulter DxH800
TAT: STAT: 45 minutes
Routine: 4 hours
Performed 24/7
Collection: Venipuncture or fingerstick: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature specimens must be run within 24 hours of collection. CBC specimens between 24 and 36 hours post collection, should be stored at 2-8°C. Differentials should be run within the first 24 hours post blood draw.
Reference Interval: Adults Male Female
WBC x 10^9/L 4-10 4-10
RBC x 10^12/L 4.6-6.1 4.1-5.3
HGB g/dL 13.5-18 11.5-15.5
HCT % 41-53 36-45
MCV fl 80-96 80-96
MCH pg 27-32 27-32
MCHC % 32-36 32-36
MPV 7.5-11.0 7.5-11.0
PLAT x 10^9/L 150-400 150-400
RDW 11.5-14.5 11.5-14.5
For pediatric normal values refer to EPIC or call Core Laboratory at 464-6820.

PP (Cyclic citrullinated peptide antibody)
Test Code: CCP3
Specimen Type: 0.5 mL serum, Gold-SST
(Minimum 0.3 mL)
Method: Enzyme-linked Immunosorbent Assay (ELISA)
TAT: 4 days
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 48 hours
Refrigerated: 2 weeks

Performed by: Core Laboratory
Reference Interval: Frozen: 1 year
<20 units
Comments: Generation 3 Assay - tests for both IgG and IgA antibodies to CCP.
Performed by: Immunology Laboratory

**CD3/CD2 COUNTS**
Test Code: CD3C
Synonyms: Transplant Profile
Specimen Type: 5 mL blood, EDTA (lavender top)
Method: Flow Cytometry
TAT: Performed: 24 hours, Monday through Friday and Saturday before noon.
Not available on Sundays or holidays. Test not performed on specimens received after noon on Saturday.
Transport: Room temperature
Specimen Stability: Room temperature: 24 hours
Reference Interval: CD3:
- 5-54 years: 62-87
- 55 years +: 49-87
CD2: 73-93%
Comment: For transplant workup
Special Instructions: DO NOT put specimen into cytochex, the preservative interferes with testing. Place sample in silver flow cytometry rack in processing area.
Performed by: Flow Cytometry Laboratory

**CD4 COUNT (HIV MONITORING)**
Test Code: CD4C
Specimen Type: 5 mL blood, EDTA (lavender top)
Method: Flow Cytometry
TAT: Performed: 24 hours, Monday through Friday and Saturday before noon.
Not available on Sunday or holidays.
Transport: Room temperature
Specimen Stability: Room temperature: 24 hours
Reference Interval: 1-3 days: 52.4-72
4-52 days: 48-75
53 days-4 months: 35-62
4-11 months: 38-61
11 months-1 year: 26-53
1 year: 36-50
3-4 years: 25-53
4-5 years: 28-49
5-54 years: 32-64
>55 years: 32-67
Special Instructions: From noon on Saturday until 9 am Sunday CD4 counts must be processed in cytochex vials which are located in the Quest refrigerator in the Core Lab.
- Mix EDTA blood by inversion for 5 minutes.
• Put 1 mL of whole blood into cytochex vial.
• Label vial with accession number sticker.
• Put labeled vial in Immunology box in the specimen receiving area refrigerator.
• Leave the remainder of the patient specimen at room temperature in the silver rack.
• *** If CBCD was not ordered, please run off line. Print a copy of results and place next to rack in processing area. *** Specimen received after 9 am Sunday may be kept in the silver rack in processing.

Performed by: Flow Cytometry Laboratory, 464-6767

CD19/CD20 COUNTS
Test Code: F1920
Specimen Type: 5 mL blood, EDTA (lavender top)
Method: Flow Cytometry
TAT: Performed: 24 hours, Monday through Friday and Saturday before noon. Not available on Sundays or holidays.
Transport: Room temperature
Specimen Stability: Room temperature: 48 hours
Reference Interval: CD19 %:
  • ≥19 years 4.6-22%
CD19 Absolute Count:
  • ≥19 years 57-417 cells/mcL
CD20 %:
  • ≥19 years 5.0-22.3%
CD20 Absolute:
  • ≥19 years 74-441 cells/mcL
Comments: Used to monitor patient's response to B cell immune modulating therapy such as rituximab.
Special Instructions: If no CBCD was ordered please run one offline and print results. Place sample and printout in the silver flow cytometry rack in the processing area.
Performed by: Flow Cytometry Laboratory

CEA (See Carcinoembryonic antigen)

CELL COUNT, CSF
Test Code: CELL
Specimen Type: At least 0.5 mL of cerebrospinal fluid is required
Method: Manual Hemocytometer
TAT: STAT: 60 minutes
Performed 24/7
Collection: Collect specimens in a sterile tightly stoppered vessel.
Ordinarily, three or four, 2-4 mL samples are placed in sterile tubes labeled sequentially as #1, 2, 3, and 4. The last tube is used for cell count unless otherwise indicated by the physician.

Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 60 minutes from collection
Reference Interval: Leukocytes:
  - Adults: 0-5 mm$^3$
  - Neonates (children less than 1 year old): 0-30 mm$^3$
Erythrocyte Count:
  - Adults and Neonates: 0 mm$^3$

Performed by: Core Laboratory

**CENTROMERE ANTIBODY**
Test Code: CENTR
Specimen Type: 0.5 mL serum, Gold-SST
Method: Multi-Lyte
TAT: 3 days
Reference Interval: 0-100 U/mL
Performed by: Immunology Laboratory

**CERULOPLASMIN**
Test Code: CERU
Specimen Type: 0.5 mL serum, Gold-SST
Method: Immunoturbidimetry
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimens using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Refrigerated: 3 days
Frozen: 4 weeks
Reference Interval: Male 15-30 mg/dL
Female 16-45 mg/dL
Performed by: Core Laboratory

**CHLAMYDIA CULTURE (See Culture, Chlamydia)**

**CHLAMYDIA TRACHOMATIS/NEISSERIA GONORRHOEAE, AMPLIFIED**
Test Code: AMPGC
Specimen Type: Urine: 20-30 mL first void in sterile cup, or APTIMA urine transport
Cervical, male urethral, specific swab transport kit for assay
Cytc PresvCyt Collection System
A single swab or urine sample is used to detect both *C. trachomatis* and *N. gonorrhoeae*.
Method: Transcription-mediated Amplification
TAT: Monday through Friday excluding major holidays.
Collection: Urine:
- Patient should not have urinated for 1 hour prior to collection.
- Collect first 20-30 mL of urine in sterile cup or Aptima urine transport.

Cervical swab (use specific swab collection kit):
- Remove excess mucus from exocervix with large-tipped swab.
- Insert small-tipped blue swab into endocervix, rotate 10-30 seconds. Avoid touching vaginal walls.
- Insert swab into transport buffer tube, break swab at score line, replace cap.

Urethral swab (males only) (Use small blue swab in collection kit):
- Patient should not have urinated for 1 hour prior to collection.
- Insert small-tipped blue swab 2-4 cm into urethra, rotate 2-3 seconds.
- Insert swab into transport buffer tube, break swab at score line and replace the cap.

Vaginal swab (Use specific swab collection kit):
- Place your thumb and forefinger in the middle of the swab shaft. Do not hold the swab shaft below the score line.
- Insert swab about 2 inches inside the opening of the vagina and gently rotate the swab for 10-30 seconds. Make sure the swab touches the walls of the vagina so that moisture is absorbed by the swab.
- Insert swab into transport tube so that the score line is at the top of the tube.
- Break the swab shaft at the score line against the side of the tube, replace cap.

Specimen Stability: Specimens in collection kits:
- Swabs: 60 days at 2-30°C
- Urine in transport: 30 days at 2-30°C
- Urine in sterile container: ≤24 hours

Comments: Amplification methods are the most sensitive assays available for diagnosing *C. trachomatis* infection. Urine samples should be submitted for females with hysterectomy. This test is not appropriate for specimens other than those listed above. Culture strongly recommended for sexual assault/abuse cases.

Performed by: Microbiology Laboratory

**CHLORIDE**

Test Code: CL
Specimen Type: 0.5 mL serum, Gold-SST/Red top
Method: Direct Potentiometry
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7

Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Refrigerated: 3 days at 2-8°C and stored tightly stoppered
Reference Interval: 96-108 mmol/L
Performed by: Core Laboratory

CHLORIDE, FECAL - Sent to Reference Laboratory
Test Code: LCLS
Specimen Type: 20 mL (10 mL minimum) Liquid Stool, Plastic specimen cup
Method: Ion Specific Electrode
TAT: 1-11 days
Collection: Freeze immediately.
Transport: Frozen (Ship on dry ice)
Specimen Stability: Frozen: 30 days
Cause for Rejection: Formed stool; specimens received at ambient temperature; specimens outside of listed stability.
Reference Range: 0.0-39.9 mmol/L
Special Instructions: Must not be diluted with water or saline.
Performed by: Sent to Reference Laboratory - LabCorp (Order #823256)

CHLORIDE, SWEAT
Test Code: SWCL
Specimen Type: At least 15 µL of sweat collected by iontophoresis
Method: LABCONCO 4425 Digital Chloridometer-coulometric Titration
TAT: Performed Monday through Friday, 8:00 a.m. through 2:00 p.m.
Collection: Iontophoresis is performed by outpatient phlebotomist personnel by appointment only.
Transport: Room temperature, ASAP, in a sealed micro cup
Specimen Stability: Deliver specimen to Special Chemistry Laboratory for analysis.
Reference Interval: For infants up to and including 6 months of age:
• \( \leq 29 \text{ mmol/L} \) cystic fibrosis is unlikely
• 30-59 mmol/L intermediate
• \( \geq 60 \text{ mmol/L} \) indicative of cystic fibrosis
For infants older than 6 months of age:
• \( \leq 39 \text{ mmol/L} \) cystic fibrosis is unlikely
• 40-59 mmol/L intermediate
• \( \geq 60 \text{ mmol/L} \) indicative of cystic fibrosis
Performed by: Core Laboratory, Special Chemistry

CHLORIDE, URINE, RANDOM
Test Code: UCL
Specimen Type: Fresh random urine
Method: Ion Selective Electrode
TAT: Performed 24/7
Collection: Random urine collected in a container with a securely fastened lid.
Transport: Room temperature, ASAP
Specimen Stability: 1 week at 2-8°C
Reference Interval: Reference Interval for random urine has not been established.
Comment: Turbid urine samples should be cleared by centrifugation.
Performed by: Core Laboratory

**CHOLESTEROL**
Test Code: CHO
Specimen Type: 0.5 mL serum, Gold-SST/Red top
Method: Enzymatic Colorimetric using cholesterol oxidase
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures. A fasting specimen is desirable.
Transport: Room temperature, ASAP
Specimen Stability: Refrigerated: 5-7 days 2-8°C
Frozen: 3 months -15 to -20°C
Reference Interval: Desirable: <200 mg/dL
Borderline high: 200-239 mg/dL
High: >240 mg/dL
Performed by: Core Laboratory

**CHROMIUM, PLASMA - Sent to Reference Laboratory**
Test Code: LCHRO
Synonyms: Cr, Plasma
Specimen Type: 3 mL (1.5 mL minimum)
Plasma, Royal blue- top (EDTA) tube
Method: Inductively-coupled Plasma/Mass Spectrometry (ICP/MS)
TAT: Set up Monday through Friday on 1st shift.
Collection: Separate plasma immediately after the collection, and transfer to a plastic transport tube for shipment to the laboratory. Maintain specimen at room temperature.
Transport: Room Temperature
Specimen Stability: Room Temperature: 14 days
Refrigerated: 14 days
Frozen: 14 days
Reference Interval: Environmental exposure: 0.1-2.1 µg/L
Comment: Submit original unopened tube. In the nocturnal total parenteral nutrition patient, the sample will be drawn "fasting" in the afternoon, before the nocturnal solution is started for the evening.
Performed by: Sent to Reference Laboratory - LabCorp (Order #071522)

**CHROMOGRANIN A - Sent to Reference Laboratory**
Test Code: LCHA
Synonyms: CGA
Specimen Type: 0.2 mL (0.1 mL minimum)
Serum, Gold/SST, red-top tube, Lavender-top (EDTA) tube

Method: Radioimmunoassay (RIA)
TAT: Set up and reported Tuesday and Thursday.
Reported within 7 working days.

Collection: Separate serum from cells and transfer to a plastic transfer tube.
Transport: Refrigerated

Specimen Stability: Refrigerated: 10 days

Causes for Rejection: Non-EDTA or nonheparinized plasma received; frozen red-top tube received; radioactive isotopes administered within 48 hours prior to venipuncture; grossly hemolyzed specimen

Reference Interval: 0-5 nmol/L

Special Instructions: Values obtained with different assay methods should not be used interchangeably in serial testing. It is recommended that only one assay method be used consistently to monitor each patient's course of therapy.

Performed by: Sent to Reference Laboratory - LabCorp (Order #140848)

CHROMOSOME ANALYSIS: AMNIOTIC FLUID

Test Code: KA
Synonyms: Karyotype Analysis
Specimen Type: 15-20 mL amniotic fluid in sterile container
TAT: 7-10 days

Collection: The first few mL drawn are most likely to contain maternal cells and should therefore not be submitted for cytogenetic studies.

Transport: Deliver to Cytogenetics Laboratory within 24 hours. Transport and store at room temperature. Do not refrigerate.

Comments: Requires patient signed consent form F82875 and requisition F86173. Clinical information to support the request for cytogenetic testing must be included on the requisition.

Performed by: Cytogenetics Laboratory

CHROMOSOME ANALYSIS: BONE MARROW (Oncology studies)

Test Code: KBM
Synonyms: Karyotype Analysis
Specimen Type: 1-2 mL of the first aspirate in sterile green top sodium heparinized tube.
TAT: 4-7 days

Transport: Deliver to Cytogenetics Laboratory as soon after collection as possible. Transport at room temperature. Direct preparations cannot be made on specimens arriving after 12 noon.

Comments: Requires completed requisition F91021. Clinical information to support the request for cytogenetic testing must be included on the requisition.

Performed by: Cytogenetics Laboratory

CHROMOSOME ANALYSIS: HIGH RESOLUTION

Test Code: EC
Synonyms: Karyotype Analysis, Prophase Analysis, Extended Chromosome Study
Specimen Type: For Adults:
- 3-5 mL whole blood collected in sterile green top sodium heparinized tube.
- Lithium heparin is not acceptable.

For Newborns:
- Approximately 2-3 mL whole blood collected as above.

TAT: 10-14 days. For best results, specimens should be submitted on Monday or Tuesday.

Transport: Transport and store at room temperature and deliver within 24 hours to Cytogenetics Laboratory.

Comments: Requires patient signed consent form F82875 and requisition F86173. Clinical information to support the request for cytogenetic testing must be included on the requisition.

Performed by: Cytogenetics Laboratory

**CHROMOSOME ANALYSIS: MICROARRAY**

Test Code: MACON (constitutional studies)
MAONC (oncology studies)

Synonyms: SNP microarray, microarray analysis

Specimen Type: 3 mL whole blood (for constitutional studies) or bone marrow (for oncology studies) collected in a sterile sodium heparin (green top) tube.

Transport: Transport and store at room temperature and deliver within 24 hours to the Cytogenetics Laboratory.

TAT: Dependent upon length of time to obtain insurance pre-authorization. Technical assay will take 10 days to 2 weeks. Additional time may be required for confirmation testing using unique FISH probes. STAT testing is an option; contact the Cytogenetics Laboratory for information.

Comments: Pre-authorization requires patient signed consent form F88925 and completed requisition F86173. Clinical information including clinical findings and preliminary diagnosis to support the request for microarray testing must be included on the requisition. Insurance pre-authorization must be obtained before testing can be performed.

Performed by: Cytogenetics Laboratory

**CHROMOSOME ANALYSIS: PERIPHERAL BLOOD**

Test Code: KBP

Synonyms: Karyotype Analysis

Specimen Type: For Adults:
- 3-5 mL whole blood collected in sterile green top sodium heparinized tube.
- Lithium heparin is not acceptable.

For Newborns:
- Approximately 2-3 mL whole blood collected as above.

TAT: 10-14 days

Transport: Transport and store at room temperature and deliver within 24 hours to Cytogenetics Laboratory.

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Comments: Required patient signed consent form F82875 and requisition F86173. Clinical information to support the request for cytogenetic testing must be included on the requisition.

Performed by: Cytogenetics Laboratory

**CHROMOSOME ANALYSIS: SOLID TISSUE**

**Test Code:** KT  
**Synonyms:** Karyotype Analysis  
**Specimen Type:** Obtain a small biopsy or piece of tissue (skin, muscle, spleen, liver, lung) by sterile technique. Place in sterile medium (Ham's F-10, Dulbecco's MEM, RPMI1640). Do not place in saline solution.

**TAT:** 14-21 days  
**Collection:** Containers of sterile medium are available upon request from the Cytogenetics Lab.  
**Transport:** Transport container on wet ice and deliver to Cytogenetics Lab as soon as possible. If delay in transport is unavoidable, sample should be stored on ice.  
**Comments:** Required completed requisition F86173. Clinical information to support the request for cytogenetic testing must be included on the requisition.  
**Performed by:** Cytogenetics Laboratory

**CHROMOSOME ANALYSIS: STAT BONE MARROW**

**Test Code:** KBM  
**Synonyms:** Karyotype Analysis  
**Specimen Type:** 1-2 mL of the first aspirate in sterile green top sodium heparinized tube.

**TAT:** 3-5 days  
**Collection:** For critical management decisions only. Contact Laboratory prior to sending specimen.  
**Transport:** Deliver to Cytogenetics Laboratory as soon after collection as possible. Transport at room temperature. Direct preparations cannot be made on specimens arriving after 12 noon.  
**Comments:** Requires completed requisition F91021. Clinical information to support the request for cytogenetic testing must be included on the requisition.  
**Performed by:** Cytogenetics Laboratory

**CHROMOSOME ANALYSIS: UNSTIMULATED PERIPHERAL BLOOD (Oncology studies)**

**Test Code:** UPB  
**Synonyms:** Karyotype Analysis  
**Specimen Type:** 3-5 mL unstimulated peripheral blood in sterile green top sodium heparinized tube. Lithium heparin is not acceptable.

**TAT:** 4-7 days  
**Transport:** Deliver to Cytogenetics Laboratory as soon as possible. Transport at room temperature. Direct preparations cannot be made on specimens arriving after 12 noon.
Comments: Bone marrow is the preferred specimen for oncology studies. Peripheral blood should be submitted as a sole specimen when bone marrow is not attainable. Requires completed requisition F91021. Clinical information to support the request for cytogenetic testing must be included on the requisition.

Performed by: Cytogenetics Laboratory

CITRIC ACID, URINE - Sent to Reference Laboratory
Test Code: Miscellaneous Test
Specimen Type: 10 mL (Minimum 1.5 mL) aliquot
Fresh well-mixed 24 hour urine collection
Method: Spectrophotometry
TAT: 3-5 business days
Transport: Refrigerate during and after collection.
Specimen Stability: Room temperature: 8 hours
Refrigerated: 30 days
Frozen: 60 days
Reference Interval: Sent with results.
Special Instructions: Ship: Refrigerated
Performed by: Sent to Reference Laboratory

CK (See Creatine kinase)

CKMB
Test Code: CKMB1
Synonyms: MB-isoenzyme
Specimen Type: 0.5 mL serum, Gold-SST/Red top
Method: Electrochemiluminescence
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 4 hours
Refrigerated: 8 hours at 2-8°C
Frozen: 3 months at -20°C
Freeze once
Reference Interval: Male: <6.70 ng/mL
Female: <3.80 ng/mL
Comment: If samples are not run within 24 hours, store samples in freezer at -20°C until they can be run. Patients routinely exposed to animals or animal serum products can be prone to interference and anomalous values from
heterophilic antibodies. Do not use samples that have been stored at room
temperature for longer than 8 hours.

Performed by: Core Laboratory

**CLO TEST**

Test Code: CLO
Synonyms: H. pylori; Helicobacter
Specimen Type: Gastric Biopsy
Method: Rapid Urease
TAT: Performed 7 days a week.
Results are available within 24 hours after receipt in the lab.
Collection: One biopsy collected at least 2 cm away from the pylorus along the lesser
or greater curve of the antrum. Biopsy size should be between 1-3 mm in
diameter. Place biopsy in CLO slide at bedside. Specimen must be placed
in CLO slide as soon as collected.
Specimen Stability: Slides containing tissue:
- Room temperature: ≤72 hours at 25-37°C

Interpretation: A positive result indicates the presence of Helicobacter pylori.

Performed by: Microbiology Laboratory

**CLOBAZAM, SERUM - Sent to Reference Laboratory**

Test Code: LCLOB
Synonyms: ONFI
Specimen Type: 1 mL
Serum, Red-top tube
Method: Liquid Chromatography/Tandem Mass Spectrometry (LC/MS-MS)
TAT: Reported within 6 working days.
Collection: Serum or plasma should be separated from cells within two hours of
venipuncture. Submit serum or plasma in a plastic transport tube.
Transport: Refrigerated
Special Instructions: Trough levels are most reproducible.
Comments: Do not use gel-barrier tubes. The use of gel-barrier tubes is not
recommended due to slow absorption of the drug by the gel. Depending
on the specimen volume and storage time, the decrease in drug level due
to absorption may be clinically significant.

Performed by: Sent to Reference Laboratory - LabCorp (Order #790500)

**CLOZAPINE, SERUM - Sent to Reference Laboratory**

Test Code: LCLZ
Synonyms: Clozaril
FazaClo
Specimen Type: 1 mL (0.3 mL minimum)
Serum, Red-top tube
Method: Liquid Chromatography/Tandem Mass Spectrometry (LC/MS-MS)
TAT: Set up Monday through Friday on 1st shift.
Reported within 3 working day.
Collection: Transfer separated serum to a plastic transport tube.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Frozen: 14 days
Causes for Rejection: Gel-barrier tube
Reference Interval: Patients dosed with 400 mg clozapine daily for 4 weeks were most likely to exhibit a therapeutic effect when the sum of clozapine and norclozapine concentrations were at least 450 ng/mL. No therapeutic, lethal, or toxic levels have been established.
Comments: Do not use gel-barrier tubes. The use of gel-barrier tubes is not recommended due to slow absorption of the drug by the gel. Depending on the specimen volume and storage time, the decrease in drug level due to absorption may be clinically significant.
Performed by: Sent to Reference Laboratory - LabCorp (Order #706440)

CMV (See Cytomegalovirus)

CMV CULTURE (See Culture, viral - cytomegalovirus)

COBALT, PLASMA - Sent to Reference Laboratory
Test Code: LCOB
Synonyms: Co, Plasma
Specimen Type: 2 mL (0.6 mL minimum)
Plasma, Royal blue-top (EDTA) tube
Method: Inductively-coupled Plasma/Mass Spectrometry (ICP/MS)
TAT: 4 days
Collection: Separate plasma immediately after the collection, and transfer to a plastic transport tube for shipment to the laboratory.
Transport: Ambient
Specimen Stability: Room Temperature: 14 days
Refrigerated: 14 days
Frozen: 14 days
Reference Interval: Environmental exposure: <1.0 µg/L
Occupational exposure: BEI (sampling time is end of shift at end of week): 1.0 µg/L
Performed by: Sent to Reference Laboratory - LabCorp (Order #071506)

COCAINE, CONFIRMATION - Sent to Reference Laboratory
Test Code: LCCUC
Specimen Type: 20 mL (7 mL minimum) aliquot from a fresh well-mixed random urine collection
Method: Mass Spectrometry (MS)
TAT: At least 7 days or more.
Collection: Random urine is collected in a container with a securely fastened lid with no preservatives.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Frozen: 14 days
Comment: This is a confirmatory test based on the DABU1 screen results. Orders are available upon request.
Performed by: Sent to Reference Laboratory - LabCorp (Order #071324)

**COCAINE, SCREEN**
Test Code: DABU1
Specimen Type: 20 mL (7 mL minimum) aliquot from a fresh well-mixed random urine collection
Method: Kinetic Interaction of Microparticles in Solution (KIMS) and Tricyclic by Enzyme Immunoassay (EIA)
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Random urine is collected in a container with a securely fastened lid with no preservatives.
Transport: Room Temperature (ASAP)
Specimen Stability: Refrigerated: Test within 3 days and store at 2-8°C.
Reference Interval: Negative
Comment: Included in the DABU1 battery. Confirmatory test available upon request (LCCUC - Order #071324)
Performed by: Core Laboratory

**COCCIDIOIDES ANTIBODIES, QUANTITATIVE, DID - Sent to Reference Laboratory**
Test Code: LCCID
Specimen Type: 0.6 mL (0.3 mL minimum)
Serum, Gold/SST, red-top tube
Method: Double Immunodiffusion (DID)
TAT: Set up and reported Monday through Friday on 2nd shift. Reported within 2 working days.
Collection: Collect specimen using standard laboratory procedures.
Transport: Refrigerated
Causes for Rejection: Hemolysis; lipemia; gross bacterial contamination
Reference Interval: Negative: <1:1
Performed by: Sent to Reference Laboratory - LabCorp (Order #164301)

**COENZYME Q10, TOTAL - Sent to Reference Laboratory**
Test Code: LCQ10
Synonyms: CoQ10, Ubiquinone 50
Specimen Type: 1 mL (0.5 mL minimum)
Plasma, Green-top (heparin) tube
Method: High-pressure Liquid Chromatography (HPLC) with electrochemical detection
TAT: 3 days
Collection: Draw blood into chilled green-top tube. Gently invert five to six times to mix with preservatives. Keep unopened vacuum tube on ice before processing. Immediately separate plasma from red cells by centrifugation. Plasma must be separated from cells within 45 minutes of venipuncture. Transfer plasma specimen to a labeled amber transport tube and freeze on dry ice. Protect from light. To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested.

Transport: Frozen
Specimen Stability: Frozen: 14 days at -70°C
Causes for Rejection: Use of EDTA anticoagulant; specimen not protected from light; plasma not frozen within 24 hours of collection.
Reference Interval: 0.37-2.20 µg/mL
Comments: To avoid delays in turnaround time when requesting multiple tests on frozen samples, please separate frozen specimens for each test requested.
Performed by: Sent to Reference Laboratory - LabCorp (Order #120251)

COLD AGGLUTININ TITER, QUANTITATIVE - Sent to Reference Laboratory
Test Code: LCOLD
Synonyms: Cold Hemagglutinin Titer
Specimen Type: 1 mL (0.5 mL minimum)
Blood, Gold/SST, red-top tube
Method: Hemagglutination
TAT: Set up Tuesday and Friday on 1st shift. Reported within 3 working days.
Collection: Incubate at 37°C and allow to clot at 37°C. After clotting, separate serum from cells if specimen is to be stored in refrigerator.
Transport: Incubated/Refrigerated  Transport blood immediately to laboratory.
Causes for Rejection: Refrigeration of the specimen before separating serum from cells.
Reference Interval: Negative: <1:32
Performed by: Sent to Reference Laboratory - LabCorp (Order #006353)

COLLECTION, 24 HOUR URINE
Test Code: COLL
Specimen Type: Aliquot from a fresh well-mixed 24 hour urine collection
Method: Collection
TAT: Performed daily between 7:00 a.m. and 3:00 p.m.
Collection: Empty your bladder by voiding completely at a specified early morning time and discard this urine. Collect and save all future urine specimens over the next 24 hours, until the next morning at the specified early morning time, at which time you empty your bladder by voiding for the final time and save this specimen with the rest of the collection. Urine upon collection should be emptied into a container provided and refrigerated. Patient's name, address, date and starting and ending time of the collection should be printed on the container.
Transport: Room temperature, ASAP
Specimen Stability: Refrigerate during collection process.
Comments: Please take care in collection of all the urine, as the total volume in 24 hours is very important.
Performed by: Core Laboratory, Microscopy

**COMPLEMENT C1 ESTERASE INHIBITOR - Sent to Reference Laboratory**
Test Code: LC1EI
Synonyms: C1 Esterase Inhibitor, Antigen
C1 Inactivator
C1 Inhibitor
Esterase Inhibitor
HANE Assay
Hereditary Angioneurotic Edema Test
Specimen Type: 1 mL (0.5 mL minimum)
Serum, Gold/SST, red-top tube
Method: Immunologic, quantitative
TAT: Set up Monday, Wednesday, and Friday on 1st shift.
Collection: Separate serum from cells within 30 to 60 minutes after collection.
Transfer specimen to a plastic transport tube. Maintain specimen at room temperature.
Transport: Frozen
Specimen Stability: Frozen: 14 days
Causes for Rejection: Microbially-contaminated samples; hemolysis; gross lipemia that cannot be cleared by ultracentrifugation; citrated plasma (heparinized plasma is acceptable).
Reference Interval: 21-39 mg/dL
Performed by: Sent to Reference Laboratory - LabCorp (Order #004648)

**COMPLEMENT C3**
Test Code: C3
Specimen Type: 0.5 mL serum, Gold-SST
Method: Immunoturbidimetry
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Refrigerated: 2 days
Frozen: 2 days
Reference Interval: 90-180 mg/dL
Performed by: Core Laboratory

**COMPLEMENT C4**
Test Code: C4
Specimen Type: 0.5 mL serum, Gold-SST
Method: Immunoturbidimetry
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Refrigerated: 2 days
Frozen: 2 days
Reference Interval: 16-47 mg/dL
Performed by: Core Laboratory

COMPLEMENT, TOTAL (CH50) - Sent to Reference Laboratory
Test Code: LCOM
Specimen Type: 1 mL (0.5 mL minimum)
Serum, plain red top
Method: Quantitative Liposome Lysis by Spectrophotometry
TAT: Set up and reported Monday through Saturday on 1st and 3rd shifts.
Reported within 2 working days.
Collection: Allow specimen to clot at room temperature for 15 to 30 minutes.
Remove serum after centrifugation, and place in plastic transport tube.
Keep specimen refrigerated for no more than three days prior to transporting frozen to the laboratory for testing.
Transport: Frozen
Specimen Stability: Frozen: 14 days
Causes for Rejection: Specimen not transported frozen; gross lipemia; plasma specimen
(Ascorbic acid, bilirubin, and hemoglobin do not have a significant effect on the measurement.)
Reference Interval: Age   Male   Female
1-30 days  Not established Not established
31 days-6 months 33-62 U/mL 21-62 U/mL
7 months-17 years 40-62 U/mL 40-62 U/mL
>17 years 42-62 U/mL 42-62 U/mL
Comments: To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested.
Performed by: Sent to Reference Laboratory - LabCorp (Order #001941)

COMPLETE BLOOD COUNT (See CBC)
CONJUGATED BILIRUBIN (See Bilirubin, direct)

COPPER, PLASMA - Sent to Reference Laboratory
Test Code: LCU3
Synonyms: Cu, Plasma
Specimen Type: 1 mL (0.2 mL minimum)
Plasma, Royal blue-top (EDTA) tube
Method: Inductively-coupled Plasma/Mass Spectrometry (ICP/MS)
TAT: Set up Monday through Friday on 1st shift.
Reported within 3 working day.

Collection: Plasma must be separated from cells within 45 minutes of collection and transferred to a metal free transport tube.

Transport: Refrigerated

Specimen Stability: Refrigerated: 14 days
Frozen: 14 days

Reference Interval: Environmental exposure: 72-166 µg/dL
Levels may be somewhat higher in pregnant women and children and in patients receiving estrogen therapy.

Performed by: Sent to Reference Laboratory - LabCorp (Order #001586)

**CORTISOL**

Test Code: CORT

Specimen Type: 0.5 mL serum, Gold-SST/Red top

Method: Electrochemiluminescence

TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7

Collection: Collect specimen using standard laboratory procedures. Time drawn should be noted on the requisition.

Transport: Room temperature, ASAP

Specimen Stability: Refrigerated: 5 days at 2-8°C
Frozen: 3 months at -20°C
Freeze once

Reference Interval: AM Specimen: 6.2-19.4 µg/dL
PM Specimen: 2.3-11.9 µg/dL

Comments: If samples are not run within 24 hours, store samples in freezer at -20°C until they can be run. Patients routinely exposed to animals or animal serum products can be prone to interference and anomalous values from heterophilic antibodies. Do not use samples that have been stored at room temperature for longer than 8 hours.

Performed by: Core Laboratory

**CORTISOL, SALIVARY - Sent to Reference Laboratory**

Test Code: LCORS

Specimen Type: 1 mL
Saliva in salivate collection device

Method: High Pressure Liquid Chromatography (HPLC)/Tandem Mass Spectrometry (LC/MS-MS)

TAT: Reported within 3 working days.

Transport: Frozen

Specimen Stability: Frozen: 5 months

Comments: Specialized kits are now available for salivary testing. Please contact LabCorp to order these.

Performed by: Sent to Reference Laboratory - LabCorp (Order #500179)
CORTISOL, URINARY FREE - Sent to Reference Laboratory
Test Code: LCFU
Synonyms: Urinary Free Cortisol
Specimen Type: 100 mL aliquot (10 mL minimum)
Urine (24 hour), Plastic urine container
Method: Liquid Chromatography/Tandem Mass Spectrometry (LC/MS-MS)
TAT: Set up Monday through Friday.
Reported within 5 working days.
Collection: Instruct the patient to void at 8:00 a.m. and discard the specimen. Then collect all urine including the final specimen voided at the end of the 24 hour collection period (i.e., 8:00 a.m. the next morning) in a plastic urine container containing 1 g boric acid per liter of urine. Mix well. Screw the lid on securely. (It is acceptable to collect cortisol with boric acid or HCl preservative.) Transport the specimen promptly to the lab. Container MUST be labeled with the patient's full name, date and time collection started, and date and time collection finished.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Frozen: 14 days
Reference Intervals: Pediatric and Adult
• year: not established
• 2-11 years: 1-21 µg/24 hours
• 12-16 years: 2-38 µg/24 hours
• Older than 16 years: 0-50 µg/24 hours
Comment: State 24 hour volume.
Performed by: Sent to Reference Laboratory - LabCorp (Order #004432)

COXSACKIE A VIRUS ANTIBODY PROFILE, IgG, IgM - Sent to Reference Laboratory
Test Code: LCOXA
Synonyms: Hand, foot and mouth disease
Specimen Type: 1 mL (0.5 mL minimum)
Serum, Gold/SST, red-top tube or Lavender-top (EDTA) tube
Plasma, Green-top (heparin) tube or Blue-top (sodium citrate) tube
Method: Indirect Fluorescent Antibody (IFA)
TAT: Set up and reported 2-3 times a week.
Positive titers reported next run.
Collection: Collect specimen using standard laboratory procedures.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Frozen: 14 days
Causes for Rejection: Microbially-contaminated or heat-treated specimen; specimen containing particulate matter; grossly hemolyzed, lipemic, or icteric samples.
Performed by: Sent to Reference Laboratory - LabCorp (Order #163295)

C-PEPTIDE
Test Code: CPEP1
Specimen Type: 1 mL serum, Gold-SST
(Minimum 0.5 mL)
Method: Chemiluminescent Microparticle Immunoassay (CMIA)
TAT: Performed Tuesday or Thursday, 8:00 a.m. -2:00 p.m.
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 8 hours
Refrigerated: 2 days
Frozen: 1 month
Reference Interval: 0.8-5.2 ng/mL
Performed by: Core Laboratory

CPK (See Creatine Kinase)

C-REACTIVE PROTEIN - HIGHLY SENSITIVE (CRP-hs)
Test Code: CRPHS
Specimen Type: 0.5 mL serum, Gold-SST
Method: Immunoturbidimetric Assay
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 11 days at 15-25°C
Refrigerated: 2 months at 2-8°C
Frozen: 3 years at -15 to -25°C
Reference Interval: CRPHS (mg/L) CVD risk
<1.0 Low
1.0-3.0 Average
>3.0 High
Performed by: Core Laboratory

CREATINE KINASE (CK)
Test Code: CK
Synonyms: CPK, CK
Specimen Type: 0.5 mL serum, Gold-SST/Red top
Method: Photometric Assay
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 2 days at 15-25°C
Refrigerated: 7 days at 2-8°C
Frozen: 4 weeks at -15 to -25°C
Reference Interval: Male >16 years 20-200 U/L
CREATINE KINASE (CK), TOTAL PLUS ISOENZYMES - Sent to Reference Laboratory
Test Code: LCKI
Synonyms: CK Fractionation
CK Isoenzymes
CPK Isoenzymes
Creatine Phosphokinase Isoenzymes
Specimen Type: 1 mL (0.6 mL minimum)
Serum, Gold/SST, red-top tube
Method: Total: Kinetic
Isoenzymes: Agarose gel electrophoresis with densitometry
TAT: Set up and reported Sunday through Friday on 3rd shift.
Collection: To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested.
Transport: Frozen
Specimen Stability: Frozen: Up to 2 weeks at -20ºC
Causes for Rejection: Moderate or excessive hemolysis
Special Instructions: State the patient's sex on the test request form.
Performed by: Sent to Reference Laboratory - LabCorp (Order #002154)

CREATININE
Test Code: CRE
Specimen Type: 0.5 mL serum, Gold-SST
Method: Photometric Assay using alkaline picric acid
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Refrigerated: 7 days at 2-8ºC
Reference Interval: Male >12 years 0.5-1.2 mg/dL
Female >12 years 0.4-1.1 mg/dL
Male and Female 5 days-12 years 0.2-0.7 mg/dL
Performed by: Core Laboratory

CREATININE CLEARANCE
Test Code: CCLR
Specimen Type: Aliquot from a fresh well-mixed 24 hour urine collection (See collection, 24 hour urine.)
Blood must be collected for a serum creatinine within 24 hours of the start time or end time of the urine collection in order to calculate a creatinine clearance.

**Method:** Photometric Assay

**TAT:** Performed 7:00 a.m. - 3:00 p.m. daily

**Collection:**

**Urine:**
Empty your bladder by voiding completely at a specified early morning time and discard this urine. Collect and save all future specimens over the next 24 hours, until the next morning at the specified early morning time, at which time you empty your bladder by voiding for the final time and save this specimen with the rest of the collection. Urine upon collection should be emptied into the 2 quart plastic container provided and refrigerated. Patient's name, address, date and starting and ending time of the collection should be printed on the container.

**Blood:**
Blood must be collected for a serum creatinine within 24 hours of the start or end time of the urine collection in order to calculate a creatinine clearance.

No calculation is possible for a random specimen.

Formula for calculation:

\[
CCLR (\text{mL/min}) = \frac{\text{Urine Cre (mg/dL)} \times \text{Total Vol (mL)}}{\text{Serum Cre (mg/dL)} \times \text{collection time (min)}}
\]

**Transport:** Room temperature, ASAP

**Specimen Stability:** Refrigerated: 4 days

**Reference Interval:**
- Male: 107-139 mL/min
- Female: 87-107 mL/min

**Performed by:** Core Laboratory, Microscopy

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**CREATININE URINE, 24 HOUR**

**Test Code:** CR24U

**Specimen Type:** 24 hour urine sample well mixed.

**Method:** Photometric assay using alkaline picric acid

**TAT:** Performed 24/7

**Collection:** Collect specimen without using preservatives in a container with a securely fastened lid. Refrigerate during collection.

**Transport:** ASAP

**Specimen Stability:** Stable for 4 days at 2-8°C.

**Reference Interval:**
- Male: 800-2000 gm/24 hour
- Female: 600-1800 gm/24 hour

**Comments:** Centrifuge samples containing precipitate before performing the assay.

**Performed by:** Core Laboratory

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**CREATININE URINE, RANDOM**

**Test Code:** CREU

**Specimen Type:** Random sample

**Method:** Photometric assay using alkaline picric acid
TAT: Performed 24/7
Collection: Collect urine without using preservatives in a container with a securely fastened lid. If delay in testing, refrigerate sample.
Transport: ASAP
Specimen Stability: Stable for 4 days at 2-8°C.
Reference Interval: Reference intervals for random urine has not been established.
Comments: Centrifuge samples containing precipitate before performing the assay.
Performed by: Core Laboratory

CRYOGLOBULIN
Test Code: CRYG
Specimen Type: 5-7 mL blood, Red top
Method: Cryoglobulin must be kept warm, immediately placed in a 37°C waterbath or 37°C heat block upon arrival to the lab to allow clotting. The Immunology Lab will pick up specimens, spin it warm, separate the serum, set up and read the assay.
TAT: 72 hours. Monday through Friday only.
Collection: Keep at 37°C. Do not refrigerate.
Transport: Transport to Lab at 37°C (wrap in heel warmer) and deliver immediately to the Lab.
Specimen Stability: Refrigerated: Unacceptable
Reference Interval: Negative
Performed by: Immunology Laboratory

CRYOPRECIPITATE
Test Code: TCRY
Specimen Type: 5 mL blood, EDTA (lavender top) (If patient's ABO & Rh not known)
TAT: Call Blood Bank in advance for cryoprecipitate orders. Preparation time is approximately 30 minutes.
Collection: Appropriate EPIC generated Prepare Cryoprecipitate order or Plasma and Cryoprecipitate Order form (on-line) if not on EPIC. If specimen is sent for ABO/Rh type, must have patient's full name, medical record number, and initials of phlebotomist. The specimen label must include the date and time the sample was drawn if this information is not entered in the collection information field of the EPIC generated order or in the Collected by field of the Blood Bank requisition.
Transport: Room temperature
Comments: See section for details on indications and dosage. Product outdates 4 hours from time product is thawed.
Performed by: Blood Bank

CRYPTOCOCCAL ANTIGEN
Test Code: CRAGF
Specimen Type: 5-7 mL blood, Gold-SST or >0.5 mL CSF
Method: Lateral Flow
TAT: 7 days/week, 7 a.m. - 10:30 p.m.
Collection: Collect specimen using standard collection procedures.
Specimen Stability: Room Temperature: (25°C) ≤ 24 hours
Refrigerated: (4°C) ≤ 72 hours
Reference Interval: Negative
Performed by: Microbiology Laboratory

CSF CULTURE (See Culture, body fluid)

C-TELOPEPTIDE - Sent to Reference Laboratory
Test Code: LCTXS
Synonyms: Carboxyterminal Cross-linking Telopeptide of Bone Collagen
Collagen Cross-linked C-Telopeptide
Crosslaps
Type 1 Collagen
Specimen Type: 0.5 mL (0.3 mL minimum)
Serum, Gold/SST, red-top tube
Method: Enzyme-linked Immunosorbent Assay (ELISA)
TAT: Reported within 5 working days.
Collection: Separate serum from cells within 45 minutes of collection. Transfer specimen to a plastic transport tube before freezing.
Transport: Frozen
Specimen Stability: Frozen: 7 days
Reference Interval: Male:
• 115-748 pg/mL
Female:
• Premenopausal: 112-738 pg/mL
• Postmenopausal: 142-1351 pg/mL
Comment: To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested.
Performed by: Sent to Reference Laboratory - LabCorp (Order #500089)

CULTURE, AFB (MYCOBACTERIA)
Test Code: AFBC
Specimen Type: Fluids/aspirates:
• As much as possible, minimum 3-5 mL in sterile container.
• Transfer synovial fluid to heparin (green top) tube.
Bone marrow:
• 1.5 mL Isolator tube
Respiratory:
• 3-5 mL in sterile container. For sputum, a deeply expectorated, early morning specimen is best.
Urine:
• 10 mL in sterile container. First morning, mid-stream specimen is best.
Swabs are suboptimal specimens.
Method: Culture including direct stain for samples other than CSV, gastric aspirates, and urine.

TAT: Smear results reported daily by 2:00 p.m.
STAT smears are not performed.
Preliminary culture results available within 7 days.

Collection: Collect specimen using standard laboratory procedures.

Specimen Stability: Refrigerated: (4°C) ≤ 7 days
Other: ≤ 48 hours

Comments: Smears are not performed on CSF, gastric aspirates, throats, or urine due to low sensitivity/specificity. Direct PCR detection of M. tuberculosis (TB) complex is automatically performed on smear-positive respiratory specimens. Patients on TB therapy may have positive direct PCR results and negative cultures.

Performed by: Microbiology Laboratory

**CULTURE, AFB (MYCOBACTERIA) (Acid-fast Skin)**

Test Code: AFBSK
Specimen Type: Tissue: 5-10 mm³. Small amount of nonbacteriostatic saline may be added to keep tissue moist.

Swabs are suboptimal specimens.

Method: Culture including direct stain.

TAT: Smear results reported daily by 2:00 p.m.
STAT smears are not available due to low sensitivity.
Preliminary culture results available within 7-14 days.

Collection: Collect specimen using standard collection procedures.

Specimen Stability: Refrigerated: (4°C) ≤48 hours

Performed by: Microbiology Laboratory

**CULTURE, ANAEROBIC**

Test Code: ANAE
Specimen Type: Suprapubic or surgically collected urine, sterile tissues/fluids, bronchial brushings, deep wound aspirates:
- In sterile container or capped syringe with air and needle removed.
- Body sites which normally harbor anaerobic flora are not acceptable, including nose, throat, oral, respiratory secretions, gastric contents, non-surgical vaginal or cervical swabs, voided or catheterized urine, feces, skin, or superficial wound.

Method: Culture

TAT: 7 days a week.
Preliminary culture results at 48 hours.
Final results within 5 days.

Collection: Swabs are suboptimal specimens for recovery of anaerobic organisms. Submit tissue or abscess aspirates. If necessary, swabs should be submitted using gel swabs.

Transport: Immediately. Do not refrigerate.

Specimen Stability: 1/2 hour at 25°C if received in a syringe or cup. Do not refrigerate.
Specimens in anaerobic transport device: ≤ 24 hours at 25°C.

Performed by: Microbiology Laboratory

**CULTURE, BARTONELLA**

Test Code: BART
Synonyms: Cat scratch (LN, liver, spleen, skin) disease
Specimen Type: Tissue biopsy/aspirate: In sterile container. Blood: Isolator tube - 10 mL (adults), 1.5 mL (pediatric).
Specify Bartonella when ordering.
Method: Culture
TAT: 7 days a week.
Final negative culture results available after 3 weeks.
Collection: See Clinical Pathology Procedure CM B-08 for blood collection.
Specimen Stability: Room temperature: (25°C) ≤ 2 hours
Performed by: Microbiology Laboratory

**CULTURE, BIOPSY (Divisible Tissue or Bone Marrow)**

Test Code: BXB
Synonyms: Tissue culture; Bone marrow culture
Specimen Type: Bone Marrow: 1.5 mL Isolator tube
5-10 mm³ piece of tissue received in sterile container is desirable, but any volume is acceptable.
Unacceptable: Specimen received in preservative, e.g. formalin.
Method: Culture. Gram stain included for soft tissues.
TAT: 7 days a week.
Preliminary culture results after 24 hours.
Final negative culture results available after 3 days.
Collection: Collect specimen using standard collection procedures.
Specimen Stability: Room temperature: ≤24 hours at 25°C
Comments: Gram stain included. Submit several pieces of tissue if additional cultures, e.g. AFB, fungus are requested.
Performed by: Microbiology Laboratory

**CULTURE, BIOPSY (Non divisible Bone)**

Test Code: BXC
Synonyms: Tissue culture
Specimen Type: Tissue: 5-10 mm³ in sterile container
Unacceptable: Specimen received in preservative, e.g. formalin.
Method: Culture.
TAT: 7 days a week.
Preliminary culture results after 24 hours.
Final negative culture results available after 7 days.
Collection: Collect specimen using standard collection procedures.
Specimen Stability: Room temperature: (25°C) <24 hour
Refrigerated: <24 hours at 2-8°C
Comments: Submit several pieces of tissue if additional cultures, e.g. AFB, fungus are requested.

Performed by: Microbiology Laboratory

CULTURE, BLOOD-FUNGUS (MOLDS)
Test Code: FUNGB
Specimen Type: Peripheral blood
Adults/older children (>36 kg): One 10 mL Isolator tube
Pediatric (≤36 kg): One 1.5 mL Isolator tube
Method: Culture
TAT: 7 days a week.
Preliminary culture results after 24 hours.
Final negative culture results available after 28 days.
Collection: See Clinical Pathology Procedure CM B-08.
Specimen Stability: Room temperature: (25°C) 16 hours
Comments: Isolator tubes should only be used for invasive or disseminated infections with Cryptococcus or molds, e.g. Aspergillus spp., dimorphic fungi, etc. Use routine BACTEC bottles for Candida spp.

Performed by: Microbiology Laboratory

CULTURE, BLOOD - MYCOBACTERIA
Test Code: AFBB
Specimen Type: 1-5 mL blood in MYCO/F - Lytic bottle
TAT: 7 days a week.
Preliminary culture results after 7 days.
Final negative culture results available after 42 days.
Collection: See Clinical Pathology Procedure CM B-08.
Specimen Stability: <48 hours at 25°C
<12 hours at 37°C
Comments: Direct smears are not performed.

Performed by: Microbiology Laboratory

CULTURE, BLOOD - QUANTITATIVE - Not performed on Adult patients
Test Code: QUNTA
Synonyms: Line culture; Catheter culture
Specimen Type: Pediatric 1.5 mL Isolator tubes - tube must be at least half full.
Label tubes according to site, e.g. peripheral, red port, etc. Draw all tubes at the same time. Lab will accept tubes drawn within 60 minutes of each other.
Unacceptable specimens: Clotted tubes, partially filled tubes (less than half full), samples from patients >18 years old, line samples without a peripheral sample.
Method: Culture
TAT: 7 days a week.
Preliminary culture results after 24 hours.
Final negative culture results available after 3 days.
Most positive cultures detected in 24 hours.

**Collection:** See Clinical Pathology Procedure CM B-08.

**Specimen Stability:** Room temperature: ≤1 hour at 25°C

**Interpretation:** Quantitative bloods are used to detect catheter-related bacteremia. Bacterial counts from the peripheral sample are compared to the line sample to make an interpretation.

**Performed by:** Microbiology Laboratory

**CULTURE, BLOOD - ROUTINE (Bacteria, yeast)**

**Test Code:** BLDC

**Specimen Type:** BACTEC bottles/required blood volume:
- Aerobic/F (glass or plastic) 8-10 mL
- Anaerobic/Lytic/10 (plastic) 8-10 mL
- Peds Plus 1F (glass) 1-3 mL

**Method:** Culture

**TAT:** 7 days a week.

Preliminary culture results after 24 hours incubation.
Final negative culture results available after 5 days.

**Collection:** For pediatric patients >80 lbs. (>36 kg) and adults: two venipunctures must be performed, collecting an aerobic and anaerobic blood bottle from each site.
Refer to Clinical Pathology Procedure CM B-08 for requirements for pediatric patients <36 kg and for venipuncture collection procedure.
Line draw: Because of a higher rate of contamination, blood should not be drawn from a line unless a peripheral sample is impossible to obtain.

**Specimen Stability:** <48 hours at 25°C
<12 hours at 37°C

**Comments:** Submitting less than the required volume will decrease recovery of organisms. Single blood cultures are rarely indicated. For persistently febrile patients, routine blood cultures should not be repeated if the initial cultures are negative. Draw only for new febrile episodes or if there is a change in clinical condition.

**Performed by:** Microbiology Laboratory

**CULTURE, BODY FLUID**

**Test Code:** FLDA

**Specimen Type:** CSF, joint, pleural, ascitic, abdominal, amniotic, cul-de-sac fluids, pericardial, peritoneal, ≥1 mL fluid in sterile container; dialysis bag (effluent).

**Method:** Culture. Includes Gram stain.

**TAT:** 7 days a week.

Preliminary culture results after 24 hours incubation.
Final negative culture results available after 3-5 days.

**Collection:** Collect specimen using standard collection procedures.

**Specimen Stability:** <2 hours at 25°C - sterile container
<48 hours at 25°C - blood bottles
CULTURE, BODY FLUID (CAPD Fluid)
Test Code: FLDC
Specimen Type: CAPD fluids, peritoneal dialysate: 10 mL can be placed directly into 10 mL aerobic BACTEC bottles. If not sent in a BACTEC bottle, label specimen as CAPD.
Method: Culture
TAT: 7 days a week.
Preliminary culture results after 24 hours incubation. Final negative culture results available after 3-5 days.
Collection: Collect specimen using standard collection procedures.
Specimen Stability: ≤2 hours at 25°C - sterile container <48 hours at 25°C - blood bottles
Performed by: Microbiology Laboratory

CULTURE, BODY FLUID (Synovial fluid)
Test Code: FLDB
Specimen Type: Synovial Fluid: ≥1 mL fluid in sterile container
Method: Culture. Includes Gram stain.
TAT: 7 days a week.
Preliminary culture results after 24 hours incubation. Final negative culture results available after 3-5 days.
Collection: Follow standard collection procedures.
Specimen Stability: <2 hours at 25°C - sterile container
Performed by: Microbiology Laboratory

CULTURE, CHLAMYDIA
Test Code: CTCL
Specimen Type: Eye, genital, rectal, throat. Other respiratory if <1 year old or immunocompromised.
Swabs or tissues: Use universal transport medium (UTM)
Body fluids: Use any sterile container.
Use flocked swabs.
Do not use wooden shafted or calcium alginate tipped swabs.
Method: Culture - C. trachomatis only
TAT: Performed Tuesday and Friday with results in 48-72 hours.
Transport: 4°C
Comments: Culture is strongly recommended for sexual assault/abuse cases.
Performed by: Virology Laboratory

CULTURE, EAR/EYE
Test Code: EE
Specimen Type: Ear or eye: Gel swab, corneal scrapings
Method: Culture. Includes Gram stain
TAT: 7 days a week.
Preliminary culture results after 24 hours incubation.
Final negative culture results available after 3 days.

Collection: Collect specimen using standard collection procedures.
Specimen Stability: Room temperature (25°C): ≤2 hours (ear)
                ≤24 hours (eye)
                Refrigerated (2-8°C): ≤24 hours (ear)
Comments: Gram stain included.
Performed by: Microbiology Laboratory

CULTURE, FOREIGN BODY
Test Code: FORB
Specimen Type: Penrose drain, catheters (non-IV, non-urine), bullet, screws, shunts, stones
             (kidney and gall bladder), etc.: In sterile container.
Method: Culture
TAT: 7 days a week.
      Preliminary culture results after 24 hours incubation.
      Final negative culture results available after 7 days.
Collection: Collect specimen using standard collection procedures.
Specimen Stability: Room temperature (25°C): ≤4 hours
                   Refrigerated (2-8°C): ≤24 hours
Comments: No Gram stain is performed.
Performed by: Microbiology Laboratory

CULTURE, FUNGUS
Test Code: FUNG
Specimen Type: Tissue: 5-10 mm³ in sterile container
              Fluid, aspirate, sputum, urine: Minimum of 3-5 mL in sterile container
              Other: Swab
Method: Culture
TAT: 7 days a week.
      Preliminary culture results after 24 hours incubation.
      Final negative culture results available after 7-28 days.
Collection: Collect specimen using standard collection procedures.
Specimen Stability: Room temperature (25°C): ≤72 hours (Sterile fluids and tissues)
                   Refrigerated (2-8°C): ≤72 hours (Others)
Performed by: Microbiology Laboratory

CULTURE, FUNGUS (Skin, Hair, Nails)
Test Code: FUNGS
Specimen Type: Hair, nails, skin scrapings: Sterile dry container, wax envelope.
Method: Culture
TAT: 7 days a week.
      Preliminary culture results after 24 hours incubation.
      Final negative culture results available after 28 days.
Collection: Hair: Pluck 5-10 hairs with tweezers.
            Nail: Clippings and debris from under nail plate.
Skin: Scrape edge of lesion with scalpel blade.

Specimen Stability: Room temperature (25°C): ≤72 hours
Performed by: Microbiology Laboratory

**CULTURE, GENITAL (Urethral, vaginal, cervical)**

Test Code: GENA
Specimen Type: Urethral, vaginal, cervical: Gel swab
Unacceptable: Dry swabs
Method: Culture. Includes Gram stain.
TAT: 7 days a week.
Preliminary culture results after 24 hours incubation.
Final negative culture results available after 3 days.
Collection: Collect specimen using standard collection procedures.
Specimen Stability: Room temperature (25°C): ≤6 hours
(Unable to culture for Neisseria gonorrhoeae if refrigerated)
Comments: Urethral, cervical, and vaginal specimens are examined primarily for N. gonorrhoeae, yeast, Beta-hemolytic streptococci.
For Neisseria gonorrhoeae only: see Culture, Neisseria; Chlamydia/Neisseria, amplified.
For yeast only see Vaginitis.
For group B streptococci in pregnant females see Culture, group B streptococci screen.
Performed by: Microbiology Laboratory

**CULTURE, GENITAL (Semen)**

Test Code: GEND
Specimen Type: Semen >1 mL
Method: Culture
TAT: 7 days a week.
Preliminary culture results after 24 hours incubation.
Final negative culture results available after 3 days.
Collection: Collect specimen using standard collection procedures.
Specimen Stability: Room temperature (25°C): ≤2 hours
Performed by: Microbiology Laboratory

**CULTURE, GENITAL (Sterile fluids, tissue)**

Test Code: GENB
Specimen Type: Steriles from OR, amniotic fluid, endometric, prostatic fluid, ovaries, testes, cul de sac, uterine material, etc.
Fluid aspirate: 2-3 mL in sterile container
Tissue: 5-10 mm³ in sterile container
Unacceptable: Dry swabs
Method: Culture. Includes Gram stain.
TAT: 7 days a week.
Preliminary culture results after 24 hours incubation.
Final negative culture results available after 3 days.
Collection: Collect specimen using standard collection procedures.
Specimen Stability: Room temperature (25°C): ≤2 hours
Refrigerated (2-8°C): ≤24 hours
(Unable to culture for Neisseria gonorrhoeae if refrigerated)
Performed by: Microbiology Laboratory

**CULTURE, GROUP B STREPTOCOCCI SCREEN**
Test Code: GBSC
Specimen Type: Combined vaginal/rectal swab: Gel swabs
Cervical swabs are not acceptable.
Method: Selective Broth Culture
TAT: 7 days a week.
Preliminary culture results after 24 hours incubation.
Final negative culture results available between 24-72 hours.
Collection: Collect specimen using standard collection procedures.
Specimen Stability: Room temperature (25°C): ≤24 hours
Refrigerated (4°C): ≤24 hours
Interpretation: Cultures are performed according to CDC guidelines.
Comments: Recommended that all pregnant females be screened for group B strep at 35-37 weeks gestation. Culturing specimens from anorectum and vagina increases detection by 25% compared to vaginal culture alone. Cervical swabs are the least sensitive specimen for group B strep.
Performed by: Microbiology Laboratory

**CULTURE, MRSA**
Test Code: MRSAS
Specimen Type: Nares, skin, axilla, rectal, previous positive site, chronic wounds: Gel swabs
Method: Culture - Recovery of MRSA only.
TAT: 7 days a week.
Final negative culture results available after 24 hours incubation.
Collection: Collect specimen using standard collection procedures.
Specimen Stability: Room temperature (25°C): ≤24 hours
Refrigerated (4°C): ≤24 hours
Comments: Swab specimens received on the same patient are combined unless lab is notified by Infection Control.
Performed by: Microbiology Laboratory

**CULTURE, MYCOPLASMA (Genital) - Sent out to reference laboratory**
Test Code: GMCL
Synonym: Ureaplasma culture
Specimen Type: Cervical, vaginal, urethral, urine, semen, prostatic secretions, respiratory (if <1 year old).
Swabs or tissues: Use universal transport medium (UTM).
Body fluids: Use any sterile container.
Use flocked swabs.
Do not use wooden shafted or calcium alginate tipped swabs.

Transport: 4°C
Specimen Stability: Refrigerated (4°C): ≤24 hours
Interpretation: Ureaplasma urealyticum and Mycoplasma hominis will be isolated.
Performed by: Sent to reference laboratory.

CULTURE, NEISSERIA GONORRHOEAE
Test Code: NSC
Specimen Type: Cervical, vaginal (prepubescent females), urethral, throat, rectal, ocular:
Gel swabs
Martin-Lewis or JEMBEC plates, inoculated at bedside.
Unacceptable: Dry swabs, cold, dry, or expired plates.
Method: Culture
TAT: 7 days a week.
Preliminary culture results after 24 hours incubation.
Final negative culture results available after 3 days.
Collection: For optimal results, cervical rather than vaginal specimens should be submitted for females (exception: prepubescent females). Collect specimen using standard laboratory procedures.
Specimen Stability: Room temperature (25°C): ≤6 hours
Do not refrigerate.
Comments: Culture is strongly recommended for sexual assault/abuse cases.
Performed by: Microbiology Laboratory

CULTURE, RESPIRATORY - BRONCHIAL BRUSH
Test Code: BBRSH
Synonyms: Bronchial brush culture
Specimen Type: Bronchial brush: In sterile transport vials - separate vials are available for bacteria/fungus, anaerobes, viruses. Vials are stocked in bronchoscopy suite and Clinical Pathology. Each request requires a separate brush.
Method: Culture. Gram stain not performed.
TAT: 7 days a week.
Preliminary culture results after 24 hours incubation.
Final negative culture results available after 3-5 days.
Collection: Collect specimen using standard collection procedures.
Specimen Stability: Bacterial, aerobic: <2 hours at 25°C; Bacterial anaerobic: ≤24 hours at 25°C; do not refrigerate Viral: See Culture, Viral Fungal: See Culture, Fungal
Interpretation: Significance of bacterial culture growth is assessed by colony count. Identification and susceptibility testing is performed on all significant quantitates of growth.
Comments: Anaerobic culture is set up on brush specimens only. Brush specimens which accompany BALs should be submitted for quantitative aerobic and anaerobic culture only unless the brush was obtained specifically for fungus or mycobacteria.
CULTURE, RESPIRATORY - LEGIONELLA
Test Code: LEGA
Specimen Type: Sputum, endo or nasotracheal aspirate, bronchial wash, bronch brush, BAL fluid: 2-3 mL in sterile container.
Method: Culture. Direct stain not performed.
TAT: 7 days a week.
Preliminary culture results after 24 hours incubation.
Final negative culture results available after 7 days.
Collection: Collect specimen using standard collection procedures.
Transport: Legionella are sensitive to sodium. Do not add saline to specimen.
Specimen Stability: Room temperature (25°C): ≤2 hours
Refrigerated (4°C): ≤24 hours
Comments: Legionella urinary antigen (see Legionella antigen) should also be performed.
Performed by: Microbiology Laboratory

CULTURE, RESPIRATORY - LEGIONELLA
Test Code: LEGB
Specimen Type: Lung tissue, lung/bronchial biopsy, pleural fluid, percutaneous lung aspirates: 5-10 mm³ in sterile container.
Method: Culture. Direct stain not performed.
TAT: 7 days a week.
Preliminary culture results after 24 hours incubation.
Final negative culture results available after 7 days.
Collection: Collect specimen using standard collection procedures.
Transport: Legionella are sensitive to sodium. Do not add saline to specimen.
Specimen Stability: Room temperature (25°C): ≤2 hours
Refrigerated (4°C): ≤24 hours
Comments: Legionella urinary antigen (see Legionella antigen) should also be performed.
Performed by: Microbiology Laboratory

CULTURE, RESPIRATORY - QUANTITATIVE
Test Code: BALQ
Synonyms: BAL culture
Specimen Type: Bronchoalveolar lavage (BAL): minimum of 13 mL in sterile container.
Method: Culture. Gram stain not performed.
TAT: 7 days a week.
Preliminary culture results after 24 hours incubation.
Final negative culture results available after 3 days.
Collection: Collect specimen using standard collection procedures.
Specimen Stability: Room temperature (25°C): ≤2 hours
Refrigerated (4°C): ≤24 hours
Interpretation: Significance of culture growth is assessed by colony count. Identification and susceptibility testing is performed on all significant quantitates of growth.

Performed by: Microbiology Laboratory

CULTURE, RESPIRATORY - ROUTINE
Test Code: SPTG
Synonyms: Sputum culture; Endotracheal aspirate culture; Bronchial wash culture
Specimen Type: Sputum, bronchial washings or tracheal aspirates: >2 mL in sterile container
It is imperative that tracheal specimens be labeled appropriately for correct Gram stain and culture interpretation.
Method: Culture. Includes Gram stain.
TAT: 7 days a week.
Preliminary culture results after 24 hours incubation. Final negative culture results available after 2 days.
Collection: Collect specimen using standard collection procedures.
Specimen Stability: Room temperature (25°C): ≤2 hours Refrigerated (4°C): ≤24 hours
Performed by: Microbiology Laboratory

CULTURE, RESPIRATORY - ROUTINE (Cystic Fibrosis Culture)
Test Code: CYST
Synonyms: Cystic fibrosis culture
Specimen Type: Throat: Gel swab
Sputum: 3-5 mL in sterile container
Order cystic sputum culture. If sample is a throat swab, change specimen description to throat.
Method: Culture. Gram stain not performed.
TAT: 7 days a week.
Preliminary culture results after 24 hours incubation. Final negative culture results available after 4 days.
Collection: Collect specimen using standard collection procedures.
Specimen Stability: Room temperature (25°C): ≤2 hours Refrigerated (4°C): ≤24 hours
Performed by: Microbiology Laboratory

CULTURE, RESPIRATORY - ROUTINE (Nasopharyngeal Culture)
Test Code: NP
Synonyms: Nasopharyngeal culture
Specimen Type: Nasopharyngeal: Mini-tip swab
Method: Culture.
TAT: 7 days a week.
Preliminary culture results after 24 hours incubation. Final negative culture results available after 2 days.
Collection: Collect specimen using standard collection procedures.
Specimen Stability: Room temperature (25°C): ≤24 hours
Performed by: Microbiology Laboratory

**CULTURE, RESPIRATORY - ROUTINE (Throat culture)**

Test Code: THR
Synonyms: Throat culture
Specimen Type: Throat: Gel swab
Method: Culture
TAT: 7 days a week.

Preliminary culture results after 24 hours incubation.
Final negative culture results available after 2 days.

Collection: Collect specimen using standard collection procedures.
Specimen Stability: Room temperature (25°C): ≤24 hours
Performed by: Microbiology Laboratory

**CULTURE, STOOL/INTESTINAL**

Test Code: INTA
Synonyms: Stool culture, Yersinia culture, Vibrio culture, E. coli 0157 culture,
Salmonella culture, Shigella culture, Campylobacter culture
Specimen Type: Stool/colostomy/etc., rectal swab (infants): 1-2 g or 1-2 mL in plastic
container or stool transport (Cary-Blair) media; gel swab.
Unacceptable: Dried specimen, contamination with foreign materials, i.e.,
soap, urine, barium.

Method: Culture. Not performed on patients hospitalized >3 days.
TAT: 7 days a week.

Preliminary culture results after 24 hours incubation.
Final negative culture results available after 3 days.

Collection: Collect specimen using standard collection procedures.
Specimen Stability: Raw stool/rectal swab
- Room temperature (25°C): ≤1 hour
- Refrigerated (4°C): ≤24 hours
- Cary-Blair
  - Room temperature (25°C): ≤48 hour

Interpretation: Routine culture includes Salmonella, Shigella, Campylobacter,
Aeromonas, Plesiomonas and E. coli 0157:H7.
Yersinia enterocolitica and Vibrio spp. by special request.

Comments: Stool specimens are not accepted from patients in hospital >3 days.
Approval by Infectious Disease service required. Consider possible C.
difficile in hospitalized patients.

Performed by: Microbiology Laboratory

**CULTURE, STOOL/INTESTINAL (Bile Culture)**

Test Code: INTB
Synonyms: Bile culture.
Specimen Type: Bile: 1-2 mL in sterile container.
Method: Culture
TAT: 7 days a week.
Preliminary culture results after 24 hours incubation.
Final negative culture results available after 3 days.

Collection: Collect specimen using standard collection procedures.
Specimen Stability: Sterile container/swab
- Room temperature: <2 hours at 25°C
- Refrigerated: <24 hours at 2-8°C

Comment: Not performed on inpatients who have been in the hospital >3 days.
Performed by: Microbiology Laboratory

CULTURE, URINE (Foley, clean catch)
Test Code: URA
Specimen Type: 1 mL minimum in a sterile container or 25 mL in a boric acid transport vial.
Type of urine (clean catch) must be specified for correct work-up and interpretation.

Method: Culture. Gram stain not performed - must be ordered separately.

TAT: 7 days a week.
Preliminary culture results after 24 hours incubation.
Final negative culture results available after 2 days for clean catch and indwelling catheter urines, 3 days for straight catheter and supra pubic urines.
For inpatient/ER/pediatric patients >10 years old, culture is performed only if urinalysis suggests infection (nitrate positive, leukocyte esterase positive, or >5 WBC's/hpf).
All outpatients and pediatric patients <10 years old will have urinalysis and/or urine culture performed as requested.

Collection: Collect specimen using standard collection procedures.
Transport: Refrigerate or preserve if delayed.
Specimen Stability: Sterile container:
- Room temperature (25°C): ≤2 hours
- Refrigerated (4°C): ≤24 hours
Boric acid transport container
- Room temperature (25°C): ≤72 hours

Performed by: Microbiology Laboratory

CULTURE, URINE (Straight catheter, Indwelling catheter)
Test Code: URB
Specimen Type: 1 mL minimum in a sterile container or 25 mL in a boric acid transport vial.
Type of urine (straight catheter, indwelling catheter) must be specified for correct work-up and interpretation.

Method: Culture. Gram stain not performed - must be ordered separately.

TAT: 7 days a week.
Preliminary culture results after 24 hours incubation.
Final negative culture results available after 3 days.
Collection: Collect specimen using standard collection procedures.
Transport: Refrigerate or preserve if delayed.
Specimen Stability: Sterile container:
  • Room temperature (25°C): ≤2 hours
  • Refrigerated (4°C): ≤24 hours
Boric acid transport container:
  • Room temperature (25°C): ≤72 hours
Performed by: Microbiology Laboratory

CULTURE, URINE (Suprapubic)
Test Code: URC
Specimen Type: 1 mL minimum in a sterile container or 25 mL in a boric acid transport vial.
Type of urine (suprapubic) must be specified for correct work-up and interpretation.
Method: Culture. Gram stain not performed - must be ordered separately.
TAT: 7 days a week.
Preliminary culture results after 24 hours incubation.
Final negative culture results available after 3 days.
Collection: Collect specimen using standard collection procedures.
Transport: Refrigerate if delayed.
Specimen Stability: Sterile container:
  • Room temperature (25°C): ≤2 hours
  • Refrigerated (4°C): ≤24 hours
Boric acid transport container:
  • Room temperature (25°C): ≤72 hours
Performed by: Microbiology Laboratory

CULTURE, VIRAL - CYTOMEGALOVIRUS
Test Code: CMCL
Specimen Type: Swabs or tissues: Place in universal transport medium (UTM). Use flocked swabs. Do not use wooden shafted or calcium alginate tipped swabs.
Body fluids: Use any sterile container.
Transport: 4° C
Comments: Includes rapid shell vial centrifugation technique for CMV.
Performed by: Virology Laboratory

CULTURE, VIRAL, GENERAL
Test Code: GVCL
Synonyms: Influenza culture; Respiratory syncytial virus culture; RSV culture; Enterovirus culture; Adenovirus culture
Specimen Type: Varies with site of infection and viruses suspected.
Swabs and tissues: Use universal transport medium (UTM).
Body fluids or feces: Use any sterile container.
Use flocked swabs. Do not use wooden shafted or calcium alginate tipped swabs.
Collection: Use flocked swabs and 3.0 mL UTM.
Transport: 4°C
Comments: Includes isolation of HSV, CMV, VZV, RSV, enterovirus, adenovirus, influenza, parainfluenza, rhinovirus, mumps, measles. PCR for HSV is preferred in lieu of culture for most specimen types.
Performed by: Virology Laboratory

CULTURE, VIRAL - HERPES SIMPLEX AND CYTOMEGALOVIRUS
Test Code: HCCL
Specimen Type: Swabs or tissues: Use universal transport medium (UTM)
Body fluids: Use any sterile container.
Use flocked swabs.
Do not use wooden shafted or calcium alginate tipped swabs.
Transport: 4°C
Comments: Includes rapid shell vial centrifugation technique for HSV and CMV.
Performed by: Virology Laboratory

CULTURE, VIRAL, INFLUENZA ONLY
Test Code: IFCL
Synonyms: Influenza culture
Specimen Type: NP flocked swab in universal transport medium (UTM) from outside patients only.
NP washes and aspirates are also acceptable.
Collection: Use COPAN 503CS01 flocked NP swabs. Swabs and UTM are available in Microbiology and Virology Laboratories.
Transport: 4°C
Comments: This test is available for outside patients only.
Performed by: Virology Laboratory

CULTURE, VRE (Vancomycin Resistant Enterococci)
Test Code: VRES
Specimen Type: Rectal, wounds, other: Gel swabs
Method: Culture -VRE only
TAT: 7 days a week.
Preliminary culture results after 24 hours incubation.
Final negative culture results available after 2 days.
Collection: Collect specimen using standard collection procedures.
Specimen Stability: Room temperature (25°C): ≤2 hours
Refrigerated (4°C): ≤24 hours
Performed by: Microbiology Laboratory

CULTURE, WOUND
Test Code: WDC
Synonyms: Abscess culture
Specimen Type: Prefer aspirates or scrapings (rather than swabs) in sterile container. If necessary, specimens may be collected with gel swabs.

Method: Culture. Includes Gram stain.

TAT: 7 days a week.

Preliminary culture results after 24 hours incubation.

Final negative culture results available after 3 days.

Collection: For best results, specimen should be obtained from deep within the lesion, avoiding contact with skin surface. If contact with skin surface is unavoidable, cleanse area with 70% isopropyl alcohol prior to collection.

Specimen Stability: Room Temperature (25°C): ≤24 hours

Performed by: Microbiology Laboratory

CYCLOSPORINE

Test Code: CYA

Specimen Type: 1 mL blood, EDTA (lavender top)

Method: Chemiluminescent Microparticle Immunoassay (CMIA)

TAT: Same day, if received before 2 p.m. Specimen analyzed 7 days per week.

Collection: Trough specimen required and specimen of choice.

Transport: Room temperature, ASAP

Specimen Stability: Room temperature: 8 hours

Refrigerated: 7 days at 2-8°C

Frozen: 1 month at -20°C

Avoid repeated freezing and thawing.

Reference Interval: Patient dependent trending

Comments: Heparin samples cannot be used. Sample should be drawn immediately prior to dose. A new formulation of CYA is called Neoral. This is manufactured as an emulsion and will yield slightly higher doses due to its ability to be absorbed more efficiently.

Performed by: Core Laboratory

CYSTIC FIBROSIS - DIRECT MUTATION ANALYSIS

Test Code: CFD

Synonyms: Cystic Fibrosis Mutation Screen

Specimen Type: 5 mL blood, EDTA (lavender top)

Cultured amniocytes for prenatal analysis.

NOTE: A maternal blood sample is required for prenatal analysis.

Method: Polymerase Chain Reaction (PCR)

TAT: 7-10 days

Collection: Requires a test specific, patient signed consent form F82857 and completed requisition F91019.

Transport: Room temperature.

Deliver to Molecular Diagnostics Laboratory as soon after collection as possible for delivery 8:00 a.m. - 5:00 p.m., Monday - Friday.

Comments: Direct detection of the 40 CF mutations. Mutations detected include the 25 CF mutations recommended by the American College of Medical Genetics for routine CF screening, plus 15 additional CF mutations found
at elevated frequency in some racial groups. Approximately 90% of CF chromosomes found in CF patients in Upstate New York will be detected.

Performed by: Molecular Diagnostics Laboratory

**CYTOMEGALOVIRUS (CMV) IgG ANTIBODY**

- **Test Code:** CMVGG
- **Specimen Type:** 0.5 mL serum, Gold-SST
- **Method:** Microparticle Enzyme Immunoassay (MEIA)
- **TAT:** 72 hours
- **Reference Interval:** Negative
- **Performed by:** Immunology Laboratory

**CYTOMEGALOVIRUS (CMV) IgM ANTIBODY, QUANTITATIVE - Sent to Reference Laboratory**

- **Test Code:** LCMV
- **Specimen Type:** 0.5 mL (0.2 mL minimum)
  - Serum, Gold/SST, red-top tube
- **Method:** Chemiluminescent Immunoassay (CLIA)
- **TAT:** Set up Monday through Friday on 3rd shift.
  - Reported within 2 days.
- **Collection:** Collect specimen using standard laboratory procedures.
- **Transport:** Refrigerated
- **Specimen Stability:** Refrigerated: 2 days
- **Causes for Rejection:** Hemolysis; lipemia; gross bacterial contamination
- **Reference Interval:** Negative: <30.0 AU/mL
  - The equivocal sample should be retested. In case the result remains in this range after repeat testing, a second sample should be collected.
- **Performed by:** Sent to Reference Laboratory - LabCorp (Order #096727)

**CYTOPATHOLOGY - FINE NEEDLE ASPIRATION**

- **Test Code:** FNAB
- **Specimen Type:** Superficial (palpable) lesions of any site or FNAs performed using Radiologic Imaging Techniques.
- **Method:** Radiologic Imaging Techniques (CT or Ultrasound).
- **TAT:** Reports are available on EPIC and are generally reported the next working day when specimens are received in the Cytopathology Laboratory prior to 2:30 p.m. unless there are ancillary tests or further consultation is required.
- **Collection:** To request FNA performance by Pathology, contact the Cytopathology Laboratory at 464-4270 to schedule this procedure or if an adequacy assessment or preliminary diagnosis is required. If the specimen is collected after laboratory hours, or if assistance is not requested or available, after preparing the slides, fix half of them immediately in 95% ETOH, the other half of the slides should be air dried and submitted in a specimen containers provided by the Cytopathology Laboratory. Label each slide with lead pencil with the patient's first and last name along with the medical record number or date of birth (2 patient identifiers).
Immediately after preparing the slides rinse the needle in saline, cap tube tightly and label. For more detailed procedures, refer to the Cytopathology Clinical Reference Manual: [http://www.upstate.edu/forms/documentns/intra/F88588.pdf](http://www.upstate.edu/forms/documentns/intra/F88588.pdf). Submit the slides and needle rinse in a biohazard plastic bag including corresponding Cytopathology Requisition Form F81121 with the complete information and pertinent history, to the Cytopathology Laboratory, Room 6725 UH. To schedule a patient for the Cytopathology Fine Needle Aspiration Clinic (Wednesday or Thursday mornings) for patients with palpable masses, to have an FNA performed by a pathologist, complete Form F88577 and call Cytopathology at 464-4270 to schedule, and fax the form to 464-4267.

Transport: Keep specimen refrigerated until transported to Cytopathology.


Performed by: Cytopathology Laboratory

**CYTOPATHOLOGY - NON-GYNECOLOGIC SPECIMENS**

Test Code: No Code

Specimen Type: Body fluid (pleural, peritoneal, pericardial effusions or peritoneal washing)

- Breast nipple discharge
- Bronchial washings or bronchoalveolar lavage for evaluation of malignancy, infection, differential cell counts, lipid laden macrophages
- Brushings, any site, including bronchus, GI, etc.
- Cerebrospinal fluid
- Sputum
- Tzanck prep for evaluation of Herpes virus cytopathic effects
- Urine for evaluation of malignancy, or eosinophil count

**TAT:**

Reports are available on EPIC and are generally reported the next working day when specimens are received in the Cytopathology Laboratory prior to 2:30 p.m. unless there are ancillary tests or further consultation is required.

**Collection:**

Collect specimen in a container that is appropriate for the volume of specimen. Do not collect with fixative or anticoagulant. Ensure that the specimen container is labeled accurately with complete information, including patient's full name, medical record number, date of collection, and type of specimen. Cap specimen container/tube tightly. Keep the specimen refrigerated until transported. Specimen containers are available from Central Stores and the Cytopathology Laboratory.

If smears are prepared they must be fixed immediately in 95% ETOH which is available from the Cytopathology Laboratory. Label each slide with lead pencil with patient's first and last name and medical record number or date of birth (2 patient identifiers).

Sputum specimens must be deep cough samples, specify if induced. Urine should not be the first morning void, specify if voided or catheterized.

No anticoagulant or fixative should be added to the fluid specimens.
Transport: Refrigerate specimens immediately and keep refrigerated (not frozen) until transported. Cap specimen tube or container tightly and place specimen in plastic biohazard bag along with a corresponding Cytopathology Requisition Form #40351 which is filled out completely, including all pertinent patient history. Deliver directly to the Cytopathology Laboratory Room 6725 UH (for all STAT specimens) or for routine specimens deliver to Clinical Pathology, where the specimens will await transport by courier to Cytopathology.

Comments: Please refer to the Cytopathology Clinical Reference Manual (F88588) for more detailed collection and submission requirements.

Performed by: Cytopathology Laboratory

**CYTOPATHOLOGY - PAP TEST**

Test Code: No Code  
Specimen Type: Source: cervical, endocervical, vaginal or anal-rectal Pap test.  
Method: SurePath or ThinPrep Pap  
TAT: Reports for Upstate University Hospital locations are available on EPIC and are generally reported within 3 working days.  
Collection: Please refer to the Cytopathology Clinical Reference Manual (F88588) for Pap test collection techniques. Fixative vials and sampling devices (for ThinPrep™ or SurePath™) are available from the Cytopathology Laboratory.  
Transport: Place specimen with corresponding requisition form #40349 completed with patient information and clinical history, in a plastic biohazard bag. Deliver to Cytopathology (Room 6725 UH) or to Clinical Pathology for courier transport to Cytopathology.  
Performed by: Cytopathology Laboratory

**D-DIMER**

Test Code: DDM  
Specimen Type: One full 3.2% citrate (blue top) Plasma may be processed and frozen at -70°C until testing can be performed.  
Method: Immunoturbidimetric Technique  
TAT: STAT: 45 minutes  
Routine: 4 hours  
Performed 24/7  
Collection: Specimens must reach the laboratory within 4 hours of blood draw. Specimens that cannot reach the lab within the time frame should be double spun at 2500 g for 15 minutes to obtain platelet poor plasma. 0.5mL aliquots should be frozen in plastic at -20°C.  
NOTE: Tubes must be full to obtain proper blood to anticoagulant ratio or the specimen will be rejected.  
Transport: Specimens scheduled to arrive in lab in less than 4 hours should be sent at room temperature. Platelet poor specimens should be frozen before
transport and placed in an insulated container on dry ice to insure that the specimen does not thaw.

Specimen Stability: Room temperature: 4 hours
Reference Interval: <0.5 µg/mL
Comments: A negative D-dimer result can rule out venous thromboembolism in patients with a low or moderate pretest probability.

Performed by: Core Laboratory

DEAMIDATED GLIADIN PEPTIDE ANTIBODY (DGP)
Test Code: DGP
Specimen Type: 0.5 mL serum, Gold-SST
Method: Enzyme-linked Immunosorbent Assay (ELISA)
TAT: 4 days
Reference Interval: <20 units
Comments: This assay tests for both IgG and IgA antibodies. Included in the celiac panel. Children under the age of 2 may be positive with this test before the TTG-IgA becomes positive. The DGP value drops faster than the TTG with patients on a gluten free diet.

Performed by: Immunology Laboratory

DELTA - AMINOLEVULIC ACID, URINE (24 hour) - Sent to Reference Laboratory
Test Code: Miscellaneous Test
Specimen Type: 2 mL aliquot from a fresh well-mixed, 24 hour urine collection (Minimum 0.6 mL)
Method: Colormetric
TAT: 5-7 business days
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: Unacceptable
Reference Interval: Sent with results.
Special Instructions: Ship: Refrigerated, in amber vial
Performed by: Sent to Reference Laboratory

DELTA - AMINOLEVULIC ACID, URINE (Random) - Sent to Reference Laboratory
Test Code: Miscellaneous Test
Specimen Type: 2 mL aliquot from a fresh well-mixed random urine collection (Minimum 0.6 mL)
Method: Colormetric
TAT: 5-7 business days
Collection: Random urine is collected in a container with a securely fastened lid with no preservatives. Collect specimen from late evening or after excessive fluid intake void. Protect from light.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: Unacceptable
Refrigerated: 7 days
Frozen: 30 days
Reference Interval: Sent with results.
Special Instructions: Ship: Refrigerated
Performed by: Sent to Reference Laboratory

DEPAKENE (See Valproic acid)

DEXAMETHASONE - Sent to Reference Laboratory
Test Code: LDMSO
Specimen Type: 3 mL (1 mL minimum)
Serum, Gold/SST, red top tube
Method: Mass Spectrometry (MS)
TAT: Reported within 7 working days.
Collection: Separate serum from cells within one hour of collection. Transfer to a plastic transport tube and freeze.
Transport: Frozen
Comment: To avoid delays in turnaround time when requesting multiple test on frozen samples, please submit separate frozen specimens for each test requested.
Performed by: Sent to Reference Laboratory - LabCorp (Order #500118)

DGP (See Deamidated gliadin peptide antibody)

DHEA - SULFATE
Test Code: DHS
Specimen Type: 0.5 mL serum, Gold-SST/Red top
Method: Electrochemiluminescence
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures
Transport: Room temperature, ASAP
Specimen Stability: Refrigerated: 2 days at 2-8°C
Frozen: 2 months at -20°C
Freeze once
Reference Interval: Age dependent - call laboratory
Performed by: Core Laboratory

DIFFERENTIAL
Test Code: DIFF
Specimen Type: 2 mL blood, EDTA (lavender top)
Method: Automated Beckman Coulter DxH800 or Manual CellaVision
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7

Collection: Venipuncture or fingerstick: Collect specimen using standard laboratory procedures.

Transport: Room temperature, ASAP

Specimen Stability: Room temperature: 24 hours

Reference Interval: Adult  %  Absolute (K/µL)
Neutrophil Band (Band)  0-7  0-0.6
Neutrophil (Neut)  33-73  1.8-7.0
Eosinophil (EOS)  0-5  0-0.5
Basophil (BASO)  0-2  0-0.2
Lymphocyte (LYMP)  13-52  1.2-4.0
Monocyte (MONO)  0-10  0-0.8

For pediatric normal values see EPIC or call Core Laboratory at 464-4460.

Performed by: Core Laboratory

**DIGOXIN**

Test Code: DIG

Specimen Type: 1 mL serum, Gold-SST

Method: Enzymatic Heterogeneous Competitive Immunoassay

TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7

Collection: Collect specimen using standard laboratory procedures.

Transport: Room temperature, ASAP

Specimen Stability: Refrigerated: 2 days at 2-8°C
Frozen: 1-2 weeks at -20°C

Reference Interval: 0.9-2.0 ng/mL
Toxic: >2.4 ng/mL

Comments: Digoxin specimen should be drawn 6 to 8 hours after last dose. Elevated DIG results will be obtained from patients receiving DIGIBIND.

Performed by: Core Laboratory

**DILANTIN (See Phenytoin)**

**DIPHTHERIA ANTITOXOID ANTIBODIES - Sent to Reference Laboratory**

Test Code: LDIPT
Synonyms: Diphtheria Antibodies
Diphtheria Toxin Antibodies

Specimen Type: 0.5 mL (0.25 mL minimum)
Serum, Gold/SST, red-top tube

Method: Enzyme Immunoassay (EIA)

TAT: Set up and reported twice a week.
Reported within 6 working days.

Collection: Collect specimen using standard laboratory procedures.

Transport: Refrigerated
Reference Interval: Nonprotective: <0.1 IU/mL
Protective: ≥0.1 IU/mL
Performed by: Sent to Reference Laboratory - LabCorp (Order #163709)

DIRECT COOMBS (See Antiglobulin, direct)

DISACCHARIDASE - Sent to Reference Laboratory
Test Code: LDISS
Specimen Type: 9 mg (0.4 mg minimum)
Human small bowel tissue, Sterile container or tissue cassettes
Method: Enzyme Assay
TAT: Reported within 8 working days.
Transport: Frozen
Performed by: Sent to Reference Laboratory - LabCorp (Order #823304)

DONOR PROCLEIX ULTRIO ASSAY - Sent to Reference Laboratory
Test Code: LDONP
Synonyms: HIV/HCV/HBV Assay
Specimen Type: 5.0 mL (2.0 mL minimum) whole blood
3.0 mL (1.0 mL minimum) plasma
Lavender top (EDTA) tube or yellow-top (ACD) tube
Method: Transcription Mediated Amplification (TMA)
Collection: Plasma: Collected in K2EDTA, K3EDTA, ACD, sodium citrate or in BD EDTA plasma preparation tubes.
Transport: Refrigerated
Specimen Stability: Whole blood: Up to 72 hours at 2-25°C, not to exceed 30°C for more than 24 hours.
Plasma: An additional 5 days at 2-8°C following centrifugation/separation. Frozen plasma: ≤-20°C for up to 6 months.
Cause for Rejection: Specimen grossly hemolyzed; received outside of specimen and/or storage requirements.
Comment: The intended use of this test is for donor screening and the detection of HIV-1 RNA, HCV RNA and HBV DNA in plasma specimens from human donors. This test is not intended for use as an aid in diagnosis of infection with HIV-1, HCV or HBV.
Performed by: Testing sent to ViroMed Laboratories via LabCorp (Order #139240).

DOUBLE STANDARD DNA (See Anti-dsDNA)

DRUGS OF ABUSE (EIGHT DRUGS), WHOLE BLOOD - Sent to Reference Laboratory
Test Code: LDASS
Specimen Type: 7 mL (3 mL minimum)
Whole Blood, Gray-top (sodium fluoride/potassium oxalate) tube preferred but Lavender-top (EDTA) tube and green top (heparin) tube also acceptable.
Method: Initial testing by Immunoassay (IA)
Confirmation by Mass Spectrometry (MS)

TAT: 7 days
Collection: Collect specimen using standard laboratory procedures.
Transport: Refrigerated
Comments: Any positive screens will automatically be confirmed at no additional cost.
Test includes amphetamines, barbiturates, benzodiazepines, cocaine and metabolite, opiates, oxycodone, phencyclidine (PCP), and Tetrahydrocannabinol (THC).

Performed by: Sent to Reference Laboratory - Lab Corp (Order #791590)

DRUGS OF ABUSE, URINE

Test Code: DABU1
Specimen Type: 10 mL (10 mL minimum) aliquot from a fresh well-mixed random urine collection
Method: Kinetic Interaction of Microparticles in Solution (KIMS) and Tricyclic by Enzyme Immunoassay (EIA)
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Random urine is collected in a container with a securely fastened lid with no preservatives.
Transport: Room temperature, ASAP
Specimen Stability: Refrigerated: Test within 3 days and store at 2-8°C
Reference Interval: Negative
Comments: Screening test, confirmations are available to the provider upon request.
Order includes Amphetamine, Barbiturate, PCP, Opiates, Benzodiazepine, Methadone, Cocaine, TCA, THC (cannabinoids).

Performed by: Core Laboratory

DRVVT (Dilute Russell's Viper Venom Time)

Test Code: DRVV
Specimen Type: 4.5 mL blood, citrate (blue top)
Method: Automated Clotting Assay
TAT: Testing is batched and performed once/week (7:00 a.m. - 3:00 p.m.). For urgent requests, call Special Hematology at 464-6826.
Collection: Specimens must reach the laboratory within 1 hour of blood draw.
Specimens that cannot reach the lab within the time frame should be double spun at 2500 g to insure platelet poor plasma. 0.5mL aliquots should be frozen in plastic at -20°C.
NOTE: Tubes must be full to obtain proper blood to anticoagulant ratio or the specimen will be rejected.
Transport: Specimens scheduled to arrive in lab in less than 1 hour should be sent at room temperature. Platelet poor specimens should be frozen before transport and placed in an insulated container on dry ice to insure that the specimen does not thaw.
Specimen Stability: Frozen: 6 months at -70°C
Reference Interval:  <1.20
Performed by: Core Laboratory, Special Hematology

dsDNA ANTIBODY
Test Code: DSDNA
Specimen Type: 0.5 mL serum, Gold-SST
Method: Multi-Lyte
TAT: 3 days
Reference Interval: 0-100 U/mL
Comments: Sometimes ordered as Native DNA.
Performed by: Immunology Laboratory

ELECTROLYTES, BLOOD
Test Code: ELE
Specimen Type: 2 mL blood, Gold-SST
Method: Ion Selective Electrode (ISE) (NA, K, CL), Enzymatic (CO2)
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature
Specimen Stability: Room temperature: 6 weeks
Refrigerated: 6 weeks at 2-8°C
Frozen: 1 year at -18°C
Reference Interval: See individual components (sodium, potassium, chloride, bicarbonate)
Performed by: Core Laboratory

ELUTION
Test Code: ELU
Specimen Type: 10 mL blood (two 5 mL tubes), EDTA (lavender top) or ACD (yellow top)
Method: Removal of antibodies coating patient's red cells in order to determine the specificity of antibody (used in transfusion reactions, autoimmune hemolytic anemia with a positive direct antiglobulin test, and hemolytic disease of the newborn).
TAT: Performed 24/7
Collection: Specimens for Blood Bank testing must be labeled with the patient's full name and medical record number and the initials of the phlebotomist. The specimen label must include the date and time the sample was drawn if this information is not entered in the collection information field of the EPIC generated order or in the Collected by field of the Blood Bank requisition.
Transport: Room temperature
Specimen Stability: Should be performed on a fresh specimen.
Performed by: Blood Bank
**ENA (Extractable Nuclear Antibody)**

Test Code: ENA  
Specimen Type: 2 mL serum, Gold-SST  
Method: Multi-Lyte  
TAT: 3 days  
Reference Interval: 0-100 U/mL  
Comments: Includes Sm and RNP  
Performed by: Immunology Laboratory

**ENCEPHALITIS PANEL - Sent to NYS Department of Health**

Test Code: ENCP  
Specimen Type: Cerebrospinal fluid: >1.1 mL in sterile container for both PCR and ELISA, >0.6 mL for PCR or ELISA  
Method: Realtime polymerase chain reaction (PCR) for HSV 1 & 2, CMV, EBV, VZV, HHV6, Adenovirus, Enterovirus, WNV, SLE and EEE. Enzyme linked immunosorbent assay (ELISA) for West Nile virus.  
TAT: ~1 week  
Transport: Room temperature: <2 hours  
Refrigerated (4°C): <24 hours  
Comments: PCR testing is only performed if the patient has encephalitis and is hospitalized. ELISA testing is performed on patients with encephalitis or meningitis, hospitalized or not. Serology tests are also available on acute and convalescent sera for WNV, EEE, WEE, SLE, Powassan virus and California serogroup viruses. Instructions and the required NYSDOH forms are available at www.upstate.edu/pathology/healthcare/forms.php.  
Performed by: Sent to Reference Laboratory by Virology

**EPSTEIN BARR IGG NUCLEAR ANTIBODY**

Test Code: EBVN1  
Synonym: Epstein Barr Virus IgG Nuclear Antibody  
Specimen Type: 0.5 mL serum, Gold SST  
Method: Enzyme-linked Immunosorbent Assay (ELISA)  
TAT: 4 days  
Reference Interval: Normal: <0.91  
Performed by: Immunology Laboratory

**EPSTEIN BARR IGM ANTIBODY**

Test Code: EBVM1  
Specimen Type: 0.5 mL serum, Gold SST  
Method: Enzyme-linked Immunosorbent Assay (ELISA)  
TAT: 4 days  
Reference Interval: Normal: <0.91  
Performed by: Immunology Laboratory
EPSTEIN BARR VIRUS PANEL (Includes EBV IgG, IgM, and Nuclear Antibodies)
Test Code: EBVPL
Synonym: EBV Panel
Specimen Type: 2 mL serum, Gold SST
Method: Enzyme-linked Immunosorbent Assay (ELISA)
TAT: 4 days
Reference Interval: Normal: <0.91
Performed by: Immunology Laboratory

EPSTEIN BARR VIRUS (EBV), QUALITATIVE, PCR - Sent to Reference Laboratory
Test Code: LEBVD
Synonyms: EVB, Real-time PCR
Specimen Type: 1 mL (0.2 mL minimum)
Whole Blood, Lavender-top (EDTA) tube, yellow-top (ACD) or sterile container (CSF)
Method: Real-time Polymerase Chain Reaction (PCR)
TAT: Reported within 6 working days.
Collection: Collect specimen using standard laboratory procedures.
Transport: Refrigerated
Causes for Rejection: Quantity not sufficient for analysis; gross specimen contamination; specimen too old; leaking or broken tube.
Performed by: Sent to Reference Laboratory - LabCorp (Order #138289)

EPSTEIN BARR VIRUS (EBV), QUANTITATIVE, PCR - Sent to Reference Laboratory
Test Code: LEBVQ
Synonyms: EBV Viral Load
Epstein Barr Virus (EBV), Quantitative, DNA by Real-time PCR
Specimen Type: 2 mL (0.5 mL minimum)
Plasma, Lavender-top (EDTA) tube
Method: Real-time Polymerase Chain Reaction (PCR)
TAT: Reported within 3 working days.
Collection: Centrifuge specimen within 24 hours of collection. Remove plasma, transfer plasma to a screw-cap polypropylene transport tube, and freeze. Ship frozen (preferred).
Transport: Frozen
Specimen Stability: Frozen: 90 days
Causes for Rejection: Quantity not sufficient for analysis; gross specimen contamination; specimen too old; leaking or broken tube.
Comments: To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested.
Performed by: Sent to Reference Laboratory - LabCorp (Order #138230)

EPSTEIN BARR VCR IgG P18 ANTIBODY
Test Code: EBVG1
Synonym: Epstein Barr Virus IgG Viral Capsid Antibody
Specimen Type: 0.5 mL serum, Gold SST
Method: Enzyme-linked Immunosorbent Assay (ELISA)
TAT: 4 days
Reference Interval: Normal: <0.91
Performed by: Immunology Laboratory

ERYTHROCYTE SEDIMENTATION RATE
Test Code: ESR
Synonyms: ESR
Specimen Type: 2 mL blood, EDTA (lavender top)
Method: SEDPLUS
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Specimen should reach the lab within 2 hours of blood draw if kept at room temperature or within 10 hours if stored at 2-8°C.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 4 hours
Refrigerated: 12 hours at 2-8°C
Reference Interval: Male:
  • <50 years old <15 mm/hr
  • >50 years old <20 mm/hr
Female:
  • <50 years old <20 mm/hr
  • >50 years old <30 mm/hr
Performed by: Core Laboratory

ERYTHROPOIETIN (EPO) - Sent out to Reference Laboratory
Test Code: LERYT
Specimen Type: 0.5 mL (0.3 mL minimum)
Serum, Gold-SST, red-top tube
Method: Immunochemiluminometric Assay (ICMA)
TAT: Set up and reported Sunday through Friday on 2nd shift.
Reported within 2 working days.
Collection: If a red-top tube is used, transfer separated serum to a plastic transport tube.
Transport: Room temperature, ASAP.
Specimen Stability: Room temperature: 14 days
Refrigerated: 14 days
Frozen: 14 days
Reference Interval: 2.6-18.5 mIU/mL
Performed by: Sent to Reference Laboratory - LabCorp (Order #140277)

ESR (See Erythrocyte sedimentation rate)
**ESTRADIOL**

Test Code: ESTD
Specimen Type: 0.5 mL serum, Gold-SST/Red top
Method: Electrochemiluminescence
TAT:STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Refrigerated: 2 days at 2-8°C
Frozen: 6 months at -20°C
Freeze once
Reference Interval: Males:
- 7.6 - 42.5 pg/mL
Females:
- Follicular: 12.5 - 166.0 pg/mL
- Ovulation: 85.8 - 498.0 pg/mL
- Luteal: 43.8 - 211.0 pg/mL
- Post menopausal: <54.7 pg/mL
Comment: If samples are not run within 24 hours, store samples in freezer at -20°C until they can be run. Patients routinely exposed to animals or animal serum products can be prone to interference and anomalous values from heterophilic antibodies. Do not use samples that have been stored at room temperature for longer than 8 hours.
Performed by: Core Laboratory

**ESTROGENS, FRACTIONATED, SERUM**

Test Code: LESTS
Specimen Type: 2 mL Serum, Gold/SST, red top tube
Method: Radioimmunoassay
TAT: Set up and reported Monday through Friday on 1st shift.
Reported within 4 working days.
Collection: Collect specimen using standard laboratory procedures.
Transport: Refrigerated
Performed by: Sent to Reference Laboratory - LabCorp (Order #004606)

**ESTRONE - Sent to Reference Laboratory**

Test Code: LESTR
Specimen Type: 3 mL (1 mL minimum) Serum, Gold, SST, red-top tube;
Method: High-pressure Liquid Chromatography/Tandem Mass Spectrometry (HPLC/MS-MS)
TAT: Performed Monday through Friday.
Reported in 4-7 business days.
Collection: Serum must be separated from cells within 45 minutes of venipuncture. Send serum in a plastic transport tube.

Transport: Frozen on dry ice.

Specimen Stability: Frozen: 32 months

Comments: To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested.

Performed by: Testing sent to Esoterix via LabCorp (Order #500634)

**ETHANOL, BLOOD**

Test Code: ALC

Synonyms: Blood alcohol

Specimen Type: 0.5 mL serum, Gold-SST

Method: Enzymatic assay using alcohol dehydrogenase

TAT: STAT: 90 minutes
      Routine: 4 hours
      Performed 24/7

Collection: Collect specimen using standard laboratory procedures. Do not use alcohol pad or other volatile disinfectants to cleanse the area when drawing specimen. Use only aqueous disinfectants.

Transport: Room temperature, ASAP

Specimen Stability: Keep tightly capped and assay ASAP.

Reference Interval: Negative

Performed by: Core Laboratory

**ETHANOL, URINE**

Test Code: UALC

Synonyms: Urine alcohol

Specimen Type: 5 mL aliquot from a fresh well-mixed random urine collection (Minimum 0.5 mL)

Method: Spectrophotometric using alcohol dehydrogenase

TAT: STAT: 90 minutes
      Routine: 4 hours
      Performed 24/7

Collection: Urine must be kept in a tightly sealed container.

Transport: Room temperature, ASAP

Specimen Stability: Keep tightly capped and assay ASAP.

Reference Interval: Negative

Performed by: Core Laboratory

**ETHOSUXIMIDE, SERUM - Sent to Reference Laboratory**

Test Code: LESUX

Synonyms: Zarontin

Specimen Type: 1 mL (0.6 mL minimum)

Serum or plasma, Red-top tube, lavender-top (EDTA) tube or green-top (heparin) tube.
Method: Immunoassay
TAT: Set up Monday through Friday.
    Reported within 4 working day.
Collection: Transfer separated serum or plasma to a plastic transport tube.
    Oral: Peak - two to four hours after dose.
    Trough: immediately prior to next dose.
    Peak and trough levels may be used to monitor therapy because blood levels are fairly constant.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
    Frozen: 14 days
Causes for Rejection: Gel-barrier tube; hemolysis; lipemia; gross bacterial contamination.
Reference Interval: Therapeutic: 40-100 µg/mL
Special Instructions: State other drugs taken by patient.
Comments: Do not use a gel-barrier tube. The use of gel-barrier tubes is not recommended due to slow absorption of the drug by the gel. Depending on the specimen volume and storage time, the decrease in drug level due to absorption may be clinically significant.
Performed by: Sent to Reference Laboratory - LabCorp (Order #007443)

**ETHYL GLUCURONIDE/ETHYL SULFATE (EtG/EtS), SCREEN WITH CONFIRMATION, URINE - Sent to Reference Laboratory**

Test Code: LRETG
Synonyms: Ethyl Metabolite
Specimen Type: 20 mL (10 mL minimum)
    Urine, Plastic urine container
Method: Initial testing by Immunoassay (IA)
    Confirmation of positives by Mass Spectrometry (MS)
TAT: Reporting Negatives in 24 hours and Positive 3-5 days.
Collection: Collect specimen in a container with a securely fastened lid using universal precautions.
Transport: Refrigerated
Comment: Confirmation test LBUPN (LabCorp Order #764400) is performed when positive with an additional charge.
Performed by: Sent to Reference Laboratory - LabCorp (Order #737610)

**FACTOR 13 (See Fibrin - stabilizing factor)**

**FACTOR II ACTIVITY**

Test Code: F2
Specimen Type: 4.5 mL blood, citrate (blue top)
Method: Clotting assay
TAT: Testing is batched and performed once/week (7:00 a.m. - 3:00 p.m.). For urgent requests, call Special Hematology at 464-6826.
Collection: Specimens must reach the laboratory within 4 hours of blood draw.
Specimens that cannot reach the lab within the time frame should be
double spun at 2500 g for 15 minutes to obtain platelet poor plasma. 0.5mL aliquots should be frozen in plastic at -20°C.

**NOTE**: Tubes must be full to obtain proper blood to anticoagulant ratio or the specimen will be rejected.

**Transport**: Specimens scheduled to arrive in lab in less than 4 hours should be sent at room temperature. Platelet poor specimens should be frozen before transport and placed in an insulated container on dry ice to insure that the specimen does not thaw.

**Specimen Stability**: Frozen: 6 months at -70°C

**Reference Interval**: 50-150 U/dL

**Performed by**: Core Laboratory, Special Hematology

**FACTOR II GENE MUTATION** (See Prothrombin 20210G→A gene mutation)

**FACTOR V ACTIVITY**

- **Test Code**: F5
- **Specimen Type**: 4.5 mL blood, citrate (blue top)
- **Method**: Clotting assay
- **TAT**: Testing is batched and performed once/week (7:00 a.m. - 3:00 p.m.). For urgent requests, call Special Hematology at 464-6826.
- **Collection**: Specimens must reach the laboratory within 4 hours of blood draw. Specimens that cannot reach the lab within the time frame should be double spun at 2500 g for 15 minutes to obtain platelet poor plasma. 0.5mL aliquots should be frozen in plastic at -20°C.

**NOTE**: Tubes must be full to obtain proper blood to anticoagulant ratio or the specimen will be rejected.

**Transport**: Specimens scheduled to arrive in lab in less than 4 hours should be sent at room temperature. Platelet poor specimens should be frozen before transport and placed in an insulated container on dry ice to insure that the specimen does not thaw.

**Specimen Stability**: Frozen: 6 months at -70°C

**Reference Interval**: 50-150 U/dL

**Performed by**: Core Laboratory, Special Hematology

**FACTOR V LEIDEN**

- **Test Code**: FVLLC
- **Synonyms**: Factor V Gene Mutation
- **Specimen Type**: 5 mL blood, EDTA (lavender top)
- **Method**: Polymerase Chain Reaction (PCR)
- **TAT**: 7-10 days
- **Collection**: Requires a test specific, patient signed consent form F82858 and completed requisition F91019.
- **Transport**: Transport at room temperature. Deliver to Molecular Diagnostics Laboratory as soon after collection as possible for delivery 8:00 a.m. - 5:00 p.m., Monday through Friday.
Comments: Direct molecular detection of the R506Q (Factor V Leiden) and D2194G point mutations in the Factor V gene which genetic risk factors for venous thromboembolism. Heterozygous Positive Factor V Leiden Reflex to Factor V D2194G Point Mutation.

Performed by: Molecular Diagnostics Laboratory

**FACTOR VII ACTIVITY**

Test Code: F7
Specimen Type: 4.5 mL blood, citrate (blue top)
Method: Clotting assay
TAT: Testing is batched and performed once/week (7:00 a.m. - 3:00 p.m.). For urgent requests, call Special Hematology at 464-6826.
Collection: Specimens must reach the laboratory within 4 hours of blood draw. Specimens that cannot reach the lab within the time frame should be double spun at 2500 g for 15 minutes to obtain platelet poor plasma. 0.5mL aliquots should be frozen in plastic at -20°C.

**NOTE:** Tubes must be full to obtain proper blood to anticoagulant ratio or the specimen will be rejected.

Transport: Specimens scheduled to arrive in lab in less than 4 hours should be sent at room temperature. Platelet poor specimens should be frozen before transport and placed in an insulated container on dry ice to insure that the specimen does not thaw.

Specimen Stability: Frozen: 6 months at -70°C
Reference Interval: 50-150 U/dL
Performed by: Core Laboratory, Special Hematology

**FACTOR VIII ACTIVITY**

Test Code: F8
Alternate Name Factor VIII:C
Specimen Type: 4.5 mL blood, citrate (blue top)
Method: Clotting assay
TAT: Testing is batched and performed once/week (7:00 a.m. - 3:00 p.m.). For urgent requests, call Special Hematology at 464-6826.
Collection: Specimens must reach the laboratory within 4 hours of blood draw. Specimens that cannot reach the lab within the time frame should be double spun at 2500 g for 15 minutes to obtain platelet poor plasma. 0.5mL aliquots should be frozen in plastic at -20°C.

**NOTE:** Tubes must be full to obtain proper blood to anticoagulant ratio or the specimen will be rejected.

Transport: Specimens scheduled to arrive in lab in less than 4 hours should be sent at room temperature. Platelet poor specimens should be frozen before transport and placed in an insulated container on dry ice to insure that the specimen does not thaw.

Specimen Stability: Frozen: 6 months at -70°C
Reference Interval: 50-150 U/dL
Performed by: Core Laboratory, Special Hematology
FACTOR VIII INHIBITOR
Test Code: F8IN
Synonyms: Factor VIII Bethesda Assay
Specimen Type: 4.5 mL blood, citrate (blue top)
Method: Clotting assay
TAT: Testing is batched and performed once/week (7:00 a.m. - 3:00 p.m.). For urgent requests, call Special Hematology at 464-6826.
Collection: Specimens must reach the laboratory within 4 hours of blood draw. Specimens that cannot reach the lab within the time frame should be double spun at 2500 g for 15 minutes to obtain platelet poor plasma. 0.5mL aliquots should be frozen in plastic at -20°C.
NOTE: Tubes must be full to obtain proper blood to anticoagulant ratio or the specimen will be rejected.
Transport: Specimens scheduled to arrive in lab in less than 4 hours should be sent at room temperature. Platelet poor specimens should be frozen before transport and placed in an insulated container on dry ice to insure that the specimen does not thaw.
Specimen Stability: Frozen: 6 months at -70°C
Reference Interval: <0.6 Bethesda units
Interpretation: Testing cannot be performed if Factor VIII activity is greater than 3 U/dL. A Factor VIII Activity test must be ordered along with the Factor VIII Inhibitor.
Performed by: Core Laboratory, Special Hematology

FACTOR IX ACTIVITY
Test Code: F9
Specimen Type: 4.5 mL blood, citrate (blue top)
Method: Clotting assay
TAT: Testing is batched and performed once/week (7:00 a.m. - 3:00 p.m.). For urgent requests, call Special Hematology at 464-6826.
Collection: Specimens must reach the laboratory within 4 hours of blood draw. Specimens that cannot reach the lab within the time frame should be double spun at 2500 g for 15 minutes to obtain platelet poor plasma. 0.5mL aliquots should be frozen in plastic at -20°C.
NOTE: Tubes must be full to obtain proper blood to anticoagulant ratio or the specimen will be rejected.
Transport: Specimens scheduled to arrive in lab in less than 4 hours should be sent at room temperature. Platelet poor specimens should be frozen before transport and placed in an insulated container on dry ice to insure that the specimen does not thaw.
Specimen Stability: Frozen: 6 months at -70°C
Reference Interval: 50-150 U/dL
Performed by: Core Laboratory, Special Hematology

FACTOR IX INHIBITOR
Test Code: F9IN
Synonyms:  Factor IX Bethesda Assay
Specimen Type:  4.5 mL blood, citrate (blue top)
Method:  STA-R Evolution
TAT:  Testing is batched and performed once/week (7:00 a.m. - 3:00 p.m.). For urgent requests, call Special Hematology at 464-6826.
Collection:  Specimens must reach the laboratory within 4 hours of blood draw. Specimens that cannot reach the lab within the time frame should be double spun at 2500 g for 15 minutes to obtain platelet poor plasma. 0.5mL aliquots should be frozen in plastic at -20°C.

NOTE:  Tubes must be full to obtain proper blood to anticoagulant ratio or the specimen will be rejected.

Transport:  Specimens scheduled to arrive in lab in less than 4 hours should be sent at room temperature. Platelet poor specimens should be frozen before transport and placed in an insulated container on dry ice to insure that the specimen does not thaw.

Specimen Stability:  Do not store plasma to be tested at 2-8°C. Citrated plasma may be aliquoted in 1/2 mL aliquots and frozen at -20°C until testing can be performed.

Reference Interval:  <0.6 Bethesda units

Interpretation:  Testing cannot be performed if Factor IX level is greater than 3 U/dL.  A Factor IX Activity test must be ordered along with the Factor IX Inhibitor.

Performed by:  Core Laboratory, Special Hematology

FACTOR X ACTIVITY
Test Code:  F10
Specimen Type:  4.5 mL blood, citrate (blue top)
Method:  Clotting assay
TAT:  Testing is batched and performed once/week (7:00 a.m. - 3:00 p.m.). For urgent requests, call Special Hematology at 464-6826.
Collection:  Specimens must reach the laboratory within 4 hours of blood draw. Specimens that cannot reach the lab within the time frame should be double spun at 2500 g for 15 minutes to obtain platelet poor plasma. 0.5mL aliquots should be frozen in plastic at -20°C.

NOTE:  Tubes must be full to obtain proper blood to anticoagulant ratio or the specimen will be rejected.

Transport:  Specimens scheduled to arrive in lab in less than 4 hours should be sent at room temperature. Platelet poor specimens should be frozen before transport and placed in an insulated container on dry ice to insure that the specimen does not thaw.

Specimen Stability:  Frozen: 6 months at -70°C

Reference Interval:  50-150 U/dL

Comments:  This is not an Anti-Factor Xa level.  See Heparin Level to order this test.

Performed by:  Core Laboratory, Special Hematology

FACTOR XI ACTIVITY
Test Code:  F11
Specimen Type: 4.5 mL blood, citrate (blue top)
Method: Automated Clotting assay
TAT: Testing is batched and performed once/week (7:00 a.m. - 3:00 p.m.). For urgent requests, call Special Hematology at 464-6826.
Collection: Specimens must reach the laboratory within 4 hours of blood draw. Specimens that cannot reach the lab within the time frame should be double spun at 2500 g for 15 minutes to obtain platelet poor plasma. 0.5mL aliquots should be frozen in plastic at -20°C.
**NOTE:** Tubes must be full to obtain proper blood to anticoagulant ratio or the specimen will be rejected.
Transport: Specimens scheduled to arrive in lab in less than 4 hours should be sent at room temperature. Platelet poor specimens should be frozen before transport and placed in an insulated container on dry ice to insure that the specimen does not thaw.

Specimen Stability: Frozen: 6 months at -70°C
Reference Interval: 59-143 U/dL
Performed by: Core Laboratory, Special Hematology

**FACTOR XII ACTIVITY**
Test Code: F12
Specimen Type: 4.5 mL blood, citrate (blue top)
Method: Clotting assay
TAT: Testing is batched and performed once/week (7:00 a.m. - 3:00 p.m.). For urgent requests, call Special Hematology at 464-6826.
Collection: Specimens must reach the laboratory within 4 hours of blood draw. Specimens that cannot reach the lab within the time frame should be double spun at 2500 g for 15 minutes to obtain platelet poor plasma. 0.5mL aliquots should be frozen in plastic at -20°C.
**NOTE:** Tubes must be full to obtain proper blood to anticoagulant ratio or the specimen will be rejected.
Transport: Specimens scheduled to arrive in lab in less than 4 hours should be sent at room temperature. Platelet poor specimens should be frozen before transport and placed in an insulated container on dry ice to insure that the specimen does not thaw.

Specimen Stability: Frozen: 6 months at -70°C.
Reference Interval: 49-142 U/dL
Performed by: Core Laboratory, Special Hematology

**FECAL FAT, QUANTITATIVE - Sent to Reference Laboratory**
Test Code: LLIP
Synonyms: Fat, Quantitative
Quantitative Fecal Fat
Stool Fat, Quantitative
Total Fat, Quantitative
Specimen Type: Entire collection or 5-25 mL of a homogenized aliquot
Stool (72-hour) Full collection in one or more clean LabCorp approved stool collection kit containing 1 gallon can, absorbent sheet, armlock O-ring, and a leakproof plastic bag.

NOTE: Reference Laboratory only accepts approved collection container supplied by them. Other collection containers will be rejected.

Method: Extraction/Spectrophotometry
TAT: Set up and reported Monday, Wednesday, and Thursday on 1st shift.
Collection: Collect stool directly into can. Do not fill any can more than 2/3 full. Secure lid with pressure and firmly attach the O-ring. State collection time on the can label. Place the can and the absorbent sheet into the leakproof plastic bag and seal. Send the entire can, or if submitting aliquot, follow this procedure:

- Weigh specimen and collection container and subtract the weight of an empty container of same type (one-gallon can weight with lid: 360 g metal or 320 g plastic container). This is the "net weight" to be recorded on the test request form.
- Open the container and observe whether the contents are liquid. If liquid stool, secure the lid, mix, and submit an aliquot of the total collection. If solid stool, add deionized water (approximately 500 mL) to the specimen container and mix thoroughly to create a homogenous specimen. Submit a 5-25 mL aliquot of the total collection in an empty stool transport vial or screw-cap urine bottle, sterile no additives.
- Record on both the container and the test request form the amount of water added to liquefy the stool or if no water was required.

Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Frozen: 14 days
Causes for Rejection: Container more than 2/3 full; container leaking; improper container; foreign matter other than feces inside of container; patient not on special diet; improper labeling of container or test request form; specimen on outside of container; specimen contaminated with urine; aliquot without "net weight" and "amount of water added" to homogenize the sample.
Reference Intervals: 0-18 years: 0.0-3.1 g/24 hours
>18 years: 0.0-7.1 g/24 hours
Special Instructions: Both the container and the test request form must state collection time (in hours). Collections of 24 or 48 hours are not recommended since results are subject to greater variability. Also, indicate the patient's age on the test request form.
Performed by: Sent to Reference Laboratory - LabCorp (Order #001354)

FELBAMATE - Sent to Reference Laboratory
Test Code: LFELB
Synonyms: Felbatol
Specimen Type: 2 mL (0.6 mL minimum)  
Serum, Red-top tube  
Method: Liquid Chromatography/Tandem Mass Spectrometry (LC/MS-MS)  
TAT: Set up Tuesday and Thursday on 1st shift.  
Reported within 1 working day.  
Collection: Transfer separated serum to a plastic transport tube.  
Transport: Refrigerated.  
Specimen Stability: Refrigerated: 14 days  
Comments: Do not use a gel-barrier tube. The use of gel-barrier tubes is not recommended due to slow absorption of the drug by the gel. Depending on the specimen volume and storage time, the decrease in drug level due to absorption may be clinically significant.  
Performed by: Sent to Reference Laboratory - LabCorp (Order #716530)

FERRITIN  
Test Code: FERR  
Specimen Type: 0.5 mL serum, Gold-SST  
Method: Electrochemiluminescence  
TAT: STAT: 90 minutes  
Routine: 4 hours  
Performed 24/7  
Collection: Collect specimen using standard laboratory procedures.  
Transport: Room temperature, ASAP  
Specimen Stability: Refrigerated: 7 days at 2-8°C  
Frozen: 12 months at -20°C  
Reference Interval: Male: 30-400 ng/mL  
Female: 13-150 ng/mL  
Comment: If samples are not run within 24 hours, store samples in freezer at -20°C until they can be run. Patients routinely exposed to animals or animal serum products can be prone to interference and anomalous values from heterophilic antibodies. Do not use samples that have been stored at room temperature for longer than 8 hours.  
Performed by: Core Laboratory

FIBRIN - STABILIZING FACTOR  
Test Code: FSF  
Synonyms: Factor 13  
Specimen Type: 4.5 mL blood, citrate (blue top)  
Method: Manual  
TAT: Performed Monday through Friday (7:00 a.m. - 3:30 p.m.)  
Collection: Specimens must reach the laboratory within 4 hours of blood draw. Specimens that cannot reach the lab within the time frame should be double spun at 2500 g for 15 minutes to obtain platelet poor plasma. 0.5mL aliquots should be frozen in plastic at -20°C.  
NOTE: Tubes must be full to obtain proper blood to anticoagulant ratio or the specimen will be rejected.
Transport: Specimens scheduled to arrive in lab in less than 4 hours should be sent at room temperature. Platelet poor specimens should be frozen before transport and placed in an insulated container on dry ice to insure that the specimen does not thaw.

Specimen Stability: Frozen: 6 months at -70 C.
Reference Interval: Insoluble in 24 hours
Performed by: Core Laboratory, Special Hematology

FIBRINOGEN CLAUSS, FUNCTIONAL
Test Code: FIB
Specimen Type: 4.5 mL blood, citrate (blue top)
Method: Automated clotting assay
TAT: STAT: 45 minutes
Routine: 4 hours
Performed 24/7
Collection: Specimens must reach the laboratory within 4 hours of blood draw. Specimens that cannot reach the lab within the time frame should be double spun at 2500 g for 15 minutes to obtain platelet poor plasma. 0.5mL aliquots should be frozen in plastic at -20°C.
NOTE: Tubes must be full to obtain proper blood to anticoagulant ratio or the specimen will be rejected.

Transport: Specimens scheduled to arrive in lab in less than 4 hours should be sent at room temperature. Platelet poor specimens should be frozen before transport and placed in an insulated container on dry ice to insure that the specimen does not thaw.

Specimen Stability: Room temperature: 4 hours
Reference Interval: 190-450 mg/dL
Performed by: Core Laboratory

FINE NEEDLE ASPIRATION (See Cytopathology)

FK 506 (See Tacrolimus)

FLT3 (FMS-related tyrosine kinase 3) - LM AND TKD MUTATIONS
Test Code: FLT3
SYNonyms: FLT3 (FMS-related tyrosine kinase 3) - TKD Mutations
FLT3 ITD and Terminal Kinase Domain Variants
Specimen Type: 5 mL blood, EDTA (lavender top), 1 mL bone marrow, EDTA preferred.
TAT: 1-5 days
Collection: Requires completed requisition F91021.
Transport: Transport at room temperature.
Deliver to Molecular Diagnostics Laboratory as soon after collection as possible for delivery, 8:00 a.m. - 5:00 p.m., Monday through Friday.
Comments: Direct molecular detection of internal tandem interphase duplications or other nucleotide insertions within the juxtamembrane domain or the first
intracellular tyrosine kinase domain of the FLT3 gene that result in an increase in the length of the FLT3 protein. Point mutations involving codons D835 or I836 are also detected. This test assists in the diagnosis and management of Acute Myeloid Leukemia (AML).

Performed by: Molecular Diagnostics Laboratory

**FLUORESCENCE IN SITU HYBRIDIZATION (FISH) (Metaphase)**

**Test Code:** FM

**Specimen Type:** For Adults:
- 3-5 mL blood collected in sterile green top sodium heparinized tube.
- Lithium heparin is not acceptable.

For Newborns:
- Approximately 2-3 mL blood collected as above.

**TAT:** 5-14 days

**Collection:** Karyotype analysis must be performed in addition to all FISH testing. The standard is a full karyotype and FISH. A minimum analysis of 5 cells and 1 karyotype (QC karyotype) can be ordered if a full analysis is not needed. The requirement to perform karyotype analysis applies only to the first specimen submitted for a patient.

**Transport:** Transport and store at room temperature and deliver within 24 hours to Cytogenetics Laboratory. Bone marrow specimens should be delivered to laboratory as soon as possible after collection.

**Comments:** Requires patient signed consent form F82875 and completed requisition F86173. Clinical information to support the request for cytogenetic testing must be included on the requisition.

Performed by: Cytogenetics Laboratory

**FLUORESCENCE IN SITU HYBRIDIZATION (FISH) (Oncology studies)**

**Test Code:** FI

**Specimen Type:** For oncology studies: 1-2 mL of the first aspirate in sterile green top sodium heparinized tube.

**TAT:** 4-7 days

**Collection:** Karyotype analysis must be performed in addition to all FISH testing. The standard is a full karyotype and FISH. A minimum analysis of 5 cells and 1 karyotype (QC karyotype) can be ordered if a full analysis is not needed. The requirement to perform karyotype analysis applies only to the first specimen submitted for a patient. "FISH only" can be performed on follow-up samples to monitor the patient's progress.

**Transport:** Transport and store at room temperature and deliver within 24 hours to Cytogenetics Laboratory. Bone marrow specimens should be delivered to laboratory as soon as possible after collection.

**Comments:** Requires patient signed consent forms and completed requisition F91021. Clinical information to support the request for cytogenetic testing must be included on the requisition.

Performed by: Cytogenetics Laboratory
FOLATE, BLOOD
Test Code: FOLA
Synonyms: Folic Acid
Specimen Type: 0.5 mL serum, Gold-SST
Method: Electrochemiluminescence
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect sample using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 2 hours
Refrigerated: 2 days at 2-8°C
Frozen: 1 month at -20°C
Freeze once
Reference Interval: 3.0-20.0 ng/mL
Comments: Hemolysis may significantly increase folate values. If sample cannot be measured immediately, store at 2-8°C.
Performed by: Core Laboratory

FOLATE, RBC - Sent to Reference Laboratory
Test Code: LFOL3
Synonyms: Folates RBC (with Hct)
Specimen Type: 3.5 mL each tube
Whole blood (2 full tubes) Lavender-top (EDTA) tubes
Method: Electrochemiluminescence Immunoassay (ECLIA)
TAT: Set up and reported Sunday through Friday on 1st shift.
Reported within 3 working days.
Collection: Refrigerate one whole blood (lavender top) tube in original tube. Freeze second whole blood (lavender top) tube in original tube or transfer whole blood from original second tube into a plastic transport tube and freeze.
Transport: 1 - Refrigerated
1- Frozen
Causes for Rejection: No frozen whole blood; no refrigerated whole blood; transport tubes with whole blood for the hematocrit portion.
Reference Interval: >498 ng/mL
Special Instructions: Verify that the patient has not had vitamins containing folic acid during the previous three to five days. If so, consult physician.
Comments: To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested.
Performed by: Sent to Reference Laboratory - LabCorp (Order #266015)

FOLIC ACID (See Folate, blood)

FOLLICLE STIMULATING HORMONE
Test Code: FSH
Synonyms: FSH
Specimen Type: 0.5 mL serum, Gold-SST/Red top
Method: Electrochemiluminescence
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Refrigerated: 48 hours at 2-8°C
Frozen: 6 months at -20°C
Freeze once
Reference Interval: Male:
• >16 years 1.5-12.4 mU/mL
• 14-16 years 1.5-12.9 mU/mL
• 11-13 years 0.4-4.6 mU/mL
• 6-10 years 0.4-3.8 mU/mL
• 1-5 years 0.2-2.8 mU/mL
Female:
• Follicular 3.5-12.5 mU/mL
• Ovulation 4.7-21.5 mU/mL
• Luteal 1.7-7.7 mU/mL
• Postmenopausal 25.8-134.8 mU/mL
• 14-17 years 1.6-17.0 mU/mL
• 11-13 years 2.1-11.1 mU/mL
• 0-10 years 0.2-11.1 mU/mL
Comment: If samples are not run within 24 hours, store samples in freezer at -20°C until they can be run. Patients routinely exposed to animals or animal serum products can be prone to interference and anomalous values from heterophilic antibodies. Do not use samples that have been stored at room temperature for longer than 8 hours.
Performed by: Core Laboratory

FONDAPARINUX LEVEL
Test Code: FONDA
Specimen Type: 4.5 mL blood, citrate (blue top)
Method: Automatic Chromogenic Assay
TAT: Routine specimen Monday through Friday: Specimen should arrive in Special Hematology before 3:00 p.m. for same day testing. Weekend and off-shift testing: Prior arrangements with Special Hematology laboratory.
Collection: Specimens must reach the laboratory within 1 hour of blood draw. Specimens that cannot reach the lab within the time frame should be double spun at 2500 g for 15 minutes to obtain platelet poor plasma. 0.5 mL aliquots should be frozen in plastic at -20°C.
NOTE: Tubes must be full to obtain proper blood to anticoagulant ratio or the specimen will be rejected.
Transport: Specimens scheduled to arrive in the lab in less than 60 minutes should be sent at room temperature. Platelet poor specimens should be frozen before transport and placed in an insulated container on dry ice to insure that the specimen does not thaw.

Specimen Stability: Frozen: 6 months at -70°C
Performed by: Core Laboratory, Special Hematology

**FRAGILE X DIRECT DETECTION**

Test Code: FXDD
Synonyms: Fragile X
Specimen Type: 10 mL blood (two 5 mL tubes), EDTA (lavender top) cultured amniocytes for prenatal analysis.
Method: Polymerase Chain Reaction (PCR) and Southern Blot performed routinely
TAT: Approximately 4 weeks
Collection: Requires a test specific, patient signed consent form F82856 and completed requisition F91019.
Transport: Room temperature.
Deliver to Molecular Diagnostics Laboratory as soon after collection as possible for delivery 8:00 a.m. - 5:00 p.m., Monday through Friday.
Comments: Direct detection of the molecular defect of the X chromosome at position Xq27.3 that results in Fragile X syndrome. Greater than 95% of Fragile X chromosomes detected. Detection of both premutation and full mutation states is available.
Performed by: Molecular Diagnostics Laboratory

**FREE ERYTHROCYTE PROTOPORPHYRIN**

Test Code: FEP2
Synonyms: FEP
Specimen Type: If only FEP is requested, acceptable sample is 1 mL EDTA whole blood protected from light. If blood lead is also requested, specimen should be collected in a lead free EDTA tube available from Special Chemistry, and protected from light.
Method: Fluorescence Photometry using the Helena Photofluor2 Fluorometer
TAT: Performed daily, Monday through Friday, 8:00 a.m. - 3:00 p.m.
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Refrigerated: 7 days at 2-8°C
Reference Interval: <70 µmol/mol
Performed by: Core Laboratory, Special Chemistry

**FREE KAPPA AND LAMBDA LIGHT CHAINS PLUS RATIO, QUANTITATIVE** - Sent to Reference Laboratory

Test Code: LKALS
Synonyms: Free Light Chains, Quantitative, Serum
Freelite
Kappa Free Light Chains Ratio, Quantitative, Serum
Kappa:Lambda Free Light Chains Ratio, Quantitative, Serum
Kappa:Lambda Free Light Chains, Quantitative, Serum
Lambda Free Light Chains, Quantitative, Serum
Light Chains, Free Kappa and Free Lambda Quantitative, Serum

Specimen Type: 0.5 mL (0.2 mL minimum)
Serum, Gold/SST, red-top tube

Method: Immunologic

TAT: Set up and reported Tuesday and Thursday on 1st shift.
Reported within 2 working days

Collection: Separate serum immediately after coagulation (30 minutes) to prevent hemolysis.

Transport: Refrigerated

Specimen Stability: Refrigerated: 4 weeks at 2-8°C
Causes for Rejection: Microbially-contaminated specimen; specimen containing particulate matter; lipemic or hemolyzed specimen.

Reference Intervals: Free Kappa Light Chains: 3.30-19.40 mg/L
Free Lambda Light Chains: 5.71-26.30 mg/L
Kappa/Lambda Light Chain Ratio: 0.26-1.65

Special Instructions: Values obtained with different assay methods should not be used interchangeably in serial testing. It is recommended that only one assay method be used consistently to monitor each patient's course of therapy. This procedure does not provide serial monitoring. It is intended for one-time use only.

Comment: Patient should be fasting for eight hours to avoid lipemic sample interference.

Performed by: Sent to Reference Laboratory - LabCorp (Order #121137)

FREE THYROXINE

Test Code: FT4
Synonyms: FT4
Specimen Type: 0.5 mL serum, Gold-SST
Method: Electrochemiluminescence

TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7

Collection: Collect specimen using standard laboratory procedures.

Transport: Room temperature, ASAP

Specimen Stability: Refrigerated: 48 hours at 2-8°C
Frozen: 30 days at -20°C
Freeze once

Reference Interval: >11 years 0.90-1.70 ng/dL
1-11 years 0.90-1.40 ng/dL
7-11 months 0.80-1.60 ng/dL
1-6 months 0.80-1.80 ng/dL
0-29 days 0.80-2.20 ng/dL
Comment: If samples are not run within 24 hours, store samples in freezer at -20°C until they can be run. Patients routinely exposed to animals or animal serum products can be prone to interference and anomalous values from heterophilic antibodies. Do not use samples that have been stored at room temperature for longer than 8 hours.

Performed by: Core Laboratory

**FREE TRIIODOTHYRONINE**

Test Code: FT3  
Synonyms: Free T3  
Specimen Type: 0.5 mL serum, Gold-SST  
Method: Electrochemiluminescence  
TAT: STAT: 90 minutes  
Routine: 4 hours  
Performed 24/7  

Collection: Collect specimen using standard laboratory procedures.  
Transport: Room temperature, ASAP  
Specimen Stability: Refrigerated: 7 days at 2-8°C  
Frozen: 1 month at -20°C  
Thaw frozen samples only once.  

Reference Interval:  
>19 years 2.0-4.40 pg/mL  
12-19 years 2.30-5.00 pg/mL  
7-11 years 2.70-5.20 pg/mL  
2-6 years 2.00-6.00 pg/mL  
2-23 months 1.50-6.40 pg/mL  
4-59 days 2.00-5.20 pg/mL  

Comments: Avoid hemolysis  
Performed by: Core Laboratory

**FRUCTOSAMINE - Sent to Reference Laboratory**

Test Code: LFRUC  
Specimen Type: 1 mL (0.5 mL minimum)  
Serum, Gold/SST, red-top tube; Plasma, green-top (heparin) or lavender-top (EDTA) tube  
Method: Colorimetric  
TAT: Reported within 2 working days.  
Collection: Separate serum or plasma from cells within 45 minutes of collection.  
Transport: Refrigerated  
Specimen Stability: Refrigerated: 14 days  
Frozen: 14 days  

Causes for Rejection: Gross hemolysis; improper labeling; gross lipemia.  
Performed by: Sent to Reference Laboratory - LabCorp (Order #100800)

**FSH (See Follicle stimulating hormone)**

**FT4 (See Free thyroxine)**
FUNGITELL, SERUM - Sent to Reference Laboratory
Test Code: LFUNG
Synonyms: 1,3-Beta D Glucan
Specimen Type: 1 mL (0.5 mL minimum)
              Serum, Gold/SST, red top tube
Method: Microplates and read in an incubating reader
TAT: Reported within 3 to 5 working days.
Collection: Original tube requested.
NOTE: If freezing sample, do not transfer to standard transfer tube.
Specimen must be frozen in plastic tube.
Transport: Frozen
Comments: To avoid delays in turnaround time when requesting multiple tests on
frozen samples, please submit separate frozen specimens for each test
requested.
Performed by: Sent to Reference Laboratory - LabCorp (Order #284526)

FUNGUS CULTURE (See Culture, fungus or Culture, blood)

G6PD (See Glucose-6-phosphate dehydrogenase)

GABAPENTIN, SERUM - Sent to Reference Laboratory
Test Code: LNEU1
Synonyms: Neurontin
Specimen Type: 1 mL (0.3 mL minimum)
              Serum, Red top tube
Method: Liquid Chromatography/Tandem Mass Spectrometry (LC/MS-MS)
TAT: Set up Monday through Friday on 1st shift and Saturday on 1st and 3rd
     shifts.
     Reported within 3 working day.
Collection: Do not use gel-barrier tubes. Transfer separated serum to a plastic
transport tube.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
                  Frozen: 14 days
Cause for Rejection: Gel-barrier tube
Reference Interval: 4.0-16.0 µg/mL
Performed by: Sent to Reference Laboratory - LabCorp (Order #716811)

GAD-65 AUTOANTIBODY (See Glutamic Acid Decarboxylase Autoantibody)

GAMMA GLUTAMYL TRANSFERASE
Test Code: GGT
Specimen Type: 0.5 mL serum, Gold-SST
Method: Enzymatic Colorimetric Assay
TAT: STAT: 90 minutes
     Routine: 4 hours
GASTRIC BLOOD
Test Code: GHGB
Specimen Type: Gastric Aspirate
TAT: ASAP, performed 24/7
Collection: Gastric aspirate obtained by nasogastric intubation or vomitus.
Transport: Room temperature, ASAP
Reference Interval: pH: 1.3-7.8
HGB (Gastroccult): Negative
Performed by: Core Laboratory, Microscopy

GASTRIN - Sent to Reference Laboratory
Test Code: LGAST
Specimen Type: 0.5 mL (0.3 mL minimum)
Serum, Gold/SST, red-top tube
Method: Immunochemiluminometric Assay (ICMA)
TAT: Set up and reported Sunday through Friday on 1st shift. Reported within 4 working days.
Collection: Separate serum from cells. Transfer the serum into a LabCorp PP transpak frozen purple tube with screw cap. Freeze immediately and maintain frozen until tested.
Transport: Frozen
Causes for Rejection: Gross hemolysis; patient not fasting; specimen not received frozen; gross lipemia; plasma specimen.
Reference Interval: Pediatric and Adults:
- 0-1 months: 69-190 pg/mL
- 2-22 months: 55-186 pg/mL
- 22 months-16 years:
  - Fasting 3-4 hours: 2-168 pg/mL
  - Fasting 5-6 hours: 3-117 pg/mL
  - Fasting >8 hours: 1-125 pg/mL
- Older than 16 years: 0-115 pg/mL
Special Instructions: The patient must be fasting overnight, 12 to 14 hours.
Comments: To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested.
Performed by: Sent to Reference Laboratory - LabCorp (Order #004390)
GENTAMICIN - PEAK
Test Code: GENTP
Specimen Type: 0.5 mL serum, Gold-SST
Method: Recombinant DNA technology to produce homogeneous enzyme immunoassay system
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard collection procedures.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 2 hours
Refrigerated: 1 week at 2-8°C
Frozen: 4 weeks at -20°C
Avoid repeated freezing and thawing.
Reference Interval: Peak: 5.0-8.0 µg/mL
Comment: Peak level should be drawn 30-90 minutes after administration of gentamicin.
Performed by: Core Laboratory

GENTAMICIN - RANDOM
Test Code: GENTR
Specimen Type: 0.5 mL serum, Gold-SST
Method: Recombinant DNA technology to produce homogeneous enzyme immunoassay system
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 2 hours
Refrigerated: 1 week at 2-8°C
Frozen: 4 weeks at -20°C
Avoid repeated freezing and thawing.
Reference Interval: None
Comment: If samples are not run within 24 hours, store samples in freezer at -20°C until they can be run. Patients routinely exposed to animals or animal serum products can be prone to interference and anomalous values from heterophilic antibodies. Do not use samples that have been stored at room temperature for longer than 8 hours.
Performed by: Core Laboratory

GENTAMICIN - TROUGH
Test Code: GENTT
Specimen Type: 0.5 mL serum, Gold-SST
Method: Recombinant DNA technology to produce homogeneous enzyme immunoassay system
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard collection procedures.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 2 hours
Refrigerated: 1 week at 2-8°C
Frozen: 4 weeks at -20°C
Avoid repeated freezing and thawing.
Reference Interval: Trough: 1.0-2.0 µg/mL
Comment: Trough level should be drawn 30 minutes prior to next dose.
Performed by: Core Laboratory

GLUCOSE
Test Code: GLUC
Specimen Type: 0.5 mL serum, Gold-SST
Plasma is not acceptable from EDTA, sodium citrate vial. Anticoagulants such as heparin and NaF potassium oxalate may be used.
Method: Photometric assay using Hexokinase
TAT: STAT: 45 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures. Nonhemolyzed serum from fasting individuals preferred.
Transport: Room temperature, ASAP
Specimen Stability: Serum: Room temperature: 8 hours at 15-25°C
Refrigerated: 72 hours at 2-8°C
Plasma: Separate the plasma from the cells within 30 minutes.
Reference Interval: >18 years  65-110 mg/dL
8 days - 18 years  60-115 mg/dL
0-7 days  40-100 mg/dL
Comment: Avoid hemolysis as it can cause an increase in glucose results of up to 10%.
Performed by: Core Laboratory

GLUCOSE-6-PHOSPHATE DEHYDROGENASE (G6PD), QUALITATIVE
Test Code: G6PS
Synonyms: G6PD
Specimen Type: 4.5 mL blood, EDTA (lavender top)
Method: Manual
TAT: Performed Monday through Friday (7:00 a.m. - 3:30 p.m.)
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP. Specimens arriving in lab after 6 hours should be refrigerated at 4°C.
Specimen Stability: Refrigerated: 7 days at 4°C.
Reference Interval: Normal. If the screen is abnormal the ordering physician must call the Special Hematology Lab (464-6826) within 7 days of blood draw to order a quantitative assay.

Performed by: Core Laboratory, Special Hematology

GLUCOSE-6-PHOSPHATE DEHYDROGENASE (G6PD), QUANTITATIVE
Test Code: G6PA
Specimen Type: 4.5 mL blood, EDTA (lavender top)
Method: Manual
TAT: Testing is batched and performed once/week (7:00 a.m. -3:00 p.m.). For urgent requests, call Special Hematology (464-6826).
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature. Specimens arriving after 6 hours should be stored at 4°C.
Specimen Stability: Refrigerated: 7 days when stored at 4°C
Reference Interval: 4.6-13.5 U/g Hgb
Performed by: Core Laboratory, Special Hematology

GLUCOSE, CSF
Test Code: GLUCS
Specimen Type: 1 mL CSF
Method: Photometric Assay using the Hexokinase
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen in a sterile tightly stoppered vessel.
Transport: Room temperature, ASAP
Specimen Stability: After separation from cellular material:
- Room temperature: 8 hours
- Refrigerated: 1 week at 2-8°C
- Frozen: 1 year
Reference Interval: >17 years  40-70 mg/dL
0-17 years     60-80 mg/dL
Performed by: Core Laboratory

GLUTAMIC ACID DECARBOXYLASE (GAD) AUTOANTIBODY - Sent to Reference Laboratory
Test Code: LGAD
Synonyms: Anti-GAD
GAD65
GADAb
Specimen Type: 0.5 mL (0.4 mL minimum)
Serum, Gold/SST, red-top tube
Method: Radioimmunoassay (RIA)
TAT: Reported within 4 working days.
Collection: If specimen is to be stored for longer than one week, transfer specimen to a plastic tube before freezing.

Transport: Refrigerated

Causes for Rejection: Specimen other than serum, recently administered radioisotopes; lipemic or grossly hemolyzed serum.

Reference Interval: 0.0-1.5 units/mL

Special Instructions: Refrigerate if analysis will occur within seven days, otherwise store frozen at -20°C.

Performed by: Sent to Reference Laboratory - LabCorp (Order #143008)

**GRAM STAIN**

Test Code: GRAM

Specimen Type: Urine, stool, genital specimens

TAT: Performed 24/7 with same day results.

Collection: Collect specimen using standard collection procedures.

Specimen Stability: <2 hours at 25°C

<24 hours at 2-8°C

Comments: For all other specimen types, gram stain is included in bacterial culture.

Performed by: Microbiology Laboratory

**GRANULOCYTES**

Test Code: XMG

Synonyms: Granulocyte concentrate

Specimen Type: 10 mL blood (two 5 mL tubes), EDTA (lavender top)

TAT: Contact Blood Bank resident to place original order. Donors must be scheduled to donate product.

Collection: Appropriate EPIC generated Prepare Granulocytes Order. Specimens for Blood Bank testing must be labeled with the patient's full name, medical record number, and initials of phlebotomist. The specimen label must include the date and time the sample was drawn if this information is not entered in the collection information field of the EPIC generated order or in the Collected by field of the Blood Bank requisition.

Transport: Room temperature

Comments: Pathology and Red Cross approval required. Product must be transfused as soon as it is received from the Red Cross.

Performed by: Blood Bank

**GROWTH HORMONE**

Test Code: GH1

Specimen Type: 0.5 mL serum, Gold-SST

Method: Chemiluminescence

TAT: Performed Monday, Wednesday, Friday, 8:00 a.m. -3:00 p.m.

Collection: Collect specimen using standard laboratory procedures.

Transport: Room temperature, ASAP

Specimen Stability: Refrigerated: 48 hours at 2-8°C

Freeze at -20°C for longer storage
Reference Interval:  
Female: 0-3.61 ng/mL  
Male: 0-0.97 ng/mL  
Comments: If part of a time study, specimens must be appropriately/distinctively labeled as to time of collection.  
Performed by: Core Laboratory  

**GUAIAC (See Occult blood)**  

**HAEMOPHILUS INFLUENZAE B, IgG - Sent to Reference Laboratory**  
Test Code: LHIB3  
Synonyms: Haemophilus influenzae B Profile, IgG HIB  
Specimen Type: 1 mL (0.5 mL minimum)  
Serum, Gold/SST, red top tube  
Method: Enzyme Immunoassay (EIA)  
TAT: 2 to 3 days  
Collection: Collect specimen using standard laboratory procedures.  
Transport: Refrigerated  
Specimen Stability: Refrigerated: 7 days  
Frozen: 14 days  
Cause for Rejection: Quantity not sufficient for analysis; contaminated specimen.  
Performed by: Sent to Reference Laboratory - LabCorp (Order #138271)  

**HAPTOGLOBIN**  
Test Code: HAPT  
Specimen Type: 0.5 mL serum, Gold-SST  
Method: Immunoturbidimetry  
TAT:  
STAT: 90 minutes  
Routine: 4 hours  
Performed 24/7  
Collection: Collect specimen using standard laboratory procedures.  
Transport: Room temperature, ASAP  
Specimen Stability: Room temperature: 3 months  
Refrigerated: 8 months  
Reference Interval: 30-200 mg/dL  
Performed by: Core Laboratory  

**HCG PREGNANCY (QUALITATIVE)**  
Test Code: HCGS1  
Specimen Type: Serum  
Method: Sure-Vue Serum/Urine HCG-STAT Test  
TAT: Performed 24/7  
Collection: Blood should be collected aseptically into a clean tube without anticoagulants.  
Transport: ASAP
Specimen Stability: Serum specimens may be stored at 2-8°C for up to 48 hours prior to testing. For prolonged storage, specimens may be frozen and stored below -20°C. Frozen specimens should be thawed and mixed before testing.

Comments: Sensitivity: Minimum detectable concentrations are 10 mU/mL.

Performed by: Core Laboratory

**HCG, URINE**

Test Code: UHCG

Synonyms: Pregnancy test

Specimen Type: 5 mL urine from a fresh well-mixed random urine collection

Method: SureVue Chromatographic Immunoassay

TAT: STAT: 90 minutes

Routine: 4 hours

Performed 24/7

Collection: Random urine is collected in a container with a securely fastened lid with no preservatives. Specimens may be collected at anytime, however the first morning urine generally contains the highest concentration of HCG.

Transport: Room temperature, ASAP

Specimen Stability: Refrigerated: 48 hours at 2-8°C

Reference Interval: Negative (non-pregnant females)

Comments: If a urine specimen is too dilute it may not contain representative levels of HCG urine. A urine specific gravity is also reported.

Performed by: Core Laboratory

**HDL CHOLESTEROL**

Test Code: HDL

Synonyms: HDL-Chol; HDL-C

Specimen Type: 1 mL serum, Gold-SST

Method: Homogeneous Enzymatic Colorimetric Test

TAT: STAT: 90 minutes

Routine: 4 hours

Performed 24/7

Collection: Collect specimen using standard laboratory procedures. A fasting specimen is desirable.

Transport: Room temperature, ASAP

Specimen Stability: Refrigerated: 7 days at 2-8°C

Frozen: 30 days at -70°C

Reference Interval: >40 mg/dL

Performed by: Core Laboratory

**HEAVY METALS PROFILE II, URINE - Sent to Reference Laboratory**

Test Code: LHMPU

Specimen Type: 15 mL (5.3 mL minimum)

Urine, plastic container without preservatives.

Method: Atomic Absorption Spectrometry (AAS); Inductively-coupled Plasma/Mass Spectrometry (ICP/MS)
TAT: Set up Sunday through Friday on 1st shift. Reported within 4 working days.
Collection: Instruct the patient to void at 8:00 a.m. and discard the specimen. Then collect all urine including the final specimen voided at the end of the 24 hour collection period (i.e.; 8 a.m. the next morning). Avoid contact with metal during collection. Screw the lid on securely. See individual tests for collection times for industrial monitoring.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Frozen: 14 days
Reference Interval: See individual tests. Refer to Reference Laboratory Website.
Performed by: Sent to Reference Laboratory - LabCorp (Order #070813)

HEINZ BODY, DIRECT
Test Code: HEIN
Specimen Type: 5 mL blood, EDTA (lavender top)
Method: Manual
TAT: Performed Monday through Friday by appointment with Special Hematology Laboratory (464-6826)
Collection: Testing must be performed on the day blood is drawn.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 8 hours
Reference Interval: Normal
Performed by: Core Laboratory, Special Hematology

HELICOBACTER (See CLO test)

HELICOBACTER PYLORI BIOPSY (See CLO test)

HELICOBACTER PYLORI (H. pylori) IgG ANTIBODY
Test Code: HPYLO
Specimen Type: 0.5 mL serum, Gold-SST
Method: Enzyme-linked Immunosorbent Assay (ELISA)
TAT: 72 hours
Reference Interval: Negative
Comments: Test performed on Serum only. This test detects only H. pylori IgG antibody for past exposure.
Performed by: Immunology Laboratory

HELICOBACTER PYLORI STOOL ANTIGEN - Sent to Reference Laboratory
Test Code: LHPYS
Synonyms: Campylobacter pylori
Campylobacter from Stomach
Helicobacter pylori Stool Antigen
Culture, helicobacter pylori
Specimen Type: 2 g (thumbnail size portion of stool), 2 mL liquid stool (1 g stool, 1 mL liquid stool, minimum)

Method: Immunoassay

TAT: Test performed three times per week.

Collection: Do not contaminate outside of container. Do not overfill container. Loose stools are acceptable.

Transport: Frozen

Causes for Rejection: Inappropriate specimen transport conditions or device; unlabeled specimen or name discrepancy between specimen and request label; specimen received after prolonged delay; leaking specimen; specimen received in inappropriate container.

Comment: Specimen should be stored at 4°C and transported to the lab within 24 hours of collection. Freeze specimen.

Performed by: Sent to Reference Laboratory - LabCorp (Order #180764)

HEMATOCRIT

Test Code: HCT

Specimen Type: 2 mL blood, EDTA (lavender top)

Method: Beckman Coulter or Manual

TAT: STAT: 90 minutes

Collection: Venipuncture or fingerstick. Collect specimen using standard laboratory procedures.

Transport: Room temperature, ASAP

Specimen Stability: Room temperature specimens must be run within 24 hours of collection. Specimens between 24-36 hours post collection should be stored at 2-8°C.

Reference Interval: Male: 41-53%

Female: 36-45%

Performed by: Core Laboratory

HEMOCCULT (See Occult blood)

HEMOGLOBIN A1C

Test Code: HBA1C

Specimen Type: 1 mL blood, EDTA (lavender top)

Method: HPLC

TAT: Performed Monday through Friday, 8:00 a.m. - 12 noon

Collection: Collect specimen using standard laboratory procedures.

Transport: Room temperature, ASAP

Specimen Stability: Room temperature: 24 hours

Refrigerated: 7 days

Reference Interval: 4.0-6.0%

Performed by: Core Laboratory, Special Hematology
HEMOGLOBIN A2/F/OTHER
Test Code: HBQ
Specimen Type: 5 mL blood, EDTA (lavender top)
Method: HPLC
TAT: STAT requests must be arranged with Special Hematology Laboratory. Performed Monday through Friday, 7:00 a.m.-2:00 p.m.
Collection: Specimens should arrive within 6 hours of blood draw at room temperature. Specimens arriving after 6 hours should be kept at 4°C.
Transport: Room temperature, ASAP.
Specimen Stability: Refrigerated: 7 days at 2-6°C
Reference Interval: HgbA2: 1.7-3.5%
HbF: age adjusted
Comment: This method is FDA approved for hemoglobin F and A2 quantitation only.
Performed by: Core Laboratory, Special Hematology

HEMOGLOBIN
Test Code: HGB
Specimen Type: 1 EDTA tube, minimum 2 mL
EDTA microtainer, minimum 0.75 mL
Method: Automated Beckman Coulter
TAT: Routine: 4 hours
STAT: 90 minutes
Performed daily
Collection: Venipuncture or fingerstick
Transport: Room temperature, ASAP
Specimen Stability: Room temperature specimens must be run within 24 hours of collection. Specimens between 24 and 36 hours post collection should be stored at 2-8°C.
Performed by: Core Laboratory

HEPARIN ASSOCIATED ANTIPLATELET ANTIBODY
Test Code: HIT
Synonyms: HIT antibody
Specimen Type: Serum, Gold-SST
Method: ELISA
TAT: Performed Monday through Friday, 10:00 a.m.-2:00 p.m.
Specimen must arrive before 10AM to be completed that day.
STAT offered by prior arrangement with Special Hematology Laboratory.
Collection: Specimen should arrive for processing as soon as possible. Samples should be spun, serum separated, and stored at 2-8°C for no longer than 48 hours. Serum should be frozen at -20°C if stored longer than 48 hours.
Transport: Frozen specimens should be placed in an insulated container on dry ice to insure the specimen does not thaw.
Specimen Stability: Refrigerated: 48 hours at 2-8°C
Frozen: Several years at -20°C
Reference Interval: Negative
Comment: This test is also known as a PF4 ELISA test, heparin antibodies, heparin platelet antibodies. The results must be used in conjunction with clinical findings.

Performed by: Core Laboratory, Special Hematology

**HEPARIN LEVEL, UNFRACTIONATED AND LMW**

Test Code: HEPUF or HEPLM  
Synonyms: Anti-factor Xa  
Specimen Type: 4.5 mL blood, citrate (blue top)  
Method: Automatic Chromogenic Assay  
TAT:  
Routine: 2 hours  
STAT: 45 minutes  
Performed 24/7  

Collection: Specimens must reach the laboratory within 1 hour of blood draw. Specimens that cannot reach the lab within the time frame should be double spun at 2500 g for 15 minutes to obtain platelet poor plasma. 0.5mL aliquots should be frozen in plastic at -20°C. **NOTE:** Tubes must be full to obtain proper blood to anticoagulant ratio or the specimen will be rejected.

Transport: Specimens scheduled to arrive in lab in less than 60 minutes should be sent at room temperature. Platelet poor specimens should be frozen before transport and placed in an insulated container on dry ice to insure that the specimen does not thaw.

Specimen Stability: Room Temperature: 1 hour unspun, 2 hours spun  
Frozen: 6 months at -70°C  

Comments: Specimens should not sit on the cells as this will affect results.

Performed by: Core Laboratory

**HEPATITIS A IgG ANTIBODY**

Test Code: HAG  
Specimen Type: 1 mL serum, Gold-SST  
Method: Chemiluminescence  
TAT: 72 hours  
Reference Interval: Negative (unless vaccinated)  
Performed by: Immunology Laboratory

**HEPATITIS A IgM ANTIBODY**

Test Code: AHAM  
Specimen Type: 0.5 mL serum, Gold-SST  
Method: Chemiluminescence  
TAT: STAT: 60 minutes  
Routine: 72 hours  
Performed Monday - Friday  
Reference Interval: Negative  
Comments: For acute infection  
Performed by: Immunology Laboratory
HEPATITIS B CORE ANTIBODY (TOTAL)
Test Code: AHBC
Specimen Type: 0.5 mL serum, Gold-SST
Method: Chemiluminescence
TAT: 72 hours
Reference Interval: Negative
Comments: Detects both Hepatitis B Core IgG and IgM antibody, but cannot distinguish between the two. A Hepatitis B core-IgM could be ordered if the physician is looking for current infection.
Performed by: Immunology Laboratory

HEPATITIS B CORE IgM ANTIBODY
Test Code: AHCM
Specimen Type: 0.5 mL serum, Gold-SST
Method: Chemiluminescence
TAT: 72 hours
Reference Interval: Negative
Comments: For acute infection
Performed by: Immunology Laboratory

HEPATITIS B SURFACE ANTIBODY
Test Code: AHBS1
Specimen Type: 0.5 mL serum, Gold-SST
Method: Chemiluminescence
TAT: 72 hours
Reference Interval: Negative: <8 mIU/mL
Borderline: 8-12 mIU/mL
Positive: >12 mIU/mL
Comments: For immune status
Performed by: Immunology Laboratory

HEPATITIS B SURFACE ANTIGEN
Test Code: HBSA
Specimen Type: 0.5 mL serum, Gold-SST
Method: Chemiluminescence
TAT: STAT: 60 minutes
Routine: 72 hours
Performed Monday-Friday
Reference Interval: Negative
Comments: For acute infection
Performed by: Immunology Laboratory

HEPATITIS B VIRUS (HBV), QUANTITATIVE - Sent to Reference Laboratory
Test Code: LHBVQ
Synonyms: Cobas TaqMan HBV Test
HBV Quantitation
Specimen Type: 2.5 mL (0.7 mL minimum)  
Serum, Gold/SST, red-top tube; DO NOT use green-top or yellow ACD tubes.

Method: Cobas AmpliPrep/Cobas TaqMan HBV Test, Version 2.0
TAT: Reported within 6 working days.
Collection: Centrifuge sample within 6 hours of collection. Transfer serum to a screw-top polypropylene transport tube. Ship frozen (preferred)
Transport: Frozen
Causes for Rejection: Incorrect anticoagulant; PPT not centrifuged.
Special Instructions: This procedure does not provide serial monitoring. It is intended for one-time use only.
Comment: To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit a separate frozen specimen for each test requested.

Performed by: Sent to Reference Laboratory - LabCorp (Order #551610)

HEPATITIS BE ANTIBODY - Sent to Reference Laboratory
Test Code: LBEAB
Synonyms: Anti-HBe  
Antibody to Hepatitis Be Antigen  
HBeAb
Specimen Type: 1 mL (0.4 mL minimum)  
Serum, Red-top or Plasma, Lavender-top (EDTA) tube
Method: Enzyme Immunoassay (EIA)
TAT: Reported within 3 working days.
Collection: Transfer separated serum or plasma to a plastic transport tube.
Transport: Refrigerated
Specimen Stability: Refrigerated: 7 days at 2-8ºC  
Frozen: 1 year at -20ºC
Causes for Rejection: Non-EDTA plasma specimen; PST gel-barrier tube
Reference Interval: Negative
Performed by: Sent to Reference Laboratory - LabCorp (Order #006635)

HEPATITIS BE ANTIGEN - Sent to Reference Laboratory
Test Code: LBEAG
Synonyms: HBeAg
Specimen Type: 1.5 mL (0.6 mL minimum)  
Plasma, Lavender-top (EDTA) tube
Method: Immunochemiluminometric assay (ICMA)
TAT: Reported within 3 working days.
Collection: Transfer separated serum or plasma to a plastic transport tube.
Transport: Refrigerated
Specimen Stability: Refrigerated: 7 days at 2-8ºC  
Frozen: 1 year at -20ºC
Causes for Rejection: Non-EDTA plasma specimen; heat-inactivated specimens; cord blood; cadaver specimens; or body fluids other than serum or EDTA plasma.
HEPATITIS C ANTIBODY (TOTAL)

Test Code: AHCV
Specimen Type: 0.5 mL serum, Gold-SST
Method: Chemiluminescence
TAT: 72 hours
Reference Interval: Negative
Comments: The signal to cutoff ratio (SCO) is reported for all positive results. Patients with a low SCO $\geq$1.00 and <5.0 may have an infection or a nonspecific reaction with this assay. The CDC recommends supplemental testing such as Hepatitis C RNA Qualitative testing by PCR (EPIC code: LAB 2734). Patients with a high S/CO$\geq$5.00 have shown to repeat as positive using a different methodology 95% of the time or greater. Thus, additional testing for verification is not recommended with a high SCO.

Performed by: Immunology Laboratory

HEPATITIS C GENOTYPE, NONREFLEX - Sent to Reference Laboratory

Test Code: LHCVG
Synonyms: HCV Subtype
Specimen Type: 3 mL (2.5 mL minimum)
Plasma, Lavender-top (EDTA) tube
Method: Polymerase Chain Reaction (PCR) amplification and line probe hybridization
TAT: Set up Monday through Friday. Reported within 5 working days.
Collection: Collect specimen in lavender-top (EDTA) tube. Do not use green-top (heparin) tubes. Separate plasma from whole blood within six hours of blood collection. Remove plasma, transfer to a screw-cap polypropylene tube (not pop-top or snap-cap), and freeze. Specimens drawn into PPT need to be centrifuged within six hours and frozen.
Transport: Frozen
Causes for Rejection: Hemolysis; green-top (sodium heparin) tube; specimen not frozen on date of collection; PPT not centrifuged; specimen received in pop-top or snap-cap tube; specimen shipped at room temperature.
Comment: To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested.

Performed by: Sent to Reference Laboratory - LabCorp (Order #550475)

HEPATITIS C VIRUS FIBROSURE - Sent to Reference Laboratory

Test Code: LHCVF
Synonyms: ActiTest FibroSure FibroTest
Specimen Type: 3.5 mL (2 mL minimum)  
Serum, Gold/SST, red-top tube  
Method: Specific to individual tests incorporated in panel.  
TAT: Reported within 7 working days.  
Collection: Separate serum from cells within two hours of collection.  
Transport: Frozen  
Specimen Stability: Frozen: 4 months  
Causes for Rejection: Gross hemolysis; gross lipemia; improper labeling; nonfasting specimen; patient less than 14 years of age.  
Reference Interval: Sent with report. Refer to Reference Lab Website.  
Special Instructions: Patient should be fasting for at least eight hours. Patient age and sex must be included on the test request form.  
Performed by: Sent to Reference Laboratory - LabCorp (Order #550123)

HEPATITIS C VIRUS (HCV) RNA QUALITATIVE - Sent to Reference Laboratory  
Test Code: LCRQ4  
Specimen Type: 1.5 mL (Minimum 600 µL)  
Plasma, Lavender-top (EDTA) tube  
Method: Nucleic Acid Amplification (NAA)  
TAT: Reported within 4 working days.  
Collection: Centrifuge specimen within 6 hours of collection. Transfer plasma to a polypropylene screw-cap tube and freeze. Ship frozen.  
Transport: Frozen  
Specimen Stability: Frozen: 6 months  
Causes for Rejection: PPT not centrifuged; specimen received in a pop-top or snap-cap tube.  
Comments: To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested.  
Performed by: Sent to Reference Laboratory - LabCorp (Order #550713)

HEPATITIS C VIRUS (HCV) RNA QUANTITATIVE - Sent to Reference Laboratory  
Test Code: LHCPC  
Specimen Type: 2.5mL (Minimum 700 µL)  
Plasma EDTA (lavender top)  
Method: Cobas AmpliPrep/Cobas TaqMan HCV Test v. 2.0  
TAT: Reported within 4 working days.  
Collection: Centrifuge sample within 6 hours of collection. Transfer plasma to a screw-cap polypropylene transport tube. Ship frozen (preferred).  
Transport: Frozen  
Causes for Rejection: Incorrect anticoagulant; PPT not centrifuged.  
Comments: To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit a separate frozen specimen for each test requested. This procedure does not provide serial monitoring. It is intended for one-time use only.  
Performed by: Sent to Reference Laboratory - LabCorp (Order #550080)
HEPATITIS D ANTIGEN - Sent out to Reference Laboratory
Test Code: LHDAG
Specimen Type: 1 mL (0.5 mL minimum)
    Serum, Gold-SST, red top
Method: ELISA
Collection: Collect specimen using standard laboratory procedures.
Transport: Frozen
Comment: To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested.
Performed by: Sent to Reference Laboratory - LabCorp (Order #823416).
Testing referred to Cambridge Biomedical, Inc.

HEPATITIS D TOTAL - Sent out to Reference Laboratory
Test Code: LHDV
Specimen Type: 2 mL (1 mL minimum)
    Serum, Gold/SST, red top tube
Method: Competitive ELISA
Collection: Collect specimen using standard laboratory procedures.
Transport: Frozen
Comments: To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested.
Performed by: Sent to Reference Laboratory - LabCorp (Order #284452).
Testing referred to Cambridge Biomedical, Inc.

HEPATITIS E IgM - Sent out to Reference Laboratory
Test Code: LHEPE
Specimen Type: 1 mL (0.5 mL minimum)
    Serum, Gold/SST, red top tube
Method: ELISA
Collection: Collect specimen using standard laboratory procedures.
Transport: Refrigerated
Performed by: Sent to Reference Laboratory - LabCorp (Order #823331).
Testing referred to Cambridge Biomedical, Inc.

HEREDITARY HEMOCHROMATOSIS
Test Code: HH
Synonyms: Hemochromatosis by DNA, Hereditary
Specimen Type: 5 mL blood, EDTA (lavender top)
Method: Polymerase Chain Reaction (PCR)/Restriction Fragment Analysis
TAT: 7-10 days
Collection: Requires a test specific, patient signed consent form F82859 and a completed requisition F91019.
Transport: Room temperature.
Deliver to Molecular Diagnostics Laboratory as soon after collection as possible for delivery 8:00 a.m. - 5:00 p.m., Monday through Friday.

Comments: Direct detection of the C282Y and H63D mutations of the HFE gene.

Performed by: Molecular Diagnostics Laboratory

HERPES I AND II IgG ANTIBODIES
Test Code: HSVG
Specimen Type: 0.5 mL serum, Gold-SST
Method: Enzyme-linked Immunosorbent Assay (ELISA)
TAT: 4 days
Reference Interval: Negative
Comment: This battery tests for IgG antibodies for Herpes I and II and can distinguish between them. If an acute infection is suspected, please order Herpes IgM antibody.

Performed by: Immunology Laboratory

HSV PCR (See PCR, Herpes Simplex Virus)

HERPES SIMPLEX VIRUS (HSV) TYPES 1/2, IgM - Sent to Reference Laboratory
Test Code: LHSV
Synonyms: Herpesvirus Hominis Types 1 and 2, IgM
HSV Type 1 and Type 2, IgM
Specimen Type: 2 mL (0.5 mL minimum)
Serum, red top tube
Method: Enzyme-linked Immunosorbent Assay (ELISA)
TAT: Reported within 3 working days.
Collection: Collect specimen using standard laboratory procedures.
Transport: Refrigerated
Cause for Rejection: Hemolysis; lipemia; gross bacterial contamination
Reference Interval: Negative: <0.91 ratio
Equivocal: 0.91-1.09 ratio
Positive: >1.09 ratio

Performed by: Sent to Reference Laboratory - LabCorp (Order #164806)

HEXAGONAL PHASE PHOSPHOLIPID NEUTRALIZATION
Test Code: HPPN
Synonyms: Lupus-like Anticoagulant
Specimen Type: 4.5 mL blood, citrate (blue top)
Method: Clotting assay
TAT: Testing is batched and performed once/week (7:00 a.m. - 3:00 p.m.). For urgent requests, please call Special Hematology at 464-6826.
Collection: Specimens must reach the laboratory within 1 hour of blood draw.
Specimens that cannot reach the lab within the time frame should be double spun at 2500 g for 15 minutes to obtain platelet poor plasma.
0.5mL aliquots should be frozen in plastic at -20°C.
NOTE: Tubes must be full to obtain proper blood to anticoagulant ratio or the specimen will be rejected.

Transport: Specimens scheduled to arrive in lab in less than 1 hour should be sent at room temperature. Platelet poor specimens should be frozen before transport and placed in an insulated container on dry ice to insure that the specimen does not thaw.

Specimen Stability: Frozen: 6 months at -70°C
Reference Interval: <8.0
Comments: Results are not affected by heparin or Coumadin therapy.
Performed by: Core Laboratory, Special Hematology

HISTONE ANTIBODY
Test Code: HISTN
Specimen Type: 0.5 mL serum, Gold-SST
Method: Multi-Lyte
TAT: 3 days
Reference Interval: 0-100 U/mL
Performed by: Immunology Laboratory

HISTOPLASMA ANTIBODIES, QUANTITATIVE - Sent to Reference Laboratory
Test Code: LHCA5
Specimen Type: 0.6 mL (0.3 mL minimum)
Serum, Gold/SST, red-top tube
Method: Double Immunodiffusion (DID)
TAT: Set up Monday through Friday on 2nd shift.
Reported within 3 working days.
Collection: Collect specimen using standard laboratory procedures.
Transport: Refrigerated
Causes for Rejection: Hemolysis; lipemia; gross bacterial contamination.
Reference Interval: Negative: <1:1
Performed by: Sent to Reference Laboratory - LabCorp (Order #164319)

HISTOPLASMA ANTIGEN, URINE - Sent to Reference Laboratory
Test Code: LHST
Specimen Type: 5 mL (1 mL minimum)
Urine, sterile urine container, no preservative
Method: ELISA
TAT: Reported within 7 working days.
Collection: Collect in a sterile urine container with no preservatives.
Transport: Frozen
Comment: To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested.
Performed by: Sent to Reference Laboratory - LabCorp (Order #823203)

HIT ANTIBODY (See Heparin Associated Antiplatelet Antibody)
HIV AG/AB COMBO TEST
Test Code: HIVCT
Specimen Type: 2 mL serum, Gold-SST
Method: Architect HIV Ag/Ab Combo assay-chemiluminescent microparticle assay (CMIA)
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Serum specimens should be stored no longer than 3 days at room temperature or 7 days at 2-8°C following specimen collection. If storage of specimen is anticipated to be greater than 7 days, store frozen at -20°C or colder.
Reference Interval: Negative
Comments: Screening test for HIV, detects HIV 1 antibody (groups M and O), HIV 2 antibody and HIV p24 antigen. Reflexes to Western Blot confirmation performed at Reference Laboratory if positive.
Performed by: Core Laboratory

HIV ENTRY ASSAY - Sent to Reference Laboratory
Test Code: HIVE
Specimen Type: Whole blood:
- 2 EDTA (purple top) tubes or EDTA plasma preparation tubes (PPT); 5 mL blood in each tube.
EDTA plasma:
- >3 mL in sterile polypropylene tube.
TAT: 3-4 weeks
Collection: Separation of whole blood: Centrifuge at 1000-1200 x g for 10-15 minutes at room temperature within 6 hours of specimen collection. Transfer plasma from EDTA tubes to sterile polypropylene tubes. Store EDTA plasma tubes and PPT tubes at -20°C.
Transport: Purple top tubes and PPT tubes must reach the lab within 5 hours of collection.
Comments: To ensure accurate results, a patient's viral load must be greater than 1000 copies/mL before this test is performed. Therefore, an order for HIV quantitative PCR must accompany the trofile assay request or the laboratory must have on record a quantitative PCR results within the previous 2 weeks.
Performed by: Sent to Reference Laboratory

HIV GENOSURE PRIME ASSAY - Sent to Reference Laboratory
Test Code: HIVGP
Specimen Type: Whole blood:
- 3 EDTA (purple top) tubes or EDTA plasma preparation tubes (PPT); 5 mL blood in each tube.
EDTA
- >6 mL in sterile polypropylene tube.

TAT: 3-4 weeks
Collection: Separation of whole blood: Centrifuge at 1000-1200 x g for 10 to 15 minutes at room temperature within 6 hours of specimen collection. Transfer plasma from EDTA tubes to sterile polypropylene tubes. Store EDTA plasma tubes and PPT tubes at -20°C.
Transport: Purple top tubes and PPT tubes must reach the lab within 5 hours of collection.
Comments: To ensure accurate results, a patient's viral load must be greater than 500 copies/mL before this test is performed. Therefore, an order for HIV quantitative PCR must accompany the genotype request or the laboratory must have on record a quantitative PCR result within the previous 2 weeks.
Performed by: Sent to Reference Laboratory

**HIV GENOTYPING - Sent to Reference Laboratory**
Test Code: HIVGT
Specimen Type: Whole blood:
- 2 EDTA (purple top) tubes or EDTA plasma preparation tubes (PPT); 5 mL blood in each tube.
EDTA plasma:
- >3 mL in sterile polypropylene tube.

TAT: 3-4 weeks
Collection: Separation of whole blood: Centrifuge at 1000-1200 x g for 10-15 minutes at room temperature within 6 hours of specimen collection. Transfer plasma from EDTA tubes to sterile polypropylene tubes. Store EDTA plasma tubes and PPT tubes at -20°C.
Transport: Purple top tubes and PPT tubes must reach the lab within 5 hours of collection.
Comments: To ensure accurate results, a patient's viral load must be greater than 500 copies/mL before this test is performed. Therefore, an order for HIV quantitative PCR must accompany the genotyping request or the laboratory must have on record a quantitative PCR result within the previous 2 weeks.
Performed by: Sent to Reference Laboratory

**HIV INTEGRASE ASSAY - Sent to Reference Laboratory**
Test Code: HIVI
Specimen Type: Whole blood:
- 2 EDTA (purple top) tubes or EDTA plasma preparation tubes (PPT); 5 mL blood in each tube.
EDTA plasma:
- >3 mL in sterile polypropylene tube.

TAT: 3-4 weeks
Collection: Separation of whole blood: Centrifuge at 1000-1200 x g for 10-15 minutes at room temperature within 6 hours of specimen collection. Transfer plasma from EDTA tubes to sterile polypropylene tubes. Store EDTA plasma tubes and PPT tubes at -20°C.

Transport: Purple top tubes and PPT tubes must reach the lab within 5 hours of collection.

Comments: To ensure accurate results, a patient's viral load must be greater than 500 copies/mL before this test is performed. Therefore, an order for HIV quantitative PCR must accompany the trofile assay request or the laboratory must have on record a quantitative PCR result within the previous 2 weeks.

Performed by: Sent to Reference Laboratory

**HIV PHENOSENSE GT - Sent to Reference Laboratory**

Test Code: HIVPG

Specimen Type: Whole blood:
- 2 EDTA (purple top) tubes of EDTA plasma preparation tubes (PPT); 5 mL blood in each tube.

EDTA plasma:
- >3 mL in sterile polypropylene tube.

TAT: 3-4 weeks

Collection: Separation of whole blood: Centrifuge at 1000-1200 x g for 10-15 minutes at room temperature within 6 hours of specimen collection. Transfer plasma from EDTA tubes to sterile polypropylene tubes. Store EDTA plasma tubes and PPT tubes at -20°C.

Transport: Purple top tubes and PPT tubes must reach the lab within 5 hours of collection.

Comments: To ensure accurate results, a patient's viral load must be greater than 500 copies/mL before this test is performed. Therefore, an order for HIV quantitative PCR must accompany the trofile assay request or the laboratory must have on record a quantitative PCR result within the previous 2 weeks.

Performed by: Sent to Reference Laboratory

**HIV PHENOSENSE GT PLUS INTEGRASE - Sent to Reference Laboratory**

Test Code: HIVGI

Specimen Type: Whole blood:
- 3 EDTA (purple top) tubes of EDTA plasma preparation tubes (PPT); 5 mL blood in each tube.

EDTA plasma:
- >6 mL in sterile polypropylene tube.

TAT: 3-4 weeks

Collection: Separation of whole blood: Centrifuge at 1000-1200 x g for 10-15 minutes at room temperature within 6 hours of specimen collection. Transfer plasma from EDTA tubes to sterile polypropylene tubes. Store EDTA plasma tubes and PPT tubes at -20°C.
Transport: Purple top tubes and PPT tubes must reach the lab within 5 hours of collection.

Comments: To ensure accurate results, a patient's viral load must be greater than 500 copies/mL before this test is performed. Therefore, an order for HIV quantitative PCR must accompany the phenotype assay request or the laboratory must have on record a quantitative PCR result within the previous 2 weeks.

Performed by: Sent to Reference Laboratory

**HIV PHENOTYPING - Sent to Reference Laboratory**

Test Code: HIVPT

Specimen Type: Whole blood:
- 2 EDTA (purple top) tubes or EDTA plasma preparation tubes (PPT); 5 mL blood in each tube.

EDTA plasma:
- >3 mL in sterile polypropylene tube.

TAT: 3-4 weeks

Collection: Separation of whole blood: Centrifuge at 1000-1200 x g for 10-15 minutes at room temperature within 6 hours of specimen collection. Transfer plasma from EDTA tube to sterile polypropylene tube. Store EDTA plasma tubes and PPT tubes at -20°C.

Transport: Purple top tubes and PPT tubes must reach the lab within 5 hours of collection.

Comments: To ensure accurate results, a patient's viral load must be greater than 500 copies/mL before this test is performed. Therefore, an order for HIV quantitative PCR must accompany the phenotype request or the laboratory must have on record a quantitative PCR result within the previous 2 weeks.

Performed by: Sent to Reference Laboratory

**HIV TROFILE ASSAY - Sent to Reference Laboratory**

Test Code: HIVTF

Specimen Type: Whole blood:
- 2 EDTA (purple top) tubes or EDTA plasma preparation tubes (PPT); 5 mL blood in each tube.

EDTA plasma:
- >3 mL in sterile polypropylene tube.

TAT: 3-4 weeks

Collection: Separation of whole blood: Centrifuge at 1000-1200 x g for 10-15 minutes at room temperature within 6 hours of specimen collection. Transfer plasma from EDTA tube to sterile polypropylene tube. Store EDTA plasma tubes and PPT tubes at -20°C.

Transport: Purple top tubes and PPT tubes must reach the lab within 5 hours of collection.

Comments: To ensure accurate results, a patient's viral load must be greater than 1000 copies/mL before this test is performed. Therefore, an order for HIV quantitative PCR must accompany the phenotype assay request or the laboratory must have on record a quantitative PCR result within the previous 2 weeks.
quantitative PCR must accompany the trofile assay request or the laboratory must have on record a quantitative PCR result within the previous 2 weeks.

Performed by: Sent to Reference Laboratory

**HIV TROFILE DNA ASSAY - Sent to Reference Laboratory**

**Test Code:** HIVTD  
**Specimen Type:** Whole blood: 1 EDTA (purple top) tube  
**TAT:** 3-4 weeks  
**Collection:** Do not centrifuge. Freeze EDTA tube immediately at -20°C.  
**Transport:** Send to laboratory immediately or store at -20°C and send to laboratory frozen.  
**Comments:** This assay determines HIV-1 co-receptor tropism. It should be used for patients with documented HIV-1 infection and undetectable viral loads.

Performed by: Sent to Reference Laboratory

**HIV VIRAL LOAD**

**Test Code:** HIVQP  
**Specimen Type:** Whole blood:  
- 2 EDTA (purple top) tubes (8 mL total). A minimum of 1 full tube (4 mL) is required. PPT tubes (EDTA plasma preparation tubes) are unacceptable.  
- EDTA plasma:  
  - ≥2.5 mL in sterile polypropylene tube; 1.1 mL absolute minimum.  
**Method:** Realtime polymerase chain reaction (PCR)  
**TAT:** Performed once per week with a maximum 2 week TAT.  
**Collection:** Separation of whole blood: Centrifuge at 800-1600 x g for 20 minutes at room temperature. Transfer plasma to sterile polypropylene tube and store at ≤-20°C. Plasma from purple top tubes must be separated within 6 hours of specimen collection.  
**Transport:** Purple top tube must reach lab within 5 hours of collection.  
**Interpretation:** >3 fold increases or decreases in viral load (#copies/mL) are considered significant. Viral load increases may not be indicative to treatment failure. Consult Infectious Disease for interpretation.

Performed by: Virology Laboratory

**HLA ANTIBODY SCREEN**

**Test Code:** PRAQ  
**Specimen Type:** 7 mL blood, red plain (no separator tubes)  
**Method:** Flow (microbead)  
**TAT:** Performed Monday through Friday, 8:00 a.m. - 5:00 p.m.  
**Transport:** Room temperature.  
**Reference Interval:** Negative  
**Comment:** Send paperwork and specimen to HLA lab.

Performed by: HLA Laboratory
HLA-B27, B27 TYPING
Test Code: HB27
Specimen Type: 7 mL blood (one 7 mL tube), sodium heparin (green top) tube
Method: Serology
TAT: Performed Monday through Friday, 8:00 a.m. - 5:00 p.m.
Transport: Room temperature. Do not refrigerate.
Reference Interval: Negative
Performed by: HLA Laboratory

HLA MOLECULAR ABC (Includes only Class II Typing)
Test Code: MABC
Specimen Type: 10 mL EDTA (2 lavender top tubes)
Method: PCR, SSO
TAT: Performed Monday through Friday, 8:00 a.m. - 5:00 p.m.
Collection: WBC >0.4 K/µL
Transport: Room temperature. Do not refrigerate or put on ice.
Reference Interval: None
Performed by: HLA Laboratory

HLA MOLECULAR ABCDRDQ (Includes Class I and Class II Typing)
Test Code: MABDR
Specimen Type: 10 mL EDTA (2 lavender top tubes)
Method: PCR, SSO
TAT: Performed Monday through Friday, 8:00 a.m. - 5:00 p.m.
Collection: WBC >0.4 K/µL
Transport: Room temperature. Do not refrigerate or put on ice.
Reference Interval: None
Performed by: HLA Laboratory

HLA MOLECULAR B LOCUS (HLA-B5701 Typing)
Test Code: MHLB
Specimen Type: 5 mL EDTA (1 lavender top)
Method: PCR, SSO
TAT: Performed Monday through Friday, 8:00 a.m. - 5:00 p.m.
Collection: WBC >0.4 K/µL
Transport: Room temperature. Do not refrigerate or put on ice.
Reference Interval: None
Performed by: HLA Laboratory

HLA MOLECULAR DRDQ (Includes only Class II Typing)
Test Code: MDR
Specimen Type: 10 mL EDTA (2 lavender top tubes)
Method: PCR, SSO
TAT: Performed Monday through Friday, 8:00 a.m. - 5:00 p.m.
Collection: WBC >0.4 K/µL
Transport: Room temperature. Do not refrigerate or put on ice.
Reference Interval:  None
Performed by:  HLA Laboratory

**HLA PLATELET PHERESIS**

Test Code:  THLA
Specimen Type:  5 mL blood, EDTA (lavender top) (If patient's ABO/Rh not known.)  Additional specimens may be needed to HLA type patient and screen for anti-HLA antibodies. Check with HLA laboratory to see if patient needs to be HLA typed.
TAT:  Must be ordered in advance. Donors may need to be scheduled to donate depending on patient's HLA type.
Collection:  Appropriate EPIC generated Prepare HLA Pheresis order or Platelet Order form (on-line) if not on EPIC. If specimen is sent for ABO/Rh type, must have patient's full name, medical record number, and initials of phlebotomist. The specimen label must include the date and time the sample was drawn if this information is not entered in the collection information field of the EPIC generated order or in the Collected by field of the Blood Bank requisition.
Transport:  Room temperature
Comments:  Contact resident for approval of initial order. Patient must be evaluated for refractoriness to platelet transfusion. See section for details on indications and dosage.
Performed by:  Blood Bank

**HOMOCYSTEINE**

Test Code:  HCYS
Specimen Type:  0.5 mL serum, Gold-SST
Method:  Homogeneous Enzymatic
TAT:  STAT: 90 minutes  Routine: 4 hours  Performed 24/7
Collection:  Collect specimen using standard laboratory procedures.
Transport:  On ice, immediately after collection. Centrifuge within 6 hours.
Specimen Stability:  Refrigerated: 2 weeks capped at 2-8°C  Frozen: 8 months
Reference Interval:  4.0-15.4 µmol/L
Comment:  Samples must be free of hemolysis and turbidity.
Performed by:  Core Laboratory

**HOMOVANILLIC ACID (HVA), 24-HOUR URINE - Sent to Reference Laboratory**

Test Code:  LHVAU
Synonyms:  HVA, 24 hour Urine
Specimen Type:  30 mL aliquot (4 mL minimum) Urine, Plastic urine container (6N HCl is optional)
Method:  Liquid Chromatography/Tandem Mass Spectrometry (LC/MS-MS)
TAT:  Set up Monday through Friday on 1st shift.
Reported next working day.

**Collection:**
Instruct patient to void at 8 a.m. and discard the specimen. Then collect all urine including the final specimen voided at the end of the 24-hour collection period (i.e., 8 a.m. the next morning). Measure and record total urine volume. Mix well and send aliquot. Label container with patient's name, date and time collection started, and date and time collection finished.

**Transport:** Refrigerated
**Specimen Stability:** Refrigerated: 14 days
Frozen: 14 days
**Reference Interval:** 0.0-10.0 mg/24 hours
**Special Instructions:** Record total 24 hour urine volume on the request form. Patient should avoid aspirin, disulfiram, reserpine, and pyridoxine, if possible, at least 48 hours prior to collection of the specimen. Levodopa should be avoided for two weeks before collection.

**Performed by:** Sent to Reference Laboratory - LabCorp (Order #120253)

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**HOMOVANILLIC ACID (HVA), RANDOM URINE - Sent to Reference Laboratory**

**Test Code:** LHVAR
**Synonyms:** HVA, Random Urine
**Specimen Type:** 10 mL (4 mL minimum) aliquot
Plastic urine container (6N HCl is optional)
**Method:** Liquid Chromatography/Tandem Mass Spectrometry (LC/MS-MS)
**TAT:** Reported within 5 working days.
**Collection:** Label container with patient's name and date.
**Transport:** Refrigerated
**Specimen Stability:** Refrigerated: 14 days
Frozen: 14 days
**Reference Intervals:** Pediatric patients and adults:
- 0-2 months: 0.0-35.0 µg/mg creatinine
- 3-23 months: 0.0-32.6 µg/mg creatinine
- 2-4 years: 0.0-22.0 µg/mg creatinine
- 5-9 years: 0.0-15.1 µg/mg creatinine
- 10-19 years: 0.0-12.8 µg/mg creatinine
- >19 years: 0.0-7.6 µg/mg creatinine
**Special Instructions:** Patient should avoid aspirin, disulfiram, reserpine, and pyridoxine, if possible at least 48 hours prior to collection of specimen. Levodopa should be avoided for two weeks before collection.

**Performed by:** Sent to Reference Laboratory - LabCorp (Order #120246)

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**HPV (Human papillomavirus) High Risk Types Detection and Typing - Sent to Reference Laboratory**

**Test Code:** HHPV
**Synonym:** HPV
**Specimen Type:** Cervical brush, small cervical biopsy: Use Digene collection and transport kit.
Large cervical biopsy: Use sterile container.
Cervical broom: Use Cytyc PreservCyt Solution (ThinPrep Pap smear)

Method: Nucleic acid hybridization with signal amplification
Transport: Brush in transport: Room temperature or 4°C.
Biopsy in transport or sterile tube: 4°C.
Broom in Cytyc PreservCyt: Room temperature

Interpretation: HPV types 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, and 68 will be detected.
Performed by: Sent to Reference Laboratory

**HPV (Human papillomavirus) Low and High Risk Types Detection and Typing - Sent to Reference Laboratory**

Test Code: HPD
Synonyms: HPV
Specimen Type: Cervical brush, small cervical biopsy: Use Digene collection and transport kit.
Large cervical biopsy: Use sterile container.
Cervical broom: Use Cytyc PreservCyt Solution (ThinPrep Pap smear)

Method: Nucleic acid hybridization with signal amplification
Transport: Brush in transport: Room temperature or 4°C.
Biopsy in transport or sterile tube: 4°C.
Broom in Cytyc PreservCyt: Room temperature

Interpretation: The 18 most common anogenital HPV types are detected and grouped into low risk types (6, 11, 42, 43, 44) and high risk types (16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, and 68). Testing is also available for high risk types only.
Performed by: Sent to Reference Laboratory

**HUMAN GRANULOCYTIC EHRLICHIOSIS (HGE), IgG, IgM - Sent to Reference Laboratory**

Test Code: LECAB
Synonyms: Anaplasma phagocytophila
Ehrlichia
HGE

Specimen Type: 0.4 mL (0.2 mL minimum)
Serum, Gold/SST, red-top tube

Method: Indirect Fluorescent Antibody (IFA)
TAT: 3 to 4 days
Collection: Specimen should be free of bacterial contamination, hemolysis, and lipemia.
Transport: Refrigerated

Causes for Rejection: Hemolysis; lipemia; gross bacterial contamination.
Reference Interval: IgG negative: <1:64
IgM negative: <1:20

Performed by: Sent to Reference Laboratory - LabCorp (Order #164672)
HUMAN T-CELL LYMPHOTROPIC VIRUS 1, 2 (HTLV-1/HTLV-2) ANTIBODIES, PRELIMINARY TEST WITH CONFIRMATION - Sent to Reference Laboratory

Test Code: LHTL
Synonyms: HTLV-I/HTLV-II
Specimen Type: 2 mL (1.5 mL minimum)
Serum, Gold/SST, red-top tube; Plasma, Lavender-top (EDTA) tube
Method: Chemiluminescent Immunoassay (CLIA); Line blot (immunoblot)
TAT: Set up and reported 3 times a week.
Collection: Centrifuge sample to separate serum and then transfer to plastic transport tube.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Frozen: 6 months
Causes for Rejection: Gross bacterial contamination; hemolysis; lipemia.
Reference Interval: Negative
Comment: If the screen is positive, the confirmation will automatically be performed at an additional cost.
Performed by: Sent to Reference Laboratory - LabCorp (Order #164277)

HYALURONIC ACID SERUM - Sent to Reference Laboratory

Test Code: LHYA
Specimen Type: 2 mL (0.5 mL minimum)
Serum, Gold/SST, red top tube
Method: Protein Binding
TAT: Reported within 7 working days.
Transport: Refrigerated
Performed by: Sent to Reference Laboratory - LabCorp (Order #829680)

HYDROXYCORTICOSTEROIDS (17), URINE - Sent to Reference Laboratory

Test Code: Miscellaneous Test
Specimen Type: 5 mL aliquot from a fresh well-mixed 24 hour urine or random urine collection
Method: Quantitative Colorimetry
TAT: 5-7 business days
Transport: Room temperature, ASAP.
Specimen Stability: Room temperature: 4 hours
Refrigerated: 1 week
Frozen: 1 month
Reference Interval: Sent with results.
Special Instructions: Ship: Frozen
Performed by: Sent to Reference Laboratory
HYPERSENSITIVITY PNEUMONITIS PROFILE - Sent to Reference Laboratory
Test Code: LHYP
Synonyms: Extrinsic Allergic Alveolitis Profile
Specimen Type: 1 mL
            Serum, Gold/SST, red-top tube
Method: Double Diffusion (Ouchterlony)
TAT: Set up Monday through Friday.
      Reported within 6 working days.
Collection: Collect specimen using standard laboratory procedures.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
                  Frozen: 14 days
Causes for Rejection: Excessive hemolysis
Reference Interval: Normal: negative
Performed by: Sent to Reference Laboratory - LabCorp (Order #660670)

IA2 AUTOANTIBODIES - Sent to Reference Laboratory
Test Code: LIA2
Synonyms: IA2 Antibodies
           ICA512 Autoantibodies
           Tyrosine Phosphatase Autoantibodies
Specimen Type: 0.5 mL (0.1 mL minimum)
              Serum, Gold/SST, red-top tube
Method: Immunoprecipitation Assay
TAT: Set up and reported once a week on 1st shift.
      Reported within 9 working days.
Collection: Transfer the serum into a LabCorp PP transpak frozen purple tube with
            screw cap. Freeze immediately and maintain frozen until tested.
Transport: Frozen
Specimen Stability: Frozen: 200 days
Causes for Rejection: Radioactive isotopes administered 24 hours prior to venipuncture.
Comment: To avoid delays in turnaround time when requesting multiple tests on
          frozen samples, please submit separate frozen specimens for each test
          requested.
Performed by; Sent to Reference Laboratory - LabCorp (Order #141531)

IBUPROFEN - Sent to Reference Laboratory
Test Code: LIBU2
Synonyms: Advil
           Motrin
           Nuprin
Specimen Type: 1 mL (0.5 mL minimum)
             Serum, red-top tube
Method: High-pressure Liquid Chromatography with ultraviolet detection
        (HPLC/UV)
TAT: 3 to 5 days
Collection: Serum should be separated from cells within two hours of venipuncture. Submit serum in a plastic transport tube.
NOTE: Gel-barrier tubes are not recommended.

Transport: Refrigerated
Comments: Trough levels are most reproducible.
Performed by: Sent to Reference Laboratory - LabCorp (Order #808462)

**IgA (Immunoglobulin A)**
Test Code: IGA
Specimen Type: 0.5 mL serum, Gold-SST
Method: Immunoturbidimetry
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 8 hours
Refrigerated: 7 days at 2-8°C
Frozen: 6 months at -20°C
Freeze once.
Reference Interval: Adult IgA: 70-400 mg/dL
Pediatric Ranges: by report
Comments: Included in Celiac Panel
Performed by: Core Laboratory

**IgD (Immunoglobulin D), QUANTITATIVE - Sent to Reference Laboratory**
Test Code: LIGDS
Synonyms: Immunoglobulin D
Quantitative IgD
Quantitative Immunoglobulin D
Specimen Type: 1 mL (0.5 mL minimum)
Serum, Gold/SST, red-top tube
Method: Immunologic
TAT: Set up Monday through Friday on 1st shift.
Reported within 5 working days.
Collection: Collect specimen using standard laboratory procedures.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Frozen: 14 days
Causes for Rejection: Hemolyzed or very lipemic specimen; specimen containing particulate matter.
Reference Interval: <14.11 mg/dL
Comments: Patient should be fasting.
Performed by: Sent to Reference Laboratory - LabCorp (Order #002162)
IgE
Test Code: IGE
Specimen Type: 0.5 mL serum, Gold-SST
Method: Electrochemiluminescence
TAT: STAT: 90 minutes
Routine: 4 hours
Performed: 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 8 hours
Refrigerated: 7 days at 2-8°C
Frozen: 6 months at -20°C
Freeze once.
Reference Interval: >15 years <180 IU/mL
Performed by: Core Laboratory

IgG, CSF
Test Code: CSFG
Specimen Type: CSF: 0.3 mL
(Minimum 250 µL of spinal fluid)
Method: Nephelometry
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 4 months
Refrigerated: 8 months
Frozen: 8 months
Reference Interval: Adult: 2.0 to 4.0 mg/dL
Pediatric: 0 to 7.6 mg/dL
Performed by: Core Laboratory

IgG, SUBCLASSES (1-4) - Sent to Reference Laboratory
Test Code: LSIGG
Synonyms: IgG Subclasses
IgG1,2,3,4
Specimen Type: 2 mL (1.5 mL minimum)
Serum, Gold/SST, red-top tube
Method: Immunologic
TAT: Set up and reported Sunday through Friday on 3rd shift.
Reported within 3 working days.
Collection: Transfer serum to a plastic transport tube.
Transport: Refrigerated
Specimen Stability: Refrigerated: 7 days
Frozen: 13 days
Causes for Rejection: Gross lipemia; hemolysis
Special Instructions: State patient's age on the test request form.
Performed by: Sent to Reference Laboratory - LabCorp (Order #209601)

**IgG SYNTHESIS RATE, CEREBROSPINAL FLUID - Sent to Reference Laboratory**

Test Code: LIGGI
Synonyms: Central Nervous System IgG Synthesis
Cerebrospinal Fluid IgG Synthesis
CNS IgG Synthesis
CSF IgG Synthesis
IgG Synthesis Rate
IgG, Spinal Fluid: Serum Ratio
Spinal Fluid IgG Synthesis

Specimen Type: Serum, 1.5 (0.7 minimum); CSF, 1 mL (0.5 mL minimum)
Serum, Gold/SST, red-top tube; CSF, sterile container

Method: CSF IgG, CSF albumin, and serum, IgG: Immunologic
Serum albumin: Spectrophotometry
Synthesis rate by calculation

TAT: Set up and reported Monday through Friday on 1st shift.
Reported within 6 working days.

Collection: Collect specimen using standard laboratory procedures.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Frozen: 14 days

Causes for Rejection: Blood in CSF; failure to obtain blood and CSF specimens.
Reference Interval: Synthesis Rate: -9.9 to +3.3 mg/24 hours
Performed by: Sent to Reference Laboratory - LabCorp (Order #085928)

**IMMUNODEFICIENCY PROFILE (See Lymphocyte subsets)**

**IMMUNOFIXATION/BENCE JONES PROTEIN**

Test Code: PISR3
Specimen Type: Serum, Gold-SST
10 mL freshly voided urine
Avoid Boric Acid preservative

Method: Sebia
TAT: Testing is batched and performed 2 times a week.
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Refrigerated: 1 week 2-8°C
Reference Interval: By report
Comment: If Urine Immunofixation is ordered, a TPU must also be ordered.
Performed by: Core Laboratory, Special Chemistry
IMMUNO GENE REARRANGEMENT, KAPPA
Test Code: IGRK
Comments: Reflex test for negative Immunoglobulin Heavy Chain (B-cell) PCR Assay.

IMMUNOGLOBULIN ASSAY: IgG, IgA, and IgM
Test Code: IMM
Specimen Type: 1 mL serum, Gold
Method: Immunoturbidimetry
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 8 months
Refrigerated: 8 months
Frozen: 8 months
Reference Interval: Adult IgG: 700-1600 mg/dL
Adult IgA: 70-400 mg/dL
Adult IgM: 40-230 mg/dL
Pediatric Ranges: By report
Performed by: Core Laboratory

INDIRECT COOMBS, ANTIBODY SCREEN (See Antiglobulin, indirect)

INFLUENZA A ANTIBODY - Sent to Reference Laboratory
Test Code: LFLU5
Specimen Type: 1 mL (0.5 mL minimum)
Serum, Gold/SST, red top tube
Method: Complement Fixation
TAT: Set up Monday through Friday on 2nd shift.
Reported within 2 working days.
Collection: Specimen should be free from hemolysis, lipemia, and gross bacterial contamination.
Transport: Refrigerated
Comments: NOTE: This test should not be used to determine H1N1 Influenza A Virus (swine origin) infection.
Performed by: Sent to Reference Laboratory - LabCorp (Order #096073)

INHIBIN A, ULTRASENSITIVE - Sent to Reference Laboratory
Test Code: LINHU
Specimen Type: 0.3 mL (0.2 mL minimum)
Serum, Gold/SST, red top tube
Method: Immunochemiluminometric Assay (ICMA)
TAT: Set up and reported on Thursday.
Collection: Transfer the serum into a LabCorp PP transpak frozen purple tube with screw cap. Freeze immediately and maintain frozen until tested.

Transport: Frozen

Cause for Rejection: Nonserum specimen received; nonfrozen specimen.

Reference Interval: Sent with results. Refer to Reference Laboratory Website.

Comments: To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested.

Performed by: Sent to Reference Laboratory - LabCorp (Order #146803)

**INHIBIN B - Sent to Reference Laboratory**

Test Code: LINHB

Specimen Type: 0.6 mL (0.3 mL minimum)
- Serum, Gold/SST, red top tube

Method: Enzyme Immunoassay (EIA)

TAT: Collection: Transfer separated serum to a plastic transport tube.
- Transport: Frozen

Specimen Stability: Refrigerated: 21 days
- Frozen: 21 days

Cause for Rejection: Nonserum sample received.

Reference Interval: Sent with results. Refer to Reference Laboratory Website.

Performed by: Sent to Reference Laboratory - LabCorp (Order #146795).

**INSULIN**

Test Code: INSU

Specimen Type: 0.5 mL serum, Gold-SST

Method: Electrochemiluminescence

TAT: STAT: 90 minutes
- Routine: 4 hours
- Performed 24/7

Collection: Collect specimen using standard laboratory procedures.

Transport: Room temperature, ASAP

Specimen Stability: Refrigerated: 24 hours at 2-8°C
- Frozen: 6 months at -20°C

Reference Interval: 2.6-24.9 µU/mL

Performed by: Core Laboratory

**INSULIN AUTOANTIBODIES (IAA) - Sent to Reference Laboratory**

Test Code: LINS

Synonyms: IAA
- Insulin Antibodies

Specimen Type: 0.5 mL (0.2 mL minimum)
- Serum, Gold/SST, red-top tube

Method: Insulin-I125 Binding Capacity
TAT: Set up and reported once a week on 1st shift. Reported within 7 working days.

Collection: Separate serum from cells. Transfer serum into a LabCorp PP transpak frozen purple tube with screw cap. Freeze immediately and maintain frozen until tested.

Transport: Frozen

Specimen Stability: Frozen: 200 days

Causes for Rejection: Radioactive isotopes administered 24 hours prior to venipuncture.

Comments: To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested.

Performed by: Sent to Reference Laboratory - LabCorp (Order #141598)

**INSULIN-LIKE GROWTH FACTOR 1 (IGF-1) - Sent to Reference Laboratory**

Test Code: LIGF1

Synonyms: IGF-1

SM-C/IGF-1

Somatomedin-C, Sulfation Factor

Specimen Type: 0.5 mL (0.2 mL minimum)

Serum, Gold/SST, red-top tube

Method: Immunochemiluminometric Assay (ICMA)

TAT: Set up and reported Sunday through Friday on 2nd shift. Reported within 2 working days.

Collection: Separate serum from cells. Transfer separated serum to a plastic transport tube. Please include patient's age on the test request form.

Transport: Refrigerated

Specimen Stability: Refrigerated: 7 days

Frozen: 14 days

Causes for Rejection: Plasma specimen

Reference Interval: Sent with results. Refer to Reference Laboratory Website.

Performed by: Sent to Reference Laboratory - LabCorp (Order #010363)

**INSULIN-LIKE GROWTH FACTOR 1 (IGF-1), PEDIATRIC WITH Z SCORE - Sent to Reference Laboratory**

Test Code: LIGFP

Specimen Type: 0.5 mL (0.1 mL minimum)

Serum, Gold/SST, red-top tube

Method: Blocking Radioimmunoassay (RIA) after acid:alcohol extraction

Collection: Serum must be separated from cells within 45 minutes of venipuncture. Send serum in a plastic transport tube. Transfer specimen to a plastic transport tube before freezing.

Transport: Frozen

Specimen Stability: Frozen: 2 years

Cause for Rejection: Specimen not serum.
Comment: To avoid delays in turnaround time when requesting multiple tests on frozen specimens, please submit separate frozen specimens for each test requested.

Performed by: Testing sent to Esoterix via LabCorp (Order #503660)

**INSULIN-LIKE GROWTH FACTOR 2 (IGF-2), PEDIATRIC - Sent to Reference Laboratory**

Test Code: LIGF2  
Synonym: IGF-2  
Specimen Type: 0.5 mL (0.1 mL minimum)  
Serum, Gold/SST, red-top tube  
Method: Radioimmunoassay (RIA) after acid:alcohol extraction  
TAT: Set up once a week.  
Reported within 10 days.  
Collection: Transfer serum into a LabCorp PP transpak frozen purple tube and screw cap. Freeze immediately and maintain frozen until tested.  
Transport: Frozen  
Specimen Stability: Frozen: 200 days  
Cause for Rejection: Specimen not serum.  
Reference Interval: Prepubertal: 258-882 ng/mL; mean: 570 ng/mL  
Pubertal: 273-892 ng/mL; mean: 583 ng/mL  
Adults: 333-967 ng/mL; mean 650 ng/mL  
Comment: To avoid delays in turnaround time when requesting multiple tests on frozen specimens, please submit frozen specimens for each test requested.  
Performed by: Testing sent to Esoterix via LabCorp (Order #141770)

**INSULIN-LIKE GROWTH FACTOR-BINDING PROTEIN 3 (IGFBP-3) - Sent to Reference Laboratory**

Test Code: LIGP3  
Specimen Type: 1 mL (0.2 mL minimum)  
Serum, Gold/SST, red-top tube  
Method: Immunochemiluminometric Assay (ICMA)  
TAT: Set up on Monday through Friday.  
Reported within 2 working days.  
Collection: Transfer separated serum to a plastic container.  
Transport: Refrigerated  
Specimen Stability: Refrigerated: 14 days  
Reference Interval: Sent with results. Refer to Reference Laboratory Website.  
Performed by: Sent to Reference Laboratory - LabCorp (Order #140152)

**INSULIN-LIKE GROWTH FACTOR-BINDING PROTEIN 3 (IGFBP-3), PEDIATRIC - Sent to Reference Laboratory**

Test Code: LIGF3  
Specimen Type: 1 mL (0.1 mL minimum)  
Serum, Gold/SST, red-top tube  
Method: Radioimmunoassay (RIA) in dilute serum
TAT: Set up Monday through Friday.
    Reported 3-5 business days.
Collection: Separate within 1 hour and transfer into a plastic transport tube.
Transport: Frozen on dry ice
Performed by: Testing done by Esoterix via LabCorp (Order #500644)

**INTERLEUKIN 2 SOLUBLE RECEPTOR α - Sent to Reference Laboratory**

Test Code: LIN2
Synonyms: IL-1sRα
Specimen Type: 0.5 mL (0.3 mL minimum)
Serum, Gold, SST, red top tube
Method: Immunochemiluminometric Assay (ICMA)
TAT: Set up and reported Tuesday and Thursday.
Collection: Transfer the serum into a LabCorp PP transpak frozen purple tube with screw cap. Freeze immediately and maintain frozen until tested.
Transport: Frozen
Specimen Stability: Frozen: 14 days
Cause for Rejection: Thawed specimen.
Reference Interval: 223-710 units/mL
Comment: To avoid delays in turnaround time when requesting multiple tests on frozen specimens, please submit frozen specimens for each test requested.
Performed by: Sent to Reference Laboratory - LabCorp (Order #142455)

**INTRINSIC FACTOR BLOCKING ANTIBODIES - Sent to Reference Laboratory**

Test Code: LITF4
Specimen Type: 2 mL (1 mL minimum)
Serum, Gold, SST, red top tube
Method: Immunochemiluminometric Assay (ICMA)
TAT: Set up and reported Monday, Wednesday, and Friday
Collection: Transfer separated serum to a plastic transport tube.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Frozen: 14 days
Cause for Rejection: Plasma specimen.
Reference Interval: 0.0-1.1 AU/mL
Special Instructions: No specimen should be collected from a patient currently undergoing B12 therapy less than one week after the last B12 injection.
Performed by: Sent to Reference Laboratory - LabCorp (Order #010413)

**IRON**

Test Code: FE
Specimen Type: 0.5 mL serum, Gold-SST
Method: Colorimetric Assay
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Refrigerated: 72 hours at 4°C
Frozen: 6 months at -20°C
Reference Interval: Male:
  • >10 years 45-160 µg/dL
Female:
  • >10 years 30-160 µg/dL
Male and Female:
  • 1-10 years 50-120 µg/dL
  • 49 days - 11 months 40-100 µg/dL
  • 0-48 days 100-250 µg/dL
Comment: Hemolyzed specimens should not be used because of the high concentration of iron in hemoglobin.
Performed by: Core Laboratory

IRON BINDING CAPACITY, TOTAL
Test Code: TIB
Synonyms: TIBC
Specimen Type: 3 mL serum, Gold-SST
Method: Spectrophotometric using FerroZine chromogen
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Refrigerated: 7 days at 4°C
Frozen: 4 days at 20-25°C
Reference Interval: 228-428 µg/dL
Comments: Hemolyzed specimens should not be used because of the high concentration of iron in hemoglobin.
Performed by: Core Laboratory

ISOHEMAGGLUTININ TITER
Test Code: ISOA
Specimen Type: 10 mL blood (two 5 mL tubes), EDTA (lavender top)
Method: Immune hemagglutination. Serial dilutions of serum to determine the highest dilution at which ABO antibody is detectable.
TAT: Performed Monday through Friday.
Collection: Specimens for Blood Bank testing must be labeled with the patient's full name, medical record number, and the initials of the phlebotomist. The specimen label must include the date and time the sample was drawn if this information is not entered in the collection information field of the EPIC generated order or in the Collected by field of the Blood Bank requisition.
Transport: Room temperature.
Interpretation: Results reported as titer of total (IgM and IgG) and IgG only.
Performed by: Blood Bank

**ITRACONAZOLE, SERUM OR PLASMA - Sent to Reference Laboratory**
Test Code: LITCO
Synonyms: Sporanox
Specimen Type: 1 mL (0.5 mL minimum)
  Serum (preferred), Red top tube
  Plasma, lavender-top (EDTA) tube
Method: Liquid Chromatography/Tandem Mass Spectrometry (LC/MS-MS)
TAT: Monday through Friday 1st shift.
Reported next day.
Collection: Transfer separated serum or plasma to a plastic transport tube. Do not use a gel-barrier tube.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
  Frozen: 14 days
Cause for Rejection: Gel-barrier tube
Performed by: Sent to Reference Laboratory - LabCorp (Order #700282)

**JAK2 (Janus Kinase 2)**
Test Code: JAK2
Specimen Type: 5 mL blood, EDTA (lavender top) or ACD (yellow top)
Method: Polymerase Chain Reaction (ARMS)
TAT: 7-10 days
Collection: Deliver to Molecular Diagnostics Laboratory as soon after collection as possible for delivery 8:00 a.m. - 5:00 p.m., Monday through Friday.
Requires completed requisition F91021.
Transport: Room temperature.
Comments: Direct molecular detection of an acquired JAK2 mutation, V617F, associated with the chronic myeloproliferative disorders polycythemia vera (PV), essential thrombocythemia (ET) and myelofibrosis with myeloid metaplasia (MMM), also called idiopathic myelofibrosis (IM).
V617F testing is useful for distinguishing the bcr-abl negative chronic MPDs listed above from a reactive process.
Performed by: Molecular Diagnostics Laboratory

**JO-1 ANTIBODY**
Test Code: JO1
Specimen Type: 0.5 mL serum, Gold-SST
Method: Multi-Lyte
TAT: 3 days
Reference Interval: 0-100 U/mL
Performed by: Immunology Laboratory
KAPPA CLONALITY
Test Code: KAPPA
Specimen Type: 1 mL Bone Marrow, 3 mm3 fresh tissue, 20-40 mL peripheral blood, Formalin fixed blocks
Method: Polymerase Chain Reaction (PCR)
TAT: 3-7 days
Collection: Requires completed requisition F91021.
Transport: Transport blood and bone marrow at room temperature.
Transport Fresh tissue on wet ice if sample will be received in 2 hours, otherwise transport tissue frozen on dry ice.
Deliver to Molecular Diagnostics Laboratory as soon after collection as possible for delivery 8:00 a.m. to 5:00 p.m., Monday through Friday.
Comments: Kappa Clonality is a second tier test for detection of a monoclonal population of B lymphocytes. Kappa clonality testing is generally reserved for cases where results of the B Cell Gene Rearrangement assay were negative or inconclusive.
Performed by: Molecular Diagnostics Laboratory

KARYOTYPE ANALYSIS (See Chromosome analysis)

KIDNEY PANEL
Test Code: KIDNY
Specimen Type: Serum, Gold/SST, red-top tube
Method: Ion Selective Electrodes for Electrolytes
TAT: Routine: 4 hours
STAT: 90 minutes
Performed: 24/7
Collection: Collect specimens using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Room Temperature: 4 hours
Refrigerated: 5 days at 2-8ºC
Frozen: 1 month at -18ºC
Comments: Order includes albumin, calcium, bicarbonate, chloride, creatinine, glucose, phosphorus, potassium, sodium, BUN.
Performed by: Core Laboratory

KOH PREP (See Vaginitis, yeast)

LACOSAMIDE - Sent to Reference Laboratory
Test Code: LLACO
Synonyms: Vimpat
Specimen Type: 0.25 mL (0.10 mL minimum)
Serum, Red-top tube
Method: Liquid Chromatography/Tandem Mass Spectrometry (LC/MS-MS)
TAT: Reported within 3 working days.
Collection: Transfer separated serum to a plastic transport tube. Do not use a gel-barrier tube. The use of a gel-barrier tube is not recommended due to slow absorption of the drug by the gel. Depending on the specimen volume and storage time, the decrease in drug level due to absorption may be clinically significant.

Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Frozen: 105 days
Causes for Rejection: Gel-barrier tube.
Performed by: Sent to Reference Laboratory - LabCorp (Order #007012)

**LACTATE DEHYDROGENASE**

Test Code: LD
Synonyms: LDH
Specimen Type: 0.5 mL serum, Gold-SST
Method: Enzymatic Assay
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7

Collection: Collect specimen using standard laboratory procedures. Separate serum from cells and assay as soon as possible.

Transport: Room temperature, ASAP
Specimen Stability: Room temperature: Store at 20-25°C
Refrigerated: Unacceptable
Frozen: Unacceptable

Reference Interval:

- Male:
  - >14 years 122-225 U/L
- Female:
  - >14 years 122-214 U/L
- Male and Female:
  - 2-14 years 120-300 U/L

Comment: Avoid Hemolysis
Performed by: Core Laboratory

**LACTATE DEHYDROGENASE ISOENZYMES - Sent to Reference Laboratory**

Test Code: Miscellaneous Test
Specimen Type: 2 mL serum, Gold-SST (Minimum 0.5 mL)
Method: Electrophoresis
TAT: 5-7 business days

Collection: Collect specimen using standard laboratory procedures. Separate serum from red cells ASAP. Hemolyzed samples unacceptable.

Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 7 days
Refrigerated: Unacceptable
Frozen: Unacceptable
LACTIC ACID
Test Code: LAC
Specimen Type: 3 mL plasma drawn in gray top tube without a tourniquet.
Method: Enzymatic Assay
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures. Separate from cells as soon as possible.
Transport: On ice, ASAP.
Specimen Stability: Separated plasma: ASAP at 20-25°C
Refrigerated: 2 days at 2-8°C
Frozen: 1 month
Reference Interval: 0.5-2.2 mmol/L
Performed by: Core Laboratory

LACTOFERRIN FECAL QUANTITATIVE - Sent to Reference Laboratory
Test Code: LFQ
Synonyms: Fecal lactoferrin
Fecal Leukocytes
IBD-Scan
Stool Lactoferrin
Specimen Type: 1 g (0.5 minimum)
Stool (unpreserved, random) in clean screw-capped vial with no preservatives
Method: Enzyme-linked Immunosorbent Assay (ELISA)
TAT: Set up and reported on Tuesday and Thursday.
Reported within 7 working days.
Collection: Do not contaminate outside of container or overfill. Loose stools are acceptable.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Frozen: 14 days
Causes for Rejection: Nonfecal sample received; stool contaminated with urine, sample outside of the container; preserved stool received.
Reference Interval: Baseline (normal): 0.00-7.24
Elevated: >7.24
An elevated result is indicative of the presence of fecal lactoferrin, a marker of intestinal inflammation. A normal result does not exclude the presence of intestinal inflammation.
Performed by: Sent to Reference Laboratory - LabCorp (Order #123016)
**LDH (See Lactate dehydrogenase)**

**LDL CHOLESTEROL (DIRECT)**
- **Test Code:** LDLDR
- **Specimen Type:** 1 mL serum, Gold-SST
- **Method:** Homogeneous enzymatic assay
- **TAT:** STAT: 90 minutes
  Routine: 4 hours
  Performed 24/7
- **Collection:** Collect specimen using standard laboratory procedures. A fasting specimen is desirable.
- **Transport:** Room temperature
- **Specimen Stability:** Refrigerated: 7 days at 2-8°C
  Frozen: 30 days at -70°C
- **Reference Interval:** <100 mg/dL
- **Performed by:** Core Laboratory

**LEAD, BLOOD**
- **Test Code:** PBB
- **Specimen Type:** Preferred: 2 mL blood, EDTA (lavender top) in a lead/metal free tube wrapped in foil or otherwise protected from light (in the event an erythroporophyrin is also desired).
  Acceptable: Micro (fingerstick) in a multivette tube.
- **Method:** Atomic Absorption Spectometry/AAnalyst Graphite Furnace
- **TAT:** Performed daily, Monday through Friday, 8:00 a.m. - 3:00 p.m.
- **Collection:** Fingerstick: Wash patient's hands with soap and water for fingerstick.
- **Transport:** Room temperature, ASAP
- **Specimen Stability:** Refrigerated: 7 days at 2-8°C
- **Reference Interval:**
  - Normal:
    - <6 years of age: <5 µg/dL
    - >6 years of age: <10 µg/dL
  - Abnormal:
    - <6 years of age:
      - 5-9 µg/dL (associated with adverse health effects in children 6-9 years and younger)
      - 10-44 µg/dL (high)
      - 45-69 µg/dL (urgent)
      - >70 µg/dL (emergent)
    - >6 years of age:
      - 10-19 µg/dL (borderline)
      - 20-44 µg/dL (high)
      - 45-69 µg/dL (urgent)
      - >70 µg/dL (emergent)
- **Interpretation:** Lead is present in the human environment as a result of industrialization. It has no known physiological value. Lead based paint and lead
contaminated dusts/soils are the primary sources and pathways of lead exposure. Children are particularly susceptible to exposure.

Performed by: Core Laboratory, Special Chemistry

**LEGIONELLA ANTIGEN - URINE**

Test Code: LEGAG  
Specimen Type: Urine: >1 mL in a sterile container  
Boric acid transport vials acceptable.  
Method: Immunochromatographic assay  
TAT: Performed daily. Same day results if received by 2:30 p.m.  
Collection: Collect specimen using standard collection procedures.  
Specimen Stability: Room temperature (25°C): ≤24 hours  
Refrigerated (4°C): ≤14 hours  
Interpretation: A positive result is presumptive evidence of infection with Legionella pneumophila serogroup 1 (LP1). A positive result can occur due to past infection with LP1 because antigen may be excreted for up to 1 year after infection.  
Comments: Legionella culture should also be ordered to detect other L. pneumophila serogroup 1 and other Legionella species.  
Performed by: Microbiology Laboratory

**LEGIONELLA CULTURE (See Culture, respiratory - Legionella)**

**LIDOCAINE - Sent to Reference Laboratory**

Test Code: Miscellaneous Test  
Specimen Type: 1 mL serum, Gold-SST  
Method: Enzyme Immunoassay  
TAT: STAT: 90 minutes  
Routine: 4 hours  
Performed 24/7  
Collection: Collect specimen using standard laboratory procedures.  
Transport: Room temperature, ASAP  
Specimen Stability: Room temperature: 7 days at 20-25°C  
Refrigerated: 7 days at 2-8°C  
Reference Interval: 1.0-5.0 mg/mL  
Special Instructions: Send: Room Temperature  
Performed by: Sent to Reference Laboratory

**LIPASE**

Test Code: LIPA1  
Specimen Type: 0.5 mL serum, Gold-SST  
Method: Enzymatic Colorimetric  
TAT: STAT: 90 minutes  
Routine: 4 hours  
Performed 24/7  
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 7 days
Refrigerated: 7 days at 2-8°C
Frozen: 1 year at -15 to -25°C
Reference Interval: 13-60 U/L
Performed by: Core Laboratory

**LIPID PROFILE 1**

Test Code: LP1
Specimen Type: 5 mL serum, Gold-SST
Method: Enzymatic Colorimetric
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 4 hours
Refrigerated: 3 days at 2-8°C
Frozen: 3 weeks at -18°C
Reference Interval: See individual tests (cholesterol, triglycerides, HDL cholesterol) as well as the following calculations (LDL, VLDL).
Performed by: Core Laboratory

**LIPOPROTEIN A - Sent to Reference Laboratory**

Test Code: LLIP0
Synonyms: Lp "Little a"
Specimen Type: 0.5 mL (0.2 mL minimum)
Serum, Gold/SST, red-top tube
Method: Immunoturbidimetric
TAT: Reported within 2 working days.
Collection: Separate serum from cells as soon as possible (within 2 hours).
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Causes for Rejection: Grossly hemolyzed, lipemic, or icteric specimens.
Reference Interval: <75 nmol/L
≥75 nmol/L may indicate independent risk factor for CHD.
Comments: Intake of alcohol, aspirin, niacin, and estrogen supplements have the potential of causing a misrepresentation of true Lp(a) concentrations.
Performed by: Sent to Reference Laboratory - LabCorp (Order #120188)

**LITHIUM**

Test Code: LI
Specimen Type: 0.5 mL serum, Gold-SST
Method: Spectrophotometric Method
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedure.
Transport: Room temperature, ASAP
Specimen Stability: Refrigerated: 1 week at 2-8°C
Frozen: 1 year at -20°C
Reference Interval: 1.00-1.20 mmol/L
Performed by: Core Laboratory

LIVER-KIDNEY MICROSONAL (LKM) ANTIBODIES - Sent to Reference Laboratory
Test Code: LLKM
Synonyms: LKM
Specimen Type: 1 mL (0.3 mL minimum)
Serum, Gold/SST, red top tube
Method: Enzyme-linked Immunosorbent Assay (ELISA)
TAT: Set up Tuesday, Thursday, and Saturday on 1st shift.
Reported within 3 working days.
Collection: Transfer separated serum to a plastic transport tube before freezing.
Transport: Frozen
Causes for Rejection: Hemolysis; lipemia; gross bacterial contamination; heat-treated specimen; specimen with preservative added
Reference Interval: Negative: 0.0-20.0
Equivocal: 20.1-24.9
Positive: >24.9
Comment: To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested
Performed by: Sent to Reference Laboratory - LabCorp (Order #163980)

LUPUS LIKE ANTICOAGULANT (See Hexagonal phase phospholipid neutralization)

LUTEINIZING HORMONE
Test Code: LH
Specimen Type: 0.5 mL serum, Gold-SST
Method: Electrochemiluminescence
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Refrigerated: 14 days at 2-8°C
Frozen: 6 months at -20°C
freeze once
Reference Interval: Male:
- >17 years 1.7-8.6 mU/mL
- 14-17 years 1.3-9.8 mU/mL
- 11-13 years 0.1-7.8 mU/mL
- 1-10 years <1.4 mU/mL

Female:
- Follicular 2.4-12.6 mU/mL
- Ovulation 14.0-95.6 mU/mL
- Luteal 1.0-11.4 mU/mL
- Postmenopausal 7.7-58.5 mU/mL
- 14-17 years 0.5-41.7 mU/mL
- 11-13 years <11.9 mU/mL
- 6-10 years <3.1 mU/mL
- 1-5 years <0.5 mU/mL

Performed by: Core Laboratory

**LUTEINIZING HORMONE, PEDIATRIC - Sent to Reference Laboratory**

Test Code: LLHP
Synonyms: LH, 3rd Generation
Specimen Type: 1 mL (0.5 mL minimum)
- Serum, Gold/SST, red top tube
Method: Two-site Electrochemiluminescence
TAT: 2-4 days
Collection: Serum must be separated from cells within 45 minutes of venipuncture.
Send serum in a plastic transport tube.
Transport: Frozen
Specimen Stability: Frozen: 200 days
Comments: To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested.

Performed by: Sent to Reference Laboratory - LabCorp (Order #502286)

**LYME DISEASE, BORRELIA BURGDORFERI - Sent to Reference Laboratory**

Test Code: LLYFL
Synonyms: Borrelia burgdorferi
Specimen Type: 0.5 mL (0.2 mL minimum)
- CSF Fluid, Sterile plastic container
- Synovial Fluid, Sterile plastic container
- Whole Blood, Lavender-top (EDTA) or yellow ACD top tube
Method: Real-time Polymerase Chain Reaction (PCR)
TAT: Reported within 5 working days.
Collection: Centrifuge fluid at 1500 x g for 20 minutes and place the supernatant in a separate tube. Ensure that residual fibrin and cellular matter have been removed prior to transport.
Transport: Refrigerated
Specimen Stability: CSF and synovial fluid are stable at room temperature or refrigerated for 7 days or frozen 90 days.
Whole blood is stable at room temperature or refrigerated for 7 days.
Do NOT freeze.
LYME IgG/IgM ANTIBODIES
Test Code: LYMT
Specimen Type: 2 mL serum, Gold-SST
Method: Enzyme Immunoassay (EIA)
TAT: Same day if received before 2 p.m.
Specimen analyzed 7 days per week.
Reference Interval: Negative
Comments: This is a screening procedure which tests for both IgG and IgM Lyme disease antibodies. All positive screens will automatically be confirmed by an immunoblot assay.

LYME IMMUNOBLOT
Test Code: LMIB
Specimen Type: Gold-SST or ≥50 µL serum
Method: Line blot
TAT: 3-4 days
Collection: Collect specimen using standard laboratory procedure.
Transport: Gold-SST: Room temperature
Serum: 4°C within 5 days
Comment: For inpatients only, results available within approximately 24 hours (Monday through Friday), for positive and equivocal Lyme antibody screens.

LYMPHOCYTE CD3/CD2 COUNTS (See CD3/CD2 counts)

LYMPHOCYTE CD4 COUNTS (See CD4 counts)

LYMPHOCYTE PHENOTYPING
Test Code: FLOWS
Specimen Type: Blood: Sodium Heparin (green top) and 1 unstained blood smear
Bone marrow: Sodium Heparin (green top) and 1-2 unstained slides
Body fluids and tissue (cut and placed into tube containing RPMI): Touch preps on 1-2 slides
For patients with suspected hematologic malignancies such as leukemia/lymphoma.
Method: Flow Cytometry
TAT: Contact Flow Cytometry Laboratory at 464-6767.
Collection: Collect specimen using standard laboratory procedures for tissue type.
Transport: Room temperature
Day shift: Specimen goes to Room 3805.
Comments: Call Flow Cytometry Laboratory at 464-6767.
If no answer beep as follows:
• After 5:00 p.m. weekdays, Saturday/Sunday, or major holidays, beep the CP on-call resident at 467-4838

Performed by: Flow Cytometry Laboratory

LYMPHOCYTE SUBSETS (NON-HIV MONITORING)

Test Code: LCS1
Synonyms: T and B-cell percentages, Immunodeficiency profile
Specimen Type: 5 mL blood, EDTA
Method: Flow Cytometry
TAT: Performed Monday through Friday and until noon on Saturday. Not available on Sundays or holidays.

Transport: Room temperature
Specimen Stability: Room temperature: 24 hours
Reference Interval: See chart on page 245
Special Instructions: From noon on Saturday until 9 am Sunday Lymphocyte subsets must be processed in cytochex vials which are located in the Quest refrigerator in Core Lab.
   • Mix EDTA blood by inversion for 5 minutes.
   • Put 1 mL of whole blood into cytochex vial.
   • Label vial with accession number sticker.
   • Put labeled vial in Immunology box in the specimen receiving area refrigerator.
   • Leave the remainder of the patient specimen at room temperature in the silver flow cytometry rack in the processing area.
   • ** If CBCD was not ordered, please run off line. Print a copy of results and place by the flow cytometry rack.**
   • Specimens received after 9 am Sunday may be kept in the flow cytometry rack for processing on Monday.

Performed by: Flow Cytometry Laboratory, 464-6767

MACROPROLACTIN - Sent to Reference Laboratory

Test Code: LPROM
Specimen Type: 1 mL (0.2 mL minimum) Serum, Gold/SST, red-top tube; Plasma, Lavender-top (EDTA) tube
Method: Immunochemiluminometric Assay (ICMA) PEG precipitation
An analyte-specific reagent (ASR) is used in this test.
TAT: Reported within 5 working days.
Collection: Do not draw sample until patient has been awake for at least two hours. Separate serum from cells within 45 minutes of collection. Transfer specimen to plastic transport tube before freezing.

Transport: Frozen
Specimen Stability: Frozen: 200 days
Comment: Reflexive order based on Prolactin Result. To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested.
MAGNESIUM
Test Code: MG1
Specimen Type: 0.5 mL serum, Gold-SST
Method: Colorimetric Endpoint
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 7 days
Refrigerated: 7 days at 2-8°C
Frozen: 1 year at -20°C
Reference Interval:
>20 years  1.6-2.6 mg/dL
12-20 years  1.6-2.2 mg/dL
6-11 years  1.7-2.1 mg/dL
5 months-5 years  1.7-2.3 mg/dL
0-4 months  1.5-2.2 mg/dL
Comment: Hemolyzed specimens are unacceptable.
Performed by: Core Laboratory

MAGNESIUM, 24 HOUR URINE
Test Code: UMGP
Specimen Type: 5 mL from a fresh well-mixed 24 hour urine collection
(Minimum 0.5 mL)
Method: Colorimetric endpoint
TAT: Performed 7:00 a.m. - 3:00 p.m. daily.
Collection: Well mixed, 24 hour urine. See Collection, 24 hour urine. Collect urine
in a 2 quart plastic bottle. Refrigerate during and after collection. Indicate
24 hour volume, date and time collected.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 7 days at 20-25°C
Refrigerated: 7 days at 4-8°C
Frozen: 1 year at -20°C
Reference Interval: Adults: 1.0-24.0 mEq/24 hour
Comment: Acidify with 6M HCL after collection.
Performed by: Core Laboratory, Microscopy

MAGNESIUM, RANDOM URINE
Test Code: UMGR
Specimen Type: 5 mL aliquot from a fresh well-mixed random urine collection
(Minimum 0.5 mL)
Method: Colorimetric endpoint
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7

Collection: Random urine is collected in a container with a securely fastened lid with no preservatives.

Transport: Room temperature, ASAP

Specimen Stability:
- Room temperature: 7 days at 20-25°C
- Refrigerated: 7 days at 2-8°C
- Frozen: 1 year at -20°C

Reference Interval: Have not been established for random samples.

Comments: Acidify with 6M HCL after collection.

Performed by: Core Laboratory, Microscopy

MALARIA (See Parasites, blood smear)

MATERNAL QUAD TEST PREGNATAL SCREEN

Test Code: QUADM
Specimen Type: Serum, Gold-SST
Method: Chemiluminescent Immunoassay
TAT: Performed Monday, Wednesday, Friday; 2-3 days

Collection: Requires a special requisition and protocol. Contact Core Laboratory at 464-6822.

Transport: Room temperature, ASAP

Specimen Stability: With 2 hours after centrifugation, store aliquoted samples at room temperature 15-30°C for no longer than 8 hours, or refrigerate at 2-8°C for 48 hours. If testing cannot be completed within 48 hours, freeze at -20°C or colder. Thaw samples only once.

Reference Interval: By report.

Comments: Signed prenatal AFP requisition is required to be submitted with specimen (F86172).

Performed by: Core Laboratory

MB - ISOENZYME (See CKMB)

MEPHEDRONE, MDPV, AND METHYLONE, URINE - Sent to Reference Laboratory

Test Code: LMPD
Synonyms:
- Bath Salts
- Bliss
- Explosion
- Impact
- Ivory Wave
- MDPV (Methylenedioxyprovalerone)
- Odorizer

Specimen Type: 10 mL (1 mL minimum)

Transport: Room temperature, ASAP

Specimen Stability: 7 days at 20-25°C

Reference Interval: By report.

Comments: Signed prenatal AFP requisition is required to be submitted with specimen (F86172).

Performed by: Core Laboratory

TAT: Reported within 3 working days.
Collection: Collect specimen in a container with a securely fastened lid using universal precautions.

Transport: Refrigerated

Performed by: Sent to Reference Laboratory - LabCorp (Order #790350)

METANEPHRINES, FRACTIONATED, PLASMA FREE - Sent to Reference Laboratory
Test Code: LMETP
Synonyms: Metanephrine
Normetanephrine
Plasma Metanephrines
Quantitative Metanephrines
Specimen Type: 1 mL (0.4 mL minimum)
Plasma, Lavender-top (EDTA) tube
Method: Liquid Chromatography/Tandem Mass Spectrometry (LC/MS-MS)
TAT: Reported within 6 working days.
Collection: Draw blood in chilled lavender-top (EDTA) tube. Invert to mix with preservatives. Centrifuge and transfer the plasma to a labeled plastic transport tube. (Note: The whole blood samples may be kept refrigerated at 4°C for as long as two hours before centrifugation, if necessary.)
Transport: Refrigerated on ice.
Causes for Rejection: Specimen not drawn in correct tube; heparinized plasma received.
Reference Intervals: Nonmetanephrine: 0-145 pg/mL
Metanephrine: 0-62 pg/mL
Concentrations of normetanephrine between 146 and 487 pg/mL and metanephrine between 63 and 255 pg/mL are considered indeterminate. Follow-up biochemical testing is recommended when patient levels fall within this indeterminate range. These tests include repeat testing of plasma/urinary fractionated metanephrines and plasma catecholamines.
Comments: Patient should be fasting overnight (water and noncaffeinated soft drinks are permissible). The patient should be in a supine position for at least 15 minutes before and during sample collection. An indwelling venous catheter (normal saline to keep the line patent) is recommended, since the acute effects of the stress of venipuncture may increase metanephrine. It is preferable, but not essential, to draw the sample without a tourniquet.

Performed by: Sent to Reference Laboratory - LabCorp (Order #121806)

METANEPHRINES, FRACTIONATED, QUANTITATIVE, 24-HOUR URINE - Sent to Reference Laboratory
Test Code: LMETU
Specimen Type: 25 mL (2.5 mL minimum)
Urine (24 hour), Plastic urine container with no preservative or 6N HCl
Method: Liquid Chromatography/Tandem Mass Spectrometry (LC/MS-MS)
TAT: Reported within 5 working days.
Collection: Instruct the patient to void at 8 a.m. and discard the specimen. Then collect all urine including the final specimen voided at the end of the 24 hour collection period (i.e. 8 a.m. the next morning). Screw the lid on
securely. Label container with patient's name, date and time collection started, and date and time collection finished. Measure and record total 24 hour volume. Mix well and send aliquot. (HCl is an acceptable preservative if required for a concurrently collected assay.)

Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Frozen: 14 days
Reference Intervals:

Normetanephrine (normotensive):
- 0-2 years: not established
- 3-8 years: 13-252 µg/24 hours
- 9-12 years: 32-346 µg/24 hours
- 13-17 years: 63-402 µg/24 hours
- >17 years: 82-500 µg/24 hours

Nonmetanephrine (hypertensive): >17 years: 110-1050 µg/24 hours

Metanephrine (normotensive):
- 0-2 years: not established
- 3-8 years: 5-113 µg/24 hours
- 9-12 years: 21-154 µg/24 hours
- 13-17 years: 32-167 µg/24 hours
- >17 years: 45-290 µg/24 hours

Metanephrine (hypertensive): >17 years: 35-460 µg/24 hours

Special Instructions: Record total 24-hour urine volume on the request form.
Comments: No caffeine before or during collection. Monamine oxidase inhibitors should be discontinued at least one week prior to beginning collection.
Performed by: Sent to Reference Laboratory - LabCorp (Order #004234)

METHADONE CONFIRMATION - Sent to Reference Laboratory
Test Code: LMEUC
Specimen Type: 20 mL (7 mL minimum) aliquot from a fresh well-mixed random urine collection
Method: Mass Spectrometry (MS)
TAT: At least 7 days or more.
Collection: Random urine is collected in a container with a securely fastened lid with no preservatives.
Transport: Refrigerated
Comment: This is a confirmatory test based on the DABU1 screen results. Orders are available upon request.
Performed by: Sent to Reference Laboratory - LabCorp (Order #700070).

METHADONE SCREEN, URINE
Test Code: DABU1
Specimen Type: 10 mL (10 mL minimum) aliquot from a fresh well-mixed random urine collection
Method: Kinetic Interaction of Microparticles in Solution (KIMS) and Tricyclic by Enzyme Immunoassay (EIA)
TAT: STAT: 90 minutes  
Routine: 4 hours  
Performed 24/7
Collection: Random urine is collected in a container with a securely fastened lid with no preservatives.
Transport: Room temperature, ASAP
Specimen Stability: Refrigerated: Test within 3 days and store at 2-8°C.
Reference Interval: Negative
Comment: Included in the DABU1 battery. Confirmatory test available upon request (LMEUC Order #700070).
Performed by: Core Laboratory

METHOTREXATE
Test Code: MTX
Specimen Type: 2 mL serum, Gold-SST, per chemotherapeutic protocol
Method: Homogeneous Enzyme Immunoassay
TAT: STAT: 60 minutes
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Refrigerated: 2 weeks at 2-8°C
If testing is delayed specimen should be stored frozen (<10°C) prior to being tested.
Reference Interval: Depends on chemotherapeutic protocol.
Comments: Testing should be performed ASAP due to result may help clinician with dosage in regards to potential kidney toxicity. Fibrin, red blood cells and other particulate matter may cause erroneous results. Ensure adequate centrifugation.
Performed by: Core Laboratory

METHYLENETETRAHYDROFOLATE REDUCTASE (MTHFR)
Test Code: MTHFR
Synonyms: Homocysteine Variant, Methylenetetrahydrofolate
Specimen Type: 5 mL blood, EDTA (lavender top)
Method: Polymerase chain reaction (PCR)
TAT: 7-10 days
Collection: Required a test specific, patient signed consent form F82754 and a completed requisition F91019.
Transport: Room temperature. Deliver to Molecular Diagnostics Laboratory as soon after collection as possible for delivery 8:00 a.m. - 5:00 p.m., Monday through Friday.
Comments: Direct molecular detection of the point mutation, 677C>T in the MTHFR gene which has been reported to be associated with hyperhomocysteinemia.
Performed by: Molecular Diagnostics Laboratory
METHYLMALONIC ACID, SERUM - Sent to Reference Laboratory
Test Code: LMMA
Specimen Type: 2 mL (0.6 mL minimum)
   Serum, Gold/SST, red-top tube
Method: Liquid chromatography/tandem mass spectrometry (LC/MS-MS)
TAT: Set up Monday through Friday on 1st shift.
   Reported within 4 working days after setup by performing laboratory.
Collection: Separate serum from cells within one hour of collection.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
   Frozen: 19 days
Causes for Rejection: Plasma from a light blue-top or yellow-top tube; citrate interferes with assay.
Reference Interval: 0-378 nmol/L
Performed by: Sent to Reference Laboratory - LabCorp (Order #706961)

MHA - TP
Test Code: MHATP
Specimen Type: Serum, Gold-SST
Method: Particle agglutination
TAT: 72 hours
Reference Interval: Non-reactive
Performed by: Immunology Laboratory

MICROALBUMIN, URINE (24 hour)
Test Code: MAUCC
Specimen Type: 5 mL aliquot from a fresh well-mixed 24 hour urine collection
   No preservatives
Method: Immunoturbidimetric Assay
TAT: Performed 7:00 a.m. - 3:00 p.m. daily.
Collection: Well mixed, 24 hour urine. See Collection, 24 hour urine. Collect urine
   in a 2 quart plastic bottle. Refrigerate during and after collection. Indicate
   24 hour volume, date and time collected.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 7 days
   Refrigerated: 1 month
   Frozen: 6 months
Reference Interval: MALB - >15 years old - <23 mg/L
   MAUR1 - <20 µg ALB/mg Creat
   MAUR1 - µg ALB/mg Creat - MALB (mg/L) x 100
   Creu (mg/dL)
Performed by: Core Laboratory, Microscopy

MICROALBUMIN, URINE (Random)
Test Code: MAUR
Specimen Type: 5 mL aliquot from a fresh well-mixed random urine collection
Method: Immunoturbidimetric Assay
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Random urine is collected in a container with a securely fastened lid with no preservatives.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 7 days
Refrigerated: 1 month
Frozen: 6 months
Reference Interval: MALB - >15 years old - <23 mg/L
MAUR1 - <20 µg ALB/mg Creat
MAUR1 - µg ALB/mg Creat - MALB (mg/L) x 100 Creu (mg/dL)
Performed by: Core Laboratory, Microscopy

MONO SCREEN
Test Code: MONO
Specimen Type: 0.5 mL serum, Gold-SST
Method: SureVue Signature Mono Test
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Refrigerated: 7 days
Reference Interval: Negative
Comment: Specimen must be at room temperature prior to testing. A positive mono test indicates that the patient had mono sometime in the past. It cannot distinguish between active and past infection. If physician needs further testing for clarification, an EBV test is recommended.
Performed by: Core Laboratory

MTHFR (See Methylenetetrahydrofolate reductase)

MUMPS ANTIBODY, IgG
Test Code: MUMPS
Specimen Type: 0.5 mL serum, Gold-SST
Method: Enzyme-linked Immunosorbent Assay (ELISA)
TAT: 4 days
Reference Interval: Negative
Comments: For immune status
Performed by: Immunology Laboratory

MUMPS ANTIBODIES, IgM - Sent to Reference Laboratory
Test Code: LMUMP
Synonyms: Parotitis Epidemica Antibodies
Specimen Type: 1 mL (0.5 mL minimum)
                      Serum, Gold/SST, red-top tube
Method: Enzyme Immunoassay (EIA)
TAT: Set up and reported Monday, Wednesday, and Friday on 1st shift.
     Reported within 3 working days.
Collection: Collect specimen using standard laboratory procedures.
Transport: Refrigerated
Reference Interval: Negative: <0.80
                  Borderline: 0.80-1.20
                  Positive: >1.20
Performed by: Sent to Reference Laboratory - LabCorp (Order #160499)

MYCOPLASMA PCR (See PCR, Mycoplasma pneumoniae)

MYCOPLASMA PNEUMONIAE ANTIBODIES, IgG - Sent to Reference Laboratory
Test Code: LMYCO
Synonyms: Atypical Pneumonia
          PPLO Antibodies
Specimen Type: 1 mL (0.5 mL minimum)
                  Serum, Gold/SST, red-top tube
Method: Enzyme immunoassay (EIA)
TAT: Set up 2-3 times a week on 1st shift.
     Reported within 3 working days.
Collection: Collect specimen using standard laboratory procedures.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
                  Frozen: 14 days
Causes for Rejection: Hemolysis; lipemia; gross bacterial contamination.
Reference Interval: Negative: <100 units/mL
Performed by: Sent to Reference Laboratory - LabCorp (Order #163741)

MYCOPLASMA PNEUMONIAE ANTIBODIES, IgM - Sent to Reference Laboratory
Test Code: LMYCM
Synonyms: Atypical Pneumonia Antibodies
          PPLO Antibodies
Specimen Type: 1 mL (0.5 mL minimum)
                  Serum, Gold/SST, red-top tube
Method: Enzyme immunoassay (EIA)
TAT: Set up 2-3 times a week on 1st shift.
     Reported within 3 working days.
Collection: Collect specimen using standard laboratory procedures.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
                  Frozen: 14 days
Causes for Rejection: Hemolysis; lipemia; gross bacterial contamination.
**MYD88/L265P MUTATION**

**Test Code:** MYD88  
**Specimen Type:**  
1-3 mL EDTA Peripheral Blood  
0.5 mL EDTA Bone Marrow  
Residual cells from Flow Cytometry (cell count $ \geq 2 \times 10^6/mL$; age <3 days)  
Fresh/Frozen tissue (3-5 mm$^3$)  
FFPE tissue (50 microns)  
**Method:** Polymerase Chain Reaction (ARMS-specific for the L265P mutation)  
**TAT:** 1-3 days  
**Collection:** Collect specimen using standard laboratory procedures. Required completed requisition F91021. Deliver to Molecular Diagnostics laboratory as soon after collection as possible for delivery 8:00 a.m. - 4:00 p.m., Monday through Friday.  
**Transport:** Room Temperature  
**Comments:** Direct molecular detection of an acquired MYD88 mutation, L265P, associated with Lymphoplasmacytic lymphoma (LPL)/Waldenström's macroglobulinemia (WM). Approximately 90% of LPL/WM samples test positive for the L265P mutation.  
**Performed by:** Molecular Diagnostics Laboratory

**MYELIN BASIC PROTEIN (MBP), CEREBROSPINAL FLUID - Sent to Reference Laboratory**

**Test Code:** LMYBP  
**Synonyms:** MBP  
**Specimen Type:**  
1 mL (0.9 mL minimum - When oligoclonal banding proteins are ordered along with myelin basic proteins, the minimum volume is 0.5 mL.)  
CSF Fluid, Plastic transport tube  
**Method:** Enzyme-linked immunosorbent assay (ELISA)  
**TAT:** Reported within 6 working days.  
**Collection:** Centrifuge CSF at 1500 x g for 20 minutes and place the supernatant in a separate tube. Ensure that residual fibrin and cellular matter have been removed prior to transport.  
**Transport:** Refrigerated  
**Specimen Stability:** Refrigerated: 14 days  
Frozen: 14 days  
**Causes for Rejection:** Lipemic, hemolyzed, or icteric specimen.  
**Reference Interval:** 0.0-1.2 ng/mL  
**Comments:** Lumbar puncture should be performed within five days of onset of neurologic symptoms suggestive of multiple sclerosis.  
**Performed by:** Sent to Reference Laboratory - LabCorp (Order #123377)

**MYOGLOBIN, SERUM - Sent to Reference Laboratory**

**Test Code:** LMYO
Specimen Type: 0.8 mL (0.3 mL minimum)
Serum, Gold/SST, red-top tube
Method: Electrochemiluminescence Immunoassay (ECLIA)
TAT: Set up and reported Sunday through Friday.
Collection: If a red-top tube is used, transfer separated serum to a plastic transport tube.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Frozen: 14 days
Causes for Rejection: Gross hemolysis
Reference Interval: Male: 28-72 ng/mL
Female: 25-58 ng/mL
Performed by: Sent to Reference Laboratory - LabCorp (Order #010405)

MYOGLOBIN, URINE
Test Code: MYO
Specimen Type: 10 mL aliquot from a fresh well-mixed random urine collection
Method: Manual
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Random urine is collected in a container with a securely fastened lid with no preservatives.
Transport: Room temperature, ASAP
Specimen Stability: ASAP
Reference Interval: Negative
Performed by: Core Laboratory, Microscopy

MYOSOLINE (See Primidone)

N-ACETYLPYROCAINAMIDE (See NAPA)

NEONATAL TYPE AND SCREEN
Test Code: NTYSC
Specimen Type: 5 mL blood, EDTA (lavender top)
Method: ABO/Rh type and antibody screen
TAT: Performed 24/7
Collection: Specimens for Blood Bank testing must be labeled with the patient's full name, medical record number, and initials of phlebotomist. The specimen label must include the date and time the sample was drawn if this information is not entered in the collection information field of the EPIC generated order or in the Collected by field of the Blood Bank requisition.
Transport: Room temperature
Comments: For infants 4 months old or less. Testing is performed once per admission. Specimen can be used to crossmatch units for the entire admission. New specimen is needed when all plasma from current specimen is used.
**NEUTROPHIL CYTOPLASMIC ANTIBODY**

Test Code: ANCA  
Specimen Type: 2 mL serum, Gold-SST  
Method: Indirect Fluorescent Antibody (IFA)  
TAT: Monday, Wednesday and Friday  
Reference Interval: Negative  
Comments: Tests for both P-ANCA and C-ANCA  
Performed by: Immunology Laboratory

**NICOTINE AND METABOLITE, QUANTITATIVE, SERUM - Sent to Reference Laboratory**

Test Code: LNICO  
Specimen Type: 1 mL (0.5 mL minimum) 
Serum, Red top tube  
Method: Liquid Chromatography/Tandem Mass Spectrometry (LC/MS-MS)  
TAT: Set up Monday through Friday on 1st shift. 
Reported within 9 working days.  
Collection: Transfer separated serum to a plastic transport tube.  
Transport: Refrigerated  
Specimen Stability: Refrigerated: 14 days  
Frozen: 14 days  
Performed by: Sent to Reference Laboratory - LabCorp (Order #071255)

**NOCARDIA CULTURE (See Culture, fungus)**

**NPM1 EXON 11 MUTATIONS**

Test Code: NPM1  
Specimen Type: 1 mL Bone Marrow (EDTA)  
3-5 mL Peripheral Blood (EDTA)  
Method: Polymerase Chain Reaction (PCR)  
TAT: 1-3 days  
Collection: Requires completed requisition F91021.  
Transport: Room Temperature.  
Deliver to Molecular Diagnostics Laboratory as soon after collection as possible for delivery 8:00 AM to 5:00 PM, Monday through Friday.  
Comments: Detects insertion mutations in NPM1 exon 11 that help to stratify patients with a diagnosis of Acute Myeloid Leukemia (AML) into different treatment groups. Testing should be performed at the time of diagnosis when the percent of leukemic cells is ~20%. Limit of sensitivity of the assay is 10% NPM1 positive cells in a background of normal cells.  
Performed by: Molecular Diagnostics Laboratory

**N-TELOPEPTIDE CROSS-LINKS (NTx) - Sent to Reference Laboratory**

Test Code: LNTXS
Synonyms: NTx
Specimen Type: 0.5 mL (0.3 mL minimum)
   Serum, Gold/SST, red-top tube
Method: Enzyme immunoassay (EIA)
TAT: Set up and reported on Wednesday and Friday.
   Reported within 7 working days.
Collection: Serum must be transferred to a plastic transport tube. Serum must be
   separated from red cells or gel-barrier immediately after clot formation and
   centrifugation.
Transport: Refrigerated
Causes for Rejection: Nonserum specimen; serum specimen received on cells or on gel-barrier.
Reference Interval: Male: 5.4-24.2 nM BCE/L
   Female: 6.2-19.0 nM BCE/L
Special Instructions: For monitoring therapy, baseline specimens should be collected just prior
to or on the day of therapy initiation. Subsequent specimens for
   comparison should be collected at approximately the same time of day as
   the baseline specimen.
Performed by: Sent to Reference Laboratory - LabCorp (Order #140830)

O & P (See Parasites, stool)

OCCULT BLOOD
Test Code: STBLD
Synonyms: Hemoccult; Guaiac
Specimen Type: Hemoccult card
Method: Guaiac
TAT: 7 days a week. Results available day of receipt.
Collection: Collection container: Hemoccult card
   See Appendix A at end of this manual.
Specimen Stability: Hemoccult Cards: \( \leq 14 \) days at 25°C
   NOTE: Raw or preserved stool cannot be used for this test. Stool must be
   applied to Hemoccult card at bedside.
Performed by: Microbiology Laboratory

OCCULT BLOOD - FIT TEST
Test Code: FIT
Synonyms: Hemoccult FIT Test
Specimen Type: Hemoccult ICT Card
Method: Immunochemical Test
TAT: 7 days a week. Results available the day of receipt.
Collection: Collection container: Hemoccult ICT Card
   NOTE: Raw or preserved stool cannot be used for this test. Stool must be
   applied to Hemoccult card at bedside.
Specimen Stability: Hemoccult cards: \( \leq 14 \) days at 25°C
Performed by: Microbiology Laboratory
OLIGOCLONAL BANDS
Test Code: PECS4
Synonyms: CSF protein electrophoresis
Specimen Type: 3.0 mL CSF
Method: High resolution agarose gel electrophoresis
TAT: 72 hours
Collection: Collect CSF in a sterile tightly stoppered vessel.
Transport: Room temperature, ASAP
Specimen Stability: Refrigerated: 7 days at 2-8°C
Frozen: 30 days at <0°C
Reference Interval: Interpreted by Pathology staff
Performed by: Core Laboratory, Special Chemistry

OPEN HEART CROSSMATCH
Test Code: XMOH
Specimen Type: 10 mL blood (two 5 mL tubes), EDTA (lavender top)
Method: ABO/Rh type and antibody screen for antibodies reaching at 37°C and
room temperature. If antibody screen is positive, an antibody
identification will be performed. If a room temperature antibody is
detected but the specificity cannot be determined, a thermal range will be
performed. Units are reserved for patient until two days post-op.
TAT: Performed 24/7
Collection: Appropriate EPIC generated Prepare RBC order or Red Cell Order form
(on-line) if not on EPIC. Specimens for Blood Bank testing must be
labeled with the patient's full name, medical record number, and initials of
phlebotomist. The specimen label must include the date and time the
sample was drawn if this information is not entered in the collection
information field of the EPIC generated order or in the Collected by field
of the Red Cell Order form.
Transport: Room temperature
Specimen Stability: Refrigerated: 3 days if stored at 2-8°C.
Comments: Reserved units will be held until 7:00 a.m. the second post-operative day.
Non-transfused units will be released to general inventory.
Performed by: Blood Bank

OPEN HEART WORK-UP
Test Code: OHWK
Specimen Type: 10 mL blood (two 5 mL tubes), EDTA (lavender top)
Method: ABO/Rh type and antibody screen and room temperature antibody screen.
If antibody screen is positive, an antibody identification will be performed.
If a room temperature antibody is detected but the specificity cannot be
determined, a thermal range will be performed.
TAT: Performed 24/7
Collection: Specimens for Blood Bank testing must be labeled with the patient's full
name, medical record number, and initials of phlebotomist. The specimen
label must include the date and time the sample was drawn if this
information is not entered in the collection information field of the EPIC generated order or in the Collected by field of the Blood Bank requisition.

Transport: Room temperature
Specimen Stability: Refrigerated: 3 days if stored at 2-8°C.
Performed by: Blood Bank

**OPIATES, CONFIRMATION - Sent to Reference Laboratory**

Test Code: LOUC
Specimen Type: 20 mL (7 mL minimum)
Urine, Plastic drug bottle
Method: Mass Spectrometry (MS)
TAT: At least 7 days or more.
Collection: Random urine is collected in a container with a securely fastened lid with no preservatives.
Transport: Refrigerated
Comment: This is a confirmatory test based on DABU1 screen results. Orders are available upon request.
Performed by: Sent to Reference Laboratory - LabCorp (Order #071456)

**OPIATES - SCREEN**

Test Code: DABU1
Specimen Type: 10 mL (10 mL minimum)
Urine, Plastic drug bottle
Method: Kinetic Interaction of Microparticles in Solution (KIMS) and Tricyclic by Enzyme Immunoassay (EIA)
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Random urine is collected in a container with a securely fastened lid with no preservatives.
Transport: Room Temperature (ASAP)
Specimen Stability: Refrigerated: Test within 3 days and store at 2-8°C.
Reference Interval: Negative
Comment: Included in the DABU1 battery. Confirmatory test available upon request (LOUC Order #071456).
Performed by: Core Laboratory

**OPIATE/OPIOID CONFIRMATION, URINE - Sent to Reference Laboratory**

Test Code: LOPCF
Specimen Type: 10 mL (3 mL minimum)
Urine (random) Plastic urine container, no preservatives
Method: Initial testing by Immunoassay.
Confirmation of positives by Liquid Chromatography/Tandem Mass Spectrometry (LC/MS-MS).
Collection: Random urine sample collected in a plastic urine container with no preservatives.
Transport: Ambient acceptable for 3 days.
Comment: Referred to MEDTOX Laboratories, Inc.
Performed by: Sent to Reference Laboratory - LabCorp (Order #735106)

**ORGANIC ACID ANALYSIS, URINE - Sent out to Reference Laboratory**

**Test Code:** LOAU  
**Specimen Type:** 10 mL (Minimum 3 mL)  
Urine (random), Plastic urine container, no preservative  
**Method:** Gastric Chromatography/Mass Spectrometry (GC/MS)  
**TAT:** Set up Monday, Wednesday, and Friday on 1st shift.  
Reported within 6 working days.  
**Collection:** Collect specimen in a container with a securely fastened lid using universal precautions.  
**Transport:** Frozen  
**Specimen Stability:** Frozen: 12 months  
**Causes for Rejection:** Urine too dilute; quantity not sufficient for analysis.  
**Comment:** To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit frozen specimens for each test requested.  
**Performed by:** Sent to Reference Laboratory - LabCorp (Order #716720)

**OSMOLALITY, FECAL - Sent to Reference Laboratory**

**Test Code:** LOSF  
**Synonyms:** Fecal Osmolality  
**Specimen Type:** 15 mL  
Liquid stool, small plastic container  
**Method:** Freezing Point Depression  
**TAT:** Set up and reported Monday through Friday, 1st shift.  
**Collection:** Stool sample must be collected without addition of water.  
**Transport:** Frozen  
**Cause for Rejection:** Formed stool not liquid; stool contaminated with urine; paint can submitted.  
**Reference Interval:** Not established.  
**Performed by:** Sent to Reference Laboratory - LabCorp (Order #120071)

**OSMOLALITY, SERUM**

**Test Code:** OSMS  
**Specimen Type:** 0.5 mL serum, Gold-SST  
**Method:** Freezing Point Depression Osmometry  
**TAT:** STAT: 90 minutes  
Routine: 4 hours  
Performed 24/7  
**Collection:** Collect specimen using standard laboratory procedures.  
**Transport:** Room temperature, ASAP  
**Specimen Stability:** Room temperature: 5 days  
Refrigerated: 30 days at 2-8°C  
Frozen: 1 year at -18°C
Reference Interval: 285-295 mOsm/Kg
Comment: Heparin plasma can be used.
Performed by: Core Laboratory

**OSMOLALITY, URINE**

Test Code: OSMU
Specimen Type: 5 mL aliquot from a fresh well-mixed random urine collection
Method: Freezing point depression osmometry
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Random urine is collected in a container with a securely fastened lid with no preservatives.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 5 days
Refrigerated: 30 days at 2-8°C
Frozen: 1 year at -18°C
Reference Interval: 300-1000 mOsm/Kg
Performed by: Core Laboratory

**OVA AND PARASITE EXAM (See Parasites, stool)**

**OXALATE: CREATININE RATIO, RANDOM URINE - Sent to Reference Laboratory**

Test Code: LUOXA
Specimen Type: 10 mL (2.5 mL minimum)
Random Urine
Collection: Collect urine and transfer to a random urine transport tube or urine Monovette® with pH stabilizer.
Transport: Refrigerated
Specimen Stability: Room Temperature: 7 days
Refrigerated: 7 days
Frozen: 14 days
Cause for Rejection: Urine sample received with a pH not ≤3 from a patient on high doses of vitamin C.
Special Instructions: State patient's age and sex on the test request form and the specimen container. Specimens submitted without preservative should be acidified after receipt to pH ≤3 with 6N HCl prior to aliquoting.
Performed by: Sent to Reference Laboratory - LabCorp (Order #123500).

**OXALATE, URINE (24 hour) - Sent out to Reference Laboratory**

Test Code: LOQ24
Specimen Type: 10 mL aliquot (2.5 mL minimum)
Fresh well-mixed 24 hour urine in a plastic urine container with 30 mL 6N HCl preservative
Method: Enzymatic
TAT: 5-7 business days
Collection: Instruct patient to void at 8 AM (or 8 PM) and discard the specimen. Then collect all urine including the final specimen voided at the end of the 24-hour collection period. Label container with patient's name and date and time collection started and finished. Measure and record total urine volume. Mix well. pH must be ≤3. Preservative not necessary during collection but should be added to urine collection within 24 hours.

Transport: Refrigerated
Specimen Stability: Refrigerated: 7 days
Frozen: 14 days
Cause for Rejection: Urine sample received with a pH not ≤3 from a patient on high doses of vitamin C.
Reference Interval: Children:
- <7 years: not established
- 7-14 years: 13-38 mg/24 hours
Adults:
- Male: 7-44 mg/24 hours
- Female: 4-31 mg/24 hours

Special Instructions: Maintain ACIDIFIED urine at room temperature. State patient's age, sex, and total 24-hour urine volume on the test request form and specimen. Specimens submitted without preservative should be acidified after receipt to pH ≤3 with 6N HCl prior to aliquoting.

Performed by: Sent to Reference Laboratory - LabCorp (Order #003970).

OXCARBAZEPINE, SERUM - Sent to Reference Laboratory
Test Code: LOXC
Synonyms: GP 47680
Trileptal
Specimen Type: 1 mL (0.3 mL minimum)
Serum, Red-top tube
Method: Liquid chromatography/tandem mass spectrometry (LC/MS-MS)
TAT: Set up and reported Monday through Friday on 1st shift.
Reported within 4 working days.
Collection: Transfer separated serum to a plastic transport tube. Draw trough levels immediately prior to next dose. Steady-state levels are reached within two to three days in patients taking oxcarbazepine twice daily.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Frozen: 105 days
Causes for Rejection: Gross lipemia; hemolysis; icteric specimen; gel-barrier tube.
Reference Interval: 10-35 µg/mL
Comment: Do not use gel-barrier tubes.
Performed by: Sent to Reference Laboratory - LabCorp (Order #716928)

PANCREATIC ELASTASE, FECAL - Sent to Reference Laboratory
Test Code: LPE1
Synonyms: Elastase, Pancreatic
Specimen Type: 3 g (1 g minimum)  
Stool (unpreserved, random), Screw-capped plastic vial  
Method: Enzyme-linked immunosorbent assay (ELISA)  
TAT: Reported within 6 working days.  
Collection: Do not contaminate outside of container. Do not overfill container. Do not submit watery stool.  
Transport: Refrigerated  
Specimen Stability: Refrigerated: 14 days  
Frozen: 14 days  
Causes for Rejection: Serum or plasma received; stool contaminated with urine; sample outside of the container; watery stool submitted; preserved stool received.  
Reference Interval: Normal: >200 µg elastase/g fecal material  
Moderate pancreatic insufficiency: 100-200 µg elastase/g fecal material  
Severe pancreatic insufficiency: <100 µg elastase/g fecal material  
Special Instructions: It is recommended that enzyme substitution therapy be interrupted to avoid any possibility of a cross-reaction with porcine proteins.  
Performed by: Sent to Reference Laboratory - LabCorp (Order #123234)  

PARAFFIN AND CLONALITY MARKERS  
Test Code: PRFCL  
Specimen Type: Unstained slides and paraffin blocks  
Order on Hematopathology Requisition.  
Method: Immunohistochemistry  
Collection: Contact Histology Laboratory at 464-5469  
Transport: Room temperature  
Interpretation: By report  
Comments: Specimens received weekdays between 8:00 a.m. and 5 p.m., call 464-5469.  
Specimens received after 5:00 p.m. weekdays, Saturday/Sunday, or major holidays, please beep resident on-call 467-4838.  
Performed by: Histology Laboratory  

PARASITES, ANTIGEN (See Parasites, Cryptosporidium/Giardia antigen)  

PARASITES, BLOOD SMEAR  
Test Code: BSM  
Synonyms: Malaria, Babesia, Trypanosomes, Microfilaria  
Specimen Type: 2 mL venous blood in EDTA (lavender top) tube  
Method: Wright's stain  
TAT: Performed 24/7  
Thin smear results available day of receipt of sample.  
Thick smear results available the following day.  
Collection: Collect specimen using standard laboratory procedures.  
Specimen Stability: Room temperature (25°C): ≤1 hour  
Interpretation: One negative sample does not rule out malaria. Submit at least two additional blood specimens collected 6-8 hours apart.
Comments: Blood-borne parasites detected:
  • Plasmodium (malaria)
  • Babesia
  • Trypanosomes
  • Microfilariae

Performed by: Microbiology Laboratory

PARASITES, CRYPTOSPORIDIUM/GIARDIA ANTIGEN
Test Code: CGIF
Specimen Type: Stool: In a clean container or in collection vials with fixative (10% formalin, MIF, or SAF are acceptable).
Method: Fluorescent Antibody Stain
TAT: Performed Monday through Friday.
Results available the day after the specimen is received.
Collection: Patient should pass the stool into a clean, dry pan or special container mounted on the toilet for this purpose. Add stool to a clean container or preferably into 10% formalin and PVA fixatives. Stool in fixative must be sufficient to bring the level of the fluid to the specimen line on the vial. MIX sample well.

Specimen Stability:
  Fresh stool:
  • ≤24 hours at 2-8°C
  Preserved:
  • ≤2 months at 25°C

Comments: Fluorescent Antibody Stain is typically more sensitive than microscopic (ova and parasite) examination for these organisms. In many cases, the antigen test can be ordered without an ova and parasite (O&P) exam since these are two of the most common causes of parasitic diarrhea. Complete O&P exam may be warranted in certain situations, e.g. immunosuppression known exposure, travel history.

Performed by: Microbiology Laboratory

PARASITES, STOOL
Test Code: OVAP
Synonyms: Ova and parasite exam, O&P
Specimen Type: Preserved stool:
  • 10% formalin/PVA transport vials
Unpreserved stool:
  • Clean container
Worm: In a clean container with saline or 70% alcohol. Do not use formalin.
Method: Direct observation/stain
TAT: Monday through Friday. Results are available the following day.
Collection: Not performed on inpatients who have been in the hospital >3 days.
Specimen Stability: Unpreserved Stool at 25°C:
  • liquid: ≤30 minutes
  • soft: ≤1 hour
• formed: ≤24 hours
Preserved Stool at 25°C:
• <2 months

Interpretation: Routine stool parasite examination does not include: Cryptosporidium, Microsporidium, Cyclospora, Cytoisospora (Isospora) or Sarcocystis.
Order separately.

Comments: Stool specimens are not accepted from patients in the hospital >3 days.
Consider possible C. difficile in hospitalized patients.

Performed by: Microbiology Laboratory

PARASITES, TRICHOMONAS (Culture)
Test Code: TCULT
Specimen Type: Urethral/vaginal secretions: Trichpouch, clean catch urine
Method: Culture
TAT: 7 days a week.
Trichpouch preliminary results are available within 24 hours, final results within 5 days.

Collection: Collect specimen using standard laboratory procedures.
Specimen Stability: Trichpouch: <48 hours at 25°C.
Do not refrigerate.

Comments: Although culture may take up to 5 days, it is recommended due to its greater sensitivity (~85%) as compared to wet mount (~60%). Wet prep and culture tests can be performed from a single sample. Orders for culture will be canceled for specimens that are wet mount-positive.

Performed by: Microbiology Laboratory

PARASITES, TRICHOMONAS (Wet Prep)
Test Code: WPREP
Specimen Type: Urethral, vaginal, urine, seminal fluid, prostatic fluid, cervix: Gel swab, urine
Method: Saline wet mount
TAT: 7 days a week.
Swab results available the day the specimen is received in the laboratory.

Collection: Collect specimen using standard laboratory procedures.
Specimen Stability: Swab:
• <1 hour at 25°C.
Urine:
• <1 hour at 25°C.
Do not refrigerate.

Comments: Wet prep and culture tests can be performed from a single sample. Orders for culture will be canceled for specimens that are wet mount-positive.

Performed by: Microbiology Laboratory

PARATHYROID HORMONE-RELATED PROTEIN (PTH-rP) - Sent to Reference Laboratory
Test Code: LRPTH
Synonyms: Parathyroid Hormone-related Protein (PTHrP)

Specimen Type: 1 mL (0.5 mL minimum)
- Plasma, Lavender-top (EDTA) tube (ice)

Method: Electrochemiluminescence (ECL)

TAT: Reported within 6 working days.

Collection: Collect into chilled or prefrozen plastic lavender-top (EDTA) tube, noting the time of collection. After venipuncture, immediately invert tube several times to ensure complete mixture. Separate plasma from cells by centrifugation. Separate plasma into a plastic vial, and freeze within 15 minutes of collection.

Transport: Frozen

Specimen Stability: Frozen: 1 month

Causes for Rejection: Specimen received at room temperature.

Comment: To avoid delays in turnaround time when requesting multiple tests on frozen sample, please submit separate frozen specimens for each test requested.

Performed by: Sent to Reference Laboratory - LabCorp (Order #503380)

PARVOVIRUS B19, DNA - Sent to Reference Laboratory

Test Code: LPARV

Synonyms: Parvo

Specimen Type: 1 mL (0.5 mL minimum)
- Whole Blood, Lavender-top (EDTA) tube

Method: Real-time polymerase chain reaction (PCR)

TAT: Reported within 6 working days.

Collection: Collect specimen using standard laboratory procedures.

Transport: Refrigerated

Specimen Stability: Refrigerated: 7 days
- Frozen: Unstable

Causes for Rejection: Quantity not sufficient for analysis; gross specimen contamination; specimen too old; leaking or broken tube; frozen specimen.

Performed by: Sent to Reference Laboratory - LabCorp (Order #138644)

PARVOVIRUS B19 (HUMAN), IgG, IgM - Sent to reference Laboratory

Test Code: LPV5

Synonyms: Human Parvovirus B19, IgG, IgM

Specimen Type: 1 mL (0.5 mL minimum)
- Serum, Gold/SST, red-top tube

Method: Enzyme immunoassay (EIA)

TAT: Set up Monday through Friday on 1st shift. Reported within 2 working days.

Collection: Collect specimen using standard laboratory procedures.

Transport: Refrigerated

Specimen Stability: Refrigerated: 14 days
Frozen: 14 days
Causes for Rejection: Hemolysis; lipemia; gross bacterial contamination.
Reference Interval: Negative:
  • IgG: <0.9 index
  • IgM: <0.9 index
Performed by: Sent to Reference Laboratory - LabCorp (Order #163303)

**pCO2**
Test Code: PCO2
Specimen Type: 0.5 mL heparinized arterial/venous syringe
  Heparinized venous or capillary blood will be accepted.
Method: Gas Sensing Potentiometric Electrode
TAT: STAT: Within 10 minutes
       Performed 24/7
Collection: Use pre-heparinized syringe with dry heparin. Liquid heparin should be avoided because of errors which can occur due to dilution of the sample drawn in anaerobic environment.
Transport: On ice, ASAP
Specimen Stability: If storage is unavoidable, store the sample horizontally at 0-4°C for no more than 30 minutes.
Reference Interval: Arterial: 35-40 mmHg
  Venous: 40-45 mmHg
Performed by: Core Laboratory

**PCP (See Phencyclidine)**

**PCR, CLOSTRIDIUM DIFFICILE TOXIN**
Test Code: CDPCR
Specimen Type: Acceptable:
  • Unformed (liquid or soft) stool submitted in a clean container.
Unacceptable:
  • Formed stools, rectal swabs or stools received in viral transport medium, 10% formalin, MIF, SAF or PVA.
  • A previous specimen received in the last 7 days that tested negative for C. difficile.
  • A previous specimen received in the last 28 days that tested positive for C. difficile.
Method: Realtime polymerase chain reaction (RT-PCR)
TAT: Performed 7 days a week up to 2:30 p.m.
  Results with ~2 hours from receipt time.
  Specimens received after 2:30 p.m., results available by 9:00 a.m. next day.
Collection: 1 stool per 7 day period.
Interpretation: Infants (<1 year) have a high rate of asymptomatic colonization with C. difficile. Positive toxin results in this age group should be interpreted in light of clinical findings.
Comments: This test should not be used as a test-of-cure because patients may continue to remain toxin-positive despite successful therapy.

Performed by: Microbiology Laboratory

**PCR, CMV DNA QUANTITATIVE - Sent to Reference Laboratory**

**Test Code:** CMVQT  
**Specimen Type:** Whole blood: ≥2 mL in 1 EDTA (purple top)  
Plasma: 0.5-2 mL in sterile polypropylene tube  
**Method:** Realtime Polymerase Chain Reaction (RT-PCR)  
**TAT:** 1-3 days after receipt at reference laboratory  
**Collection:** Separation of whole blood: Centrifuge at ~1100 x g for 15 minutes at room temperature within 24 hours of specimen collection. Transfer plasma to a sterile polypropylene tube and store at -20°C.  
**Transport:** Whole blood: Room Temperature: <24 hours  
Plasma: Frozen  
**Interpretation:** Reportable range is 200-1,000,000 copies/mL. This test was developed and its performance characteristics have been determined by LabCorp.  

Performed by: Sent to Reference Laboratory

**PCR, ENTEROVIRUS**

**Test Code:** ENTD  
**Specimen Type:** Cerebrospinal fluid: >0.2 mL in sterile container  
**Method:** Realtime Polymerase Chain Reaction (PCR)  
**TAT:** Performed daily  
**Transport:** 4°C <72 hours  

Performed by: Virology Laboratory

**PCR, HERPES SIMPLEX VIRUS (HSV)**

**Test Code:** HSNC  
**Synonyms:** HSV PCR  
**Specimen Type:** Dermal, genital, ocular, and oral (including throat): Flocked swabs in 3 mL universal transport medium (UTM)  
**Method:** Realtime Polymerase Chain Reaction (PCR)  
**TAT:** Performed Monday-Wednesday-Friday with same day results if received by 7:00 a.m.  
**Transport:** 4°C <72 hours  
**Interpretation:** This test has been approved by the NYS Department of Health, but has not been cleared or approved by the U.S. Food and Drug Administration. This result should not be used as the sole criterion for the diagnosis of herpesvirus infection.  

Comments: In cases of suspected sexual abuse, viral culture for HSV should be performed. See Culture, viral - general.  

Performed by: Virology Laboratory

**PCR, HERPES SIMPLEX VIRUS (HSV) IN CSF**

**Test Code:** HSVD
Synonyms: HSV PCR  
Specimen Type: Cerebrospinal fluid: >0.2 mL (1 mL ideal) in sterile container  
Method: Realtime Polymerase Chain Reaction (PCR)  
TAT: Performed Monday-Wednesday-Friday with same day results if received by 7:00 a.m.  
Transport: 4°C <72 hours  
Interpretation: This test has been approved by the NYS Department of Health, but has not been cleared or approved by the U.S. Food and Drug Administration. This result should not be used as the sole criterion for the diagnosis of herpesvirus infection.  
Comments: In cases of suspected sexual abuse, viral culture for HSV should be performed. See Culture, viral - general.  
Performed by: Virology Laboratory

**PCR, HIV QUANTITATIVE (See HIV viral load)**

**PCR, MYCOBACTERIUM TUBERCULOSIS COMPLEX**

Test Code: No Code  
Synonyms: TB PCR  
Specimen Type: Smear positive respiratory samples only  
Method: Polymerase Chain Reaction (PCR)  
TAT: 24 hours from time of positive smear report, Monday through Thursday 48-72 hours, Friday through Sunday  
Interpretation: This test has been approved by the NYS Department of Health but has not been cleared or approved by the U.S. Food and Drug Administration. This result should not be used as the sole criterion for the diagnosis of tuberculosis.  
Performed by: Microbiology Laboratory

**PCR, MYCOBACTERIUM TUBERCULOSIS COMPLEX IN CSF - Sent to Reference Laboratory**

Test Code: No Code  
Synonyms: TB PCR  
Specimen Type: CSF only (nonbloody)  
Method: Transcription mediated amplification  
TAT: 1-3 days after receipt at reference laboratory  
Transport: 4°C <24 hours  
Interpretation: The manufacturer has not determined the efficacy of this test when performed on CSF specimens. The performance characteristics of this test were determined by ARUP Laboratories.  
Performed by: Sent to Reference Laboratory

**PCR, MYCOPLASMA PNEUMONIAE - Sent to Reference Laboratory**

Test Code: MPPCR  
Specimen Type: Bronchoalveolar lavage, bronchial wash and sputum:  
• >1 mL in sterile container
Nasopharyngeal and throat:
- Flocked swabs in 1 or 3 mL universal transport medium (UTM)

Method: Realtime Polymerase Chain Reaction (PCR)
TAT: 1-3 days after receipt at reference laboratory.
Transport: 4°C <72 hours
Interpretation: This test was developed and its performance characteristics have been determined by ARUP Laboratories.
Performed by: Sent to Reference Laboratory

PERIPHERAL BLOOD (for Cytogenetic studies, See Chromosome analysis and Fluorescence in situ hybridization - FISH)

PERTUSSIS (See Respiratory Panel)

PFA - 100
Test Code: PFA
Synonyms: Platelet function
Specimen Type: One full 3.2% citrate tube (blue top)
Method: PFA 100 Whole Blood Platelet Shear
TAT: STAT: 90 minutes
                  Routine: 3 hour
                  Performed 24/7
Collection: Specimen MUST arrive in lab for testing within 4 hours of blood draw.
            DO NOT centrifuge tube.
            NOTE: Tubes must be full to obtain proper blood to anticoagulant ratio
            or the specimen will be rejected.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 4 hours
Reference Interval: Collagen/epinephrine cartridge:
                  • 98-160 second
            Collagen/ADP cartridge:
                  • 72-108 second
Comment: Specimens that have been spun or refrigerated cannot be used for this test.
          Spun tubes cannot be re-suspended for testing. Patients with less than
          normal platelet counts, low hematocrits, increased sedimentation rates
          may have abnormal results due to those conditions.
Performed by: Core Laboratory, Special Hematology

pH, BLOOD
Test Code: PH
Specimen Type: 0.5 mL heparinized arterial/venous blood
      Heparinized venous or capillary blood will be accepted.
Method: Hydrogen Ion Sensing Electrode
TAT: STAT: Within 10 minutes
      Performed 24/7
Collection: Use a preheparinized syringe with dry heparin. Liquid heparin should be avoided because of errors which can occur due to the dilution of the sample drawn in anaerobic environment.
Transport: On ice, ASAP
Specimen Stability: If storage is unavoidable, store the sample horizontally at 0-4°C for no more than 30 minutes.
Reference Interval: Arterial: 7.38-7.44
Venous: 7.36-7.41
Performed by: Core Laboratory

**PHENCYCLIDINE, CONFIRMATION - Sent to Reference Laboratory**
Test Code: LPCUC
Specimen Type: 20 mL (7 mL minimum)
Urine, Plastic urine drug bottle
Method: Mass Spectrometry (MS)
TAT: At least 7 days or more.
Collection: Random urine is collected in a container with a securely fastened lid with no preservatives.
Transport: Refrigerated
Comment: This is a confirmatory test based on the DABU1 screen results. Orders are available upon request.
Performed by: Sent to Reference Laboratory - LabCorp (Order #071464)

**PHENCYCLIDINE, SCREEN**
Test Code: DABU1
Specimen Type: 10 mL (10 mL minimum) aliquot from a fresh well-mixed random urine collection
Method: Kinetic Interaction of Microparticles in Solution (KIMS) and Tricyclic by Enzyme Immunoassay (EIA)
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Random urine is collected in a container with a securely fastened lid with no preservatives.
Transport: Room Temperature (ASAP)
Specimen Stability: Refrigerated: Test within 3 days and store at 2-8°C.
Reference Interval: Negative
Comment: Included in the DABU1 battery. Confirmatory test available upon request.
Performed by: Sent to Reference Laboratory - LabCorp (LPCUC Order #071464)

**PHENOBARBITAL**
Test Code: PHEN
Specimen Type: 0.5 mL serum, Gold-SST/Red top
Method: Kinetic interaction of microparticles in solution (KIMS)
TAT: STAT: 60 minutes
Routine: 4 hours
Performed 24/7

Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 7 days capped at 25°C
Refrigerated: 6 days capped at 2-8°C
Frozen: 1 year capped at -20°C
Avoid repeated freezing and thawing.
Reference Interval: 15.0-40.0 µg/mL
Performed by: Core Laboratory

PHENOLPHTHALEIN, FECES - Sent to Reference Laboratory
Test Code: Miscellaneous Test
Specimen Type: 10 g frozen feces from a well-mixed 24, 48, 72 hour collection
(Minimum 5 g)
Method: Colorimetric
TAT: 5-7 business days
Collection: Collect stool from a well-mixed 24, 48, 72 hour collection in a tightly sealed plastic container. Record total weight and time of collection on container and requisition.
Transport: Room temperature, ASAP. Protect from light.
Specimen Stability: Room temperature: 7 days
Refrigerated: 7 days
Frozen: 14 days
Reference Interval: Sent with results.
Special Instructions: Ship: Frozen
Performed by: Sent to Reference Laboratory

PHENYTOIN
Test Code: DPH
Synonyms: Dilantin (DPH)
Specimen Type: 0.5 mL serum, Gold-SST
Method: Kinetic interaction of microparticles in solution (KIMS)
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 4 days capped at 20-25°C
Refrigerated: 4 days capped at 2-8°C
Frozen: 1-2 months capped at -20°C
Avoid repeated freezing and thawing.
Reference Interval: 10.0-20.0 µg/mL
Comment: The timing of specimen collection can influence the relationship between phenytoin concentrations and the clinical response. General guidelines for sample collection recommend that phenytoin levels be measured within
two hours after an intravenous dose or four hours after an intramuscular dose.

Performed by: Core Laboratory

**PHENYTOIN, FREE - Sent to Reference Laboratory**

Test Code: LDPH
Synonyms: Dilantin-125
Dilantin
Free Phenytoin
Phenytek

Specimen Type: 3 mL (1.5 mL minimum)
Serum, red-top tube; Plasma, Lavender-top (EDTA) or green-top (heparin) tube

Method: Ultrafiltrate assayed by immunoassay

TAT: Set up Monday through Friday on 1st shift.
Reported within 4 working days.

Collection: Transfer separated serum or plasma to a plastic transport tube. Draw specimen just prior to next dose. Do not use a gel-barrier tube. The use of gel-barrier tubes is not recommended due to slow absorption of the drug by the gel. Depending on the specimen volume and storage time, the decrease in drug level due to absorption may be clinically significant.

Transport: Refrigerated

Specimen Stability: Refrigerated: 14 days
Frozen: 14 days

Causes for Rejection: Gel-barrier tube; hemolysis; lipemia.

Reference Interval: Therapeutic: 1.0-2.0 µg/mL

Performed by: Sent to Reference Laboratory - LabCorp (Order #070763)

**PHOSPHORUS**

Test Code: PHOS1

Specimen Type: 0.5 mL serum, Gold-SST

Method: Endpoint method of sampling blanking/Photometric assay using ammonium molybdate

TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7

Collection: Collect specimen using standard laboratory procedures.

Transport: Room temperature, ASAP

Specimen Stability: Room temperature: 24 hours
Refrigerated: 4 days at 2-8°C
Frozen: 1 year at -20°C

Reference Interval: >11 years  2.7-4.5 mg/dL
24 months - 11 years 4.5-5.5 mg/dL
10 days - 23 months 4.5-6.7 mg/dL
0-9 days 4.5-9.0 mg/dL

Comment: Hemolysis specimens can elevate phosphorus.
PHOSPHORUS, URINE (24 hour)
Test Code: UP24
Specimen Type: 5 mL aliquot from a well-mixed 24 hour collection preserved in boric acid (Minimum 0.5 mL)
Method: Endpoint method with sample blanking
TAT: Performed 7:00 a.m. - 3:00 p.m. daily.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 8 hours at 15-25°C
Refrigerated: 2 days at 2-8°C
Reference Interval: 400-1300 mg
Comment: Acidify (PH<2) with 6M HCL. Do not centrifuge sample unless specimen contains precipitate.
Performed by: Core Laboratory, Microscopy

PHOSPHORUS, URINE (Random)
Test Code: UPR
Specimen Type: 5 mL aliquot from a fresh well-mixed random urine collection (Minimum 0.5 mL)
Method: Endpoint method with sample blanking
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Random urine is collected in a container with a securely fastened lid with no preservatives.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 8 hours at 15-25°C
Refrigerated: 2 days at 2-8°C
Reference Interval: Not established for random urine
Comment: Acidify (PH<2) with 6M HCL. Do not centrifuge sample unless specimen contains precipitate.
Performed by: Core Laboratory

PLASMA (Thawed Plasma, Fresh Frozen Plasma)
Test Code: TFFP
Specimen Type: 5 mL blood, EDTA (lavender top) (If patient's ABO and Rh not known.)
TAT: Call Blood Bank in advance for Plasma orders. Preparation time is approximately 20 minutes.
Collection: Appropriate EPIC generated Prepare Plasma order or Plasma and Cryoprecipitate Order form (on-line) if not on EPIC. If specimen is sent for ABO/Rh type, must have patient's full name, medical record number, and initials of phlebotomist. The specimen label must include the date and
time the sample was drawn if this information is not entered in the
collection information field of the EPIC generated order or in the
Collected by field of the Blood Bank requisition.

Transport: Room temperature
Comments: See section for details on indications and dosage. Fresh frozen plasma or
thawed plasma (derived from either Fresh Frozen Plasma or plasma frozen
within 24 hours) will be provided depending on the clinical indication.
FFP outdates 24 hours from time product is thawed. Thawed plasma
outdates 5 days from time product is thawed.

Performed by: Blood Bank

PLATELET AGGREGATION
Test Code: PAGR
Specimen Type: 3.2% citrated whole blood, special tubes prepared by Special Hematology
laboratory.
Method: Aggregometry
TAT: Performed Monday through Friday (9:00 a.m. - 12:00 p.m.) by
appointment with Special Hematology Laboratory (464-6826).
Collection: This test should not be performed in the presence of platelet-inhibitory
drugs. No aspirin for 5 days, Ibuprofen for 1 day, Naproxen for 4 days,
Clopidogrel for 7 days.
Transport: Drawn on site only.
Specimen Stability: Aggregation testing should be completed within four hours from the time
the blood is drawn
Reference Interval: Interpreted by Pathologist
Performed by: Core Laboratory, Special Hematology

PLATELET CONCENTRATES
Test Code: TPLT
Synonyms: Pooled platelets, platelet concentrates, whole blood-derived platelets
Specimen Type: 5 mL blood, EDTA (lavender top) (If patient's ABO/Rh not known.)
TAT: Small inventory is maintained in Blood Bank. Call Blood Bank in
advance for Platelet Orders. Preparation time is approximately 10-15
minutes.
Collection: Appropriate EPIC generated Prepare Platelet Pool order or Platelet Order
form (on-line) if not on EPIC. If specimen is sent for ABO/Rh type, must
have patient's full name, medical record number, and initials of
phlebotomist. The specimen label must include the date and time the
sample was drawn if this information is not entered in the collection
information field of the EPIC generated order or in the Collected by field
of the Blood Bank requisition.
Transport: Room temperature
Comments: See section for details on indications and dosage.
Performed by: Blood Bank

PLATELET FUNCTION -100 (See PFA-100)
PLATELET NEUTRALIZATION

Test Code: PNEUT
Synonyms: Lupus-like anticoagulant
Specimen Type: 4.5 mL blood, citrate (blue top)
Method: STA-R Evolution
TAT: Testing is batched and performed once/week (7:00 a.m. - 3:00 p.m.). For urgent requests Monday through Friday, call Special Hematology at 464-6826. For urgent requests Saturday and Sunday call 464-6830 (6:30 a.m. - 2:30 p.m.).
Collection: Specimens must reach the laboratory within 1 hour of blood draw. Specimens that cannot reach the lab within the time frame should be double spun at 2500 g for 15 minutes to obtain platelet poor plasma. 0.5mL aliquots should be frozen in plastic at -20°C.
NOTE: Tubes must be full to obtain proper blood to anticoagulant ratio or the specimen will be rejected.
Transport: Specimens scheduled to arrive in lab in less than 1 hour should be sent at room temperature. Platelet poor specimens should be frozen before transport and placed in an insulated container on dry ice to insure that the specimen does not thaw.
Specimen Stability: Frozen: 6 months at -70°C.
Reference Interval: <0.1 seconds
Performed by: Core Laboratory, Special Hematology

PLATELET PHERESIS

Test Code: TPHER
Synonyms: Single-donor platelets, apheresis platelets
Specimen Type: 5 mL blood, EDTA (lavender top) (If patient's ABO/Rh not known.)
Collection: Appropriate EPIC generated Prepare Platelet Pheresis order or Platelet Order form (on-line) if not on EPIC. If specimen is sent for ABO/Rh type, must have patient's full name, medical record number, and initials of phlebotomist. The specimen label must include the date and time the sample was drawn if this information is not entered in the collection information field of the EPIC generated order or in the Collected by field of the Blood Bank requisition.
Transport: Room temperature
Comments: See section for details on indications and dosage.
Performed by: Blood Bank

PLEURAL pH FLUID

Test Code: PLPH
Specimen Type: 2 mL (minimum)
TAT: 30 minutes; Performed 24/7
Collection: The pleural fluid should be drawn anaerobically in a heparinized syringe.
Transport: On ice or room temperature within 1 hour.
Performed by: Core Laboratory

**PNEUMOCYSTIS FLUORESCENT ANTIBODY STAIN**
Test Code: PFAS
Synonyms: PCP
Specimen Type: Induced sputum: >0.5 mL, 2-5 mL ideal
Bronch wash, BAL, endotracheal aspirate, pleural fluid, lung biopsy: In sterile container
Unacceptable: Expectorated sputum
TAT: Performed Monday through Friday
BAL only on weekend day shift.
Only BAL will be tested on a STAT basis and only if the specimen is received in the laboratory by 2:00 p.m.
Transport: Room temperature
Comments: After third negative induced sputum, additional sputum specimens processed only with Infectious Disease approval. Bronchoscopy recommended in these cases.
Performed by: Virology Laboratory

**PO2**
Test Code: PO2
Specimen Type: 0.5 mL heparinized arterial/venous syringe
Heparinized venous or capillary blood will be accepted.
Method: Clark polarographic gas sensing electrode
TAT: STAT: Within 10 minutes
Performed 24/7
Collection: Use pre-heparinized syringe with dry heparin. Liquid heparin should be avoided because of errors which can occur due to dilution of the sample drawn in anaerobic environment.
Transport: On ice, ASAP
Specimen Stability: If storage is unavoidable, store the sample horizontally at 0-4°C for no more than 30 minutes.
Reference Interval: Arterial: 95-100 mmHg
Performed by: Core Laboratory

**PORPHOBILINOGEN (PBG), QUANTITATIVE, RANDOM URINE - Sent to Reference Laboratory**
Test Code: LPRQU
Synonyms: PBG Random Urine, Quantitative
Specimen Type: 3 mL (1 mL minimum)
Urine, Plastic urine container with 0.5 mL of 30% glacial acetic acid (optional preservative, but required if ordered with Delta ALA) and amber plastic frozen transport tube and cap.
Method: Chromatography/Spectrophotometry
TAT: Set up and reported Monday, Wednesday and Friday on 1st shift.
Collection: On collection of random urine, it is advisable not to use first voided morning specimen, late evening specimen after 8 p.m., or specimen obtained following excessive fluid intake. Transfer the urine into a LabCorp amber plastic frozen transport tube with amber cap. If ordered with Delta ALA, pH must be <6. Specimen should be frozen immediately and maintained frozen until tested. If amber tube and cap are not available, cover a clear plastic transport tube completely from top to bottom with aluminum foil. Identify the specimen with the patient's name directly on the transport tube and the outside of the aluminum foil. Secure with tape.

Transport: Frozen

Specimen Stability: Stable when preserved with 30% glacial acetic acid and frozen for one month or refrigerated for 24 hours.

Cause for Rejection: Specimen exposed to light; specimen not received frozen.

Reference Interval: 0.0-2.0 mg/L

Comments: To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for test requested.

Performed by: Sent to Reference Laboratory - LabCorp (Order #003053)

**PORPHYRINS, QUANTITATIVE, RANDOM URINE - Sent to Reference Laboratory**

Test Code: LPRU

Synonyms: Coproporphyrin
Uroporphyrin

Specimen Type: 2 mL (1.5 mL minimum)
Urine (random), Amber plastic urine container with no preservative

Method: High-pressure Liquid Chromatography (HPLC) with Fluorometric Detection

TAT: Set up on Tuesday and Friday on 1st shift.
Reported within 2 working days.

Collection: Transfer required aliquot into a LabCorp amber plastic transport cup with amber cap. If amber transport cup is unavailable, cover transport tube completely, top and bottom, with aluminum foil. Identify specimen with patient's name directly on the amber transport cup and on the outside of the aluminum foil. Secure with tape.

Transport: Refrigerated

Specimen Stability: Refrigerated: 7 days
Frozen: 14 days

Cause for Rejection: Stored specimen not refrigerated; specimen exposed to light; acid preservative; pH <3.

Reference Interval: Coproporphyrin (CP) I: 0-15 µg/L
Coproporphyrin (CP) III: 0-49 µg/L
Heptacarboxylporphyrins (7-CP): 0-2 µg/L
Hexacarboxylporphyrin (6-CP): 0-1 µg/L
Pentacarboxylporphyrin (5-CP): 0-2 µg/L
Uroporphyrins (UP): 0-20 µg/L
Special Instructions: Protect from light.
Performed by: Sent to Reference Laboratory - LabCorp (Order #120980)

**POTASSIUM, FECAL - Sent to Reference Laboratory**

Test Code: LKS  
Specimen Type: 20 mL (10 mL minimum) Liquid Stool, Plastic specimen cup  
Method: Ion Specific Electrode  
TAT: 1-11 days  
Collection: Freeze immediately.  
Transport: Frozen (Ship on dry ice)  
Specimen Stability: Frozen: 30 days  
Cause for Rejection: Formed stool; specimens received at ambient temperature; specimens outside of listed stability.  
Reference Range: 0.0-199.9 mmol/L  
Special Instructions: Must not be diluted with water or saline.  
Performed by: Sent to Reference Laboratory - LabCorp (Order #823254)

**POTASSIUM, SERUM**

Test Code: K  
Specimen Type: 0.5 mL serum, Gold-SST/Red top  
Method: Ion selective electrode  
TAT: STAT: 60 minutes  
Routine: 4 hours  
Performed 24/7  
Collection: Collect specimen using standard laboratory procedures.  
Transport: Room temperature, ASAP  
Specimen Stability: Room temperature: 2 weeks at 15-25°C  
Refrigerated: 2 weeks at 2-8°C  
Reference Interval: 3.3-5.1 mmol/L  
Comment: Hemolyzed specimens can increase potassium results.  
Performed by: Core Laboratory

**POTASSIUM, URINE**

Test Code: KU  
Specimen Type: 5 mL aliquot from a fresh well-mixed random urine collection  
Method: Ion selective electrodes  
TAT: STAT: 90 minutes  
Routine: 4 hours  
Performed 24/7  
Collection: Random urine is collected in a container with a securely fastened lid with no preservatives.  
Transport: Room temperature, ASAP  
Specimen Stability: Refrigerated: 1 week at 2-8°C  
Reference Interval: No reference interval is established for random urine specimens.  
Comment: Centrifuge samples containing precipitate before performing the assay.
**PREALBUMIN**

Test Code: PALBN  
Specimen Type: 0.5 mL serum, Gold-SST  
Method: Immunoturbidimetry  
TAT: STAT: 90 minutes  
Routine: 4 hours  
Performed 24/7  
Collection: Collect specimen using standard laboratory procedures.  
Transport: Room temperature  
Specimen Stability: Refrigerated: 3 days at 2-8°C  
Frozen: 6 months at -20°C  
Reference Interval: 20.0-40.0 mg/dL  
Performed by: Core Laboratory

**PREGNANCY TEST (See HCG, urine)**

**PRENATAL WORK-UP FOLLOW-UP**

Test Code: PNF  
Specimen Type: 10 mL blood (two 5 mL tubes), EDTA (lavender top)  
Method: Antibody screen only. If antibody screen is positive, an antibody identification is performed. If antibody is considered clinically significant, an antibody titer is performed.  
TAT: Performed 24/7  
Collection: Specimens for Blood Bank testing must be labeled with the patient's full name, medical record number, and initials of phlebotomist. The specimen label must include the date and time the sample was drawn if this information is not entered in the collection information field of the EPIC generated order or in the Collected by field of the Blood Bank requisition.  
Transport: Room temperature  
Specimen Stability: Refrigerated: 3 days if stored at 2-8°C.  
Comments: Ordered when ABO/Rh type of patient is known. If a confirmation of the ABO/Rh type is needed, order a Prenatal Workup Initial.  
Performed by: Blood Bank

**PRENATAL WORK-UP INITIAL**

Test Code: PNT  
Specimen Type: 10 mL blood (two 5 mL tubes), EDTA (lavender top)  
Method: ABO/Rh type, and antibody screen. If antibody screen is positive, an antibody identification is performed. If antibody is considered clinically significant, an antibody titer is performed.  
TAT: Performed 24/7  
Collection: Specimens for Blood Bank testing must be labeled with the patient's full name, medical record number, and initials of phlebotomist. The specimen label must include the date and time the sample was drawn if this
information is not entered in the collection information field of the EPIC generated order or in the Collected by field of the Blood Bank requisition.

Transport: Room temperature
Specimen Stability: Refrigerated: 3 days if stored at 2-8°C.
Performed by: Blood Bank

**(PRO)BNP**
Test Code: BNPP
Synonyms: NT, ProBrain Natriuretic peptide
Specimen Type: 0.5 mL serum, Gold-SST
Method: Electrochemiluminescence immunoassay
TAT:
  - STAT: 90 minutes
  - Routine: 4 hours
  - Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability:
  - Room temperature: 3 days at 20-25°C
  - Refrigerated: 3 days at 2-8°C
  - Frozen: 12 months at -20°C
Reference Interval:
  - >74 years: <450 pg/mL
  - <74 years: <125 pg/mL
Comment: Because of possible evaporation effects, samples on the analyzer should be measured within 2 hours.
Performed by: Core Laboratory

**PROCALCITONIN**
Test Code: PRCAL
Specimen Type: Lithium Heparin (light green top tube with Gel)
Method: Immunoassay
TAT:
  - STAT: 90 minutes
  - Routine: 4 hours
  - Performed 24/7
Collection: Collect using standard laboratory procedures.
Transport: ASAP
Specimen Stability: Refrigerated: 48 hours
Reference Interval: Normal: <0.10
Performed by: Core Laboratory

**PROGENITOR CELLS (See Stem cells)**

**PROGESTERONE**
Test Code: PROG
Specimen Type: 0.5 mL serum, Gold-SST
Method: Electrochemiluminescence
TAT:
  - STAT: 90 minutes
  - Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Refrigerated: 48 hours at 2-8°C
Frozen: 6 months at -20°C
Freeze once
Reference Interval: Male:
• 0.2-1.4 ng/mL
Female:
• Follicular 0.2-1.5 ng/mL
• Ovulation 0.8-3.0 ng/mL
• Luteal 1.7-27.0 ng/mL
• Postmenopausal 0.1-0.8 ng/mL
Comment: If samples are not run within 24 hours, store samples in freezer at -20°C until they can be run. Patients routinely exposed to animals or animal serum products can be prone to interference and anomalous values from heterophilic antibodies. Do not use samples that have been stored at room temperature for longer than 8 hours.
Performed by: Core Laboratory

**PROINSULIN - Sent to Reference Laboratory**
Test Code: LPRO
Specimen Type: 0.6 mL (0.4 mL minimum)
Serum, Gold/SST, red-top tube
Method: Enzyme immunoassay (EIA)
TAT: Set up once a week.
Reported within 5 working days.
Collection: Separate serum from cells. Transfer serum into a LabCorp PP transpak frozen purple tube with screw cap. Freeze immediately and maintain frozen until tested.
Transport: Frozen
Specimen Stability: Frozen: 12 days
Causes for Rejection: Nonfrozen specimen; nonserum specimen; gross hemolysis; gross lipemia.
Reference Interval: 0.0-10.0 pmol/L
Special Instructions: Baseline proinsulin levels should be collected after a 12-hour fast.
Comment: To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested.
Performed by: Sent to Reference Laboratory - LabCorp (Order #140533)

**PROLACTIN**
Test Code: PRLA
Specimen Type: 0.5 mL serum, Gold-SST/Red top
Method: Electrochemiluminescence
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Refrigerated: 24 hours at 2-8°C
Frozen: 6 months at -20°C
Freeze once
Reference Interval: Male:
• 4.0-15.2 ng/mL
Female:
• 4.7-23.3 ng/mL
Comment: If samples are not run within 24 hours, store samples in freezer at -20°C until they can be run. Patients routinely exposed to animals or animal serum products can be prone to interference and anomalous values from heterophilic antibodies. Do not use samples that have been stored at room temperature for longer than 8 hours.
Performed by: Core Laboratory

PROPHASE ANALYSIS, EXTENDED CHROMOSOME STUDY (See Chromosome analysis)

PROSTATE SPECIFIC ANTIGEN, FREE
Test Code: FPSAB
Synonyms: FPSA
Specimen Type: 0.5 mL of serum, Gold-SST
Method: Electrochemiluminescence
TAT: STAT: 90 minutes
Routine: 4 hours
Performed: 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Refrigerated: 5 days at 2-8°C
Frozen: 6 months at -20°C
Freeze once.
Reference Interval: ≤25% of total PSA
Comments: Allow serum to clot completely at room temperature before centrifuging. Separate serum or plasma from cells.
Performed by: Core Laboratory

PROSTATE SPECIFIC ANTIGEN, TOTAL
Test Code: PSA2
Synonyms: PSA
Specimen Type: 0.5 mL serum, Gold-SST/Red top
Method: Electrochemiluminescence
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Refrigerated: 5 days at 2-8°C
Frozen: 6 months at -20°C
Freeze once
Reference Interval: <4.0 ng/mL
Comment: If samples are not run within 24 hours, store samples in freezer at -20°C until they can be run. Patients routinely exposed to animals or animal serum products can be prone to interference and anomalous values from heterophilic antibodies. Do not use samples that have been stored at room temperature for longer than 8 hours. Serum levels of PSA should not be interpreted as absolute evidence of the presence or absence of cancer. Results obtained with different methods cannot be used interchangeably.

Performed by: Core Laboratory

PROTEIN C ACTIVITY
Test Code: PRCCA
Synonyms: Protein C clotting
Specimen Type: 4.5 mL blood, citrate (blue top)
Method: Automated Clotting assay
TAT: Testing is batched and performed once a week, Monday through Friday (7:00 a.m. - 3:00 p.m.). For urgent requests call Special Hematology at 464-6826.

Collection: Specimens must reach the laboratory within 4 hours of blood draw. Specimens that cannot reach the lab within the time frame should be double spun at 2500 g for 15 minutes to obtain platelet poor plasma. 0.5mL aliquots should be frozen in plastic at -20°C.

NOTE: Tubes must be full to obtain proper blood to anticoagulant ratio or the specimen will be rejected.

Transport: Specimens scheduled to arrive in lab in less than 4 hours should be sent at room temperature. Platelet poor specimens should be frozen before transport and placed in an insulated container on dry ice to insure that the specimen does not thaw.

Specimen Stability: Frozen: 6 months at -70°C.
Comments: Decreased results may be seen following a recent thrombosis and/or on oral anticoagulant therapy. It is recommended that testing be delayed until 2 weeks after a thrombosis. Testing may be performed while patient is undergoing Coumadin therapy if controlled by another Vitamin K dependent factor (e.g. Factor II). Thrombin inhibitors (e.g. hirudin, argatroban) present in the sample to be tested may lead to an overestimation of the Protein C level.

Reference Interval: 68-162 U/dL
Performed by: Core Laboratory, Special Hematology

PROTEIN ELECTROPHORESIS, SERUM
Test Code: SPE3
**PROTEIN ELECTROPHORESIS, URINE**

Test Code: UPE4  
Specimen Type: 10 mL aliquot from a fresh well-mixed random urine collection  
Method: Agarose Gel Electrophoresis  
TAT: 72 hours  
Collection: Random urine is collected in a container with a securely fastened lid with no preservatives.  
Transport: Room temperature, ASAP  
Specimen Stability: Refrigerated: 7 days at 2-8°C  
Frozen: 30 days at 0°C  
Reference Interval: No reference intervals  
Comments: When ordering urine protein electrophoresis, please order TPU as well.  
Performed by: Core Laboratory, Special Chemistry

**PROTEIN S ACTIVITY**

Test Code: PRSAT  
Specimen Type: One full 3.2% citrate (blue top)  
Method: Automated Clotting assay  
TAT: Testing is batched and performed once a week, Monday through Friday (7:00 a.m. - 3:00 p.m.). For urgent requests call Special Hematology at 464-6826.  
Collection: Specimens must reach the laboratory within 4 hours of blood draw. Specimens that cannot reach the lab within the time frame should be double spun at 2500 g for 15 minutes to obtain platelet poor plasma. 0.5mL aliquots should be frozen in plastic at -20°C.  
**NOTE:** Tubes must be full to obtain proper blood to anticoagulant ratio or the specimen will be rejected.
Transport: Specimens scheduled to arrive in lab in less than 4 hours should be sent at room temperature. Platelet poor specimens should be frozen before transport and placed in an insulated container on dry ice to insure that the specimen does not thaw.

Specimen Stability: Frozen: 6 months at -70°C

Reference Interval: Male:
- 67-167 U/dL
Female:
- 49-130 U/dL

Interpretation: Results may be decreased in patients following a recent thrombosis and/or on Coumadin therapy. Testing cannot be performed in the presence of a lupus-like anticoagulant. Analysis may be performed while patient is on stable oral anticoagulant if controlled by another vitamin K dependent factor (ex. Factor II).

Performed by: Core Laboratory, Special Hematology

**PROTHROMBIN GENE MUTATION 20210G>A**

Test Code: PROLC

Synonym: Factor II Gene Mutation
Prothrombin Gene Mutation

Specimen Type: 5 mL blood, EDTA (lavender top)

Method: Polymerase Chain Reaction (PCR)

TAT: 7-10 days

Collection: Requires a test specific, patient signed consent form F82858 and a completed requisition F91019.

Transport: Room temperature.
Deliver to Molecular Diagnostics Laboratory as soon after collection as possible for deliver 8:00 a.m. - 5:00 p.m., Monday through Friday.

Comments: Direct molecular detection of the point mutation 20210G>A, in the prothrombin gene which is a genetic risk factor for venous thromboembolism.

Performed by: Molecular Diagnostics Laboratory

**PROTHROMBIN TIME/INR**

Test Code: PT

Specimen Type: 4.5 mL blood, citrate (blue top)

Method: Automated clotting assay

TAT: STAT: 45 minutes
Routine: 4 hours
Performed 24/7

Collection: Specimens must reach the laboratory within 24 hours of blood draw. Specimens that cannot reach the lab within the time frame should be double spun at 2500 g for 15 minutes to obtain platelet poor plasma. 0.5mL aliquots should be frozen in plastic at -20°C.

**NOTE:** Tubes must be full to obtain proper blood to anticoagulant ratio or the specimen will be rejected.
Transport: Specimens scheduled to arrive in lab in less than 24 hours should be sent at room temperature. Platelet poor specimens should be frozen before transport and placed in an insulated container on dry ice to insure that the specimen does not thaw.

Specimen Stability: Room temperature: 24 hours
Refrigerated: Unacceptable
Frozen: 6 months at -70°C

Reference Interval: 12.5-14.9 seconds

Performed by: Core Laboratory

PROTOPORPHYRIN, FREE ERYTHROCYTE (FEP), AND ZINC PROTOPORPHYRIN (ZPP), WORKPLACE - Sent to Reference Laboratory

Test Code: LPROT
Synonyms: FEP
Workplace FEP/ZPP
ZPP

Specimen Type: 7 mL (0.2 mL minimum)
Whole Blood, Royal blue-top (EDTA) or tan-top lead-free tube, submit original tube.

Method: Fluorometry
TAT: Performed Monday through Friday, 2nd shift.
Reported within 2 working days.

Collection: Mix tube thoroughly to avoid clotting.

Transport: Room Temperature, ASAP

Specimen Stability: Room Temperature: 14 days
Refrigerated: 14 days
Frozen: 14 days

Causes for Rejection: Clotted specimen.

Reference Interval: FEP, blood: Occupational exposure: Adults: 0-100 µg/dL
ZPP, blood: Occupational exposure: Adults: 0-100 µg/dL: BEI (sampling is after one month's exposure)

Special Instructions: Workplace monitoring only.

Performed by: Sent to Reference Laboratory - LabCorp (Order #010169)

PSA (See Prostate specific antigen)

PSEUDOCHOLINESTERASE - Sent to Reference Laboratory

Test Code: Miscellaneous Test
Specimen Type: 1 mL serum, Gold-SST (Minimum 0.25 mL)
Method: Quantitative Enzymatic
TAT: 5-7 business days
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature
Specimen Stability: Room temperature: 4 hours
Refrigerated: 1 week
Frozen: 3 months
Reference Interval: Sent with results.
Comments: Any result observed to be DECREASED from the RI must be faxed to NYS DOH ASAP. The fax number is 518-458-6200. The number is operable 24 hours/day. Please address the fax to Dorilee Grabau (her phone number is 800-322-6850) if there are any questions. Please note if the specimen is pre-op, post-op, or for pesticide exposure/poisoning. Specimen should be obtained before anesthesia OR greater than or equal to 4 hours after administration of anesthetic agents for best results.

Special Instructions: Ship: Refrigerated
Performed by: Sent to Reference Laboratory

**PTH INTACT**

Test Code: IPTH
Specimen Type: 3 mL serum, Gold-SST/EDTA (lavender top)
Method: Electrochemiluminescence
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Serum:
  - Room temperature: 8 hours
  - Refrigerated: 48 hours at 2-8°C
  - Frozen: 6 months at -20°C
Plasma:
  - Room temperature: 2 days
  - Refrigerated: 3 days at 2-8°C
  - Frozen: 6 months at -20°C
Reference Interval: 15-65 pg/mL
Comment: Do not analyze samples that show visible signs of hemolysis.
Performed by: Core Laboratory

**PTH RELATED PROTEIN (See Parathyroid Hormone Related Protein)**

**PYRUVIC ACID, WHOLE BLOOD - Sent to Reference Laboratory**

Test Code: LPA
Synonyms: Pyruvate
Specimen Type: 0.5 mL (clear supernatant) (0.2 mL minimum)
Perchloric acid supernatant from oxalated whole blood, Gray-top (sodium fluoride) tube
Method: Pyruvate-lactate; Spectrophotometry
TAT: Set up and reported on Tuesday and Thursday on 1st shift. Reported within 5 working days.
Collection: Draw blood into chilled gray-top tube. Immediately after blood is drawn, add 2 mL of whole blood from the gray-top tube to 2 mL of 8% perchloric
acid. Note: Use 1:1 blood (i.e. equal parts) to 8% perchloric ratio if less blood is obtained. Shake mixture vigorously for about 30 seconds. Refrigerate for five minutes to ensure complete protein precipitation. Centrifuge 5 to 10 minutes at approximately 1500 x g. Immediately transfer the clear supernatant to a transport tube. Label the transport tube as "supernatant" and send to the laboratory. Note: A second centrifugation of the supernatant may be necessary to obtain a clear protein-free solution.

Transport: Refrigerated on ice.
Specimen Stability: Refrigerated: 7 days
Frozen: 7 days
Causes for Rejection: Whole blood received; gray-top tube not prepared with perchloric acid.
Reference Interval: 0.3-0.7 mg/dL
Comments: Patient should be in a fasting and resting state (should not exercise). Maintain the perchloric acid supernatant refrigerated.
Performed by: Sent to Reference Laboratory - LabCorp (Order #004788)

**QUANTIFERON-TB GOLD - Sent to Reference Laboratory**

Test Code: LQNTC
Synonyms: Interferon-gamma Release Assay (IGRA) for Mycobacterium tuberculosis
Specimen Type: 1 mL x 3 tubes (0.8 mL x 3 tubes minimum)
Whole Blood, QuantiFERON collection kit
Method: Mycobacterium tuberculosis antigen-stimulated interferon-gamma production with detection by enzyme-linked immunosorbent assay (ELISA).
TAT: 3-4 days
Collection: Refer to collection instructions with the QuantiFERON collection kit.
Transport: Incubated and then Refrigerated
Causes for Rejection: Specimen centrifuged, refrigerated, or frozen; specimen more than 14 hours old on receipt by lab.
Special Instructions: This test is time-sensitive and specimens must be received in the laboratory within 14 hours of collection. Specimen collection times will vary depending on logistics from the blood draw location to a LabCorp lab. Sample is incubated at 37°C for a minimum of 16 hours but no longer than 24 hours prior to shipment to reference laboratory. Submit QuantiFERON specimens that are client incubated.
Comments: This test includes PHA (positive) and nil (negative) controls. This is also known as an interferon-y release assay (IGRA).
Performed by: Sent to Reference Laboratory - LabCorp (Order #182873)

**QUANTITATIVE BCR-ABL (See BCR-ABL1 p210)**

**QUETIAPINE, SERUM - Sent to Reference Laboratory**

Test Code: LQUET
Synonyms: Seroquel
Specimen Type: 3 mL (0.6 mL minimum)
Serum, Red top tube
Method: Liquid Chromatography/Tandem Mass Spectrometry (LC/MS-MS)
TAT: 5-7 days
Collection: Do not use gel-barrier tubes. Serum should be separated from cells within 2 hours of venipuncture. Transfer separated serum to a plastic transport tube.
Transport: Refrigerated
Performed by: Sent to Reference Laboratory - LabCorp (Order #808404)

QUINIDINE - Sent out to Reference Laboratory
Test Code: Miscellaneous Test
Specimen Type: 0.5 mL serum, Plain red
Method: Immunoassay
TAT: 2-3 business days
Transport: Room temperature, ASAP
Specimen Stability: Refrigerated: 1 day
Frozen: 7 days
Reference Interval: Sent with results.
Comment: Do not use SST tube as the serum separates and may falsely affect results.
Special Instructions: Ship: Refrigerated
Performed by: Sent to Reference Laboratory

RENNAL TYPE AND SCREEN
Test Code: RTYSC
Specimen Type: 10 mL blood (two 5 mL tubes), EDTA (lavender top)
Method: ABO/RH type and antibody screen for antibodies reacting at 37°C and room temperature. If antibody screen is positive, an antibody identification is performed.
TAT: Performed 24/7
Collection: Specimens for Blood Bank testing must be labeled with the patient's full name, medical record number, and initials of phlebotomist. The specimen label must include the date and time the sample was drawn if this information is not entered in the collection information field of the EPIC generated order or in the Collected by field of the Blood Bank requisition.
Transport: Room temperature
Specimen Stability: Refrigerated: 3 days if stored at 2-8°C.
Performed by: Blood Bank

RENIN ACTIVITY, PLASMA - Sent to Reference Laboratory
Test Code: LREN
Synonyms: Plasma Renin Activity (PRA)
PRA
Specimen Type: 1 mL (0.8 mL minimum)
Plasma, Lavender-top (EDTA) tube
Method: Radioimmunoassay (RIA)
TAT: Set up and reported Monday through Friday on 1st shift.
Reported within 3 working days.

Collection: Draw blood into an EDTA tube. Keep tube at room temperature. Centrifuge at room temperature. Transfer the plasma into a LabCorp PP transpak frozen purple tube with screw cap. Freeze immediately and maintain frozen until tested. It is critical that the plasma be transferred and frozen as quickly as possible to prevent cryoactivation of protein to renin (which results in falsely elevated renin levels).

Transport: Frozen
Specimen Stability: Frozen: 14 days
Causes for Rejection: Gross hemolysis; serum or heparinized plasma specimen; specimen not received frozen; recently administered isotopes.
Reference Interval: Sent with results. Refer to Reference Laboratory Website.
Special Instructions: The patient's posture at the time of collection should be noted.
Comment: To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested.

RESPIRATORY PANEL
Test Code: RSPP
Synonyms: RVP
Specimen Type: NP swab in 1.0 mL universal transport medium (UTM)
Method: Polymerase chain reaction (PCR)
TAT: 90 minutes, 7 days/week
Inpatients and ER patients: ~90 minutes form receipt time, 7 days/week. All others: ≥90 minutes from receipt time depending on test volume, 7 days/week.
Collection: Use COPAN 503CS01 flocked NP swabs. Swabs and UTM are available in the Microbiology and Virology Laboratories.
Transport: Room temperature within 4 hours of collection or 4°C.
Performed by: Virology Laboratory

RETICULOCYTE COUNT
Test Code: RET
Specimen Type: 4 mL blood, EDTA (lavender top)
Method: Automated Beckman Coulter DxH800
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Venipuncture or fingerstick: Collect using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 24 hours Refrigerated: Up to 72 hours at 2-8°C
Reference Interval: Absolute count: 26-122 K/µL Retic %: 0.6-2.8
**Rh IMMUNE GLOBULIN EVALUATION**

**Test Code:** RHEV  
**Specimen Type:** 10 mL blood (two 5 mL tubes), EDTA (lavender top)  
**Method:** ABO/Rh type and antibody screen to determine pre-existing anti-D in patient's serum. If the antibody screen is positive, an antibody identification will be performed.  
**TAT:** Daily  
**Collection:** Specimens for Blood Bank testing must be labeled with the patient's full name, medical record number, and initials of phlebotomist. The specimen label must include the date and time the sample was drawn if this information is not entered in the collection information field of the EPIC generated order or in the Collected by field of the Blood Bank requisition.  
**Transport:** Room temperature  
**Specimen Stability:** Refrigerated: 3 days at 2-8°C  
**Comments:** Rh immune globulin is given to Rh negative women antepartum between 28 and 38 weeks of gestation, after amniocentesis and post-partum. It is also given with abortions, ectopic pregnancies, chorionic villus sampling, antepartum hemorrhage and fetal death. Its use may be considered when Rh positive cellular blood products are given to Rh negative females of child bearing age.

**Performed by:** Blood Bank

**Rh PHENOTYPING**

**Test Code:** RHPH  
**Synonyms:** Zygosity  
**Specimen Type:** 5 mL blood, EDTA (lavender top)  
**Method:** Serologic testing of patient's red cells for the C, D, E, c, e antigens and determination of the most probable Rh genotype.  
**TAT:** Performed Monday through Friday  
**Collection:** Specimens for Blood Bank testing must be labeled with the patient's full name, medical record number, and initials of phlebotomist. The specimen label must include the date and time the sample was drawn if this information is not entered in the collection information field of the EPIC generated order or in the Collected by field of the Blood Bank requisition.  
**Transport:** Room temperature  
**Interpretation:** Most probable genotype reported.  
**Comment:** If requested as zygosity, deliver blood/serum specimens to Blood Bank. If Amniotic Fluid, save at room temperature and deliver to Molecular Diagnostics (DNA Probe Lab).

**Performed by:** Blood Bank

**RHEUMATOID FACTOR**

**Test Code:** RFT  
**Specimen Type:** 0.5 mL serum, Gold-SST
Method: Immunoturbidimetry
TAT: STAT: 90 minutes
Routine: 4 hours
Performed: 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 24 hours
Refrigerated: 3 days
Frozen: 4 weeks
Reference Interval: <14 IU/mL
Performed by: Core Laboratory

**RISPERIDONE - Sent to Reference Laboratory**
Test Code: LRISP
Synonyms: Risperdal
Risperdal Consta
Specimen Type: 3 mL (1.1 mL minimum)
Serum, Red top tube
Method: Liquid Chromatography/Tandem Mass Spectrometry (LC/MS-MS)
Collection: Collect specimen just prior to the next dose (trough level).
Transport: Refrigerated
Specimen Stability: Room Temperature: 14 days
Refrigerated: 14 days
Frozen: 14 days
Cause for Rejection: Gel-barrier tube
Reference Interval: 20-60 ng/mL
Performed by: Sent to Reference Laboratory - LabCorp (Order #716563)

**RISTOCETIN COFACTOR**
Test Code: VWF
Synonyms: von Willebrand Factor, functional
Specimen Type: 4.5 mL blood, citrate (blue top)
Method: Platelet angulation
TAT: Testing is batched and performed once/week (7:00 a.m. - 3:00 p.m.). For urgent requests, call Special Hematology at 464-6826.
Collection: Specimens must reach the laboratory within 4 hours of blood draw. Specimens that cannot reach the lab within the time frame should be double spun at 2500 g for 15 minutes to obtain platelet poor plasma. 0.5mL aliquots should be frozen in plastic at -20°C.
NOTE: Tubes must be full to obtain proper blood to anticoagulant ratio or the specimen will be rejected.
Transport: Specimens scheduled to arrive in lab in less than 4 hours should be sent at room temperature. Platelet poor specimens should be frozen before transport and placed in an insulated container on dry ice to insure that the specimen does not thaw.
Specimen Stability: Room temperature: 4 hours
RISTOCETIN COFACTOR - VON WILLEBRAND FACTOR (vWF) ACTIVITY (see von Willebrand Factor (vWF) Activity Ristocetin Cofactor)

**RNP ANTIBODY**
- **Test Code:** RNPR
- **Specimen Type:** 0.5 mL serum, Gold-SST
- **Method:** Multi-Lyte
- **TAT:** 3 days
- **Reference Interval:** 0-100 U/mL
- **Comment:** Includes Sm and RNP
- **Performed by:** Immunology Laboratory

**ROTAVIRUS ANTIGEN**
- **Test Code:** RVAG
- **Specimen Type:** Stool:
  - Approximately 1 gm or 1 mL in plastic cup.
  - Rectal swabs are acceptable provided that sufficient material is obtained.
- **Unacceptable:**
  - Rectal swabs and stool received in viral transport medium.
- **Method:** Immunochromatographic assay
- **TAT:** Performed 7 days/week, day shift only
- **Comments:** Rotavirus antigen is shed in the stool in large quantities at the onset of disease and for at least 4 days afterward. Additional stools are not accepted within 4 days of a negative result.
- **Performed by:** Virology Laboratory

**RPR**
- **Test Code:** RPR1
- **Specimen Type:** 2 mL serum, Gold-SST
- **Method:** Agglutination
- **TAT:** 72 hours
- **Reference Interval:** Non-reactive
- **Comments:** Screening test for syphilis. Reflexes to MHATP if positive and patient is not known to have had a positive MHATP in the past.
- **Performed by:** Immunology Laboratory
RSV CULTURE (See Culture, viral - general)

**RUBELLA IgG ANTIBODY**
Test Code: RUB  
Specimen Type: 0.5 mL serum, Gold-SST  
Method: Enzyme-linked Immunosorbent Assay (ELISA)  
TAT: 4 days  
Comments: For immune status only. Rubella immune status measures only IgG antibody. If the Rubella immune status test is positive, the patient has protective levels of antibody present. If the physician suspects active Rubella infection, a Rubella IgM antibody test should be ordered.  
Performed by: Immunology Laboratory

**RUBEOLA IgG ANTIBODY**
Test Code: RUBEOD  
Specimen Type: 0.5 mL serum, Gold-SST  
Method: Enzyme-linked Immunosorbent Assay (ELISA)  
TAT: 4 days  
Comments: For immune status only. Rubeola immune status detects IgG antibody. Positive Rubeola immune status indicates that the patient has protective levels of antibody. If the physician is looking for current infection, a Rubeola IgM antibody test should be ordered.  
Performed by: Immunology Laboratory

**RUFINAMIDE - Sent to Reference Laboratory**
Test Code: LRUF  
Synonyms: Banzel  
Specimen Type: 2 mL (0.5 mL minimum) Serum, red-top tube  
Method: Liquid Chromatography/Tandem Mass Spectrometry (LC/MS-MS)  
TAT: Reported within 3 working days.  
Collection: Do not use a gel-barrier tube. The use of gel-barrier tubes is not recommended due to slow absorption of the drug by the gel. Depending on the specimen volume and storage time, the decrease in drug level due to absorption may be clinically significant.  
Transport: Refrigerated  
Specimen Stability: Refrigerated: 14 days  
Frozen: 14 days  
Comment: Serum should be separated from cells within 2 hours of venipuncture. Transfer separated serum to a plastic transport tube.  
Performed by: Sent to Reference Laboratory - LabCorp (Order #284191)

**SALICYLATE**
Test Code: SALI  
Synonyms: Acetylsalicylic acid; aspirin  
Specimen Type: 0.5 mL serum, Gold-SST
Method: Ferric nitrate in an acidic medium
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 7 days
Refrigerated: 7 days at 2-8°C
Frozen: 6 months at -18°C
Reference Interval: <30 mg/dL
Performed by: Core Laboratory

SCHISTOSOMA ANTIBODY - Sent to Reference Laboratory
Test Code: LSCHS
Specimen Type: 1 mL (0.5 mL minimum)
Serum, Gold/SST, red top tube
Method: ELISA
TAT: 1-8 days
Collection: Transfer separated serum to a plastic transport tube before freezing.
Transport: Frozen
Comments: To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested.
Performed by: Sent to Reference Laboratory - LabCorp (Order #809958)

SCL-70 ANTIBODY
Test Code: SCL70
Specimen Type: 0.5 mL serum, Gold-SST
Method: Multi-Lyte
TAT: 3 days
Reference Interval: 0-100 U/mL
Performed by: Immunology Laboratory

SELENIUM, PLASMA - Sent to Reference Laboratory
Test Code: LSELT
Specimen Type: 2 mL (0.6 mL minimum)
Plasma, Royal blue top (EDTA) tube
Method: Inductively Coupled Plasma/Mass Spectrometry (ICP/MS)
TAT: Set up Tuesday through Friday on 1st shift.
Reported within 4 working days.
Collection: Submit plasma removed from a royal blue top tube, and transfer to a certified metal-free plastic transport tube for shipment to laboratory.
Maintain specimen at room temperature.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Frozen: 14 days
Cause for Rejection: Certified metal-free plastic transport tube not submitted.
Reference Interval: Environmental exposure: 79-326 µg/L
Performed by: Sent to Reference Laboratory - LabCorp (Order #716910)

SEmen Analysis
Test Code: SEMN
Synonyms: Determination of semen quality
Specimen Type: Freshly collected semen after 3-5 days of abstinence.
Method: Normal morphology percent, automated sperm counting motility assessment
TAT: 5 days - must be scheduled through Andrology Laboratory
Reference Interval: Complete absence of sperm or motility to normal values. Interpretation Normal/marginal/poor semen quality according to standards set by World Health Organization.
Performed by: Andrology Laboratory

Serotonin, Blood - Sent to Reference Laboratory
Test Code: LSERB
Synonyms: Functional HIT Assay
Heparin-dependent Platelet Antibody
Specimen Type: 2.0 mL (1.5 mL minimum)
Serum, Gold/SST red top tube
Method: High-pressure Liquid Chromatography (HPLC) with Electrochemical (EC) Detection
TAT: Set up Monday through Friday on 1st shift. Reported next day.
Collection: Separate serum from cells within 30 minutes of collection. Transfer to a plastic transport tube before freezing.
Transport: Frozen
Specimen Stability: Frozen: 13 days
Causes for Rejection: Specimen not frozen; plasma specimen.
Reference Interval: Male: 21-321 ng/mL
Female: 0-420 ng/mL
Comments: To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested.
Special Instructions State patient's sex on test request form.
Performed by: Sent to Reference Laboratory - LabCorp (Order #120204)

Serotonin Release Assay - Sent to Reference Laboratory
Test Code: LSRA
Synonyms: Functional HIT Assay
Heparin-dependent Platelet Antibody
Specimen Type: 1.0 mL (0.5 mL minimum)
Serum, Plastic transport tube
Method: Liquid Chromatography/Tandem Mass Spectroscopy
**SEROUS FLUID (Cell Count)**

**Test Code:** CELL  
**Specimen Type:** 1 mL in EDTA (lavender top): Pleural, peritoneal, and pericardial fluids  
**Method:** Iris or Manual  
**TAT:** STAT: 90 minutes  
**Collection:** Collect specimen using standard laboratory procedures.  
**Transport:** Room temperature, ASAP  
**Specimen Stability:** Refrigerated: 24 hours  
**Reference Interval:** Normal WBC and RBC counts are not clearly defined.  
**Performed by:** Core Laboratory, Microscopy

**SERUM VISCOSITY**

**Test Code:** SV1  
**Specimen Type:** 5 mL serum, 4 red tops only (no gold tops) - plain  
**Method:** Manual  
**TAT:** Performed Monday through Friday 7:00 a.m. to 3:00 p.m. Specimens should reach the Special Hematology lab by 2:00 p.m. to be done that day. STAT specimens should be arranged through the Special Hematology Laboratory.  
**Collection:** Specimens should be allowed to clot and retract in a 37°C heat block or 37°C waterbath. Centrifuge the tubes at 2800 rpm for 15 minutes, remove the serum, and freeze in one aliquot. 5 mL of serum is required to perform the test.  
**Transport:** Specimens that have not been spun should reach the lab the day that they are drawn. Frozen specimens should arrive frozen.  
**Specimen Stability:** Freeze at -20°C until tested  
**Reference Interval:** 1.4-1.8  
**Performed by:** Core Laboratory, Special Hematology

**SEX HORMONE-BINDING GLOBULIN - Sent to Reference Laboratory**

**Test Code:** LSHBG  
**Synonym:** Testosterone-binding Globulin  
**Specimen Type:** 0.8 mL (0.3 mL minimum) Serum, Gold/SST, red top tube
Method: Electrochemiluminescence Immunoassay (ECLIA)
TAT: Set up and reported Monday through Friday.
Collection: Transfer separated serum to a plastic transport tube.
Transport: Refrigerated
Specimen Stability: Room Temperature: 14 days
Refrigerated: 14 days
Frozen: 14 days
Cause for Rejection: Citrate plasma specimen; EDTA plasma specimen; improper labeling
Reference Interval: Male:
• 20-49 years: 16.5-55.9 nmol/L
• >49 years: 19.3-76.4 nmol/L
Female:
• 20-49 years: 24.6-122.0 nmol/L
• >49 years: 17.3-125.0 nmol/L
Performed by: Sent to Reference Laboratory - LabCorp (Order #082016)

SHIGA TOXIN ASSAY - Sent to reference laboratory
Test Code: STOX
Specimen Type: Stool:
• Minimum 1 mL in plastic cup
• Stool in Cary-Blair transport medium is also acceptable
Unacceptable:
• Rectal swabs or stool received in viral transport medium
Method: Enzyme immunoassay (EIA)
Interpretation: E. coli 0157:H7 is the most frequently identified shiga toxin-producing E. coli, however, at least 50 other serotypes have been associated with the production of cytotoxins and development of hemolytic uremic syndrome and/or hemorrhagic colitis.
Performed by: Sent to Reference Laboratory

SICKLE CELL PREP
Test Code: SICK
Specimen Type: 4 mL blood, EDTA (lavender top)
Method: Manual
TAT: 24 hours
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Refrigerated: Up to 45 days at 2-6°C
Reference Interval: Negative
Comment: The method is a qualitative test and as such does not distinguish between sickle cell disease (S/S) and sickle trait (A/S). All positive tests should be evaluated by hemoglobin electrophoresis. Low levels of HbS (less than 20%) can lead to false negatives. This is commonly seen in infants less than 3 months of age, therefore, this test is not recommended for that population.
Performed by: Core Laboratory, Special Hematology
**SIROLIMUS**

Test Code: SIRO

Synonym: Rapamune

Specimen Type: 0.5 mL blood, EDTA (lavender top)

Method: Chemiluminescent Microparticle Immunoassay (CMIA)

TAT: Performed Tuesday and Thursday

Collection: Collect specimen using standard laboratory procedures. Trough specimen required.

Transport: Room temperature, ASAP

Specimen Stability:
- Refrigerated: 7 days at 2-8°C
- If testing is delayed more than 7 days, store at less than or equal to -10°C
- Thaw only once.

Reference Interval: 6.5-15.0 ng/mL based on trough specimen

Comments: The stated therapeutic range is based on a trough specimen, with the patient in the maintenance phase, and in combination with cyclosporine for a kidney transplant.

Samples must be mixed thoroughly, immediately prior to the manual pretreatment step to ensure consistency in results.

Performed by: Core Laboratory

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**SM ANTIBODY (Smith)**

Test Code: ASMR

Specimen Type: 0.5 mL serum, Gold-SST

Method: Multi-Lyte

TAT: 3 days

Reference Interval: 0-100 U/mL

Performed by: Immunology Laboratory

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**SODIUM, BLOOD**

Test Code: NA

Specimen Type: 0.5 mL serum, Gold-SST/Red top

Method: Ion selective electrode

TAT:
- STAT: 90 minutes
- Routine: 4 hours
- Performed 24/7

Collection: Collect specimen using standard laboratory procedures.

Transport: Room temperature, ASAP

Specimen Stability:
- Room temperature: 2 weeks at 15-25°C
- Refrigerated: 2 weeks at 2-8°C

Reference Interval: 133-145 mmol/L

Performed by: Core Laboratory

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**SODIUM, FECAL - Sent to Reference Laboratory**

Test Code: LNAST

Specimen Type: 20 mL (10 mL minimum)

Liquid Stool, Plastic specimen cup
Method: Ion Specific Electrode
TAT: 1-11 days
Collection: Freeze immediately.
Transport: Frozen (Ship on dry ice)
Specimen Stability: Frozen: 30 days
Cause for Rejection: Formed stool; specimens received at ambient temperature; specimens outside of listed stability.
Reference Range: 0.0-159.9 mmol/L
Special Instructions: Must not be diluted with water or saline.
Performed by: Sent to Reference Laboratory - LabCorp (Order #823260)

**SODIUM, URINE**
Test Code: NAU
Specimen Type: 5 mL aliquot from a fresh well-mixed random urine collection
Method: Ion selective electrodes
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Random urine is collected in a container with a securely fastened lid with no preservatives.
Transport: Room temperature, ASAP
Specimen Stability: Refrigerated: 1 week at 2-8°C
Reference Interval: No reference interval is established for random urine specimens.
Comments: Centrifuge samples containing precipitate before performing the assay.
Performed by: Core Laboratory, Microscopy

**SOLUBLE TRANSFERRIN RECEPTOR - Sent to Reference Laboratory**
Test Code: LSTR
Synonyms: sTfR
Specimen Type: 1 mL (0.2 mL minimum) Serum, Gold-top/SST, red-top tube
Method: Immunochemiluminometric Assay (ICMA)
TAT: Set up and reported on Monday and Thursday.
Reported within 2 working days.
Collection: Separate serum from cells and transfer to a plastic transport tube.
Transport: Refrigerated
Causes for Rejection: Gross hemolysis; use of yellow-top tube.
Reference Interval: 12.2-27.3 nmol/L
Performed by: Sent to Reference Laboratory - LabCorp (Order #143305)

**SPECIAL ANTIGEN TYPING**
Test Code: SAT
Synonyms: Phenotyping, red cells
Specimen Type: 5 mL blood, EDTA (lavender top)
Method: Serologic testing of patient's red cells for specific red cell antigens
TAT: Performed 24/7
Collection: Specimens for Blood Bank testing must be labeled with the patient's full name, medical record number, and initials of phlebotomist. The specimen label must include the date and time the sample was drawn if this information is not entered in the collection information field of the EPIC generated order or in the Collected by field of the Blood Bank requisition.
Transport: Room temperature
Specimen Stability: Refrigerated: 3 days at 2-8°C
Interpretation: If trying to determine the likelihood of passing an antigen on to a child, the expression of both allelic antigens should be tested to determine whether an individual is homozygous or heterozygous for the antigen of interest.
Performed by: Blood Bank

SPERM ANTIBODY
Test Code: RSA3
Specimen Type: Fresh semen with >50% motile sperm and immunology kit
Method: Mixed agglutination of sperm with latex bead coated with human IgG in the presence of soluble rabbit anti-human IgG.
Interpretation: Diagnosis of immunological infertility is suspected when 10-39% of the motile spermatozoa have attached latex particles. Immunological infertility is highly probable when 40% or more spermatozoa have attached latex beads.
Performed by: Andrology Laboratory

SPERM MORPHOLOGY
Test Code: SMSC
Specimen Type: Fresh smear of semen fixed and stained
Method: Automated analysis
Reference Interval: Normal semen have the following characteristics:
  • Morphology: 50% or more with normal morphology.
  • White blood cells: Less than 1 million/mL
Performed by: Andrology Laboratory

SPERM MOTILITY
Test Code: MOT
Specimen Type: Freshly collected semen
Method: Microscopy and automated motion analysis
Performed by: Andrology Laboratory

SPERM PENETRATION OF CERVICAL MUCUS
Test Code: SSU
Specimen Type: Fresh semen and cervical mucus collected at the onset of ovulation
Method: Measuring the progress of swimming sperm through cervical mucus
Comments: Report sperm counts at 10 mm, 20 mm, and 30 mm distance from the semen end of the capillary.
Performed by: Andrology Laboratory

SPERM WASH FOR INSEMINATION
Test Code: SWO
Synonyms: Artificial insemination
Specimen Type: 2 mL fresh semen after 2 days of abstinence
Method: Automated sperm counting
TAT: 2 hours - Must be scheduled through the Andrology Laboratory.
Transport: Room temperature, less than 1 hour
Reference Interval: >5 million total sperm
Interpretation: Motility less than 20% is indicative of male factor deficiency.
Comments: Expect large variation of sperm count and motility.
Performed by: Andrology Laboratory

S-PHASE, CELL CYCLE ANALYSIS (See DNA ploidy analysis)

SSA ANTIBODY
Test Code: SSSA
Specimen Type: 0.5 mL serum, Gold-SST
Method: Multi-Lyte
TAT: 3 days
Reference Interval: 0-100 U/mL
Performed by: Immunology Laboratory

SSB ANTIBODY
Test Code: SSB
Specimen Type: 0.5 mL serum, Gold-SST
Method: Multi-Lyte
TAT: 3 days
Reference Interval: 0-100 U/mL
Performed by: Immunology Laboratory

STONE ANALYSIS - Sent to Reference Laboratory
Test Code: LCAL4
Specimen Type: Gallstones, Salivary, etc., Clean container or capsule
Method: Optical Microscopy
TAT: Call lab for testing days and turnaround times.
Collection: Calculi must be submitted completely dry. Specimens should not be submitted in liquid (formalin, urine, blood, etc.), in gauze, filters, taped, or on Q-tips. There will be delay in analyzing and reporting specimens not received completely dry.
Transport: Room Temperature
Reference Interval: Percentage of interior and exterior layers.
Comments: Do not attach small calculi to cellulose tape.
Performed by: Sent to Reference Laboratory - LabCorp (Order #120790)
STOOL CULTURE (See Culture, stool/intestinal)

STREPTOCOCCUS PNEUMONIAE IgG ANTIBODIES - Sent to Reference Laboratory
Test Code: LPNAB
Specimen Type: 1 mL (0.5 mL minimum)
    Serum, Gold/SST, red top tube
Method: Fluoroimmunoassay (FIA)
TAT: 5-7 days
Collection: Collect specimen using standard laboratory procedures.
Transport: Refrigerated
Performed by: Sent to Reference Laboratory - LabCorp (Order #816767)

STRONGYLOIDES, IgG ANTIBODY, QUALITATIVE - Sent to Reference Laboratory
Test Code: LSTRG
Specimen Type: 0.4 mL (0.1 mL minimum)
    Serum, Gold/SST, red-top tube
Method: Enzyme immunoassay (EIA)
TAT: Reported within 6 working days.
Collection: Serum should be separated from cells within 2 hours of venipuncture.
    Send serum in plastic transport tube.
Transport: Refrigerated
Specimen Stability: Refrigerated: 1 week at 2-8ºC without preservative
Performed by: Sent to Reference Laboratory - LabCorp (Order #164000)

SULFONYLUREA ANALYSIS - Sent to Reference Laboratory
Test Code: LSULF
Specimen Type: 2 mL (1 mL minimum)
    Serum, Red top tube
    Plasma, Green top (heparin) tube
Method: Liquid Chromatography/Tandem Mass Spectrometry (LC/MS-MS)
Collection: Serum or plasma should be separated from cells within two hours of venipuncture. Submit serum or plasma in a plastic transport tube.
Transport: Refrigerated
Cause for Rejection: Gel-barrier tubes
Comments: Testing referred to MEDTOX Labs, Inc.
Performed by: Sent to Reference Laboratory - LabCorp (Order #814133)

SYNOVIAL FLUID EXAMINATION (Cell Count)
Test Code: CELL
Specimen Type: Synovial fluid in EDTA (lavender top)
Method: Iris or Manual
TAT: STAT: 90 minutes
    Routine: 4 hours
    Performed 24/7
Transport: Room temperature, ASAP
Specimen Stability: Refrigerated: 24 hours
SYNOVIAL FLUID EXAMINATION (Crystal Count)

Test Code: CRYST
Specimen Type: Synovial fluid in EDTA (lavender top)
Method: Manual
TAT: STAT: 90 minutes
       Routine: 4 hours
       Performed 24/7
Transport: Room temperature, ASAP
Specimen Stability: Refrigerated: Prolonged period
Reference Interval: Normal WBC and RBC counts are not clearly defined. No crystals detected.
Performed by: Core Laboratory, Microscopy

SYPHILIS SEROLOGY (See VDRL, RPR)

T3, REVERSE - Sent to Reference Laboratory
Test Code: LT3R
Synonyms: Reverse Triiodothyronine
           Reverse T3
Specimen Type: 1 mL (0.6 mL minimum)
              Serum, Gold/SST, red-top tube
Method: Liquid chromatography/tandem mass spectrometry (LC/MS-MS)
TAT: Set up and reported Monday through Friday.
     Reported within 5 working days.
Collection: If a tube other than gel-barrier tube is used, transfer serum to a plastic transport tube.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
                 Frozen: 14 days
Reference Interval: Age    Range
                   Premature (26-32 weeks) 33.0-147.0 ng/dL
                   Premature (32-35 weeks) 49.0-217.0 ng/dL
                   Full-term (2-7 days) 33.0-206.0 ng/dL
                   8 days - 5 months 13.0-107.0 ng/dL
                   6-12 months 8.1-52.8 ng/dL
                   1-15 years 8.3-22.9 ng/dL
                   16 years and older 9.2-24.1 ng/dL
Performed by: Sent to Reference Laboratory - LabCorp (Order #070104)

T3, TOTAL
Test Code: T3
Synonyms: T3, Triiodothyronine
Specimen Type: 0.5 mL serum, Gold-SST/Red top
Method: Electrochemiluminescence
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 8 hours
Refrigerated: 7 days at 2-8°C
Frozen: 1 month at -20°C
Freeze once
Reference Interval:
>19 years  80-200 ng/dL
10-19 years  80-213 ng/dL
1-9 years  94-269 ng/dL
8-364 days  105-245 ng/dL
1-7 days  100-470 ng/dL
Comment: If samples are not run within 24 hours, store samples in freezer at -20°C until they can be run. Patients routinely exposed to animals or animal serum products can be prone to interference and anomalous values from heterophilic antibodies. Do not use samples that have been stored at room temperature for longer than 8 hours.
Performed by: Core Laboratory

**T3-UPTAKE - Sent out to Reference Laboratory**

Test Code: LT3U
Synonyms: T3 Resin Uptake
Thyroid Hormone-binding Ratio (THBR)
Specimen Type: 1 mL serum (Minimum 0.5 mL) Adult
0.8 mL (0.3 mL minimum) Pediatric
Serum, Gold-SST, red-top tube
Method: Cloned enzyme donor immunoassay (CEDIA)
TAT: Set up and reported Sunday through Friday on 1st and 3rd shifts.
Reported within 2 working days.
Collection: If a gel-top tube is used, transfer separated serum to a plastic transport tube.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Frozen: 14 days
Reference Interval:
<table>
<thead>
<tr>
<th>Age</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-11 months</td>
<td>23-34%</td>
<td>23-36%</td>
</tr>
<tr>
<td>1-3 years</td>
<td>24-35%</td>
<td>24-36%</td>
</tr>
<tr>
<td>4-6 years</td>
<td>24-34%</td>
<td>24-35%</td>
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<td>7-12 years</td>
<td>24-33%</td>
<td>22-35%</td>
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<tr>
<td>11-15 years</td>
<td>25-37%</td>
<td>23-37%</td>
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<tr>
<td>16-18 years</td>
<td>24-38%</td>
<td>23-35%</td>
</tr>
<tr>
<td>&gt;18 years</td>
<td>24-39%</td>
<td>24-39%</td>
</tr>
</tbody>
</table>
Special Instructions: This test reflects assessment of thyroxine-binding globulin (TBG) and should not be ordered alone.

Performed by: Sent to Reference Laboratory - LabCorp (Order #001156)

**T4, FREE, DIALYSIS - Sent to Reference Laboratory**

Test Code: LFT4D

Synonyms: Free Thyroxine (T4) by Dialysis/Mass Spectrometry

Specimen Type: 1 mL (0.5 mL minimum)
- Serum, Gold/SST, red-top tube or Plasma, Lavender-top (EDTA) tube

Method: Direct Dialysis Mass Spectrometry; High-pressure Liquid Chromatography/Mass Spectrometry (HPLC/MS)

TAT: Reported within 6 working days.

Collection: Serum or plasma must be separated from cells within 45 minutes of venipuncture. Send serum or plasma in plastic transport tube.

Transport: Frozen

Specimen Stability: Frozen: 453 days

Reference Interval:
- Premature (0-4 weeks) 0.86-4.46 ng/dL
- Newborn (0-2 weeks) 0.84-4.97 ng/dL
- Newborn (2 weeks-12 months) 0.81-2.12 ng/dL
- 1-11 years 0.65-1.9 ng/dL
- Pubertal children and adults 0.8-1.7 ng/dL

Pregnant Female
- 1st trimester (0-13.3 weeks) 0.65-1.4 ng/dL
- 2nd trimester (13.4-26.6 weeks) 0.5-1.3 ng/dL
- 3rd trimester (>26.6 weeks) 0.5-1.1 ng/dL

Comment: To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens to each test requested.

Performed by: Sent to Reference Laboratory - LabCorp (Order #501902)

**T4, TOTAL**

Test Code: T4

Synonyms: Thyroxine

Specimen Type: 0.5 mL serum, Gold-SST

Method: Electrochemiluminescence

TAT: STAT: 90 minutes
- Routine: 4 hours
- Performed 24/7

Collection: Collect specimen using standard laboratory procedures.

Transport: Room temperature, ASAP

Specimen Stability:
- Room temperature: 8 hours
- Refrigerated: 7 days at 2-8°C
- Frozen: 1 month at -20°C
- Freeze once

Reference Interval: >20 years 4.6-12.0 µg/dL
15-20 years  4.2-11.8 µg/dL  
10-14 years  5.6-11.7 µg/dL  
5-9 years  6.4-13.3 µg/dL  
1 month - 4 years  7.2-15.6 µg/dL  
8-29 days  8.1-16.6 µg/dL  
1-7 days  11.0-21.5 µg/dL

Comment: If samples are not run within 24 hours, store samples in freezer at -20°C until they can be run. Patients routinely exposed to animals or animal serum products can be prone to interference and anomalous values from heterophilic antibodies. Do not use samples that have been stored at room temperature for longer than 8 hours.

Performed by: Core Laboratory

TACROLIMUS
Test Code: FK506
Synonyms: FK506
Specimen Type: 0.5 mL blood, EDTA (lavender top)
Method: Chemiluminescent microparticle immunoassay (CMIA)
TAT: Same day if received before 10 a.m.
Collection: Collect specimen using standard laboratory procedures. Trough specimen required.
Transport: Room temperature, ASAP
Specimen Stability: Refrigerated: 7 days at 2-8°C prior to being tested. If testing will be delayed more than 7 days, store frozen (-10°C or colder).
Reference Interval: Recommended: Renal Transplant - Trough Levels
• Immediate Post Transplant: 8-12 ng/mL
• First 6 months: 6-10 ng/mL
• After 6 months: 4-10 ng/mL

Performed by: Core Laboratory

T + B - CELL PERCENTAGES (See Lymphocyte subsets)
TB PCR (See PCR, Mycobacterium tuberculosis)

T-CELL GENE REARRANGEMENT
Test Code: TGR
Specimen Type: 1 mL Bone Marrow, EDTA 3 mm3 Fresh Tissue
10-20 mL Peripheral Blood, EDTA (lavender top) Formalin fixed blocks
Method: T-gamma PCR
TAT: 3-7 days
Collection: Requires completed requisition F91021.
Transport: Transport fresh tissue on wet ice if sample will be received in 2 hours, otherwise transport tissue frozen on dry ice. Deliver to Molecular Diagnostics Laboratory as soon after collection as possible for delivery 8:00 a.m. - 5:00 p.m., Monday through Friday.
Comments: Utilizing Biomed primers, T-gamma PCR detects the presence of clonal population of cells. Clonality is not restricted to clones of T-cell lineage. In conjunction with immunophenotyping this assay provides information to aid in the diagnosis and classification of lymphoma and leukemia.

Performed by: Molecular Diagnostics Laboratory

TCO2 (See Bicarbonate)

TEGRETOL (See Carbamazepine)

TESTOSTERONE, TOTAL, FEMALE CHILDREN AND HYPOGONADAL MALES - Sent out to Reference Laboratory
Test Code: LTTOT, LTTC
Specimen Type: 0.8 mL (0.4 mL minimum)
Serum, Gold/SST, red-top tube
Method: Liquid Chromatography/Tandem Mass Spectrometry (LC/MS-MS)
TAT: Set up Monday through Friday on 1st shift.
Reported within 5 working days.
Collection: If a red-top tube is used, transfer separated serum to a plastic transport tube.
Transport: Refrigerated
Specimen Stability: Refrigerated: 7 days
Frozen: 2.6 years
Reference Interval: Sent with report. Refer to Reference Laboratory Website.
Comment: State patient's age and sex on the test request form.
Performed by: Sent to Reference Laboratory - LabCorp (Order #070001)

TESTOSTERONE, FREE DIRECT WITH TOTAL TESTOSTERONE - Sent out to Reference Laboratory
Test Code: LTFT
Specimen Type: 2 mL (0.7 mL minimum)
Serum, Gold/SST, red-top tube
Method: Free: Direct analog/radioimmunoassay (RIA)
Total: Electrochemiluminescence immunoassay (ECLIA)
TAT: Reported within 2 working days.
Collection: If other than a gel-barrier tube is used, transfer separated serum to a plastic transport tube.
Transport: Frozen
Specimen Stability: Frozen: 14 days
Causes for Rejection: Gross lipemia (may yield erroneously high free testosterone results);
plasma specimen; recently administered isotopes.
Comment: State patient's age and sex on the test request form.
Performed by: Sent to Reference Laboratory - LabCorp (Order #140103)
TESTOSTERONE, FREE DIRECT WITH TOTAL, FEMALE/CHILD - Sent out to Reference Laboratory
Test Code: LTFTC
Specimen Type: 2 mL (Minimum 0.7 mL)
Serum, Gold-SST, red-top tube
Method: Free: Direct analog/radioimmunoassay (RIA)
Total: Liquid chromatography/tandem mass spectrometry (LC/MS-MS)
TAT: Reported within 5 working days.
Collection: If other than a gel-barrier tube is used, transfer separated serum to a plastic transport tube.
Transport: Refrigerated
Specimen Stability: Refrigerated: 7 days
Frozen: 14 days
Comment: State patient's age and sex on the test request form.
Performed by: Sent to Reference Laboratory - LabCorp (Order #070195)

TESTOSTERONE, FREE AND WEAKLY BOUND, WITH TOTAL TESTOSTERONE - Sent to Reference Laboratory
Test Code: LTIBC
Specimen Type: 1.2 mL (0.6 mL minimum)
Serum, Gold/SST, red-top tube
Method: Ammonium sulfate precipitation; liquid chromatography/tandem mass spectrometry (LC/MS-MS)
TAT: Reported within 5 working days.
Collection: If other than a gel-barrier tube is used, transfer separated serum to a plastic transport tube.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Comment: State patient's age and sex on the test request form.
Performed by: Sent to Reference Laboratory - LabCorp (Order #070282)

TETANUS ANTITOXOID ANTIBODIES - Sent to Reference Laboratory
Test Code: LTET
Synonyms: Tetanus Toxin Antibodies
Specimen Type: 0.4 mL (0.2 mL minimum)
Serum, Gold/SST, red-top tube
Method: Enzyme immunoassay (EIA)
TAT: Set up and reported twice a week.
Reported within 5 working days.
Collection: Collect specimen using standard laboratory procedures.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Frozen: Unstable
Causes for Rejection: Gross hemolysis; lipemia; bacterial contamination.
Reference Interval: Nonprotective: <0.1 IU/mL
Performed by: Sent to Reference Laboratory - LabCorp (Order #163691)
THC (See Cannabinoids)

**THEOPHYLLINE**

Test Code: THEO  
Specimen Type: 0.5 mL serum, Gold-SST  
Method: Homogeneous enzyme immunoassay  
TAT: STAT: 90 minutes  
Routine: 4 hours  
Performed 24/7  
Collection: Collect specimen using standard laboratory procedures.  
Transport: Room temperature, ASAP  
Specimen Stability: Room temperature: 2 hours  
Refrigerated: 1 week at 2-8°C  
Frozen: 4 weeks at -20°C  
Reference Interval: 8.0-20.0 µg/mL  
Comment: The timing of specimen collection can influence the relationship between theophylline concentrations and the clinical response. Other pharmacokinetic factors should be taken into consideration. General guidelines for sample collection recommend theophylline levels should be measured from two to four hours after oral administration and 30 minutes after intravenous administration.  
Performed by: Core Laboratory

**THIAMINE (See Vitamin B1)**

**THIOPURINE METHYLTRANSFERASE (TPMT), ENZYME ACTIVITY, ERYTHROCYTES - Sent to Reference Laboratory**

Test Code: LTHME  
Synonyms: TPMT Biochemical Assay, Myelotoxicity  
Specimen Type: 8 mL (5 mL minimum) Adults  
5 mL Pediatric  
Whole Blood, Green top (sodium heparin) or lavender top (EDTA) tube  
Method: Enzymatic Endpoint/Liquid Chromatography/Tandem Mass Spectrometry (LC/MS-MS)  
TAT: Test performed at Esoterix. Reported within 9 working days.  
Collection: Drawn Monday through Friday ONLY to allow for adequate specimen stability.  
Transport: Refrigerated  
Specimen Stability: Refrigerated: 7 days  
Frozen: Unstable  
Causes for Rejection: Frozen specimen; gross hemolysis  
Reference Interval: Normal: 15.1-26.4 units/mL RBC  
Heterozygous for low TPMT variant: 6.3-15.0 units/mL RBC  
Homozygous for low TPMT variant: <6.3 units/mL RBC  
Performed by: Sent to Reference Laboratory - LabCorp (Order #510750)
THROMBIN TIME
Test Code: TT
Specimen Type: One full 3.5% citrate (blue top)
Method: Automated clotting assay
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Specimens must reach the laboratory within 4 hours of blood draw. Specimens that cannot reach the lab within the time frame should be double spun at 2500 g for 15 minutes to obtain platelet poor plasma. 0.5mL aliquots should be frozen in plastic at -20°C.
NOTE: Tubes must be full to obtain proper blood to anticoagulant ratio or the specimen will be rejected.
Transport: Specimens scheduled to arrive in lab in less than 4 hours should be sent at room temperature. Platelet poor specimens should be frozen before transport and placed in an insulated container on dry ice to insure that the specimen does not thaw.
Specimen Stability: Room temperature: 4 hours
Reference Interval: 14.6-17.8 seconds
Performed by: Core Laboratory

THYROGLOBULIN ANTIBODY QUANTITATIVE
Test Code: TGA
Specimen Type: 0.5 mL serum, Gold-SST/Red top
Method: Chemiluminescence on Beckman Access
TAT: Performed Monday, Wednesday, Friday, 8:00 a.m. - 3:00 p.m.
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Frozen: immediately at -20°C
Avoid repeated freezing and thawing.
Reference Interval: <2.3 U/mL
Comment: Avoid glossy hemolyzed or lipemic samples.
Performed by: Core Laboratory

THYROGLOBULIN, QUANTITATIVE
Test Code: TGB
Synonym: TGB
Specimen Type: 0.1 mL serum, Gold-SST/Red top
Method: Chemiluminescence on the Beckman Access
TAT: Performed Monday, Wednesday, Friday; 8:00 a.m. - 3:00 p.m.
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Refrigerated: 48 hours at 2-8°C
Frozen: at -20°C for longer storage
Avoid repeated freezing and thawing.
Reference Interval: <35 ng/mL
Comment: Avoid glossy hemolyzed or lipemic samples.
Performed by: Core Laboratory

THYROID PEROXIDASE ANTIBODY
Test Code: TPOAB
Specimen Type: 0.5 mL serum, Gold-SST/Red top
Method: Chemiluminescence Immunoassay
TAT: Monday, Wednesday, Friday, 8:00 a.m. - 3:00 p.m.
Collection: Collect specimen using standard precautions for venipuncture.
Transport: Room temperature, ASAP
Specimen Stability: If the assay will not be completed within 48 hours, freeze at -20°C.
Avoid repeated freezing and thawing.
Reference Interval: <9 IU/mL
Comment: Avoid glossy hemolyzed, glossy lipemic or jaundiced samples.
Performed by: Core Laboratory

THYROID STIMULATING HORMONE
Test Code: TSHS
Specimen Type: 0.5 mL serum, Gold-SST
Method: Electrochemiluminescence
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 8 hours
Refrigerated: 7 days at 2-8°C
Frozen: 1 month at -20°C
Freeze once
Reference Interval: >12 years  0.270-4.200 µU/mL
7-12 years  0.280-4.300 µU/mL
1 month - 6 years  0.300-5.000 µU/mL
8-29 days  0.400-10.000 µU/mL
1-7 days  0.400-15.000 µU/mL
Comment: If samples are not run within 24 hours, store samples in freezer at -20°C until they can be run. Patients routinely exposed to animals or animal serum products can be prone to interference and anomalous values from heterophilic antibodies. Do not use samples that have been stored at room temperature for longer than 8 hours.
Performed by: Core Laboratory

THYROID-STIMULATING IMMUNOGLOBULIN (TSI) - Sent to Reference Laboratory
Test Code: LTSI
Synonyms: Human Thyroid Stimulator (HTS)
Long-acting Thyroid Stimulator (LATS)
Thyretain
Specimen Type: 3 mL (0.3 mL minimum)
Serum, Gold/SST, red-top tube
Method: Chinese hamster ovary cell line transfected with both the thyrotropin receptor and a luciferase reporter gene
TAT: Reported within 5 working days.
Collection: Serum must be separated from blood cells by centrifugation, ideally within 2 hours of collection. If other than a gel-barrier tube is used, transfer separated serum to a plastic transport tube.
Transport: Refrigerated
Causes for Rejection: Improper labeling; gross microbial contamination; specimen contaminated with anticoagulants; plasma specimen; icteric, hemolytic, or lipemic serum.
Reference Interval: Normal: <140% of basal activity
Special Instructions: Prepare sterile venipuncture site.
Performed by: Sent to Reference Laboratory - LabCorp (Order #140749)

THYROTROPIN RECEPTOR ANTIBODY, SERUM - Sent to Reference Laboratory
Test Code: LTRAB
Synonyms: LATS
Long-acting Thyroid Stimulator
TBII
Thyrotropin-binding Inhibitory Immunoglobulin
TRAb
TSH Receptor Antibody
TSH Receptor-binding Inhibitor Immunoglobulin
Specimen Type: 0.8 mL (0.3 mL minimum)
Serum, Gold/SST, red-top tube
Method: Electrochemiluminescence immunoassay (ECLIA)
TAT: Set up and reported on Monday through Friday.
Reported within 3 working days.
Collection: If tube other than a gel-barrier tube is used, transfer separated serum to a plastic transport tube before freezing.
Transport: Frozen
Specimen Stability: Frozen: 1 month
Causes for Rejection: Citrate plasma specimen; samples collected in heparin or samples from patients on heparin therapy; lipemic or hemolyzed serum samples; improper labeling.
Reference Interval: 0.0-1.75 units/L
Comments: To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested.
Performed by: Sent to Reference Laboratory - LabCorp (Order #010314)

THYROXINE (See T4, total)
THYROXINE-BINDING GLOBULIN (TBG), SERUM - Sent to Reference Laboratory

Test Code: LTBGL
Synonyms: Thyroxine (T4), Free Direct
Triiodothyronine (T3)
Specimen Type: 0.5 mL (0.3 mL minimum)
Serum, Gold/SST, red-top tube
Method: Immunoochemiluminometric Assay (ICMA)
TAT: Set up and reported Sunday through Friday on 2nd shift.
Collection: If a red-top tube is used, transfer separated serum to a plastic transport tube.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Frozen: 14 days
Reference Interval:

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Male</th>
<th>Female</th>
</tr>
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<tbody>
<tr>
<td>1-11 months</td>
<td>16-33 µg/mL</td>
<td>18-32 µg/mL</td>
</tr>
<tr>
<td>1-3 years</td>
<td>16-32 µg/mL</td>
<td>19-34 µg/mL</td>
</tr>
<tr>
<td>4-6 years</td>
<td>17-30 µg/mL</td>
<td>18-31 µg/mL</td>
</tr>
<tr>
<td>7-12 years</td>
<td>17-29 µg/mL</td>
<td>15-29 µg/mL</td>
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<tr>
<td>13-18 years</td>
<td>13-26 µg/mL</td>
<td>14-29 µg/mL</td>
</tr>
<tr>
<td>&gt;18 years</td>
<td>13-39 µg/mL</td>
<td>13-39 µg/mL</td>
</tr>
</tbody>
</table>

Performed by: Sent to Reference Laboratory - LabCorp (Order #001735)

TIBC (See Iron binding capacity, total)

TISSUE (for Cytogenetic studies, See Chromosome analysis)

TISSUE TRANSGLUTAMINASE IgA ANTIBODY (TTGA)

Test Code: TTGA
Specimen Type: 0.5 mL serum, Gold-SST
Method: Enzyme-linked Immunosorbent Assay (ELISA)
TAT: 4 days
Reference Interval: <20 units
Comments: Included in celiac panel; patient must be able to make IgA in order to detect. Order IgA (part of celiac panel) along with this test if unsure of patient's IgA level. This test will reflex to TTG-IgG if the IgA level is <4 mg/dL.

Performed by: Immunology Laboratory

TISSUE TRANSGLUTAMINASE IgG ANTIBODY (TTGG)

Test Code: TTGG
Specimen Type: 0.5 mL serum, Gold-SST
Method: Enzyme-linked Immunosorbent Assay (ELISA)
TAT: 4 days
Reference Interval: <20 units
Comments: Most patients with celiac disease or dermatitis herpetiformis (DH) make IgA antibodies to TTG. Patients with celiac disease or DH and lacking
IgA will make IgG antibodies instead. This combination is rare and will be reflexively tested in patients with IgA <4 mg/dL.

Performed by: Immunology Laboratory

**TOBRAMYCIN - Peak**

Test Code: TOBRP  
Specimen Type: 0.5 mL serum, Gold-SST  
Method: Homogeneous Enzyme Immunoassay  
TAT: STAT: 90 minutes  
Routine: 4 hours  
Performed 24/7  
Collection: Collect specimen using standard laboratory procedures.  
Transport: Room temperature, ASAP  
Specimen Stability: Room temperature: 2 hours  
Refrigerated: 3 days at 2-8°C  
Frozen: 4 weeks at -20°C  
Reference Interval: 6-10 µg/mL  
Comment: Peak specimens are to be obtained 30-60 minutes after end of infusion/injection, 30 minute post 30 minute infusion, and 60 minute post IM dose. Amikacin cross-reacts with this assay. Kanamycin cross-reacts significantly. Samples that contain tobramycin in combination with either amikacin or kanamycin cannot be reliably quantitated by this assay.  
Performed by: Core Laboratory

**TOBRAMYCIN - Random**

Test Code: TOBRR  
Specimen Type: 0.5 mL serum, Gold-SST  
Method: Homogeneous enzyme immunoassay  
TAT: STAT: 90 minutes  
Routine: 4 hours  
Performed 24/7  
Collection: Collect specimen using standard laboratory procedures.  
Transport: Room temperature, ASAP  
Specimen Stability: Room temperature: 2 hours  
Refrigerated: 3 days at 2-8°C  
Frozen: 4 weeks at -20°C  
Comments: Amikacin cross-reacts with this assay. Kanamycin cross-reacts significantly. Samples that contain tobramycin in combination with either amikacin or kanamycin cannot be reliably quantitated by this assay.  
Performed by: Core Laboratory

**TOBRAMYCIN - Trough**

Test Code: TOBRT  
Specimen Type: 0.5 mL serum, Gold-SST  
Method: Enzyme Immunoassay  
TAT: STAT: 90 minutes
Routine: 4 hours  
Performed 24/7

Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 2 hours  
Refrigerated: 3 days at 2-8°C  
Frozen: 4 weeks at -20°C
Reference Interval: Trough: <2.0 µg/mL
Comment: Trough specimen to be obtained immediately prior to next dose. Trough = <2 µg/mL. Amikacin cross-reacts with this assay. Kanamycin cross-reacts significantly. Samples that contain tobramycin in combination with either amikacin or kanamycin cannot be reliably quantitated by this assay.

Performed by: Core Laboratory

TOPIRAMATE
Test Code: TOPI
Synonym: Topamax
Specimen Type: 0.5 mL serum, Gold-SST
Method: Homogeneous Turbidimetric Immunoassay
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7

Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Patient samples should be stored at 2-8°C for no longer than 24 hours. Specimens that are removed from the cells, clot and gel may be stored up to 7 days at 2-8°C. If longer storage is required, samples can be frozen at -20°C or colder for up to 2 weeks.
Reference Interval: 2-25 µg/mL
Comment: Thaw frozen samples completely and mix thoroughly prior to use. Mix all samples well prior to performing the assay procedure.

Performed by: Core Laboratory

TOTAL PROTEIN
Test Code: TP
Specimen Type: 0.5 mL serum, Gold-SST
Method: Colorimetric Assay
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7

Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 14 hours  
Refrigerated: 3 days at 2-8°C  
Frozen: 6 months at -20°C
Reference Interval: >2 years 6.4-8.3 g/dL
1-2 years  5.6-7.5 g/dL
7-11 months  5.1-7.3 g/dL
7 days - 6 months  4.4-7.6 g/dL
0-6 days  4.6-7.0 g/dL

Performed by: Core Laboratory

**TOTAL PROTEIN URINE, RANDOM**

Test Code: TPU
Specimen Type: Fresh random urine sample
Method: Turbidimetric
TAT: Performed 24/7
Collection: Use a fresh random urine sample with no preservatives. Collect in a container with a securely fastened lid.
Transport: ASAP
Specimen Stability: Room Temperature: 4 hours
Specimens may be stored for 48 hours at 2-8ºC.
Comments: Centrifuge samples with precipitate.
Reference Interval: Reference intervals for random urine has not been established.
Performed by: Core Laboratory

**TOTAL PROTEIN URINE, QUANTITATIVE**

Test Code: TPQT
Specimen Type: 1 aliquot of well-mixed 24 hour urine
Method: Turbidimetric
TAT: Performed 24/7
Collection: Collect a 24 hour urine specimen with no preservative. Refrigerate during collection.
Transport: ASAP
Specimen Stability: Specimen may be stored at 2-8ºC for 48 hours.
Reference Interval: 0-0.15 gm/24 hour
Comments: Centrifuge samples with precipitate.
Performed by: Core Laboratory

**TOXOPLASMA GONDII ANTIBODY, IgG**

Test Code: TOXG
Specimen Type: 0.5 mL Serum, Gold-SST
Method: Enzyme-linked Immunosorbent Assay (ELISA)
TAT: 4 days
Reference Interval: <0.9 ISR negative
Performed by: Immunology Laboratory

**TOXOPLASMA GONDII ANTIBODIES, IgM, QUANTITATION - Sent to Reference Laboratory**

Test Code: LTOXM
Synonyms: Toxoplasmosis Acute Antibodies
Specimen Type: 0.5 mL (0.2 mL minimum)
Serum, Gold/SST, red-top tube

Method: Chemiluminescent immunoassay (CLIA)
TAT: Set up and reported Monday through Friday on 3rd shift. Positives reported next day.
Collection: Collect specimen using standard laboratory procedures.
Transport: Refrigerated
Specimen Stability: Refrigerated: 2 days
Causes for Rejection: Hemolysis; lipemia; gross bacterial contamination.
Reference Interval: Negative: <8.0 AU/mL
Equivocal: 8.0-9.9 AU/mL
Positive: >9.9 AU/mL
Performed by: Sent to Reference Laboratory - LabCorp (Order #096651)

TRANSFERRIN
Test Code: TRANF
Specimen Type: 0.5 mL serum, Gold-SST/Red top
Method: Immunoturbidimetric
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 8 days
Refrigerated: 8 days
Frozen: 6 months
Reference Interval: 200-360 mg/dL
Performed by: Core Laboratory

TRANSFUSION REACTION EVALUATION
Test Code: TRXN
Specimen Type: Post transfusion: 10 mL blood (two 5 mL tubes), EDTA (lavender top) and 10 mL urine
Method: ABO/Rh type of pre and post-transfusion specimens, direct antiglobulin test, visual inspection of serum for hemolysis, post-transfusion urine for hemoglobin and clerical check on all work performed. Additional testing performed based on the findings of the initial tests performed.
TAT: Daily
Collection: Transfusion reaction form, blood bag with administration set and any attached solution bags intact, and 1st post-transfusion voided urine sample. Specimens must be labeled with the patient's full name, medical record number, and initials of phlebotomist. The specimen label must include the date and time the sample was drawn if this information is not entered in the collection information field of the EPIC generated order or in the Collected by field of the Blood Bank requisition.
Transport: Room temperature
Interpretation: Data from tests used to determine if an immediate intravascular hemolytic reaction has occurred. A final written interpretation will be provided following evaluation of all laboratory and clinical findings by an Attending Pathologist.

Performed by: Blood Bank

**TREPONEMAL PALLIDUM ANTIBODY**

Test Code: MHATP
Specimen Type: 2 mL serum, Gold-SST
Method: Particle Agglutination
TAT: 72 hours
Reference Interval: Non-reactive
Performed by: Immunology Laboratory

**TRICHOMONAS (See Parasites, trichomonas)**

**TRICYCLIC ANTIDEPRESSANTS, CONFIRMATION - Sent to Reference Laboratory**

Test Code: LTRUC
Specimen Type: 30 mL (10 mL minimum) Urine, Urine container
Method: Enzyme-linked Immunosorbent Assay (ELISA)
TAT: At least 7 days or more.
Collection: Random urine is collected in a container with a securely fastened lid with no preservatives.
Transport: Refrigerated
Comment: This is a confirmatory test based on the DABU1 screen results. Orders are available upon request.
Performed by: Sent to Reference Laboratory - LabCorp (Order #733856).

**TRICYCLIC ANTIDEPRESSANTS, SCREEN**

Test Code: DABU1
Specimen Type: 20 mL (7 mL minimum) aliquot from a fresh well-mixed random urine collection
Method: Kinetic Interaction of Microparticles in Solution (KIMS) and Tricyclic by Enzyme Immunoassay (EIA)
TAT: STAT: 90 minutes Routine: 4 hours Performed 24/7
Collection: Random urine is collected in a container with a securely fastened lid with no preservatives.
Transport: Room Temperature (ASAP)
Specimen Stability: Refrigerated: Test within 3 days and store at 2-8°C.
Reference Interval: Negative
Comment: Included in the DABU1 battery. Confirmatory test available upon request (LTRUC Order #733856).
Performed by: Core Laboratory
TRIGLYCERIDES
Test Code: TRIG
Specimen Type: 0.5 mL serum, Gold-SST/Red top
Method: Enzymatic colorimetric
TAT: STAT: 90 minutes
Route: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures. Specimens from patients fasting for at least 12 hours is desired.
Transport: Room temperature, ASAP
Specimen Stability: Refrigerated: 7 days at 2-8°C
Frozen: 3 months at -20°C
Reference Interval: <200 mg/dL
Performed by: Core Laboratory

TRIIODOTHYRONINE (See T3, total)

TROPONIN T
Test Code: TROPT
Specimen Type: 1 mL serum, Gold-SST
Method: Electrochemiluminescence
TAT: STAT: 90 minutes
Route: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 4 hours
Refrigerated: 24 hours at 2-8°C
Frozen: 12 months at -20°C
Reference Interval: <0.10 ng/mL
Comment: Because of possible evaporation effects, samples on the analyzers should be measured within 2 hours.
Performed by: Core Laboratory

TRYPTASE - Sent to Reference Laboratory
Test Code: LTRPT
Synonyms: Mast Cell Tryptase
Specimen Type: 0.7 mL (0.5 mL minimum)
Serum, Gold/SST, red-top tube
Method: ImmunoCAP
TAT: Reported within 4 working days.
Collection: Separate serum from cells and transfer to a plastic transport tube.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Frozen: 14 days
Causes for Rejection: Grossly hemolyzed or lipemic samples.
Reference Interval: 2.2-13.2 μg/L
Performed by: Sent to Reference Laboratory - LabCorp (Order #004280)

TYLENOL (See Acetaminophen)

TYPE AND CROSSMATCH
Test Code: XM
Specimen Type: 10 mL blood (two 5 mL tubes), EDTA (lavender top)
Method: ABO/Rh type, antibody screen and red cell crossmatch
TAT: Performed 24/7
STAT orders completed in approximately 1 hour.
Routine orders are batched and completed in 4 hours.
Specimens with irregular antibodies require more time for antibody identification, locating antigen negative units, and crossmatching.
Collection: Appropriate EPIC generated Prepare RBC order or Red Cell Order form (on-line) if not on EPIC. Specimens for Blood Bank testing must be labeled with the patient's full name, medical record number, and initials of phlebotomist. The specimen label must include the date and time the sample was drawn if this information is not entered in the collection information field of the EPIC generated order or in the Collected by field of the Red Cell Order form.
Transport: Room temperature
Specimen Stability: Refrigerated: 3 days if stored at 2-8°C.
Transfusion must occur within 3 days of collection of specimen.
Comments: Crossmatched units held until 7:00 a.m. on the second day after specimen was drawn. Units can be reserved an additional day if requested. Units must be transfused within 3 days of specimen collection.
Performed by: Blood Bank

TYPE AND SCREEN
Test Code: TYSC
Specimen Type: 10 mL blood (two 5 mL tubes), EDTA (lavender top)
Method: ABO/Rh type and antibody screen
TAT: Performed 24/7
Collection: Specimens for Blood Bank testing must be labeled with the patient's full name, medical record number, and initials of phlebotomist. The specimen label must include the date and time the sample was drawn if this information is not entered in the collection information field of the EPIC generated order or in the Collected by field of the Blood Bank requisition.
Transport: Room temperature
Specimen Stability: Refrigerated: 3 days if stored at 2-8°C
Comments: Type and screens should be ordered on patients who may need to be transfused. Having a valid specimen on hold in the laboratory will save time when blood is ordered for transfusion. Use of the type and screen in place of a crossmatch eliminates unnecessary crossmatches for patients who will not be transfused. If converted to a crossmatch, an appropriate
EPIC generated Prepare RBC order or Red Cell Order form (on-line) if not on EPIC must be sent to the Blood Bank. The specimen can be used to crossmatch units providing units are transfused within 3 days of specimen collection.

Performed by: Blood Bank

**UNCONJUGATED ESTRIOL**

Test code: UE3  
Specimen Type: 0.5 mL Serum, Gold-SST/Red top  
Method: Chemiluminescence  
TAT: Tuesday & Thursday 8:00 a.m. - 3:00 p.m.  
Collection: Collect specimen using standard laboratory procedures.  
Transport: Room temperature, ASAP  
Specimen Stability: Room temperature: 8 hours  
Refrigerated: 72 hours at 2-8°C  
Frozen: -20°C for longer storage  
Reference Interval: Not applicable.  
Comment: This test is used in conjunction with alpha-fetoprotein, Inhibin A, and HCG for maternal screening. Included in battery (QUADM).  
Performed by: Core Laboratory

**UREA NITROGEN, BLOOD**

Test Code: BUN  
Synonym: Blood urea nitrogen; BUN  
Specimen Type: 0.5 mL serum, Gold-SST/Red top  
Method: Kinetic UV assay  
TAT: STAT: 90 minutes  
Routine: 4 hours  
Performed 24/7  
Collection: Collect specimen using standard laboratory procedures.  
Transport: Room temperature, ASAP  
Specimen Stability: Room temperature: 7 days at 20-25°C  
Refrigerated: 7 days at 2-8°C  
Frozen: 1 year at -20°C  
Reference Interval: >59 years 8-23 mg/dL  
18-59 years 6-20 mg/dL  
1-17 years 5-18 mg/dL  
0-11 months 4-19 mg/dL  
Performed by: Core Laboratory

**UREA NITROGEN, URINE (24 hour)**

Test Code: UUNP  
Specimen Type: 5 mL aliquot from a fresh well-mixed 24 hour urine collection  
Method: Kinetic UV assay  
TAT: Performed 7:00 a.m. - 3:00 p.m. daily.

Transport: Room temperature, ASAP

Specimen Stability:
- Room temperature: 2 days at 20-25°C
- Refrigerated: 7 days at 2-8°C
- Frozen: 1 month at -20°C

Reference Interval: 12-20 mg/24 hours

Comment: Centrifuge samples containing precipitates before running assay.

Performed by: Core Laboratory, Microscopy

**UREA NITROGEN, URINE (Random)**

Test Code: UUNR

Specimen Type: 5 mL aliquot from a fresh well-mixed random urine collection

Method: Kinetic UV Assay

TAT: STAT: 90 minutes

Collection: Random urine is collected in a container with a securely fastened lid with no preservatives.

Transport: Room temperature, ASAP

Specimen Stability:
- Room temperature: 2 days at 20-25°C
- Refrigerated: 7 days at 2-8°C
- Frozen: 1 month at -20°C

Reference Interval: No normal range for urea nitrogen or random urine samples.

Comment: Centrifuge samples containing precipitates before running assay.

Performed by: Core Laboratory, Microscopy

**URIC ACID**

Test Code: UA

Specimen Type: 0.5 mL serum, Gold-SST

Method: Enzymatic Colorimetric Assay

TAT: STAT: 90 minutes

Collection: Collect specimen using standard laboratory procedures.

Transport: Room temperature, ASAP

Specimen Stability:
- Refrigerated: 5 days at 2-8°C
- Frozen: 6 months at -20°C

Reference Interval:
- Male: 3.4-7.0 mg/dL
- Female: 2.4-5.7 mg/dL

Comment: Avoid Hemolysis.

Performed by: Core Laboratory

**URIC ACID, URINE (24 hour) - Sent out to Reference Laboratory**

Test Code: LUUAC
Specimen Type: 10 mL aliquot (1 mL minimum)
Urine, Plastic urine container, no preservative
Method: Uricase
TAT: Set up and reported Sunday through Friday on 2nd and 3rd shifts.
Collection: Instruct the patient to void at 8 a.m. and discard the specimen. Then collect all urine including the final specimen voided at the end of the 24 hour collection period (i.e., 8 a.m. the next morning). Measure and record total urine volume. Mix well and send aliquot. Label container with patient's name, date and time collection started and date and time collection was completed.
Transport: Refrigerated
Specimen Stability: Room temperature: 14 days
Refrigerated: 14 days
Frozen: 14 days
Cause for Rejection: Improper labeling; use of preservative; pH <6
Reference Interval: 250-750 mg/24 hours
Special Instructions: State urine volume on the request form.
Performed by: Sent to Reference Laboratory - LabCorp (Order #003418)

URIC ACID, URINE (Random) - Sent out to Reference Laboratory
Test Code: Miscellaneous Test
Specimen Type: 5 mL aliquot from a fresh well-mixed random urine collection (Minimum 2 mL)
Method: Spectrophotometry
TAT: 3-5 business days
Collection: Random urine is collected in a container with a securely fastened lid with no preservatives.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 13 days
Refrigerated: 13 days
Frozen: 28 days
Reference Interval: Sent with results.
Comment: Do not acidify the specimen. Please aliquot for uric acid testing prior to the addition of any acid for those tests requiring preservatives.
Special Instructions: Ship: Refrigerated
Performed by: Sent to Reference Laboratory

URINALYSIS, COMPLETE
Test Code: URN2
Specimen Type: 6 mL freshly voided urine
Method: Iris 2
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen in a container with a securely fastened lid using universal precautions.
Transport: Room temperature, ASAP
Specimen Stability: If testing cannot be performed within 2 hours of collection, refrigerate the specimen, but perform testing within 4 hours of collection (bring specimen to room temperature before testing).
Reference Interval: 
- Urine Appearance: Yellow and clear
- Urine Specific Gravity: 1.003-1.030
- Urine pH: 5.0-8.0
- Urine Protein: Negative
- Urine Glucose: Negative
- Urine Ketone: Negative
- Urine Bili: Negative
- Urine Nitrite: Negative
- Urine Hgb: Negative
Comments: Avoid exposure to sunlight.
Performed by: Core Laboratory, Microscopy

**URINALYSIS, COMPLETE (Culture)**
Test Code: URNC
Specimen Type: 6 mL freshly voided urine
Method: Iris 2
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen in a container with a securely fastened lid using universal precautions.
Transport: Room temperature, ASAP
Specimen Stability: If testing cannot be performed within 2 hours of collection, refrigerate the specimen, but perform testing within 4 hours of collection (bring specimen to room temperature before testing).
Reference Interval: 
- Urine Appearance: Yellow and clear
- Urine Specific Gravity: 1.003-1.030
- Urine pH: 5.0-8.0
- Urine Protein: Negative
- Urine Glucose: Negative
- Urine Ketone: Negative
- Urine Bili: Negative
- Urine Nitrite: Negative
- Urine Hgb: Negative
Comments: Avoid exposure to sunlight.
Performed by: Core Laboratory, Microscopy

**URINE ALCOHOL (See Ethanol, urine)**

**URINE CULTURE (See Culture, urine)**

**URINE IMMUNOFIXATION (See Immunofixation)**
VAGINITIS, TRICHOMONAS (See Parasites, trichomonas)

VAGINITIS, YEAST
Test Code: KOHP
Synonyms: Monilia, KOH prep
Specimen Type: Vaginal: Gel swab
Method: KOH wet mount
TAT: Performed 24/7
Results available the day the specimen is received in the laboratory.
Collection: Collect specimen using standard laboratory procedures.
Specimen Stability: Room temperature: <2 hours at 25°C
Refrigerated: <24 hours at 2-8°C
Performed by: Microbiology Laboratory

VALPROIC ACID
Test Code: VPA
Synonym: Depakote, Depakene
Specimen Type: 0.5 mL serum, Gold-SST
Method: Homogeneous enzyme immunoassay
TAT: STAT: 60 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 2 days capped at 15-25°C
Refrigerated: 7 days capped at 2-8°C
Frozen: 3 months capped at -20°C
Avoid repeated freezing and thawing.
Reference Interval: 50-100 µg/mL
Comments: Specimens for valproic acid analysis should be drawn just prior to a dose, preferably in the fasting state. More frequent monitoring may be necessary when administering valproic acid in the presence or during the withdrawal of other anti-epileptic agents.
Performed by: Core Laboratory

VALPROIC ACID, FREE - Sent to Reference Laboratory
Test Code: LVAF
Synonyms: Depacon
Depakene
Depakote
Free Valproic Acid
Stavzor
Valproate
Specimen Type: 3 mL (1.1 mL minimum)
Serum, Red-top tube
Method: Ultrafiltrate assayed by liquid chromatography/tandem mass spectrometry (LC/MS-MS)
TAT: Set up Monday through Friday on 1st shift.
Reported within 4 working days.
Collection: Do not use gel-barrier tubes. Transfer separated plasma to a plastic transport tube.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Frozen: 14 days
Causes for Rejection: Gel-barrier tube; hemolysis; serum or plasma not removed from cells.
Reference Interval: Therapeutic: 4.0-12.0 µg/mL
Comments: The use of gel-barrier tubes is not recommended due to slow absorption of the drug by the gel. Depending on the specimen volume and storage time, the decrease in drug level due to absorption may be clinically significant.
Performed by: Sent to Reference Laboratory - LabCorp (Order #070789)

VANCOMYCIN (Peak)
Test Code: VANCP
Specimen Type: 0.5 mL serum, Gold-SST/Red top
Method: Homogeneous Particle-enhanced Turbidimetric Immunoassay
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 2 hours at 15-25°C
Refrigerated: 2 days at 2-8°C
Frozen: 4 weeks at -20°C
Reference Interval: Peak: 20.0-40.0 µg/mL
Comment: Peak specimens should be obtained 30-90 minutes after administration.
Performed by: Core Laboratory

VANCOMYCIN (Random)
Test Code: VANCRR
Specimen Type: 0.5 mL serum, Gold-SST/Red top
Method: Homogeneous Particle-enhanced Turbidimetric Immunoassay
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7
Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Room temperature: 2 hours at 15-25°C
Refrigerated: 2 days at 2-8°C
Frozen: 4 weeks at -20°C
Comment: If samples are not run within 24 hours, store samples in freezer at -20°C until they can be run. Patients routinely exposed to animals or animal
serum products can be prone to interference and anomalous values from heterophilic antibodies. Do not use samples that have been stored at room temperature for longer than 8 hours.

Performed by: Core Laboratory

**VANCOMYCIN (Trough)**

Test Code: VANCT  
Specimen Type: 0.5 mL serum, Gold-SST  
Method: Homogeneous Particle-enhanced Turbidimetric Immunoassay  
TAT: STAT: 90 minutes  
Routine: 4 hours  
Performed 24/7  
Collection: Collect specimen using standard laboratory procedures.  
Transport: Room temperature, ASAP  
Specimen Stability: Room temperature: 2 hours at 15-25°C  
Refrigerated: 2 days at 2-8°C  
Frozen: 4 weeks at -20°C  
Reference Interval: Trough: 10.0-20.0 µg/mL  
Comment: Trough level should be drawn 30 minutes prior to next dose.  
Performed by: Core Laboratory

**VANILLYLMANDELIC ACID (VMA), 24-HOUR URINE - Sent to Reference Laboratory**

Test Code: LVMAU  
Synonym: VMA, 24 hour urine  
3-Methoxy-4-Hydroxymandelic Acid, 24 hour urine  
Specimen Type: 30 mL aliquot (1 mL aliquot minimum)  
Urine (24 hour), Plastic urine container  
Method: Liquid Chromatography/Tandem Mass Spectrometry (LC/MS-MS)  
TAT: Set up Monday through Friday on 1st shift.  
Reported next working day.  
Collection: Instruct the patient to void at 8 a.m. and discard the specimen. Then collect all urine, including the final specimen voided at the end of the 24-hour collection period (i.e., 8 a.m. the next morning). Measure and record total urine volume. Mix well and send aliquot. Label container with patient's name, date and time collection started and date and time collecting completed.  
Transport: Refrigerated  
Specimen Stability: Refrigerated: 14 days  
Frozen: 14 days  
Reference Interval: 0.0-7.5 mg/24 hours  
Special Instructions: Record total 24-hour urine volume on the request form.  
Performed by: Sent to Reference Laboratory - LabCorp (Order #004143)
VANILLYL MANDELIC ACID (VMA), RANDOM URINE - Sent to Reference Laboratory

Test Code: LVMAR
Synonyms: VMA, Random Urine
3-Methoxy-4-Hydroxy mandelic Acid
Specimen Type: 10 mL (1 mL minimum) aliquot
Plastic urine container
Method: Liquid Chromatography/Tandem Mass Spectrometry (LC/MS-MS)
TAT: Reported within 4 working days.
Collection: If specimen is to be stored for longer than seven days before analysis, use random urine transport tube.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Frozen: 14 days
Reference Interval: Pediatric patients and adults: VMA: creatinine ratio
- Up to 2 years: 0.0-18.8 mg/g creatinine
- 2-4 years: 0.0-11.0 mg/g creatinine
- 5-9 years: 0.0-8.3 mg/g creatinine
- 10-19 years: 0.0-8.2 mg/g creatinine
- Older than 19 years: 0.0-6.0 mg/g creatinine
Special Instructions: Use of patients where 24-hour urine collection is difficult (e.g. Pediatric patients). Twenty-four hour urine collection is preferable. Patient should avoid salicylates, caffeine, phenothiazine, and antihypertension agents.
Performed by: Sent to Reference Laboratory - LabCorp (Order #123208)

VARICELLA ZOSTER FLUORESCENT ANTIBODY STAIN

Test Code: VFAS
Synonyms: VZV FA Stain
Specimen Type: Scrapings of vesicular or pustular lesions containing cells applied to glass slides.
TAT: Performed Monday through Friday
Collection: Remove any creams, lotions, deodorants, talcum, etc. prior to the collection of scrapings as these materials may interfere with this test. Incise vesicle around periphery with a sterile scalpel. Lift back the top of the lesion and remove excess fluid by gently blotting with a sterile swab. This swab can be placed in UTM and transported on ice for culture. Scrape the base of the lesion with a sterile scalpel blade and spread the collected cells thinly within the circles of 2 microscope slides. Allow slides to air dry.
Transport: Room temperature, ASAP
Comments: The FA stain is more sensitive than VZV culture if adequate cellular material is collected.
Performed by: Virology Laboratory

VARICELLA ZOSTER IgG ANTIBODY

Test Code: VZIM
Specimen Type: 0.5 mL serum, Gold-SST
Method: Enzyme-linked Immunosorbent Assay (ELISA)
TAT: 4 days
Comments: For immune status only. The Varicella immune status test measures IgG antibody. If the Varicella immune status test is positive, the patient has protective levels of antibody present. If the physician is trying to determine current infection, a Varicella IgM antibody test should be ordered.
Performed by: Immunology Laboratory

VARICELLA ZOSTER VIRUS (VZV) ANTIBODIES, IgM, QUANTITATIVE - Sent to Reference Laboratory
Test Code: LVZVM
Synonyms: VZV IgM
Specimen Type: 1 mL (0.5 mL minimum)
Serum, Gold/SST, red-top tube
Method: Enzyme immunoassay (EIA)
TAT: Set up Monday through Friday on 1st shift.
Positive reported next day.
Collection: Collect specimen using standard laboratory procedures.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Frozen: 14 days
Causes for Rejection: Hemolysis; lipemia; gross bacterial contamination; plasma samples.
Reference Interval: Negative: <0.91 index
Borderline: 0.91-1.09 index
Positive: >1.09 index
Performed by: Sent to Reference Laboratory - LabCorp (Order #096776)

VDRL - CSF SYPHILIS TESTING
Test Code: CSVD
Specimen Type: CSF
Method: Agglutination
TAT: 7 days
Reference Interval: Non-reactive
Comment: Use only for CSF specimens. If a serum VDRL is ordered, it must be entered with the RPR1 code.
Performed by: Immunology Laboratory

VERIFYNOW ASPIRIN
Test Code: PASPR
Specimen Type: 2 Greiner 3.2% sodium citrate blue top and 1 non-additive white top tube.
Method: VerifyNow Platelet Aggregometry
TAT: Within 4 hours of collection
Collection: Collect specimen with a 21 gauge or larger needle. Always collect 2 mL's of blood in a non-additive white top tube and discard. Next collect 2
Greiner sodium citrate tubes. These are partial fill tubes that fill halfway to the black arrow. NEVER draw these tubes after filling an EDTA tube. Mix gently by inverting 5 times. Collection time MUST be recorded on the tube and requisition as this is a time sensitive test.

**NOTE:** Tubes must be full to obtain proper blood to anticoagulant ratio or the specimen will be rejected.

**Transport:** Room temperature, within 4 hours of blood draw. Do NOT transport in pneumatic tube.

**Specimen Stability:** Whole blood:
- Room temperature: 4 hours.

**Interpretation:** Sent with results.

**Reference Interval:** <550 ARU

**Comments:** Call the laboratory at 464-6830 to get collection tubes and instructions.

**Performed by:** Core Laboratory, Special Hematology

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**VERIFYNOW IIB/IIIA**

**Test Code:** P2B3A

**Synonyms:** Abciximab (ReoPro) or Eptifibatide (Integrilin)

**Specimen Type:** 2 Greiner lithium heparin green top tubes and 1 non-additive white top tube.

**Method:** VerifyNow Platelet Aggregometry

**TAT:** Within 15 minutes of collection

**Collection:** Collect specimen with a 21 gauge or larger needle. Always collect 2 mL's of blood in a non-additive white top tube and discard. Next collect 2 Greiner lithium heparin green top tubes. These are partial fill tubes that fill halfway to the black arrow. NEVER draw these tube after filling an EDTA tube. Mix gently by inverting 5 times. Collection time MUST be recorded on the tube and requisition as this is a time sensitive test.

**NOTE:** Tubes must be full to obtain proper blood to anticoagulant ratio or the specimen will be rejected.

**Transport:** Immediately transport to the lab at room temperature. Testing must be performed within 15 minutes of collection. Do NOT transport by pneumatic tube.

**Specimen Stability:** Room temperature: 15 minutes

**Interpretation:** Sent with results.

**Comments:** Must schedule this test with laboratory, 464-6830.

**Performed by:** Core Laboratory, Special Hematology

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**VERIFYNOW P2Y12**

**Test Code:** PLY12

**Synonyms:** Plavix

**Specimen Type:** 2 Greiner 3.2% sodium citrate blue top and 1 non-additive white top tube.

**Method:** VerifyNow Platelet Aggregometry

**TAT:** Within 4 hours of collection

**Collection:** Collect specimen with a 21 gauge or larger needle. Always collect 2 mL's of blood in a non-additive white top tube and discard. Next collect 2
Greiner sodium citrate tubes. These are partial fill tubes that fill halfway to the black arrow. NEVER draw these tubes after filling an EDTA tube. Mix gently by inverting 5 times. Collection time MUST be recorded on the tube and requisition as this is a time sensitive test.

NOTE: Tubes must be full to obtain proper blood to anticoagulant ratio or the specimen will be rejected.

Transport: Room temperature, within 4 hours of blood draw. Do NOT transport in pneumatic tube.
Specimen Stability: Whole blood:
  • Room temperature: 4 hours.
Reference Interval: <208 PRU
Interpretation: Sent with results.
Comments: Call the laboratory at 464-6830 to get collection tubes and instructions.
Performed by: Core Laboratory, Special Hematology

VIRAL LOAD (See HIV viral load)

VIRUS CULTURE (See Culture, viral)

VITAMIN A - Sent to Reference Laboratory
Test Code: LVITA
Synonyms: A, Vitamin
  Retinol, Serum
Specimen Type: 0.7 mL (0.4 mL minimum)
  Serum, Gold/SST, red-top tube
Method: High-pressure Liquid Chromatography (HPLC) with UV detection
TAT: Set up Monday through Friday on 1st shift.
  Reported within 4 working day.
Collection: Immediately separate serum from cells. Specimen should be free from hemolysis. Protect specimen from light. Transfer specimen to amber plastic transport tube. If amber tubes are unavailable, cover standard transport tube completely, top to bottom, with aluminum foil. Identify specimen with patient's name directly on the container and on the outside of the aluminum foil. Secure with tape.
Transport: Frozen
Specimen Stability: Frozen: 7 days
Causes for Rejection: Specimen not protected from light; hemolysis.
Reference Interval: 18-77 µg/dL
Special Instructions: Patients must fast a minimum of eight hours. No foods containing vitamin A should be ingested in the previous 48 hours by patients older than six months. For those who are younger than six months, the period is 24 hours.
Performed by: Sent to Reference Laboratory - LabCorp (Order #017509)

VITAMIN B1, WHOLE BLOOD - Sent out to Reference Laboratory
Test Code: LVB1
Synonym: Thiamine, Whole Blood
B1 Vitamin, Whole Blood
Specimen Type: 1 mL (0.5 mL minimum)
Whole Blood, Lavender-top (EDTA) tube
Method: High-pressure Liquid Chromatography (HPLC) with Fluorescence Detector
TAT: Reported within 4 working days.
Collection: Draw blood. Do not separate. Protect specimen from light. Transfer blood to an amber plastic transport tube and close with amber top. If amber tubes are not available, cover standard transport tube completely, top and bottom, with aluminum foil. Identify specimen with patient's name directly on the container and on the outside of the aluminum foil. Secure with tape.
Transport: Frozen
Specimen Stability: Frozen: 7 days at -20°C
Causes for Rejection: Specimen not frozen (-20°C); plasma specimen; use of anticoagulants other than EDTA; specimen not protected from light.
Reference Interval: 66.5-200.0 nmol/L
Comment: To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested.
Performed by: Sent to Reference Laboratory - LabCorp (Order #121186)

VITAMIN B6 - Sent to Reference Laboratory
Test Code: LVITB
Synonyms: B6
B6, Vitamin
PLP
Pyridoxal-5-Phosphate
Pyridoxine
Specimen Type: 2 mL (1 mL minimum)
Plasma, Lavender-top (EDTA) tube or green-top (heparin) tube
Method: High-pressure Liquid Chromatography (HPLC) with fluorescence detection, measuring the biologically active form of vitamin B6-pyridoxal-5-phosphate
TAT: Set up Monday through Friday on 1st shift.
Reported within 4 working days.
Collection: Draw blood. Immediately separate plasma from red cells. Protect specimen from light. Transfer blood to an amber plastic transport tube and close with amber top. If amber tubes are not available, cover standard transport tube completely, top and bottom, with aluminum foil. Identify specimen with patient's name directly on the container and on the outside of the aluminum foil. Secure with tape.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Frozen: 16 days
Causes for Rejection: Specimen not protected from light; hemolysis; use of anticoagulants other than EDTA or heparin.

Reference Intervals: Male: 5.3-46.7 µg/L
Female: 1.0-32.8 µg/L

Performed by: Sent to Reference Laboratory - LabCorp (Order #004655)

VITAMIN B12
Test Code: B12
Specimen Type: 0.5 mL serum, Gold-SST/Red top
Method: Electrochemiluminescence
TAT: STAT: 90 minutes
Routine: 4 hours
Performed 24/7

Collection: Collect specimen using standard laboratory procedures.
Transport: Room temperature, ASAP
Specimen Stability: Refrigerated: 2 days at 2-8°C
Frozen: 2 months at -20°C
Freeze once
Reference Interval: 211-946 pg/mL
Comment: If samples are not run within 24 hours, store samples in freezer at -20°C until they can be run. Patients routinely exposed to animals or animal serum products can be prone to interference and anomalous values from heterophilic antibodies. Do not use samples that have been stored at room temperature for longer than 8 hours.

Performed by: Core Laboratory

VITAMIN B12 UNSATURATED BINDING CAPACITY - Sent to Reference Laboratory
Test Code: LVVB12
Synonyms: UBC, Vitamin B12
Specimen Type: 2 mL (0.5 mL minimum)
Serum, Gold/SST, red-top tube
Method: Radioimmunoassay (RIA)
TAT: Reported within 5 working days.
Collection: If tube other than a gel-barrier tube is used, transfer separated serum to a plastic transport tube.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Frozen: 14 days
Causes for Rejection: Recently administered isotopes.
Reference Interval: 725-2045 pg/mL
Special Instructions: Vitamin B12 supplements should be discontinued at least 72 hours prior to specimen collection.
Performed by: Sent to Reference Laboratory - LabCorp (Order #081869)

VITAMIN D
Test Code: VITD
Specimen Type: Serum, Gold top
Method: Electrochemiluminescence
TAT: 24/7
Collection: Collect using standard laboratory procedure.
Transport: Transport at room temperature ASAP.
Specimen Stability: Room Temperature: 8 hours at 18-25°C
Refrigerated: 4 days at 2-8°C
Frozen: 24 weeks at -20°C
Comments: Centrifuge samples containing precipitates before performing the assay.
Samples showing visible signs of hemolysis may cause interference.
Performed by: Core Laboratory

**VITAMIN D1, 25 DIHYDROXYCHOLECALCIFEROL - Sent to Reference Laboratory**
Test Code: LVD1
Synonyms: 1,25 (OH) Vitamin D
Calcitriol (1,25 di-OH Vitamin D)
1,25-Dihydroxy Vitamin D
1,25-Dihydroxycholecalciferol
Vitamin D, 1,25-Dihydroxy

Specimen Type: 0.5 mL (0.3 mL minimum)
Serum, Gold/SST, red-top tube
Method: Immunochemiluminometric Assay (ICMA)
TAT: Set up Monday through Friday on 1st shift.
Reported within 3 working days.
Collection: If tube other than a gel-barrier tube is used, transfer separated serum to a plastic transport tube.
Transport: Refrigerated
Specimen Stability: Refrigerated: 10 days
Frozen: 10 days
Reference Interval: 19.9-79.3 pg/mL
Special Instructions: This test is not the same as Vitamin D3, (25-Hydroxy, vitamin D3), which must be ordered separately.
Performed by: Sent to Reference Laboratory - LabCorp (Order #081091)

**VITAMIN E - Sent to Reference Laboratory**
Test Code: LVTE
Synonyms: Alpha Tocopherol
Vitamin E1

Specimen Type: 0.7 mL (0.4 mL minimum)
Serum, Gold/SST, red-top tube
Method: High-pressure Liquid Chromatography (HPLC) with Fluorometric Detection
TAT: Set up Monday through Friday on 1st and 3rd shifts.
Reported within 4 working days.
Collection: Immediately separate serum from red cells. Specimen should be free from hemolysis. Protect specimen from light. Transfer blood to an amber
plastic transport tube and close with amber top. If amber tubes are not
available, cover standard transport tube completely, top and bottom, with
aluminum foil. Identify specimen with patient's name directly on the
container and on the outside of the aluminum foil. Secure with tape.

Transport: Frozen
Specimen Stability: Frozen: 7 days
Causes for Rejection: Specimen not protected from light; hemolysis.
Reference Interval: \( \alpha \)-tocopherol: 4.6-17.8 mg/L
Performed by: Sent to Reference Laboratory - LabCorp (Order #081000)

**VITAMIN K1 - Sent to Reference Laboratory**

Test Code: LVK1
Synonyms: Phylloquinone
Phytonadione
Specimen Type: 1.5 mL (1 mL minimum)
Serum, Gold/SST, red-top tube
Plasma, Lavender-top (EDTA) tube
Method: High-pressure Liquid Chromatography (HPLC) with Electrochemical
(EC) Detection
TAT: Reported within 6 working days.
Collection: Immediately separate serum from red cells. Specimen should be free from
hemolysis. Protect specimen from light. Transfer blood to an amber
plastic transport tube and close with amber top. If amber tubes are not
available, cover standard transport tube completely, top and bottom, with
aluminum foil. Identify specimen with patient's name directly on the
container and on the outside of the aluminum foil. Secure with tape.

Transport: Frozen
Specimen Stability: Frozen: 3 months at -20°C
Causes for Rejection: Specimen not protected from light; specimen not received frozen; use of
anticoagulants other than EDTA has not been studied.
Reference Interval: 0.28-1.78 ng/mL
Performed by: Sent to Reference Laboratory - LabCorp (Order #121200)

**VMA (See Vanillylmandelic acid, urine)**

**VON WILLEBRAND FACTOR ACTIVITY**

Test Code: VWACT
Synonyms: von Willebrand Factor, Functional
Specimen Type: 4.5 mL blood, citrate (blue top)
Method: Immunoturbidimetric
TAT: Testing is batched and performed once/week (7:00 a.m. to 3:00 p.m.). For
urgent requests, call Special Hematology at 464-6826.
Collection: Specimens must reach the laboratory within 4 hours of blood draw.
Specimens that cannot reach the lab within the time frame should be
double spun at 2500 g for 15 minutes to obtain platelet poor plasma. 0.5
mL aliquots should be frozen in plastic at -20°C.
Transport: Specimens scheduled to arrive in the lab in less than 4 hours should be sent at room temperature. Platelet poor specimens should be frozen before transport and placed in an insulated container on dry ice to insure that the specimen does not thaw.

Specimen Stability: Room temperature: 4 hours
Frozen: 6 months at -70°C

Reference Interval: 55-150 U/dL

Performed by: Core Laboratory, Special Hematology

**VON WILLEBRAND FACTOR (vWF) ACTIVITY RISTOCETIN COFACTOR - Sent to Reference Laboratory**

Test Code: LVWF
Synonyms: Ristocetin Cofactor
Specimen Type: 2 mL (1 mL minimum)
Plasma (platelet poor), Blue-top (sodium citrate) tube

Method: The patient plasma is mixed with formalin-fixed platelets in the presence of ristocetin. The extent of platelet agglutination detected photo-optically is proportional to the vWF activity of the sample.

TAT: N/A
Collection: Blood should be collected in a blue-top tube containing 3.2% buffered sodium citrate. Evacuated collection tubes must be filled to completion to ensure a proper blood-to-anticoagulant ratio. The sample should be mixed immediately by gentle inversion at least six time to ensure adequate mixing of the anticoagulant with the blood. A discard tube is not required prior to collection of coagulation samples unless the sample is collected using a winged (butterfly) collection system. With a winged blood collection set a discard tube should be drawn first to account for the dead space of the tubing and prevent under-filling of the evacuated tube. When noncitrate tubes are collected for other tests, collect sterile and nonadditive (red-top) tubes prior to citrate (blue-top) tube. Gel-barrier tubes and serum tubes with clot initiators should also be collected after the citrate tubes.

Transport: Frozen
Cause for Rejection: Gross hemolysis; clotted specimen; frozen specimen thawed in transit; improper labeling.

Reference Interval: Type O: 74.8%
Type A: 105.6%
Type B: 116.9%
Type AB: 123.3%

Special Instructions: Avoid warfarin (Coumadin®) therapy for two weeks and heparin therapy for two days prior to the test. Do not draw from an arm with a heparin lock or heparinized catheter.

Comment: To avoid delays in turnaround time when requesting multiple tests on frozen samples, please submit separate frozen specimens for each test requested.

Performed by: Sent to Reference Laboratory - LabCorp (Order #164509)
VON WILLEBRAND FACTOR ANTIGEN
Test Code: F8AG
Specimen Type: 4.5 mL blood, citrate (blue top)
Method: Immuno-turbidimetric
TAT: Testing is batched and performed once/week (7:00 a.m. - 3:00 p.m.). For urgent requests, call Special Hematology at 464-6826.
Collection: Specimens must reach the laboratory within 4 hours of blood draw. Specimens that cannot reach the lab within the time frame should be double spun at 2500 g for 15 minutes to obtain platelet poor plasma. 0.5mL aliquots should be frozen in plastic at -20°C.
NOTE: Tubes must be full to obtain proper blood to anticoagulant ratio or the specimen will be rejected.
Transport: Specimens scheduled to arrive in lab in less than 4 hours should be sent at room temperature. Platelet poor specimens should be frozen before transport and placed in an insulated container on dry ice to insure that the specimen does not thaw.
Specimen Stability: Frozen: 6 months at -70°C
Reference Interval: 64-140 U/dL
Interpretation: The von Willebrand Factor is a multimeric plasma protein with two important functions in hemostasis. It mediates platelet adhesion at the site of injury and transports and stabilizes Factor VIII in the circulation. von Willebrand Factor is decreased in von Willebrand disease.
Performed by: Core Laboratory, Special Hematology

VORICONAZOLE, SERUM OR PLASMA - Sent to Reference Laboratory
Test Code: LVORI
Synonyms: UK-109,496
Vfend
Specimen Type: 1 mL (0.5 mL minimum)
Serum (preferred) Red top tube
Plasma, lavender-top (EDTA) tube
Method: Liquid Chromatography/Tandem Mass Spectrometry (LC/MS-MS)
TAT: Monday through Friday, 1st shift.
Reported next day.
Collection: Transfer separated serum or plasma to a plastic transport tube. Do not use a gel-barrier tube.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
Frozen: 14 days
Cause for Rejection: Gel-barrier tube
Performed by: Sent to Reference Laboratory - LabCorp (Order #700353)

WBC DIFFERENTIAL (See Differential)

WEST NILE VIRUS (WNV) ANTIBODY - Sent to Reference Laboratory
Test Code: LWNVS
Synonyms: WNV Antibody
Specimen Type: 1 mL (0.5 mL minimum)
   Serum, Gold/SST, red-top tube
Method: Enzyme Immunoassay (EIA)
TAT: Reported within 3 working days.
Collection: Collect specimen using standard laboratory procedures.
Transport: Refrigerated
Specimen Stability: Refrigerated: 48 hours
   Frozen: >48 hours
Causes for Rejection: Gross contamination; severe hemolysis; icteric serum; lipemic serum;
   quantity not sufficient for analysis.
Reference Interval: Negative
Performed by: Sent to Reference Laboratory - LabCorp (Order #138842)

WET PREP (See Parasite, trichomonas)
ZINC, PLASMA - Sent to Reference Laboratory
Test Code: LZNC
Specimen Type: 2 mL (0.6 mL minimum)
   Plasma, Royal blue-top (EDTA) tube
Method: Inductively Coupled Plasma/Mass Spectrometry (ICP/MS)
TAT: Set up Monday through Friday on 1st shift.
   Reported within 3 working days.
Collection: Separate plasma from cells within 45 minutes of collection and transfer to
   a metal free transport tube.
Transport: Refrigerated
Specimen Stability: Refrigerated: 14 days
   Frozen: 14 days
Causes for Rejection: Unspun royal blue-top tube from which the plasma has not been removed;
   gel-barrier tube.
Reference Interval: Environmental exposure: 56-134 µg/dL
Performed by: Sent to Reference Laboratory - LabCorp (Order #001800)

ZINC TRANSPORTER 8 AUTOANTIBODIES - Sent to Reference Laboratory
Test Code: LZNT8
Synonyms: ZnT8 Antibodies
Specimen Type: 0.5 mL (0.2 mL minimum)
   Serum, Gold/SST, red-top tube
Method: Enzyme-linked Immunosorbent Assay (ELISA)
TAT: Testing performed at Esoterix.
   Reported within 10 working days.
Collection: Serum must be separated from cells within 45 minutes of venipuncture.
   Transfer separated serum to a plastic transport tube.
Transport: Frozen
Comment: Green-top (heparin) tubes are also acceptable. Ship plasma refrigerated.
   To avoid delays in turnaround time when requesting multiple tests on
frozen samples, please submit separate frozen specimens for each test requested.

Performed by: Sent to Reference Laboratory - LabCorp (Order #503995)

**ZONISAMIDE, SERUM - Sent to Reference Laboratory**

Test Code: LZON  
Synonyms: Zonegran  
Specimen Type: 1.2 mL (0.4 mL minimum)  
Serum, Red-top tube  
Method: Liquid Chromatography/Tandem Mass Spectrometry (LC/MS-MS)  
TAT: Set up Monday through Friday on 1st shift. Reported within 3 working days.

Collection: Separate serum from cells within 45 minutes of collection and transfer to a plastic transport container. Do not use a gel-barrier tube.  
Trough: Immediately prior to next dose. Steady-state levels are reached within 5 to 15 days in patients on zonisamide monotherapy.

Transport: Refrigerated  
Specimen Stability: Refrigerated: 14 days  
Frozen: 14 days  
Causes for Rejection: Gel-barrier tube; hemolysis; nonseparated serum or plasma specimen.  
Reference Interval: 10.0-40.0 µg/mL  
Special Instructions: Refrigerate at 2-8°C if specimen is not tested immediately.

Performed by: Sent to Reference Laboratory - LabCorp (Order #007915)
Appendix A - Hemoccult SENSA Collection:

SPECIMEN COLLECTION:
The Hemoccult II SENSA test requires only a small fecal specimen. The specimen is applied to the Guaiac paper of the Hemoccult II SENSA Test Card as a THIN SMEAR using the Applicator Stick provided.

Slides containing samples may be stored up to 14 days at room temperature (15-30°C) before developing.

Patients should be instructed to return completed slides (Test Cards) to the physician or laboratory after preparing the last test and according to the patient instructions.

IMPORTANT NOTE: Current U.S. Postal Regulations prohibit mailing completed slides in standard paper envelopes. Physicians who wish their patients to return Slides by mail must instruct them to use only the U.S. Postal Service approved Mailing Pouch provided in the patient kit.

Fecal specimens should be collected from bowel movements on three different days. To further increase the probability of detecting occult blood, separate samples should be taken from two different areas of each fecal specimen.

PATIENT PREPARATION AND INSTRUCTIONS:
FIRST: Preparation before taking the test.
Okay to eat:
- Pork, chicken, turkey and fish
- Fruits and vegetables
- High-fiber foods, e.g., whole wheat bread, bran cereal, popcorn
- Acetaminophen (Tylenol)
- Cup to one adult aspirin (325 mg) a day

Avoid:
7 days prior and during testing:
- No more than one adult aspirin (325 mg) a day
- No other non-steroid anti-inflammatory drugs such as ibuprofen. NOTE: Please talk to your physician or pharmacist if you have any questions about medications you take regularly.

3 days prior and during testing:
- No red meat (beef, lamb or liver)
- No more than 250 mg vitamin C a day from supplements and citrus fruits and juices. An average orange contains approximately 70-57 mg vitamin C. 100% of the recommended daily allowance of vitamin C is 60 mg.
NOTE: Some iron supplements contain vitamin C in excess of 250 mg.
SECOND: Taking the test on 3 different days.
   1. Write your name, ID number (if known) and physician's name on front of Test Card.
   2. Fill in Day 1 Collection Date. Open Day 1 flap.
   3. Urinate before bowl movement, if possible. Collect stool using one of the following options.
      a. **Tissue - Plastic Wrap** (preferred)
         (1) Flush toilet.
         (2) Obtain 2 foot piece of plastic wrap (not included).
         (3) Lift lid and seat of toilet.
         (4) Secure plastic wrap across back half of bowl allowing middle to hand down just above water.
         (5) Unfold tissue (provided) halfway.
         (6) Place on top of plastic wrap.
         (7) Lower seat.
         (8) Have a bowel movement.
         (9) Go to 4.
      b. **Tissue alone**
         (1) Flush Toilet.
         (2) Unfold tissue (provided) completely.
         (3) Float tissue on surface of water.
         (4) Allow edges to stick to sides of bowl.
         (5) Have a bowel movement.
         (6) Go to 4.
   4. Obtain a small stool sample with provided Applicator Stick. Apply thin smear in box A.
   5. Reuse Applicator Stick to obtain a 2nd sample from a different part of stool.
      Apply thin smear in box B.
      a. Flush tissue and stool ONLY.
      b. Discard stick and plastic wrap (if used) in waste container.
      a. Let dry.
      b. Do not store smeared Test Card in any moisture-proof material (e.g. plastic bag).
   7. Repeat steps 2 through 4 for Day 2 and Day 3.

THIRD:
   1. Insert completed and overnight air-dried Test Card into enclosed U.S. Postal Service approved mailing pouch.
   2. Peel tape from flap. Fold flap over. Press firmly to seal.
   3. Deliver the mail sealed Mailing Pouch to your physician or laboratory within 10 days of Day 1 Collection Date.
INTERFERING SUBSTANCES:
   In general, patients should be carefully instructed to not ingest foods, vitamins, or medications which can cause false-positive or false-negative test results.

Substances which can cause false-positive test results:
   • Red meat (beef, lamb, and liver)
   • Aspirin (greater than 325 mg/day) and other non-steroidal anti-inflammatory drugs such as ibuprofen, indomethacin and naprouan.
   • Corticosteroids, phenylbutazone, reserpine, anticoagulants, antimetabolites, and cancer chemotherapeutic drugs.
   • Alcohol in excess.
   • The application of antiseptic preparations containing iodine (povidone/iodine mixture).

Dietary iron supplements will not produce false-positive test results with Hemoccult II SENSA tests.

Acetaminophen is not expected to affect test results.

Substances which can cause false-negative test results:
   • Ascorbic acid (Vitamin C) in excess of 250 mg per day.
   • Excessive amounts of vitamin C enriched foods, citrus fruits and juices.
   • Iron supplements which contain quantities of vitamin C in excess of 250 mg per day.
SPECIAL REQUISITION AND CONSENT FORMS

Core Forms:
  Department of Pathology Prenatal Alpha-Fetoprotein Testing Down Syndrome Screening
  Requisition and Consent - F86172

Cytogenetic Forms:
  Amniotic and Tissue Cytogenetics Requisition - F86173
  Patient Consent Form - F82875
  Hematopathology Requisition - F91021
  Consent for Chromosome SNP Microarray Testing - F88925

Hematopathology Forms:
  Hematopathology Requisition - F91021

Molecular Diagnostics Forms:
  Authorization for the Molecular Test for MTHFR 677C>T - F82754
  Authorization for the Molecular Test for Fragile X Syndrome - F82856
  Authorization for the Genetic Test for Cystic Fibrosis - F82857
  Authorization for the Genetic Test for Factor V (Leiden and D2194G) and Prothrombin
  20210G>A - F82858
  Authorization for the Genetic Test for Hereditary Hemochromatosis - F82859
  Authorization for the Genetic Testing Referred to NYS Permitted Laboratory - F82860
  Authorization for Genetic Testing Referred to Non NYS Permitted Laboratory - F82861
  DNA Based Genetic Testing - F91019
  Hematopathology Requisition - F91021

Surgical and Cytopathology Forms:
  Surgical Pathology Requisition - 41610
  In and Outpatient Cytopathology Pap Smear Requisition - 40349
  Cytopathology Non-Gynecologic Requisition - 40351
  Fine Needle Aspiration Biopsy Consultation - F81121
  FNA Biopsy Thyroid Consultation - F81123
  FNA Cytopathology Consultation Request for Pathologist On-site Interpretation - F88577
  Pathology Dermatopathology Requisition OP - F86340
  Pathology Intra-Operative Consultation - F86106

Transfusion and Blood Bank Forms:
  Consent to Transfuse - 41485
  Spanish Version Consent to Transfuse - F81852
  Blood Product Delivery Request Form - F90081
  Health Information for You - Patient and Family Education - Blood Transfusion
# Flow Cytometry Reference Ranges

## LA Children's Hospital 2014

<table>
<thead>
<tr>
<th>Value</th>
<th>1-3 days</th>
<th>4-52 days</th>
<th>53 days - 4 mo.</th>
<th>4 mo-11 mo</th>
<th>11 mo-1 yr</th>
<th>11 mo-3 yrs</th>
<th>3-4 yrs</th>
<th>4-5 yrs</th>
<th>5-54 yrs</th>
<th>55 yrs +</th>
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<tbody>
<tr>
<td>ABSLymph</td>
<td>3080-6748</td>
<td>1967-7980</td>
<td>3886-10750</td>
<td>4182-12213</td>
<td>3464-11619</td>
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<td>69-93</td>
<td>55-79</td>
<td>59-80</td>
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<td>35-62</td>
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<td>3.07</td>
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<td>CD19 %</td>
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<td>16-36</td>
<td>16-33</td>
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<td>9-32</td>
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</tbody>
</table>

Ages 1 day - 5 years: Reference ranges per O'Gorman et. al. Cytometry Part B. 1998 & LA Children's Hospital 2014.

Ages 5 years -54 years: Reference ranges per ARUP. 2014

55+ years: Reference ranges per Mayo Clinic 2010

Reference ranges examined by retrospective review of 101 pediatric lymphocyte subset values from 1/2013-10/2014. Histories of a random selection of patients with values outside of concurrent URI, recurrent fevers (negative microbiology workup), and on steroids for juvenile arthritis. None of the patients could be expected to have truly normal values, supporting the usage of the reference ranges cited above.

(Literature reviewed see references.)