



## **Directory of Services**

**Medical Diagnostic Laboratory, Inc.**

**45 Sheffield Drive**

**Belleville, Illinois 62223**

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## GENERAL INFORMATION

Medical Diagnostic Laboratory, Inc. (MDL) since 1985 offers clinical laboratory services throughout the St. Louis Metropolitan area. Incorporating a network of sophisticated testing procedures, delivery service, computerization, and communications, MDL performs an extensive range of both routine and specialty testing procedures.

We believe quality laboratory results are a direct result of qualified individuals working together for a common goal: accurate results in a timely manner at prices affordable to the public. We recognize the service we provide is special and distinguishes MDL from other laboratories. We strive to provide quality laboratory services for the public, physicians, industries, and medical facilities regardless of size and quantity of work. Together, the development of the total quality program makes laboratory services a success at MDL!

### ⌘ **Dedicated Medical Professionals**

MDL is directed by board-certified pathologists. Pathology and technical specialists are available for consultation with clients concerning the significance of test results, unusual cases, and technical matters. Every health care professional on the laboratory team is committed to the quality and service you deserve.

### ⌘ **Laboratory Accreditations**

Health Care Finance Administration CLIA # 14D0646903

College of American Pathologists # 4190301

Medicare Provider # 148475

College of American Pathologists Proficiency Testing Program

# SERVICES AND POLICIES

MDL is a comprehensive reference laboratory offering assays in both clinical and anatomical pathology. Each service department is staffed with personnel prepared to support your needs. When placing a telephone call to MDL at (618) 233-0522 or (800) 593-0522, an operator will guide you in your selection options to put you in touch with the information you need as quickly as possible. For quick reference, the phone options available include:

- 1 Hours of Operation or Directions**
- 2 Billing Department**
- 3 Test Results and Other Technical Information**
- 4 Cytology Results**
- 5 Pathology Department**
- 6 Courier or Supply Orders**
- 7 Long Term Care/Phlebotomy Request**
- 9 Long-Term Care STAT pick-up**
- 0 Operator**

## CLIENT SERVICES

A client service representative is available Monday through Friday, 8:30 a.m. until 5:30 p.m. to assist you. The customer service department can provide you information concerning:

- Status of laboratory testing in progress.
- Specimen and special handling requirements.
- Test results and interpretation assistance.
- Procedures for adding tests to specimens already in-house.

During off-hours, an answering service is available to take messages and have calls returned the following business day. To contact the answering service, call (618) 398-9703.

## PHLEBOTOMY STATIONS

Phlebotomy stations are located at:

- ❖ 45 Sheffield Drive – Belleville, Illinois  
Monday through Friday: 7:30 a.m.–5:00 p.m.
- ❖ 2016 Vadalebene Road – Maryville, Illinois  
Monday through Friday: 7:30 a.m.–6:00 p.m.  
Saturday: 8:00 a.m. – 11:30 a.m.

## SUPPLIES

The supplies needed for referring specimens to MDL are provided at no charge to the customer. Supplies include blood and urine collection devices, venipuncture needles, culturettes, pap packs, specimen bags, and test requisitions. Any special supplies needed for a test listed in the directory are available upon request. When beginning services with MDL, clients are provided a standard start-up selection of supplies. When

replacement supplies are needed, notify the courier department by calling MDL at (618) 233-0522 or (800) 593-0522 and selecting option “6” to place your order or enter the extension of 114.

## TECHNICAL CONSULTATIONS

The MDL professional staff is always available to discuss test results, answer questions, or consult on unusual cases. The Medical Director is available to assist physicians with diagnostic test determinations.

## CONTINUING EDUCATION

MDL offers its clients a variety of educational opportunities and individualized training. Up-to-date information regarding techniques in specimen collection, preparation, and handling as well as regarding new tests, changes in procedures and other clinical information is available to you upon request. Contact your sales representative to arrange for your educational needs.

## REPORTING

Most frequently ordered tests are completed and reported within 24 hours following receipt of specimens in the laboratory. Those that require longer testing time are reported as soon as results are available.

MDL’s computerized reporting system includes chart-ready copies with reference (normal) ranges for comparison. For most procedures, abnormal results are “flagged” or highlighted.

Test results may be delivered by:

- ❖ Telephone when “Call Results” is specified in writing on the test request form or when it is determined that telephoned results will provide optimal service. Printed results follow with regularly scheduled report deliveries.
- ❖ Remote print device or PLN computer system.
- ❖ Professional courier during regularly scheduled service stops.
- ❖ First-class mail.
- ❖ Facsimile.

## REPEAT ASSAYS

Accuracy is a crucial part of our service. Standardization and maintenance of instrumentation, quality control surveillance, and verification of test results are reviewed continuously.

If the clinician determines that a result is incompatible with a patient’s clinical condition, MDL will repeat the test at no additional charge if notification is received within 5 days and if analyte stability and specimen volume permit.

### SPECIMEN RETENTION

Except for unstable specimens (e.g. those for cultures, CBC's, urinalysis), specimens are retained for 7 days. If a test is to be added to a specimen that is already in-house, or if a repeat assay is requested, contact the Customer Service Department as soon as possible.

### TEST CANCELLATIONS

Tests may be canceled without charge while specimens are in transit. If the test is cancelled after it has been resulted, you will be billed for the test(s). Cancellation requests can be called to the Customer Service Department.

### REFLEX TESTING

Each client may establish criteria authorizing MDL to perform additional testing based on a particular result obtained on the original test requested. A physician or Medical Director signed reflex agreement must be on file before implementation. Contact your sales representative or the Customer Service department to establish your desired protocol

### CUSTOM PANELS

Each client may establish a panel(s) of tests to best meet your diagnostic needs. A physician or Medical Director signed acknowledgement must be on file before implementation. Contact customer service or your sales representative to establish your desired panel(s) and necessary compliance restrictions.

### UNACCEPTABLE SPECIMENS

In order for you to make a valid clinical decision using laboratory results, it is important that testing be performed on acceptable specimens. In the event that a test is requested to be performed on a specimen that is unacceptable, the client will be notified by telephone to request a new specimen. If the physician makes the determination to continue on with testing, there will be a comment on the laboratory report cautioning result interpretation due to the unacceptable quality of the specimen. Contact the Customer Service Department for further information on acceptability of specimens for testing.

### NOTIFICATION OF ALERT LABORATORY VALUES

In order to provide you with the information you need to best treat your patients, MDL has established alert laboratory results under the direction of the Medical Director. These are results that may be potentially life threatening to your patient.

#### Chemistry

Sodium	<120.0 or	>155.0 mEq/L
Potassium	<3.0 or	>6.0 mEq/L
Chloride	<80.0 or	>115.0 mEq/L
CO2	<15.0 or	>40.0 mEq/L
Calcium	<7.0 or	>12.0 mg/dL
Glucose	<50.0 or	>400.0 mg/dL
BUN		>90.0 mg/dL

#### Hematology & Coagulation

WBC	<2.5 or	>25.0 K/ $\square$ L
Hemoglobin	<7.0 or	>22.0 g/dL
Platelets	<30 or	>1000 K/ $\square$ L
PT		>25.0 sec.
PTT		>75.0 sec.

#### Therapeutic Drug Monitoring

Carbamazepine	>15.0 $\square$ g/mL
Digoxin	>2.0 ng/mL
Gentamicin, Peak	>20.0 mg/L
Gentamicin, Trough	>10.0 mg/L
Lithium	>1.5 mEq/L
Phenobarbital	>50.0 $\square$ g/mL
Phenytoin	>25.0 $\square$ g/mL
Theophylline	>20.0 $\square$ g/mL
Valproic Acid	>130.0 $\square$ g/mL
Vancomycin, Peak	>55.0
Vancomycin, Trough	>22.0

#### Miscellaneous

Positive Blood Cultures  
Positive AFB Cultures/Smears  
All CSF results (culture, Smear, glucose, protein, cell count, and cell differential)

**NOTICE:** MDL can provide specific client requests for different testing ranges other than those indicated based upon physician request submitted in writing. Routinely, alert laboratory results will be called to the client during normal business hours. MDL offers notification of alert values outside normal business hours at the request of the client. Contact customer service department or your sales representative to determine protocol for your specific needs.

## BILLING PRACTICES AND MEDICARE COMPLIANCE

MDL offers customers a variety of billing options.

### CLIENT BILLING

MDL will bill the client for the laboratory tests requested if specifically indicated on the requisition.

**The client will also be billed for services if no specific area is selected in the BILL TO: section of the requisition.**

When completing the requisition, the patient's last name, first name, sex, and date of birth is required as well as the ordering physician's name. The patient's social security number is helpful as a second form of identification but is not required.

If you determine that you were billed incorrectly for laboratory services, all requests to change from "**BILL CLIENT**" to "**BILL THIRD PARTY**" must be received within 60 days from the date of service.

Client invoices are processed the last business day of each month. Terms of payment are net 30 days.

Payments are to be mailed to:  
Medical Diagnostic Laboratory  
45 Sheffield Dr.  
Belleville, IL 62223.

If an invoice is in question, contact our billing department at (618) 233-0522 or (800) 593-0522, ext. 145.

### PATIENT BILLING

MDL will bill patients directly if indicated on the requisition.

When completing the requisition, the patient's name, sex, date of birth, address, and telephone number is required as well as ordering physician's name (which should be pre-printed on each client's requisition). It is helpful to include the diagnosis information and the patient's social security number on the requisition so that MDL can bill an insurance company at a later date if we are requested to do so by your patient.

### THIRD PARTY BILLING

MDL will bill third party payers directly if indicated on the requisition. We have an affiliation with over 100 insurance companies. Contact your sales representative for a current listing of billable insurance companies.

When completing the requisition, the patient's name, sex, date of birth, social security number, address, telephone number, ordering physician and diagnosis information are required entries. Also include the insurance company's billing address, policy number and/or certificate number. It is often helpful for you

to include a copy of the patient's insurance card with the laboratory requisition. Claims are submitted electronically within 10 days of the date of service providing MDL has complete patient information.

If MDL has received incomplete or incorrect information, a billing representative will contact your office to obtain necessary information prior to billing. If your office is unable to provide the information, you will be billed for the services.

### MEDICARE/MEDICAID BILLING

MDL will bill Medicare Part B and various state Medicaid programs.

Complete the test request form and provide the following information: patient's name, sex, date of birth, social security number, address, Medicare or Medicaid number, diagnosis for each test, and ordering physician. It is helpful for you to include a copy of the patient's insurance card with the laboratory requisition.

If MDL has received incomplete or incorrect information, a billing representative will contact your office to obtain necessary information prior to billing. If your office is unable to provide the information, you will be billed for the services. Contact extension 116 for any Medicare/Medicaid questions.

### ADVANCED BENEFICIARY NOTICE

Medicare has established Medical Necessities for many laboratory tests. These guidelines determine when the tests will and will not be reimbursed by Medicare.

If your facility orders any of these tests on your Medicare patients, it is important that you complete an Advanced Beneficiary Notice and have it signed by the patient at the time of service. This will allow MDL to bill the patient for the test if Medicare does not reimburse the test.

**If the patient does not sign an ABN and Medicare fails to reimburse MDL for the test(s) ordered, the client will be billed for the services.**

## Medicare and the Use of Profiles

Medicare will not reimburse every test ordered by a clinician if it has determined that a particular test or tests are not medically necessary. The AMA has developed organ and disease-specific profiles that are combined under one CPT code. Medicare will reimburse MDL for the profiles listed in this section when the proper ICD-9 codes or medical documentation is submitted when ordering the test(s). Your assistance in providing these codes at the time of specimen submission will be appreciated.

### MEDICARE PART B MEDICAL REVIEW POLICIES

The Centers for Medicare & Medicaid Services (CMS) requires Medicare carriers to implement policies to ensure that services being paid for by Medicare are medically necessary. The Illinois Medicare Part B carrier and Wisconsin Physicians Service (WPS) have issued these medical review policies in partnership with the National Heritage Insurance Company. The medical review policies establish limited coverage policies under which reimbursement for certain tests will only be approved. As a result, if a limited coverage test is performed for a diagnosis or frequency that is not on the carrier's list of covered criteria, Medicare will not pay the laboratory for the test.

When ordering diagnostic laboratory assays, it is important that all medically necessary ICD-9 codes be provided for each test indicated on the patient's test requisition. A descriptive diagnosis on the requisition is not recommended.

If a patient required a limited coverage test for a condition other than those listed in these policies, an Advance Beneficiary Notice (ABN) signed by the patient must accompany the test requisition. **If a health care provider fails to document a covered ICD-9 code on the requisition or submit a completed ABN, then the client may be billed for the test(s) at a later date if Medicare denies the payment on the test(s).**

These policies do not reflect the sole opinion of Medical Diagnostic Laboratory, the carrier, or carrier Medical Director. Although the final decision rests with the carrier, these policies were developed in cooperation with the Carrier Advisory Committee, which includes representatives from Illinois medical professional associations. All references to CPT and ICD-9-CM codes reference those approved by HCFA at the time these policies became effective. These policies should be interpreted to incorporate future changes in either coding system such that their original intent and scope will not substantively change. The carrier's limited coverage policies should not be used as a substitute for the ICD-9 or CPT manual. **The ultimate responsibility for correct coding and compliance with the medical review policies lies with the ordering physician.**

MDL will provide updates to this information as they are received from the carrier. For further information, contact the Billing Department at (618) 233-0522 or (800) 593-0522 extension 116.

## SPECIMEN COLLECTION, PREPARATION, AND HANDLING

Laboratory tests contribute vital information about a patient's health. Correct diagnostic and therapeutic decisions rely, in part, on the accuracy of test results. Adequate patient preparation, specimen collection, and specimen handling are essential prerequisites for accurate testing. The accuracy of test results is dependent on the integrity of specimens.

### SAFETY AND DISPOSAL CONSIDERATIONS IN SPECIMEN COLLECTION

In all settings in which specimens are collected and prepared for testing, laboratory and health care personnel should follow current recommended sterile techniques. Procedures should include precautions regarding the use of needles and other sterile equipment as well as guidelines for the responsible disposal of all biological material and contaminated specimen collection supplies. For all those who are involved in specimen collection and preparation, the responsibility to adhere to current recommendations designed to maintain the safety of both patients and health care workers does not end when the patient is dismissed.

### HAZARDOUS CHEMICALS

MDL prepares and provides specimen collection devices that may contain the following hazardous chemicals: acetic acid solution, citrate buffered acetone, ethyl alcohol, ethyl alcohol and polyethylene glycol, formalin (formaldehyde), hydrochloric or boric acid, or perchloric acid solution. Contact MDL safety officer for specific information.

### PREPARING TO COLLECT A SPECIMEN

Prior to each collection, review the laboratory's specimen requirement. Note the proper specimen to be collected, the amount, the procedure, the collection materials, and the storage and handling requirements. For tests not drawn routinely by your office/facility contact MDL client service department (option # 3) to ensure proper collection and storage requirements are met. Refer to the appendix for a detailed procedure for performing a venipuncture.

- ❖ **Prepare the Patient.** In advance provide the patient with appropriate collection instructions and information on fasting, diet, and medication restrictions when necessary. Refer to the appendix for patient test preparation instructions.
- ❖ **Prepare the Specimen.** Confirm the identification of the specimen in the presence of the patient. Identify the specimen with *Name, Date, Time, Processor or Phlebotomist* initials and the corresponding requisition labels when available. Process and store the specimen as required.

### BLOOD CHEMISTRY AND HEMATOLOGY TESTING

There are many coagulation factors involved in the clotting of the blood. Several different types of anticoagulants interfere with the activity of these factors to prevent clotting. Both anticoagulants and preservatives may be required for plasma specimens. The specified anticoagulant or preservative **must** be used for the test procedure ordered. Blood collected with one anticoagulant suitable for the test described should not be considered suitable for other tests. Because additives are not interchangeable, it is necessary to consult the specimen requirement field of individual test descriptions to determine the appropriate requirements for the test ordered.

#### ❖ **Blood Collection/Transport Containers**

The accuracy of any result depends upon the quality of the specimen. Following the collection, preparation, and transport instructions suggested by MDL helps to ensure the best possible test results. Material for proper specimen collection and transport are supplied by MDL.

Proper identification of specimens is extremely important. **Unidentified samples will not be tested**; therefore, clearly label each specimen with the patient's full name, date collected, time collected, requisition number (or patient's social security number), and initials of collector.

❖ ***Anticoagulants and Preservatives***

To ensure accurate test results, all tubes containing an anticoagulant or preservative **must** be allowed to fill completely. Attempts to force more blood into the tube by exerting pressure will result in damage to the red cells (hemolysis). If the vacuum tube is not filling properly, and you are certain that you have entered the vein properly, substitute another tube.

**Note:** Use plastic transfer tubes for all frozen serum or plasma specimens.

Label all transfer tubes or adhesive specimen labels before drawing blood indicate the content on the tube such as EDTA plasma, Citrated plasma, etc. All tubes should be labeled with the patient's full name, date collected, time collected, requisition number, and initials of collector.

❖ ***Selecting Appropriate Specimen Containers***

Select the appropriate specimen container according to the list below.

**Red-stopper tube.** Contains no anticoagulant or preservative. Used for most therapeutic drug level and ABO Rh testing. Use when serum or clotted whole blood is required. When serum is required separate from cells within 30 minutes to 1 hour of venipuncture. Send serum in a plastic transfer tube.

**Mottled red/gray or cherry red-stopper (serum separator) tube, SST.** Contains clot activator and gel for separating serum from cells, but not anticoagulant. Do not use serum separator tubes to submit specimens for which tricyclic antidepressant levels are requested. Used for assays requiring serum unless otherwise stated. Invert SST 6 times after drawing. Separate serum from cells within 30 minutes to 1 hour of venipuncture. Serum may be sent in the tube with an intact barrier or in a plastic tube.

**Purple-stopper tube.** Contains liquid K3, EDTA. Used for tests requiring EDTA whole blood or plasma. Tests requiring **whole blood**, gently invert purple top tube several times to prevent clotting. Tests requiring **EDTA plasma** send plasma in a plastic transfer tube labeled "Plasma, EDTA."

**Gray-stopper tube.** Contains sodium fluoride, a preservative, and potassium oxalate, an anticoagulant. Used for tests requiring sodium fluoride whole blood or plasma. Send plasma in a plastic transfer tube labeled "Plasma, Sodium Fluoride." Send whole blood in a gray-stopper tube.

**Blue-stopper tube.** Contains sodium citrate. Tube must be filled completely. Used for tests requiring sodium citrate plasma. Send plasma in a plastic transfer tube labeled "Plasma, Sodium Citrate." Send whole blood in blue-stopper tube.

**Green-stopper tube.** Contains sodium heparin or lithium heparin. Used for tests requiring heparinized whole blood or plasma. Send plasma in a plastic transfer tube labeled "Plasma, Sodium Heparin" or "Plasma, Lithium Heparin." Send whole blood in a green-stopper tube.

**Yellow-stopper tube.** Contains 1 ml acid citrate dextrose (ACD) solution. Used for assays requiring ACD whole blood. Send whole blood in a yellow-stopper tube.

## ❖ **Blood Preparation Procedures**

### **Preparing Serum**

**Serum Preparation from a Red-Stopper Tube.** Follow the steps below when preparing a serum specimen for submission.

1. Draw whole blood in an amount 2 1/2 times the required volume of serum so that a sufficient amount of serum can be obtained. The 10-ml red-stopper tube will yield approximately 4 ml serum after clotting and centrifuging. The 15 ml red-stopper tube yields approximately 7 ml serum. Label the specimen appropriately.
2. Place the collection tube in the upright position in the rack, and allow the blood to clot at room temperature for no longer than 30-60 minutes. If clotting fails to occur within 45 minutes, notify the physician.
3. As soon as possible after a clot has formed, insert the tube in the centrifuge, stopper end up. Operate the centrifuge for 10-15 minutes at the speed recommended by the manufacturer. Do not allow prolonged centrifugation as this may cause hemolysis. When using a bench-top centrifuge, employ a balance tube of the same type containing an equivalent volume of water. The tube stopper should remain.
4. Turn the centrifuge off and allow it to come to a complete stop. Do not stop it by hand or brake. Remove the tube carefully without disturbing the contents.
5. Remove the stopper and carefully aspirate all serum from cells, using a separate disposable Pasteur pipette for each tube. Place the tip of the pipette against the side of the tube, approximately 1/4 inch above the cell layer. Do not disturb the cell layer or carry any cells over into the pipette. If cells do enter the pipette, re-centrifuge the entire specimen.

**Serum Preparation from a Serum-Separator Tubes (SST).** Serum-separator (mottled red/gray or cherry red-stopper) tubes contain clot activator and gel for separating serum from cells but include no anticoagulant. Adhere to the following steps when using a serum-separator tube. Draw whole blood in an amount 2 1/2 times the required volume of serum so that a sufficient amount of serum can be obtained. The 15 ml red-stopper tube will yield approximately 7 ml serum. Label the specimen appropriately.

1. Gently invert the serum-separator tube five times to mix the clot activator and blood.
2. Place the collection tube in the upright position in the rack, and allow the blood to clot at room temperature for no longer than 30-60 minutes. (Clots usually form in 20-30 minutes.)
3. As soon as possible after the clot has formed, insert the tube in the centrifuge, stopper end up. Operate the centrifuge for 10-15 minutes at the speed recommended by the manufacturer. Do not allow prolonged centrifugation as this may cause hemolysis. When using a bench-top centrifuge, employ a balance tube of the same type containing an equivalent volume of water.
4. Turn the centrifuge off and allow it to come to a complete stop. Do not stop it by hand or brake. Remove the tube carefully without disturbing the contents. Inspect the barrier gel to ensure that it has sealed the serum from the packed cells. Also, examine the serum for signs of hemolysis and turbidity by holding it up to the light. Be sure to provide the laboratory with the amount of serum specified.
5. Make sure the tube is clearly labeled with all pertinent information.
6. If a frozen specimen is not required, it is not necessary to transfer serum to a plastic transport tube.
7. When frozen serum is required, always transfer the serum (using a disposable pipette) into a separate, clearly labeled plastic transfer tube. Place the tube immediately in the freezer compartment of the refrigerator, and notify the courier that you have a frozen sample. Unless otherwise indicated, serum samples may be sent refrigerated.

### **Preparing Plasma**

When plasma is required, follow the steps below.

1. Always use the proper vacuum tube for tests requiring a special anticoagulant (eg, EDTA, heparin, sodium, citrate, etc) or preservative.
2. Tap the tube gently to release additive adhering to the tube or stopper diaphragm.
3. Permit the vacuum tube to fill completely. Failure to fill the tube will cause an improper blood-to-anticoagulant ratio and yield questionable results.
4. To avoid clotting, mix the blood with the anticoagulant or preservative immediately after drawing each sample. To ensure adequate mixing, slowly invert the tube five to ten times using a gentle wrist rotation motion. **DO NOT SHAKE.**
5. Immediately centrifuge the specimen for 5 minutes. Do not remove the stopper.

6. Turn the centrifuge off and allow it to come to a complete stop. Do not stop it by hand or brake. Remove the tube carefully without disturbing the contents.
7. Remove the stopper and carefully aspirate plasma, using a separate disposable Pasteur pipette for each tube. Place the tip of the pipette against the side of the tube, approximately 3 inch above the cell layer. Do not disturb the cell layer or carry any cells over into the pipette. Do not pour off; use transfer pipette.
8. Transfer the plasma from the pipette into the transfer tube. Be sure to provide the laboratory with the amount of plasma specified.
9. Label all tubes clearly and carefully with all pertinent information or bar code. All tubes should be labeled with the patient's full name or identification number as it appears on the test request form or affix bar code. Also, print on the label the type of plasma submitted, e.g., "Plasma, Sodium Citrate," "Plasma, EDTA," etc.
10. When frozen plasma is required, place plastic transfer tube(s) immediately in the freezer compartment of the refrigerator, and notify your courier that you have a frozen specimen to be picked up.

### **PLASMA, PLATELET POOR**

Instructions for Platelet Poor Plasma:

1. Draw a plain red top tube to remove tissue fluid contamination and discard. (This step is not needed if serum is needed and tubes are drawn first.)
2. Draw blood into a buffered citrate collection tube (light blue top) filled to the proper level. Sodium citrate of 0.109M should be used. Use of other anticoagulants is unacceptable.
3. Invert gently 6 times to mix. Process immediately.
4. Centrifuge for 15 minutes.
5. Remove plasma using a plastic pipette and transfer to new tube.
6. Repeat the centrifugation for 15 min. to assure complete platelet removal.
7. Dispense the plasma into 2 or more plastic tubes using a plastic pipette. Label tube appropriately.
8. Freeze immediately at  $-70^{\circ}\text{C}$ .
9. Specimen must remain frozen at all times.
10. Specimen should not be submitted if it is hemolyzed, micro-clots are present, or the tube is less than 90% filled.

### **URINE TESTING**

Laboratory tests requiring urine specimens involve a wide variety of procedures. A basic urinalysis is almost always included in the routine work-up of patients. When a urine culture or a more esoteric urine test is ordered, the clinical usefulness of the test results can be ensured only if the patient receives explicit written instructions.

#### **❖ *Random Urine Collection for Routine Analysis***

Patients should be provided with both written and spoken "clean-catch" instructions. When a clean-catch urine specimen is required, follow the directions found in the Microbiology section.

The collected urine should be refrigerated immediately or kept in a cool place to retard bacteria growth until the test is performed.

The time of collection is critical because urine values vary considerably during a 24-hour period, and most testing methods are based on normal values for first morning samples. The first urine voided in the morning is preferred because it has a more uniform volume and concentration and a lower pH, which helps preserve the formed elements. If it is not possible to obtain a first morning sample, the time of the sample should be noted on the test requisition form and in your office patient record.

A sterile container with a lid (provided by the laboratory) must be used for urine cultures, and these specimens must be refrigerated immediately. Refrigeration must be maintained until delivery of the specimen to the laboratory. Alternatively, urine may be collected in a clean disposable cup, transferred to the urine culture transport tube, and maintained at room temperature. Be sure the urine is mixed with the preservative. Refer to the Microbiology section for further information.

**Note:** Routine urinalysis requests should not be submitted on the same requisition as urine drug screens. Urine drug screens should always be submitted on a separate requisition. Split samples are required when ordering both tests.

### ❖ *Routine 24-Hour Urine Collection*

For many urine chemistry tests, it is necessary to analyze a sample taken from an entire 24-hour collection. Incorrect collection and preservation of 24-hour urine collections are two of the most frequent errors in laboratory medicine.

The 24-hour urine specimen should be submitted in a wide-mouth, chemically clean, properly labeled urine container. (Patients should not be allowed to submit urine specimens in their own "clean" jars). The laboratory adds required preservatives or supplies the proper preservative with the container.

Written instructions should clearly explain the following points.

1. The collection of the 24-hour urine starts with the patient voiding (completely emptying bladder) and discarding the first urine passed in the morning and noting the time.
2. Except for the first discarded urine, **all** of the urine passed during that day and night, up to and including the first voiding of the following day should be collected. The collection should end the same time as started the next day. (Urine passed during bowel movements must also be collected.)
3. If possible, the entire specimen should be refrigerated at 4C (39F) during collection, or kept in a cool place, since urine is an excellent culture medium for organisms, and its constituents decompose quickly.

You should also inform the patient of the following recommended collection requirements.

1. A normal intake of fluids during the collection period is desirable unless otherwise indicated by the physician or test specimen requirements.
2. In some cases, it may be advisable for patients to discontinue taking all medication for an interval of at least 12 hours (preferably 48-72 hours) preceding the urine collection period. This is done as a precaution against interference in the chemical assays of various hormones; there may be instances, however, in which this is not recommended. Check with the physician before any medication is discontinued.
3. In certain complex chemical analyses, the metabolic products of certain foods may also cause misleading results. In these instances, the laboratory will advise the physician of special dietary restrictions to be communicated to the patient.

Finally, in preparing and submitting the specimen, you should always adhere to the following critical points.

1. If only a portion of the 24-hour collection is submitted to the laboratory, be sure to measure the entire 24-hour volume and record the total amount in milliliters (ml) on the test requisition form for laboratory use.
2. When aliquots are required with preservatives, use only the preservative requested. **One preservative must not be substituted for another. Do not add preservatives except as specified by the laboratory.**
3. Even in the healthy individual, the total daily urine volume may be highly variable depending upon water intake, diet, activity, and environmental factors. Be sure to provide the patient with a container of adequate size.
4. When the laboratory requires a pooled, well-mixed specimen (collected in more than one container) or a measured aliquot for an individual test, provide the specimen prepared exactly as stated in the specimen requirement. Submit this to the laboratory as soon as possible.

### **AVOIDING COMMON ERRORS**

During specimen collection, preparation, and submission, there is a much greater possibility of critical error than during actual testing or examination of the specimen. Errors in storage and handling compromise the integrity of the specimen and, thus, the test result. Careful attention to routine procedures can eliminate most of the errors outlined in this section. The complete blood collection system and other collection materials provided by the laboratory can maintain the integrity of the specimen only when they are used in strict accordance with the instruction provided

### ❖ *General Specimen Collection Errors.*

Some of the common errors affecting all types of specimens include:

1. Insufficient quantity of specimen to run the test(s) or QNS (quantity not sufficient).
2. Failure to use the correct container for appropriate specimen preservation.
3. Inaccurate and incomplete patient instructions prior to collection.
4. Failure to label a specimen correctly and to provide all pertinent information.
5. Failure to tighten specimen container lids, resulting in leakage and/or contamination of specimens.

- ❖ ***Serum Preparation Errors.*** The most common serum preparation errors include:
  1. Failure to separate serum from red cells within 30-60 minutes of venipuncture.
  2. Failure to adequately centrifuge the specimen.
  3. Hemolysis: red blood cells broken down and components spilled into serum. (This can be due to several factors such as a hard to stick patient or due to phlebotomy technique.
  4. Lipemia: cloudy or milky serum sometimes due to the patient's diet.
  5. Fibrin clot: Failure to allow specimens to clot at least 30 minutes before centrifugation.
  
- ❖ ***Plasma Preparation Errors.*** The most common errors in the preparation of plasma include:
  1. Failure to mix with proper additive immediately after collection.
  2. Hemolysis: damage to red blood cells.
  3. Incomplete filling of the tube, thereby creating an excessive dilution factor for total specimen volume.
  4. Failure to separate plasma from cells within 30-45 minutes of venipuncture.
  5. Failure to adequately centrifuge the specimen.
  
- ❖ ***Urine Collection Errors.*** The most common urine collection errors include:
  1. Failure to obtain a clean-catch, midstream specimen.
  2. Failure to refrigerate specimen or use appropriate preservative.
  3. Failure to provide a complete 24-hour collection or other timed specimen.
  4. Failure to add the proper preservative to the urine collection container prior to collection of the specimen.
  5. Failure to provide a sterile collection container and to refrigerate specimen when bacteriological examination of the specimen is required or failure to transfer specimen to appropriate container with preservative.
  6. Failure to tighten specimen container lids, resulting in leakage of specimen.
  7. Failure to provide patients with adequate instructions for 24-hour urine collection. **NOTE: Refer to "Patient Instructions" for sample instructions, which may be duplicated for use with your patients.**
  
- ❖ ***Vacuum Tubes Containing Anticoagulants.*** When using vacuum tube containing anticoagulants and preservatives:
  1. Tap the tube gently at a point just below the stopper to release any additive adhering to the tube or stopper.
  2. Permit the tube to fill completely to ensure the proper ratio of blood to additive.
  3. To ensure adequate mixing of blood with the anticoagulant or preservative, use a slow rolling wrist motion to invert the tube gently five or six times. Rapid wrist motion or vigorous shaking contributes either to small clot formation or hemolysis and fails to initiate proper mixing action.
  4. Check to see that all the preservative or anticoagulant is dissolved. If any preservative powder is visible, continue inverting the tube slowly until the powder is dissolved.
  5. If multiple samples are being drawn, invert each specimen as soon as it is drawn with no delay.
  
- ❖ ***Vacuum Tubes without Anticoagulants.*** When using vacuum tubes containing no anticoagulants or preservatives:
  1. Permit the tube to fill completely.
  2. Let the specimen stand for a minimum of 30 minutes and not longer than 45 minutes prior to centrifugation. This allows time for the clot to form. If the specimen is allowed to stand for longer than 45 minutes, chemical activity and degeneration of the cells within the tube will take place, and test results will be altered as a consequence.
  3. Centrifuge the specimen at the end of the 30- to 45-minute for no less than 10 minutes and no longer than 15 minutes at 3000 rpm.
  
- ❖ ***Hemolysis.*** In general, grossly or even moderately hemolyzed blood specimens may not be acceptable for testing. Hemolysis occurs when the red cells rupture and hemoglobin and other intracellular components spill into the serum. Hemolyzed serum is pink or red, rather than the normal clear straw color.

Most cases of hemolysis can be avoided by observing the steps listed below:

1. Use a needle no smaller than 20- or 21-gauge. On occasion, however, it may be necessary to use a 22- or 23-gauge needle for patients from elderly and pediatric populations with small or difficult veins.
2. If there is air leakage around the needle or loss of vacuum in the tube, replace the vacuum tube.
3. If you are using your own collection equipment instead of the vacuum tube technique, use only clean, dry, sterile needles, syringes, and tubes.
4. Collect blood in room temperature containers unless the specimen requirement specifies otherwise.

5. When a vacuum tube fills too slowly due to an incomplete venipuncture, damage to the red blood cells may result. Correct by deeper vein entry or select another puncture site and collect a second specimen.
6. Do not remove the needle from the vein until the vacuum tube is completely filled. Premature removal causes a rush of air to enter the tube, with resultant damage to the red cells.
7. Remove the tube from the needle before withdrawing the needle from the patient.
8. Be as gentle as possible drawing the blood evenly.

❖ **Lipemic Serum (Turbidity).** Most serum in fasting patients is a clear, light yellow straw color. Turbid serum appears cloudy or milky usually in patients not fasting. Serum may be cloudy due to bacterial contamination or chronic or transient high lipid levels in the patient's blood.

The primary dietary sources of lipids (fatty substances) are meats, butter, cream, and cheese. Patients who consume these foods within the 24-hour period immediately preceding collection of a blood specimen may have temporarily elevated lipid levels, which may be manifested by cloudy or lipemic serum. Lipemic serum may not be a true indicator of the patient's physiologic state.

To avoid dietary-induced high lipid levels prior to testing, many physicians require patients to exclude the high-fat foods from their diets or to fast for 12-14 hours prior to specimen collection. For morning specimen collection, the laboratory recommends that the patient be required to fast from 6 p.m. on the previous evening.

❖ **Quantity Not Sufficient.** One of the most common and expensive errors in specimen collection is the submission of an insufficient sample for testing. This means that the laboratory has to send out a report marked **QNS** (quantity not sufficient) and the patient has to be called back for a repeat collection at additional expense and inconvenience to the patient and to the physician. To ensure an adequate quantity of specimen:

1. Always draw whole blood in an amount 2 1/2 times the required volume of serum required for a particular test. For example, if 4 mls of serum are required, draw at least 10 mls whole blood.
2. For most profile testing, submit one full tube (8-10 ml) of whole blood collected in a serum separator tube.
3. Provide patients with adequate containers and instructions for 24-hour urine and stool collections.
4. For most serum and plasma tests, check to be certain that the transfer tube is half full.

❖ **Interference of Medications and Other Substances.** Direct drug interference is least likely to occur in blood tests, as drug concentrations are usually very low; however, drugs or their metabolites frequently are concentrated in the urine in sufficient amounts to interfere significantly with urine assays.

When ordering Vanillylmandelic acid (VMA) testing, coffee, tea and chocolate should be avoided 48 hours before collection. When ordering urinary hydroxyindoleacetic acid (5-HIAA), patients should exclude pineapple, walnuts, plums, and tomatoes from their diet prior to and during the collection period.

**Since many medications have been shown to have long-term residual effects that interfere with testing, careful history taking is essential prior to testing.**

## DIAGNOSTIC TESTING & PROFILES

MDL has designed several profiles to provide comprehensive test combinations. Profiles may be instrumental in assisting providers with the diagnosis of various diseases and are designed in a way that provides meaningful information. Turnaround times (TAT) and specimen requirements listed are those optimal for testing; contact Customer Service for minimum specimen requirements not listed.

MDL offers any client the clinical consultation of the Medical Director as well as assistance with the latest interpretation of laboratory testing. If you need information, contact the MDL customer service department at (800) 593-0522 or (618) 233-0522.

### **5HIAA (5-Hydroxyindoleacetic Acid Random Urine)** Methods Test Code: **3310UR**

Components: 5-Hydroxyindoleacetic Acid Random Urine  
5-HIAA/Creatinine Ratio

HPLC  
CALC

Specimen: 25 mL Urine; Refrigerate

TAT: 4-5 Days

CPTs: 83497

Collection Instructions: Patients should abstain, if possible, from medications, over-the-counter drugs and herbal remedies for at least 72 hours prior to collection. Patients should not eat avocados, bananas, eggplant, pineapple, plums, tomatoes, or walnuts for a 48-hr period prior to start of collection. Add 25 mL 6N HCl or 50% acetic acid to container at start of collection. Adjust pH to 2.0-4.0 if needed.

### **5-Hydroxyindoleacetic Acid, 24 Hr Urine** Methods Test Code: **3310S**

Components: 5-Hydroxyindoleacetic Acid 24 hr Urine  
Creatinine 24 hr Urine

HPLC  
S

Specimen: 25 L Urine HCL Additive; Refrigerate

TAT: 4-5 Days

CPT: 83497, 82570

Collection Instructions: Patients should abstain, if possible, from medications, over-the-counter drugs, and herbal remedies for at least 72 hours prior to collection. Patients should not eat avocados, bananas, eggplant, pineapple, plums, tomatoes or walnuts for a 48-hr period prior to start of collection to achieve a pH between 2.0 and 4.0. Keep specimen refrigerated during collection. Measure the total volume, mix the specimen and transfer the aliquot to a clean, leak-proof screw cap tube. Record the total volume in mL on the specimen container and requisition form.

### **ABO-Rh Blood Type** Test Code: **ABORH**

Includes: ABO Blood Group, Rh Type, Du Variant

Specimen: 7 ml Whole Blood (purple top tube); Refrigerate

Note: **Tube must be labeled with patient's full name and date of collection.**

TAT: 1-3 days

CPT: 86900, 86901

### **Acetylcholine Receptor Binding Autoantibodies** Test Code: **1410S**

Specimen: 1 mL Serum; Refrigerate

Method: RIA

TAT: 3-5 days

CPT: 83519

### **Acetylcholine Receptor Blocking Autoantibodies** Test Code: **1412S**

Specimen: 1 mL Serum; Refrigerate

Method: RIA

TAT: 5-11 days

CPT: 83519

### **Acid Phosphatase, Serum** Test Code: **S40540**

Specimen: 2 mL Serum: Frozen

Method: Enzymatic

Note: Use of SST tube not recommended.

TAT: 5 days

CPT: 84060

**Adrenocorticotrophic Hormone (ACTH)** Test Code: **3102S**  
Specimen: 1 (0.5) mL Plasma (purple top tube); separate plasma immediately from cells and split into two separate plastic tubes; Frozen- 31 days  
Method: Chemiluminescence  
Note: Plasma samples should be placed in plastic or siliconized glass tubes and frozen immediately. Avoid freeze/thaw cycles.  
TAT: 3-5 days  
CPT: 82024

**AFP (Alpha-Fetoprotein), Tumor Marker** Test Code: **3109S**  
Specimen: 2 (0.7) ml Serum; Refrigerate  
Method: Chemiluminescence  
Note: Diagnostic code is required for third party reimbursement; refer to Medicare Part B Medical Review policies. **This test should not be used for screening of neural tube or other birth defects.**  
TAT: 5 days  
CPT: 82105

**Albumin, Serum** Test Code: **ALB**  
Specimen: 2 ml Serum (SST or red top tube); Refrigerate  
Method: Bromocresol Green  
TAT: 1-3 Days  
CPT: 82040

**Alcohol, Urine Ethyl** Test Code: **4102U**  
Specimen: 5 (3) mL Urine; Sterile: Frozen  
Method: Radiative Energy Attenuation  
TAT: 3-5 Days  
CPT: 82055

**Aldolase** Test Code: **1392S**  
Specimen: 2 (1) ml Serum; Refrigerated- 5 days, Frozen- 14 days  
Method: Kinetic Spectrophotometry  
Note: Separate serum from cells within 1 hour of collection and split into two separate plastic tubes.  
TAT: 5 days  
CPT: 82085

**Aldosterone, Serum** Test Code: **3104S**  
Specimen: 2 (0.8) mL Serum; Refrigerated- 5 days, Frozen- 14 days  
Method: Radioimmunoassay  
Note: Patient should be fasting 12 hours  
TAT: 3-5 days  
CPT: 82088

**Aldosterone, Urine 24 Hour** Test Code: **3104US**  
Specimen: 15 (5) mL Urine Boric Acid; Sterile; Refrigerated- 7 days, Frozen- 2 months  
Method: Radioimmunoassay  
Note: Collect urine with 10g of boric acid to maintain the pH level 3-5. Record total volume on requisition.  
TAT: 4-11 Days  
CPT: 82088

**Alkaline Phosphatase** Test Code: **ALP**  
Specimen: 2 ml Serum (SST or red top tube); Refrigerate  
Method: PNPP, AMP Buffer  
TAT: 1-3 Days  
CPT: 84075

**Alkaline Phosphatase, Bone Specific** Test Code: **3974S**  
Specimen: 1mL Serum; Refrigerate  
Method: Enzyme Immunoassay  
TAT: 3-5 Days  
CPT: 84075

<b>Alkaline Phosphatase Isoenzymes</b>	<b>Methods</b>	<b>Test Code: 3996S</b>
Components: Alkaline Phosphatase Total	KS	
Bone %	AE	
Bone U/L	CALC	
Liver %	AE	
Liver U/L	CALC	
Specimen: 2 mL Serum; Refrigerate		
Method: Kinetic Spectrophotometry		
TAT: 2-5 Days		
CPTs: 84075, 84080		

<b>Allopurinol &amp; Metabolite</b>	<b>Methods</b>	<b>Test Code: S4619S</b>
Components: Allopurinol	HPLC	
Oxypurinol	HPLC	
Specimen: 4 mL Serum Foil Wrapped; Refrigerate		
TAT: 2-8 Days		
CPT: 80299		

<b>Alpha-1-Antitrypsin</b>	<b>Test Code: 1513S</b>
Specimen: 1 ml Serum; Refrigerated	
Method: Nephelometry	
TAT: 3 days	
CPT: 82103	

<b>Alpha-Fetoprotein Maternal, 2.0 MoM</b>	<b>Methods</b>	<b>Test Code: 3108S</b>
Components: AFP	MEIA	
AFP MoM	CALC	
Down Syndrome Risk		
DOWN SYNDROME SCREEN		
Down Syndrome Interpretation		
Open Spina Bifida Risk		
OPEN SPINA BIFIDA SCREEN		
Open Spina Bifida Interpretation		
Comments		
Method of Estimation		
Number of Fetuses		
Weeks Gestation		
Race		
Weight		
Insulin Dependant Diabetes		
Date of Ultrasound		
Date of LMP		
Date of Birth		
Specimen: 3 mL Serum; Refrigerate		
Method: Microparticle Enzyme Immunoassay		
TAT: 4-5 Days		
CPT: 82105		

**Collection Instruction:**  
Collect specimen between 14-21 weeks gestation. Icteric or grossly hemolyzed specimens are not acceptable.

**SPECIAL INSTRUCTIONS:**  
Must include: Gestational method (ultrasound, LMP, EDD), history of Down syndrome, history of Neural tube defect, if the patient is insulin dependent, weight, race, number of fetuses and if it is a repeat sample.

<b>Alpha-Fetoprotein Quad Screen, 2.5 MoM</b>	<b>Methods</b>	<b>Test Code: 3092S</b>
Components: AFP	MEIA	
AFP MoM	CALC	
uE3 (unconjugated Estriol)	CL	
uE3 (unconjugated Estriol) MoM	CALC	
hCG	MEIA	
hCG MoM	CALC	
Inhibin A Value	EIA	
Inhibin A MoM	CALC	
Down Syndrome Risk		

**Alpha-Fetoprotein Quad Screen, 2.5 MoM (cont)**Test Code: **3092S**

DOWN SYNDROME SCREEN  
 Down Syndrome Interpretation  
 Open Spina Bifida Risk  
 OPEN SPINA BIFIDA SCREEN  
 Open Spina Bifida Interpretation  
 TRISOMY 18 SCREEN

Comments

Method of Estimation

Number of Fetuses

Weeks Gestation

Race

Weight

Insulin Dependant Diabetes

Date of Ultrasound

Date of LMP

Date of Birth

Specimen: 5 mL Serum; Refrigerate

Method: Microparticle Enzyme Immunoassay

TAT: 2-6 Days

CPTs: 82105, 82677, 84702, 86336

**Collection Instruction:**

Collect specimen between 14-21 weeks gestation. Icteric or grossly hemolyzed specimens are not acceptable.

**SPECIAL INSTRUCTIONS:**

Must include: Gestational method (ultrasound, LMP, EDD), history of Down syndrome, history of Neural tube defect, if the patient is insulin dependent, weight, race, number of fetuses and if it is a repeat sample.

**Alpha-Fetoprotein Triple Marker Screen, 2.0 MoM**

Methods

Test Code: **3110S**

Components: AFP

AFP MoM

uE3 (unconjugated Estriol)

uE3 (unconjugated Estriol) MoM

hCG

hCG MoM

Down Syndrome Risk

DOWN SYNDROME SCREEN

Down Syndrome Interpretation

Open Spina Bifida Risk

OPEN SPINA BIFIDA SCREEN

Open Spina Bifida Interpretation

TRISOMY 18 SCREEN

Comments

Method of Estimation

Number of Fetuses

Weeks Gestation

Race

Weight

Insulin Dependant Diabetes

Date of Ultrasound

Date of LMP

Date of Birth

Specimen: 3 mL Serum; Refrigerate

Method: Microparticle Enzyme Immunoassay

TAT: 2-5 Days

CPTs: 82105, 82677, 84702

MEIA

CALC

CL

CALC

MEIA

CALC

**Collection Instruction:**

Collect specimen between 14-21 weeks gestation. Icteric or grossly hemolyzed specimens are not acceptable.

**SPECIAL INSTRUCTIONS:**

Must include: Gestational method (ultrasound, LMP, EDD), history of Down syndrome, history of Neural tube defect, if the patient is insulin dependent, weight, race, number of fetuses and if it is a repeat sample.

**ALT (SGPT)**Test Code: **ALT**

Specimen: 2 ml Serum (SST or red top tube); Refrigerate

Method: UV without P5P

TAT: 1-3 Days

CPT: 84460

**Aluminum, Serum**Test Code: **4862S**

Specimen: 2 ml Serum (royal blue top tube); Refrigerate

Method: ICP/MS

TAT: 2-5 days

<b>Aluminum, Serum (cont)</b>		Test Code: <b>4862S</b>
CPT: 82108		
<b>Aluminum, Whole Blood</b>		Test Code: <b>4862WS</b>
Specimen: 2 ml Whole Blood (royal blue top tube); Refrigerate		
Method: ICP/MS		
TAT: 2-5 days		
CPT: 82108		
<b>Amikacin</b>		Test Code: <b>4900S</b>
Specimen: Serum 1 mL, Aliquot; Refrigerate		
Method: Fluorescence Polarization Immunoassay		
Notes: Red top serum separator tubes are not accepted. Specimens from patients on other antibiotics must be frozen. Specimens should be collected at trough (within 30 minutes prior to next dose) or peak at concentrations (end of a 1 hour constant infusion, 30 minutes after the end of a 30 minute constant infusion, or 1 hour after an IM dose).		
TAT: 2-4 Days		
CPT: 80150		
<b>Amiodarone &amp; Metabolites</b>	Methods	Test Code: <b>4147S</b>
Components: Amiodarone	HPLC	
Desethylamiodarone	HPLC	
Specimen: 2 mL Serum Foil Wrapped; Refrigerate		
TAT: 2-7 Days		
CPT: 83789		
Collection Instructions: Please send specimen foil-wrapped as analyte is light sensitive.		
<b>Amitriptyline &amp; Nortriptyline</b>	Methods	Test Code: <b>4914S</b>
Components: Amitriptyline	HPLC	
Nortriptyline	HPLC	
Amitriptyline + Nortriptyline	HPLC	
Specimen: 2 mL Serum; Refrigerate		
TAT: 2-4 Days		
CPTs: 80152, 80182		
Collection Instructions: Serum separator tubes are not acceptable. Use polypropylene tubes. Collect at steady state trough concentration, at least 12 hours after last dose.		
<b>Ammonia, Plasma</b>		Test Code: <b>007054</b>
Specimen: 1ml EDTA Plasma (purple top tube); Frozen		
Method: Enzymatic		
Notes: Patient should be fasting 12-14 hours. Keep specimen on ice after venipuncture. Date and time specimen was drawn must be written on the tube. Plasma needs to be separated from cells and frozen within 15 minutes of venipuncture for best stability. <b>Caution:</b> blood ammonia levels increase rapidly at room temperatures.		
TAT: 2-3 Days		
CPT: 82140		
<b>Amoxapine &amp; 8-Hydroxy-Amoxapine</b>	Methods	Test Code: <b>S40450</b>
Components: Amoxapine	GC	
8-Hydroxy-Amoxapine	GC	
Specimen: 1 mL Serum; Refrigerate		
TAT: 2-5 Days		
CPT: 82492		
<b>Amylase, Random Urine</b>		Test Code: <b>RUAMY</b>
Specimen: U Urine Cup; Refrigerate		
Method: CNP-triose/CNAG3		
TAT: 1-3 Days		
CPT: 82150		

**Amylase, Serum** Test Code: **AMY**

Specimen: 2 ml Serum (SST or red top tube); Refrigerate  
 Method: CNP-triose/CNAG3  
 Note: Separate from cells within 45 minutes

**Amylase, Serum (cont)** Test Code: **AMY**

TAT: 1-3 Days  
 CPT: 82150

**Amylase, Urine** Test Code: **UAMY**

Specimen: U Urine Cup; Refrigerate  
 Method: CNP-triose/CNAG3  
 TAT: 1-3 Days  
 CPT: 82150

**ANA Profile (ANalyzer)** Test Code: **1000S**

Components:	Methods
Antinuclear Antibodies (ANA)	IFA/IMAGE
ANA Pattern	IFA
dsDNA Autoantibodies	Farr RBA
U1 RNP/snRNP IgG Auto abs –IAA	IAA
Sm (Smith) IgG Autoantibodies –IAA	IAA
SS-A IgG Autoantibodies –IAA	IAA
SS-B IgG Autoantibodies –IAA	IAA
Scl-70 IgG Autoantibodies –IAA	IAA
Thyroid Peroxidase Autoantibodies	ICMA
C3 Complement	NEPH
C4 Complement	NEPH
Rheumatoid Factor IgM Auto abs	NEPH
Ribosomal P Protein Autoantibodies	IAA

Specimen: 4 mL Serum; Refrigerate  
 TAT: 2-4 Days  
 CPTs: 83520, 86038, 86160x2, 86225, 86235x5, 86376, 86431

**ANA (Antinuclear Antibodies) & Titer** Test Code: **1122S**

Components:	Methods
Antinuclear Antibodies (ANA)	IFA/IMAGE
Antinuclear Antibodies Titer	IFA
ANA Pattern	IFA

Specimen: 1 mL Serum; Refrigerate  
 TAT: 2-3 Days  
 CPT: 86038

**Androstenedione** Test Code: **3112S**

Specimen: 1 mL Serum; Aliquot; Ambient –24 hours  
 Method: Radioimmunoassay  
 TAT: 2-5 Days  
 CPT: 82157

**Anemia Panel** Test Code: **8165**

Components:	Method
TIBC	Colormetric/CALC
Vitamin B12	Chemiluminescent
Folate	Chemiluminescent
Ferritin	Chemiluminescent
CBC w/ Differential	
Reticulocyte Count	

Specimen: 5 mL Whole Blood EDTA (Purple Top); Refrigerate  
 TAT: 2-4 Days  
 CPT: 83540, 83550, 82607, 82746, 82728, 85025, 85045

**Angiotensin-Converting Enzyme (ACE)** Test Code: **3114S**

Specimen: 1 mL Serum; Refrigerate  
 Method: Kinetic  
 TAT: 2-5 Days CPT: 82164

<b>Antineutrophil Cytoplasmic Autoantibodies (ANCA)</b>	<b>Methods</b>	<b>Test Code: 1862S</b>
Components: ANCA Total Autoantibodies	IFA/IMAGE	
ANCA Pattern	IFA	
Antinuclear Antibodies (ANA)	IFA/IMAGE	
ANA Pattern	IFA	
ANCA IgG Autoantibodies	IFA/IMAGE	
ANCA IgM Autoantibodies	IFA	
ANCA IgA Autoantibodies	IFA	
Specimen: 2 mL Serum; Refrigerate		
TAT: 2-4 Days		
CPTs: 86038x2, 86039, 86021x3		

<b>ANCA Evaluation (PAN)</b>	<b>Methods</b>	<b>Test Code: 1866S</b>
Components: ANCA Total Autoantibodies	IFA/IMAGE	
ANCA Pattern	IFA	
Myeloperoxidase Autoantibodies	EIA	
Proteinase-3 Autoantibodies	EIA	
Antinuclear Antibodies (ANA)	IFA/IMAGE	
ANA Pattern	IFA	
ANCA IgG Autoantibodies	IFA/IMAGE	
ANCA IgM Autoantibodies	IFA	
ANCA IgA Autoantibodies	IFA	
Specimen: 3 mL Serum; Refrigerate		
TAT: 3-5 Days		
CPTs: 83520x2, 86021, 86038. If positive: 86038x2, 86039, and 86021x5		

<b>Anti-Streptolysin O (ASO)</b>	<b>Test Code: ASO</b>
Specimen: 2 mL Serum; Refrigerate	
Method: Latex Agglutination	
TAT: 1-3 Days	
CPT: 86063	

<b>Anti-Streptolysin O Titer</b>	<b>Test Code: ASOTI</b>
Specimen: 2 mL Serum; Refrigerate	
Method: Latex Agglutination	
TAT: 1-3 Days	
CPT: 86060	

<b>Antibody Identification</b>	<b>Test Code: 006213</b>
Specimen: 10 mL Clotted Blood (Red Top only) and 5 mL Whole Blood (Purple Top); Refrigerate	
Method: Antiglobulin Test	
TAT: 1-2 Days	
CPT: 86870	
Note: <b>Do not use SST</b>	

<b>Antiphospholipid Syndrome EvaluatR</b>	<b>Methods</b>	<b>Test Code: 1081S</b>
Components: DRVVT Screen	CLOT DET	
DRVVT Mixing Study	CLOT DET	
DRVVT Confirm	CLOT DET	
DRVVT Ratio	CALC	
DRVVT Interpretation	CLOT DET	
Cardiolipin IgG Autoantibodies	EIA	
Cardiolipin IgM Autoantibodies	EIA	
Cardiolipin IgA Autoantibodies	EIA	
Phosphatidylserine IgG Auto abs	EIA	
Phosphatidylserine IgM Auto abs	EIA	
Phosphatidylserine IgA Auto abs	EIA	
Beta-2-Glycoprotein I IgG Auto abs	EIA	
Beta-2-Glycoprotein I IgM Auto abs	EIA	
Beta-2-Glycoprotein I IgA Auto abs	EIA	
Specimen 1: 2 mL Serum; Refrigerate &		

**Antiphospholipid Syndrome EvaluatR (cont)** Test Code: **1081S**

Specimen 2: 2 mL Plasma Citrated; Light Blue; Frozen  
 TAT: 3-5 days  
 CPTs: 85613, 86146x3, 86147x3, 86148x3, and 85612  
 Collection Instructions: See instructions for platelet-poor plasma.

**Antithrombin III Antigen** Test Code: **3253S**

Specimen: 2mL Plasma Citrated; Light Blue; Frozen  
 Method: Latex Immunoassay  
 Note: Split platelet-poor plasma into 2 plastic vials before freezing. Heparinized samples are not acceptable.  
 TAT: 2-4 Days  
 CPT: 85301

**Antithrombin III Functional** Test Code: **5951S**

Specimen: 2 mL Plasma Citrated; Light Blue; Frozen  
 Method: Chromogenic  
 Note: Split platelet-poor plasma into 2 plastic vials before freezing. Heparinized samples are not acceptable.  
 TAT: 2-4 Days  
 CPT: 85300

**Apolipoprotein Evaluation** Test Code: **1900S**

Components:	Methods
Apolipoprotein A-1	NEPH
Apolipoprotein B	NEPH
Lipoprotein (a)	S

Specimen: 2 mL Serum; Refrigerate  
 Note: Patient should fast for 12 hrs prior to testing  
 TAT: 2-4 days  
 CPT: 82172x3

**Arsenic Urine Random** Test Code: **4867UR**

Components:	Methods
Arsenic Random Urine	ICP/MS
Arsenic/Creatinine Ratio	CALC

Specimen: 10 mL Urine; Refrigerate  
 TAT: 2-4 Days  
 CPT: 82175

**Arthritis Panel** Test Code: **ARTH**

Components:	Method
ANA	IFA/IMAGE
ESR	mL/min
RA	Latex
Uric Acid	Uricase colormetric

Specimen: 2 mL Serum and Whole Blood EDTA; Refrigerate  
 TAT: 3-5  
 CPT: 86038, 85651, 86430, 84550

**AST (SGOT)** Test Code: **AST**

Specimen: 2 mL Serum; Refrigerated  
 Method: UV without P5P  
 TAT: 24 Hrs.  
 CPT: 84450

**Bartonella Henselae IgG & IgM Abs** Test Code: **8851S**

Components:	Methods
Bartonella henselae IgG Antibodies	IFA
Bartonella henselae IgM Antibodies	IFA

Specimen: 1 mL Serum; Refrigerate  
 TAT: 2-5 Days  
 CPT: 86611x2

<b>Bartonella Quintana IgG &amp; IgM Abs</b>	Methods	Test Code: <b>8864S</b>
Components: Bartonella quintana IgG Antibodies	IFA	
Bartonella quintana IgM Antibodies	IFA	
Specimen: 1 mL Serum; Refrigerate		
TAT: 2-5 Days		
CPT: 86611x2		

<b>Basic Metabolic Panel</b>	Test Code: <b>BMP</b>
Components: Bun	
Bun/Creatinine	
Calcium	
CO <sub>2</sub>	
Chloride	
Creatinine	
Fasting Glucose	
Potassium	
Sodium	
Specimen: 2mL Serum; Refrigerate	
Method: Colormetric & ISE Indirect	
TAT: 1-2 Days	
CPT: 80048	

<b>Bence-Jones Protein Evaluation (Qual Reflex To Quant)</b>	Methods	Test Code: <b>1592S</b>
Components: Bence-Jones Protein Urine	AE	
IgG	AE	
IgA	AE	
IgM	AE	
Kappa	AE	
Lambda	AE	
Kappa Light Chain Urine	NEPH	
Kappa Chain 24 hr Urine	CALC	
Lambda Light Chain Urine	NEPH	
Lambda Chain 24 hr Urine	CALC	
Specimen: 15 mL Urine; Refrigerate		
TAT: 2-5 Days		
CPTs: 82784x3, 82664x3		

Collection Instructions: A 24-hr urine collection is preferred. Keep specimen refrigerated during collection. No added

<b>Beta-2-Glycoprotein I, IgG, IgM, IgA Auto abs</b>	Methods	Test Code: <b>1083S</b>
Components: Beta-2-Glycoprotein I IgG Autoantibodies	EIA	
Beta-2-Glycoprotein I IgM Autoantibodies	EIA	
Beta-2-Glycoprotein I IgA Autoantibodies	EIA	
Specimen: 1 mL Serum; Refrigerate		
TAT: 3-4 days		
CPT: 86146x3		

<b>Beta-2-Microglobulin Serum</b>	Test Code: <b>3143S</b>
Specimen: 2 mL Serum; Aliquot; Ambient - 7 days Refrigerate	
Method: Nephelometry	
TAT: 2-4 days	
CPT: 82232	

<b>Bile Acids</b>	Test Code: <b>010330</b>
Specimen: 1 mL Serum; Frozen	
Method: Enzymatic	
TAT: 3-5 Days	
CPT: 82239	

<b>Bile Acid Fractioned</b>	Methods	Test Code: <b>S49102</b>
Components: Cholic Acid	ENZ	
Deoxycholic Acid	ENZ	
Chenodoxycholic Acid	ENZ	

**Bile Acid Fractioned (cont)** Methods Test Code: **S49102**

Total Bile Acids  
Specimen: 3 mL Serum; Refrigerate  
Notes: Overnight fasting is preferred.  
TAT: 2-5 Days  
CPTs: 83520x3, 82239

**Bilirubin, Total** Test Code: **TBILI**

Specimen: 2 mL Serum; Aliquot; Refrigerated  
Method: Evelyn Malloy  
TAT: 1-3 Days  
CPT: 82247

**Biotin** Test Code: **S41147**

Specimen: 2 mL Serum; Frozen  
TAT 3-5 Days  
CPT: 84999

**B. Burgdorferi IgG & IgM By Immunoblot** Methods Test Code: **7711BS**

Components: Borrelia burgdorferi IgG Abs –IB  
Borrelia burgdorferi IgM Abs –IB  
Specimen: 1 mL Serum; Refrigerate  
TAT: 3-5 Days  
CPT: 86617x2

**Brucella Abortus IgG Antibodies** Test Code: **8836S**

Specimen: 1 mL Serum; Aliquot Refrigerate  
Method: Enzyme Immunoassay  
TAT: 3-5 Days  
CPT: 86622

**BUN, Serum** Test Code: **BUN**

Specimen: 1 mL Serum; Refrigerated  
Method: Urease, UV  
TAT: 1-3 Days  
CPT: 84520

**C-Peptide** Test Code: **3140S**

Specimen: 3 mL; Serum; Frozen  
Method: Immunochemiluminometric Assay (ICMA)  
TAT: 3-5 Days  
CPT: 84681  
Notes: Patient should fast 12 hrs. prior to collection. Split serum into 2 plastic vials before freezing and freeze within 1 hour of collection

**C-Reactive Protein** Test Code: **CRP**

Specimen: 1 mL; Serum; Refrigerate  
Method: Latex Agglutination  
TAT: 2-4 Days  
CPT: 86140

**C-Reactive Protein, Semi-Quantitative** Test Code: **CRPTI**

Specimen: Serum; Refrigerate  
Method: Latex Agglutination  
TAT: 2-4 Days  
CPT: 86140

**CA 125** Test Code: **C125**

Specimen: Serum; Refrigerate  
Method: Microparticle Enzyme Immunoassay  
TAT: 1-3 Days

<b>CA 125 (cont)</b>		Test Code: <b>C125</b>
CPT: 86304		
<b>CA 15-3</b>		Test Code: <b>3119S</b>
Specimen: Serum; Refrigerate		
Method: Microparticle Enzyme Immunoassay (MEIA)		
TAT: 3-7 Days		
CPT: 86300		
Notes: Diagnosis (signs or symptoms) supporting medical necessity must be submitted with requisition to obtain third-party reimbursement.		
<b>CA 19-9</b>		Test Code: <b>3120S</b>
Specimen: Serum; Refrigerate		
Method: Chemiluminescence (CL)		
TAT: 3-4 Days		
CPT: 86301		
Notes: Diagnosis (signs and symptoms) supporting medical necessity must be submitted with requisition to obtain third-party reimbursement.		
<b>CA 27.29</b>		Test Code: <b>3134S</b>
Specimen: Serum; Refrigerate		
Method: Chemiluminescence (CL)		
TAT: 3-5 Days		
CPT: 86300		
<b>Calcitonin (Thyrocalcitonin)</b>		Test Code: <b>3126S</b>
Specimen: Serum; Frozen		
Method: Chemiluminescence (CL)		
Notes: Frozen only (refrigerated samples are not accepted).		
TAT: 3-8 Days		
CPT: 82308		
<b>Calcium, Ionized</b>	<b>Methods</b>	<b>Test Code: 4831S</b>
Components: Calcium (Ionized)	CM	
Calcium (Normalized)	CALC	
Specimen: 3 mL Serum Separator Tube; Refrigerate		
Method: Colorimetric		
TAT: 3-5 Days		
CPT: 82330		
Collection Instructions: Use only serum separator tube for collection. <b>Tube must not be opened.</b>		
<b>Calcium, Serum</b>		Test Code: <b>CA</b>
Specimen: Serum; Refrigerate		
Method: Arsenazo III		
TAT: 1-3 Days		
CPT: 82310		
<b>Calcium, Urine</b>		Test Code: <b>UCAL</b>
Specimen: Urine; Sterile Cup; Refrigerate		
Method: Arsenazo III		
TAT: 1-3 Days		
CPT: 82340		
<b>Carbamazepine (Tegretol)</b>		Test Code: <b>CARBAM</b>
Specimen: 2 mL Serum; Refrigerate		
Method: Fluorescence Polarization Immunoassay (FPIA)		
TAT: 1-3 Days		
CPT: 80156		
Notes: Serum separator tubes are not accepted. Collect at trough concentrations, i.e., within 30 minutes prior to the administration of the next dose.		

**Carbon Dioxide** Test Code: **CO2**

Specimen: 2 mL Serum; Refrigerate  
 Method: PEP Carboxylase  
 TAT: 1-3 Days  
 CPT: 82374

**Carcinoembryonic Antigen** Test Code: **CEA**

Specimen: 2 mL Serum; Refrigerate  
 Method: Microparticle Enzyme Immunoassay (MEIA)  
 TAT: 1-3 days  
 CPT: 82378

<b>Cardiolipin IgG, IgM &amp; IgA Auto Abs (EIA)</b>	Methods	Test Code:
	<b>3371S</b>	

Components: Cardiolipin IgG Autoantibodies	EIA
Cardiolipin IgM Autoantibodies	EIA
Cardiolipin IgA Autoantibodies	EIA
Specimen: 1 mL Serum; Refrigerate	
TAT: 2-3 Days	
CPT: 86147x3	

**Cardiolipin IgA Autoantibodies** Test Code: **3374S**

Specimen: 1 mL Serum; Refrigerate  
 Method: Enzyme Immunoassay (EIA)  
 TAT: 2-3 Days  
 CPT: 86147

**Cardiolipin IgG Autoantibodies** Test Code: **3372S**

Specimen: 1 mL Serum; Refrigerate  
 Method: Enzyme Immunoassay (EIA)  
 TAT: 2-3 Days  
 CPT: 86147

**Cardiolipin IgM Autoantibodies** Test Code: **3373S**

Specimen: 1 mL Serum; Refrigerate  
 Method: Enzyme Immunoassay  
 TAT: 2-3 Days  
 CPT: 86147

<b>Catecholamines, Fractioned Plasma</b>	Methods	Test Code: <b>3304S</b>
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Components: Epinephrine	HPLC
Norepinephrine	HPLC
Dopamine	HPLC
Catecholamines Plasma	CALC
Specimen: 4 mL Plasma; Heparinized; Refrigerate	
TAT: 3-7 Days	
CPT: 82384	

## Collection Instructions:

If possible, patients should discontinue all drugs at least 1 week prior to collection. Medications known to interfere with the assay include: Alpha-methyldopa (Aldomet), Isoproterenol, Labetalol, Mandelamine, Metoclopramide, Acetaminophen (high concentrations only), Cimetidine, and Catecholamine-containing drugs, MAO inhibitors, diuretics and vasodilators. 1. The patient must stop smoking and drinking coffee or tea for a minimum of four hours before sample is drawn. 2. Insert an intravenous catheter and reassure the patient as he/she rests in a supine position for 30 minutes in a quiet room. 3. At the end of 30 minutes, draw 10 mL of blood into each of the 2 pre-chilled vials containing heparin (green top). 4. Separate plasma in a refrigerated centrifuge at 4 C within 30 minutes after phlebotomy. Transfer plasma into plastic vials and freeze immediately at -70 C. The effect of drugs on catecholamines results may not be predictable.

<b>Catecholamines, Fractioned 24 Hr Urine</b>	Methods	Test Code
<b>3304US</b>		
Components: Catecholamines Tot (E+NE) 24 hr Ur	HPLC	
Epinephrine 24 hr Urine	HPLC	
Norepinephrine 24 hr Urine	HPLC	
Dopamine 24 hr Urine	HPLC	
Specimen: 30 mL Urine 24 hour; Sterile; Refrigerate		
TAT: 3-6 Days		
CPT: 82384		
Collection Instructions:		
If possible, patient should discontinue all drugs at least 1 week prior to collection.		
Medications known to interfere with this assay include: Alpha-methyl dopa (Aldomet), Isoproterenol, Labetalol, Mandelamine, Metaclopramide, Acetaminophen (high concentrations only), Cimetidine, and Catecholamine-containing drugs, MAO inhibitors, diuretics, vasodilators. Other interfering substances include smoking and drinking tea within 4 hours of collecting specimen. Refrigerate during and after collection.		
<b>Catecholamines, Fractioned Urine Random</b>	Methods	Test Code: <b>3304UR</b>
Components: Catecholamines Total (E+NE) Rand Ur	HPLC	
Epinephrine Random Urine	HPLC	
Norepinephrine Random Urine	HPLC	
Dopamine Random Urine	HPLC	
Specimen: 30 mL Urine; Refrigerate		
TAT: 3-6 Days		
CPT: 82384		
Collection Instructions:		
If possible, patient should discontinue all drugs at least 1 week prior to collection.		
Medications known to interfere with this assay include: Alpha-methyl dopa (Aldomet), Isoproterenol, Labetalol, Mandelamine, Metaclopramide, Acetaminophen (high concentrations only), Cimetidine, and Catecholamine-containing drugs, MAO inhibitors, diuretics, vasodilators. Other interfering substances include smoking and drinking tea within 4 hours of collecting specimen.		
1. Refrigerate during and after collection. 2. Record the 24hr total volume on the requisition form. 3. Store and ship refrigerated.		
<b>CBC (Complete Blood Count)</b>		Test Code: <b>CBC</b>
Specimen: 5 mL Whole Blood (Purple Top); Refrigerate		
Method:		
TAT: 1-2 Days		
CPT: 85025		
<b>Celiac Disease Auto abs Evaluation</b>	Methods	Test Code: <b>1076S</b>
Components: Endomysial IgA Autoantibodies	IFA	
Gliadin IgA Antibodies	EIA	
Gliadin IgG Antibodies	EIA	
Reticulin IgA Autoantibodies	IFA	
Specimen: 2 mL Serum; Refrigerate		
TAT: 5-9 days		
CPTs: 83520x2, 86256x2		
<b>Centromere Autoantibodies</b>		Test Code: <b>1109S</b>
Specimen: 1 mL Serum; Refrigerate		
Method: Indirect Fluorescent Antibody (IFA)		
TAT: 3-4 Days		
CPT: 86255		
<b>Ceruloplasmin</b>		Test Code: <b>1516S</b>
Specimen: 1 mL Serum; Refrigerate		
Method: Nephelometry (NEPH)		
TAT: 3-4 Days		
CPT: 82390		

**Chlamydia DNA By PCR** Test Code: **CT**

Specimen: Viral Transport  
Method: PCR  
TAT: 2-3 Days  
CPT: 87491

**Chlamydia Trachomatis Culture** Test Code: **2400S**

Specimen: M4 Transport Media/Swab  
Method: Culture  
TAT: 6 Days  
CPT: 87110  
Notes: Please supply patient's birth date on requisition form for Public Health Department reporting. Urine is not acceptable for culture.

**Chloride, Serum** Test Code: **CL**

Specimen: 2 mL Serum; Refrigerate  
Method: ISE Indirect  
TAT: 1-3 Days  
CPT: 82435

**Cholesterol** Test Code: **CHOL**

Specimen: 2 mL Serum; Refrigerate  
Method: Cholesterol Oxidase, Esterase  
TAT: 1-3 Days  
CPT: 82465

**Cholinesterase RBC** Test Code: **3123S**

Specimen: 2 mL Whole Blood EDTA; Lavender; Refrigerate  
Method: Spectrophotometry  
TAT: 3-4 Days  
CPT: 82482x2  
Notes: Only refrigerated samples are accepted, ambient will be rejected.

**Cholinesterase Serum** Test Code: **3123S**

Specimen: 2 mL Serum; Refrigerate  
Method: Spectrophotometry  
TAT: 3-4 Days  
CPT: 82480

**Chromosome Analysis, Routine Blood** Test Code: **S49663**

Components are as listed: Specimen, Indications, Number of cells counted, Number of cells analyzed, Number of cells imaged, Number of Cells Karyotyped, Band Resolution, Banding Method(s), Culture Method(s), Karyotype, Interpretation, Recommendations, Comment, and Clinical Cytogeneticist.  
Specimen: 5 mL Whole Blood Heparin; Green; Ambient  
TAT: 6-9 Days  
CPTs: 88262, 88230, 88291

**Citrate, 24 Hour Urine** Test Code: **3970US**

	Methods	
Components: Citrate 24 hr Urine	S	
Creatinine 24 hr Urine	S	
Specimen: 10 mL Urine Boric Acid; Refrigerate		
TAT: 3-6 Days		
CPT: 82507, 82570, 81050		
Collection Instructions: Collect a 24-hour urine specimen. Add 10 grams of boric acid at start of collection. Record total volume on both the container and requisition		

**CK (CPK)** Test Code: **CK**

Specimen: 2 mL Serum; Refrigerate  
Method: NAC Activated

TAT: 1-3 Days

**CK (CPK) (cont)**

Test Code: **CK**

CPT: 82550

**CKMB**

Test Code: **CKMB3**

Specimen: 2 mL Serum; Refrigerate

Method: Enzymatic

TAT: 1-3 Days

CPT: 82553

**Clonazepam**

Test Code: **4918S**

Specimen: 2 mL Serum; Red Top; Refrigerate

Method: High-Performance Liquid Chromatography (HPLC)

TAT: 3-6 days

CPT: 80154

Notes: Collect at trough concentration, i.e., immediately before the administration of the next dose.

Serum separator tubes are not acceptable; use polypropylene tubes. Protect from light. Ship on cold pack.

**Clostridium Difficile Toxin Evaluation**

Methods

Test Code: **7670S**

Components: Clostridium difficile Toxin A

EIA

Clostridium difficile Toxin B

TCA

Specimen: 1 g Stool; Refrigerate

TAT: 3-5 Days

CPTs: 87230, 87324

Collection Instructions: Collect 1-10 g (mL) fresh stool (no preservatives) in a sterile, leak-proof plastic container. Specimens collected in formalin, PVA or on swabs are not acceptable.

**Clozapine & Norclozapine**

Methods

Test Code: **CLOZAP**

Components: Clozapine

HPLC

Norclozapine

HPLC

Specimen: 2 mL Plasma Heparinized; Refrigerate

TAT: 3-7 Days

CPT: 80299x2

Collection Instructions: Serum separator tubes are not acceptable; use polypropylene tubes for transportation.

Avoid using glass material for long-term storage as drug adsorbs on the glass.

**Cold Agglutinin**

Test Code: **9026S**

Specimen: 1 mL Serum; Ambient

Method: Hemagglutination (HA)

TAT: 3-5 Days

CPT: 86156

Notes: Clot blood at 37 C for 30 minutes. Centrifuge, separate, and ship ambient.

**Complement Evaluation Plus CH50**

Methods

Test Code: **1021S**

Components: CH50

NEPH

C3 Complement

NEPH

C4 Complement

MEIA

Complement Factor B

NEPH

Specimen: 2 mL Serum; Frozen

TAT: 3-5 days

CPTs: 86160x3, 86162

Collection Notes: 2 frozen aliquots required. Avoid freeze/thaw cycles.

**Comp. Functional Activity: C1 Esterase**

Test Code: **1531S**

Specimen: Serum; Frozen

Method: Enzyme Immunoassay (EIA)

Notes: Avoid freeze/thaw cycles.

TAT: 4-7 Days

CPT: 86161

**Complement C3** Test Code: 1501S

Specimen: 1 mL Serum; Refrigerate  
Method: Nephelometry (NEPH)  
TAT: 3-5 Days  
CPT: 86160

**Complement C4** Test Code: 1504S

Specimen: 1 mL Serum; Refrigerate  
Method: Nephelometry (NEPH)  
TAT: 3-5 Days  
CPT: 86160

**Complement: CH50** Test Code: 1600S

Specimen: 1 mL; Serum; Frozen  
Method: Microparticle Enzyme Immunoassay  
Notes: Avoid freeze/thaw cycles  
TAT: 3-6 Days  
CPT: 86162

**Comprehensive Metabolic Panel** Test Code: 1005

Components: A/G Ratio

- Albumin
- Alkaline Phosphatase
- ALT
- AST
- Total Bilirubin
- BUN
- BUN/Creatinine
- Calcium
- CO<sub>2</sub>
- Chloride
- Creatinine
- Globulin
- Fasting Glucose
- Potassium
- Total Protein
- Sodium

Specimen: 2 mL Serum; Refrigerate  
Method: Colormetric & ISE Indirect  
TAT: 1-3 Days  
CPT: 80053

**Coombs Test, Direct** Test Code: DCOOMS

Specimen: 2 mL; Serum; Refrigerate; Red top tube only  
Method: Manual Tube Method  
TAT: 1-3 Days  
CPT: 86880

**Copper 24 Hour Urine** Test Code: 4870US

Specimen: 10 mL Urine 24 hour; Sterile; Refrigerate  
Method: ICP/MS  
TAT: 3-6 Days  
CPT: 82525

**Copper Serum** Test Code: 4870S

Specimen: 2 mL; Serum Trace Metal; Royal Blue; Refrigerate  
Method: Inductively Coupled Plasma (ICP), Mass Spectrometry (MS)  
TAT: 3-6 Days  
CPT: 82525

**Cortisol, Free 24 Hour Ultraquant** Test Code: **3129US**

Specimen: 10 mL Urine 24 hour; Refrigerate  
Method: LC/MS/MS  
TAT: 3-6 Days  
CPT: 82530  
Collection Instructions: Add 25 mL of 50% acetic acid or 6N hydrochloric acid (HCl) at the start of a 24-hour collection to achieve a pH between 2.0 and 4.0. Measure the total volume, mix the specimen and transfer the aliquot to a clean, leak proof screw cap tube. Record the total volume on specimen container and requisition form.

**Cortisol, Serum** Test Code: **3128S**

Specimen: 3 mL; Serum; Refrigerate  
Method: Immunochemiluminometric Assay (ICMA)  
TAT: 3-5 Days  
CPT: 82533  
Notes: Collect morning specimen at 8 AM; collect evening specimen at 4 PM. Record time of collection on specimen container and requisition.

**Coxiella Burnetii IgG, IgM & IgA Abs, Phase 1 & 2** Test Code: **9381S**

Components:	Methods
Coxiella burnetii IgG Abs Phase 1	IFA
Coxiella burnetii IgG Abs Phase 2	IFA
Coxiella burnetii IgM Abs Phase 1	IFA
Coxiella burnetii IgM Abs Phase 2	IFA
Coxiella burnetii IgA Abs Phase 1	IFA
Coxiella burnetii IgA Abs Phase 2	IFA

Specimen: 1 mL Serum; Refrigerate  
TAT: 3-6 Days  
CPT: 86638x6

**Creatine Kinase Isoenzymes** Test Code: **3851S**

Components:	Methods
CK1-BB	EP/S
CK2-MB	EP/S
CK3-MM	EP/S
Creatine Kinase Total	KS

Specimen: 2 mL Serum; Frozen  
TAT: 3-4 Days  
CPTs: 82550, 82552

**Creatine, Serum** Test Code: **002402**

Specimen: 2 mL; Serum; Frozen  
Method: Enzymatic (Creatinase)/Spectrophotometry  
TAT: 3-5 Days  
CPT: 82540

**Creatinine, Serum** Test Code: **CREAT**

Specimen: 2 mL; Serum; Refrigerate  
Method: Alkaline Picrate - Kinetic  
TAT: 1-3 Days  
CPT: 82565

**CRP (Inflammation)** Test Code: **CRP**

Specimen: 1mL; Serum; Refrigerate  
Method: Latex Agglutination  
TAT: 1-2 Days  
CPT: 86140

**CRP Ultraquant (Cardiac Risk)** Test Code: **1536S**

Specimen: 2 mL; Serum; Refrigerate  
Method: Nephelometry  
TAT: 3-4 Days

CPT: 86141

**Cryoglobulin**

Test Code: **1156S**

Specimen: 4 mL; Serum; Refrigerate

Method: Inspection

TAT: 3-4 Days

CPT: 82595

Notes: Immediately after collection, continuously maintain vacutainer tube at 37 C for 1 hour Followed by centrifugation maintaining 37 C. Split the serum into 2 plastic vials labeled serum. Once separated from clots and cells, serum may be sent ambient, refrigerated, or frozen.

**Cryptococcus Antigen**

Test Code: **9189S**

Specimen: 1 mL Serum; Refrigerate

Method: Latex Particle Agglutination

TAT: 3-4 Days

CPT: 87449

**Crystal Exam, Miscellaneous Fluid**

Test Code: **005355**

Specimen: 1mL; Body or Synovial Fluid; Refrigerate

Method: Polarized Light

Notes: Request forms must state source of fluid.

TAT: 3-5

CPT: 89060

**Culture, Anaerobic Bacteria**

Test Code: **CULANA**

Specimen: Culturette for Anaerobes

BC Blood Culture Set

BF Body Fluid

M Miscellaneous

MP Micro Plates

TH Thio Tube

TS tissue

Method: Culture

TAT: 7 Days

CPT: 87075

**Culture, Cornea**

Test Code: **CULCOR**

Specimen: CR Cornea

Method: Culture

TAT: 2-4 Days

CPT: 87070

**Culture, Eye/Ear**

Test Code: **CULEYE**

Specimen: Culturette

Method: Culture

TAT: 2-4 Days

CPT: 87070

**Culture, Nares/Nose**

Test Code: **CULNOS**

Specimen: Culturette

Method: Culture

TAT: 2-4 Days

CPT: 87070

**Culture, Stool**

Test Code: **CULFE**

Specimen: Stool

Method: Culture

TAT: 3-5Days

CPT: 87045

<b>Culture, Throat A Strep</b>	Test Code: <b>CULAST</b>
Specimen: Miscellaneous	
Method: Culture	
TAT: 2-4 Days	
CPT: 87081	
<b>Culture, Urine</b>	Test Code: <b>CULUR</b>
Specimen: Urine Cup	
Method: Culture	
TAT: 2-4 Days	
CPT: 87086	
<b>Culture, Vaginal/Cervix</b>	Test Code: <b>CULVAG</b>
Specimen: Culturette	
Method: Culture	
TAT: 2-4 Days	
CPT: 87070	
<b>Culture, Yeast</b>	Test Code: <b>CULYEA</b>
Specimen: Culturette	
Method: Culture	
TAT: 2-4 Days	
CPT: 87101	
<b>Cyclosporine A With Metabolites Whole Blood</b>	Test Code: <b>4311S</b>
Specimen: 5 mL Whole Blood EDTA; Refrigerate	
Method: Fluorescence Polarization Immunoassay	
TAT: 3-4 Days	
CPT: 80158	
<b>Cyclosporine A, Whole Blood</b>	Test Code: <b>706556</b>
Specimen: 2 mL Whole Blood EDTA; Refrigerate	
Method: Immunoassay	
TAT: 3-4 Days	
CPT: 80158	
<b>Cystic Fibrosis GenotypR: Carrier Study</b>	Test Code: <b>5356S</b>
Specimen: 5 mL Whole Blood EDTA; Lavender; Ambient	
TAT: 14 Days	
CPTs: 83890, 83896x55, 83901, 83912	
Note: Heparinized whole blood is not acceptable. Please use specialized cystic fibrosis requisition, which solicits clinical information necessary for interpretation of results, (patient ethnicity and family history). Carrier studies will be performed only for adult patients.	
<b>Cytomegalovirus IgG Abs</b>	Test Code: <b>9431S</b>
Specimen: 1 mL Serum	
Method: Enzyme Immunoassay	
TAT: 3-5 Days	
CPT: 86644	
<b>Cytomegalovirus IgM Antibodies</b>	Test Code: <b>2486S</b>
Specimen: 1 mL Serum; Refrigerate	
Method: Enzyme Immunoassay	
TAT: 3-5 Days	
CPT: 86645	
<b>D-Dimer</b>	Test Code: <b>4200S</b>
Specimen: Plasma Citrated; Light Blue; Frozen	
Method: Latex Particle Agglutination	
TAT: 3-5 Days	
CPT: 85378	

**D-Dimer (cont)** Test Code: **4200S**

Notes: Split platelet-poor plasma into 2 plastic vials before freezing. See instructions for platelet-poor plasma.

**Desipramine (Norpramin)** Test Code: **4922S**

Specimen: 2 mL Serum; Refrigerate  
Method: High Performance Liquid Chromatography  
Notes: Serum separator tubes are not accepted. Redtop only.  
TAT: 3-5 Days  
CPT: 80160

**Digoxin** Test Code: **DIG**

Specimen: 1 mL Serum; Refrigerate  
Method: Fluorescence Polarization Immunoassay  
Notes: Serum separator tubes are not accepted. Collect specimen after patient reaches steady state and at least 8 hours after the last dose  
TAT: 1-3 Days  
CPT: 80162

**Direct Bilirubin** Test Code: **DBILI**

Specimen: 2 mL Serum; Refrigerate  
Method: Oxidation by Nitrite  
TAT: 1-3 Days  
CPT: 82248

**Direct LDL Cholesterol** Test Code: **3351S**

Specimen: 1 mL Serum; Refrigerate  
Method: Spectrophotometry  
TAT: 3-5 Days  
CPT: 83721

**Disopyramide (Norpace)** Test Code: **S49512**

Specimen: 1 mL Serum; Refrigerate  
Method: Fluorescence Polarization Immunoassay  
Notes: Collect specimen >12 hours after dose. Use of SST not recommended  
TAT: 3-4 Days  
CPT: 80299

**Drugs Of Abuse Screen, Serum** Methods Test Code: **4125S**

Components: Opiates	EIA
Cocaine Metabolites	EIA
Benzodiazepines	EIA
Cannabinoids	EIA
Amphetamines	EIA
Barbiturates	EIA
Methadone	EIA
Phencyclidine	EIA
Propoxyphene	EIA

Specimen: 2 mL Serum; Refrigerate  
TAT: 2-5 Days  
CPT: 80101x9  
Collection Instructions: 2 mL Serum shipped refrigerated; collect in plain redtop tube with no additives. Do not use serum separator.

**Drug Screen Panel 5, Urine Chain of Custody** Test Code: **UDSC**

Components: Amphetamine/Methamphetamine  
    Cannabinoids  
    Cocaine  
    Opiate  
    Phencyclidine (PCP)  
Specimen: Urine; Refrigerate

**Drug Screen Panel 5, Urine Chain of Custody (cont)** Test Code: **UDSC**

Method:

CPT: 80101

Note: Please order UDSNC if non-chain of custody testing is needed.

**DRVVT Screen** Test Code: **1911S**

Components:	Methods
DRVVT Screen	CLOT DET
DRVVT Confirm	CLOT DET
DRVVT Mixing Study	CLOT DET
DRVVT Ratio	CALC
DRVVT Interpretation	CLOT DET

Specimen: 2 mL Plasma Citrated; Light Blue; Frozen

TAT: 3-5 days

CPT: 85612, 85613

Collection Notes: See instructions for platelet poor plasma

**Ds-DNA Auto Abs, Double Stranded** Test Code: **1201S**

Specimen: 1 mL Serum; Refrigerate

Method: Farr Radiobinding Assay

TAT: 3-5 Days

CPT: 86225

Notes: This assay can be run on fluids but there is no reference range established for these specimen types.

**E. Coli Enterohemorrhagic (0157: H7)** Test Code: **5639S**

Specimen: 10 mL Stool Carey-Blair Media

Method: Culture

TAT: 5-6 Days

CPT: 87081

Notes: Call for special collection instructions.

**Endomysial IgA Autoantibodies** Test Code: **1191S**

Specimen: 1 mL Serum; Refrigerate

Method: Indirect Fluorescent Antibody

TAT: 3-4 Days

CPT: 86256

**Ehrlichia Chaff. (HME) & E. Equi (HGE) IgG & IgM Abs** Test Code: **7848S**

Components:	Methods
Ehrlichia equi IgG Antibodies	IFA
Ehrlichia equi IgG Antibodies	IFA
Ehrlichia chaffeensis IgG Abs	IFA
Ehrlichia chaffeensis IgM Abs	IFA

Specimen: 1 mL Serum; Refrigerate

TAT: 3-6 Days

CPT: 86666x4

**Ehrlichia Chaffeensis (HME) IgG & IgM Abs** Test Code: **7851S**

Components:	Methods
Ehrlichia chaffeensis IgG Abs	IFA
Ehrlichia chaffeensis IgM Abs	IFA

Specimen: 1 mL Serum; Refrigerate

TAT: 3-6 Days

CPT: 86666x2

**Ehrlichia Equi (HGE) IgG & IgM Abs** Test Code: **7844S**

Components:	Methods
Ehrlichia equi IgG Antibodies	IFA
Ehrlichia equi IgM Antibodies	IFA

Specimen: 1 mL Serum; Refrigerate

TAT: 2-5 Days

CPT: 86666x2

<b>Electrolyte Panel</b>	Methods	Test Code: <b>LYTE</b>
Components: Anion gap	CALC	
CO <sub>2</sub>	PEP carboxylase	
Chloride	ISE indirect	
Potassium	ISE indirect	
Sodium	ISE indirect	
Specimen: 2 mL Serum; Refrigerate		
TAT: 24 Hours		
CPT: 80051		

<b>Epoxide (Carbamazepine) &amp; Metabolite</b>	Methods	Test Code: <b>S40960</b>
Components: Carbamazepine	HPLC	
-10 11 Epoxide	HPLC	
Specimen: 2 mL Serum; Refrigerate		
TAT: 3-4 Days		
CPT: 80156		

<b>Epstein-Barr Virus EvaluatR</b>	Methods	Test Code: <b>2211S</b>
Components: EBV Viral Capsid Antigen IgG Abs	IFA/IMAGE	
EBV Viral Capsid Antigen IgM Abs	IFA/IMAGE	
EBV Early Antigen IgG Antibodies	IFA/IMAGE	
EBV Nuclear Antigen IgG Antibodies	IFA/IMAGE	
Specimen: 2 mL Serum; Refrigerate		
TAT: 4-6 Days		
CPTs: 86663, 86664, 86665x2		

<b>Erythropoietin</b>	Test Code: <b>1160S</b>
Specimen: 1 mL Serum; Refrigerate	
Method: Chemiluminescence	
Notes: Avoid Freeze /Thaw Cycles	
TAT: 3-5 Days	
CPT: 82668	

<b>Estradiol, Serum</b>	Test Code: <b>ESTRAD</b>
Specimen: 1 mL Serum; Refrigerate	
Method: Microparticle Enzyme Immunoassay (MEIA)	
TAT: 1-3 Days	
CPT: 82670	

<b>Estrogens, Total</b>	Test Code: <b>004549</b>
Specimen: 2.5 mL Serum; Refrigerate	
Method: Radioimmunoassay	
TAT: 3-4 Days	
CPT: 82672	

<b>Estrone</b>	Test Code: <b>3154S</b>
Specimen: 3 mL Serum; Refrigerate	
Method: Radioimmunoassay	
TAT: 3-6 Days	
CPT: 82679	

<b>Extractable Nuclear Ag (ENA) IgG Auto Abs</b>	Methods	Test Code: <b>1210S</b>
Components: U1 RNP/snRNP IgG Autoantibodies -IAA	EIA	
Sm (Smith) IgG Autoantibodies -IAA	EIA	
Specimen: 1 mL Serum; Refrigerate		
TAT: 3-5 days		
CPT: 86235x2		

<b>Factor V (Leiden) Mutation</b>	Test Code: <b>1966S</b>
Specimen: 5 mL Whole Blood EDTA; Lavender; Ambient	
Method: INVADER	

**Factor V (Leiden) Mutation (cont)** Test Code: **1966S**

TAT: 3-15 Days  
CPTs: 83891, 83892x2, 83896x5, 83903, 83912

**Factor V Activity** Test Code: **1943S**

Specimen: 2 mL Plasma Citrated; Light Blue; Frozen  
Method: Clot Detection  
TAT: 3-5 Days  
CPT: 85220  
Notes: Split platelet-poor plasma into 2 plastic vials before freezing. See instructions for platelet-poor plasma.

**Factor VII Activity** Test Code: **1945S**

Specimen: 2 mL Plasma Citrated; Light Blue; Frozen  
Method: Clot Detection  
TAT: 3-5 Days  
CPT: 85230  
Notes: Split platelet-poor plasma into 2 plastic vials before freezing. See instructions for platelet-poor plasma.

**Factor VIII Activity** Test Code: **1947S**

Specimen: 2 mL Plasma Citrated; Light Blue; Frozen  
Method: Clot Detection  
TAT: 3-5 Days  
CPT: 85240  
Notes: Split platelet-poor plasma into 2 plastic vials before freezing. See instructions for platelet-poor plasma.

**Fecal Fat (Lipids) Qualitative** Methods Test Code: **4426S**

Components: Fatty Acid Droplets	LM
Neutral Fats and/or Soaps	LM

Specimen: 2 g Stool; Refrigerate  
TAT: 4-7 Days  
CPT: 82705  
Collection Instructions: Collect specimen in a clean leak-proof container.

**Ferritin** Test Code: **FERR**

Specimen: 2 mL Serum; Frozen  
Method: Chemiluminescence  
TAT: 1-3 Days  
CPT: 82728

**Fibrinogen** Test Code: **1426S**

Specimen: 2 mL Plasma Citrated; Light Blue; Frozen  
Method: Clot Detection  
TAT: 3-5 Days  
CPT: 85384  
Notes: Split platelet-poor plasma into 2 plastic vials before freezing. See instructions for platelet-poor plasma.

**Fluphenazine (Prolixin)** Test Code: **S4175S**

Specimen: 2 mL Serum; red top only; Refrigerate  
Method: GC  
TAT: 4-6 Days  
CPT: 84022

**Folate RBC** Test Code: **3522RS**

Specimen: 2 mL Whole Blood EDTA, foil wrap not required; Refrigerate  
Method: Immunochemiluminometric Assay  
TAT: 3-6 Days  
CPT: 82747

**Folate RBC (cont)**Test Code: **3522RS**

Notes: A fasting specimen is preferred. Ship on cold pack. **Do not freeze.**

**Folic Acid (Folate)**Test Code: **FOL**

Specimen: 2mL Serum; Refrigerate

Method: Chemiluminescence

TAT: 1-3 Days

CPT: 82746

Note: Serum needs to be removed from cells within 24 hrs of draw.

**Follicle Stimulating Hormone (FSH)**Test Code: **FSH**

Specimen: 2 mL Serum; Refrigerate

Method: Microparticle Enzyme Immunoassay

TAT: 1-3 Days

CPT: 83001

Notes: Diagnosis (signs or symptoms) supporting medical necessity must be submitted with requisition to obtain third party reimbursement.

**Formaldehyde (Formic Acid)**Test Code: **S47980**

Specimen: Plasma Heparinized; Serum; Refrigerate

Method: GC

TAT: 3-5Days

CPT: 83918

**Fructosamine**Test Code **3934S**

Specimen: 2 mL Serum; Refrigerate

Method: Kinetic Spectrophotometry

TAT: 3-4 Days

CPT: 82985

**Fungal Identification**Test Code: **5324S**

Specimen: Pure Culture Agar Slant; Ambient

Method: Culture

TAT: 6-11 Days

CPT: 87106

**Fungus Culture & Stain**Test Code: **5322S**

Specimen: 1 mL Body Fluid/Tube; Refrigerate

Method: Culture

TAT: 28 Days

CPTs: 87102, 87206

Collection Instructions: Acceptable specimens: Any body fluid is acceptable with the exception of serum or whole blood (EDTA) lavender top. 1. Collect specimen in a sterile leak-proof container. 2. Tissue specimens should be placed in small amount of sterile saline to prevent dehydration. 3. Yellow top and green top are acceptable.

**Gabapentin**Test Code: **3364S**

Specimen: 2 mL Serum; Refrigerate

Method: High Performance Liquid Chromatography

TAT: 4-5 Days

CPT: 80299

Notes: Draw blood in a red top tube 1 hour prior to next dose (trough value). Spin down and send ambient. Do not use serum separator tubes.

**Gastrin**Test Code: **3176S**

Specimen: 1 mL Serum; Refrigerate

Method: Radioimmunoassay

TAT: 3-6 Days

CPT: 82941

Notes: Patient should fast 12 hours prior to collection. Split serum into 2 plastic vials before freezing.

<b>GC DNA By PCR</b>		Test Code: <b>GC</b>
Specimen: Viral Transport		
Method: PCR		
TAT: 1-3 Days		
CPT: 87591		
<b>Gamma Glutamyl Transpeptidase (GGT)</b>		Test Code: <b>GGT</b>
Specimen: 1 mL Serum; Refrigerate		
Method: Kinetic Spectrophotometry		
TAT: 1-3 Days		
CPT: 82977		
<b>Giardia Lamblia Ag Detection</b>		Test Code: <b>7760S</b>
Specimen: 10 g Stool; Refrigerate		
Method: Enzyme Immunoassay		
TAT: 3-5 Days		
CPT: 87328		
<b>General Health Panel</b>		Test Code: <b>8900</b>
Components: CMP		
CBC		
TSH		
Specimen: 4 mL Serum and 5 mL Whole Blood EDTA; Refrigerate		
Method:		
TAT: 1-3 Days		
CPT: 80050		
<b>Gliadin IgG &amp; IgA Antibodies</b>	Methods	Test Code: <b>1266S</b>
Components: Gliadin IgG Antibodies	EIA	
Gliadin IgA Antibodies	EIA	
Specimen: 1 mL Serum; Refrigerate		
TAT: 3-5 days		
CPT: 83520x2		
<b>Glomerular Basement Membrane IgG</b>		Test Code: <b>1136S</b>
Specimen: 1 mL Serum or plasma ACD, EDTA Heparinized; Refrigerate		
Method: Enzyme Immunoassay		
TAT: 3-4 Days		
CPT: 83520		
<b>Glucose, Body Fluid</b>		TestCode: <b>019497</b>
Specimen: BF Body Fluid		
Method: Enzymatic		
TAT: 3-5 Days		
CPT: 82947		
<b>Glucose P50-Non OB 1 Hour</b>		Test Code: <b>1HR</b>
Specimen: 2 mL Serum; Grey top; Refrigerate		
Method: Hexokinase		
TAT: 1-3 Days		
CPT: 82950		
Notes: Draw specimen 1 hour after 50-gram dose. Spin SST within 1 hour of collection.		
<b>Glucose Post 50-OB 1-Hour</b>		Test Code: <b>1 HROB</b>
Specimen: 2 mL Serum; Grey top; Refrigerate		
Method: Hexokinase		
TAT: 1-3 Days		
CPT: 82950		

<b>Glucose Post Prandial 2-Hour</b>	Test Code: <b>2 HR</b>
Specimen: 2 mL Serum; Grey top; Refrigerate	
Method: Hexokinase	
TAT: 1-3 Days	
CPT: 82950	
<b>Glucose, Fasting</b>	Test Code: <b>GLU</b>
Specimen: 2 mL Serum; Refrigerate	
Method: Hexokinase	
TAT: 1-3 Days	
CPT: 82947	
<b>Glucose, Random</b>	Test Code: <b>GLURAN</b>
Specimen: 2 mL Serum; Refrigerate	
Method: Hexokinase	
TAT: 1-3 Days	
CPT: 82947	
<b>Glucose, Urine</b>	Test Code: <b>UGLU</b>
Specimen: U Urine Cup	
Method: Hexokinase	
TAT: 1-3 Days	
CPT: 82945	
<b>Glucose-6-Phosphate-Dehydrogenase</b>	Test Code: <b>1398S</b>
Specimen: 7 mL Whole Blood EDTA; Refrigerate	
Method: Kinetic Spectrophotometry	
TAT: 3-7 Days	
CPT: 82955	
<b>Growth Hormone</b>	Test Code: <b>3182S</b>
Specimen: 1 mL Serum; Refrigerate	
Method: Chemiluminescence	
TAT: 3-5 Days	
CPT: 83003	
Notes: Avoid freeze/thaw cycles.	
<b>Haptoglobin</b>	Test Code: <b>1517S</b>
Specimen: 1 mL Serum; Refrigerate	
Method: Nephelometry	
TAT: 3-5 Days	
CPT: 83010	
<b>HCG Qualitative, Serum</b>	Test Code: <b>HCG</b>
Specimen: 2 mL Serum; Refrigerate	
Method: Immunochromatographic Assay	
TAT: 1-3 Days	
CPT: 84703	
<b>HCG Quantitative, Serum</b>	Test Code: <b>HCGTOT</b>
Specimen: 2 mL Serum; Refrigerate	
Method: Microparticle Enzyme Immunoassay (MEIA)	
TAT: 1-3 Days	
CPT: 84702	
<b>HCG, Urine</b>	Test Code: <b>HCGUR</b>
Specimen: U Urine Cup	
Method: Immunochromatographic Assay	
TAT: 1-3 Days	
CPT: 84703	

<b>HCV Abs (RIBA) Confirmation</b>		Test Code: <b>2447S</b>
Specimen: 1 mL Serum; Refrigerate		
Method: Recombinant Immunoblot Assay		
TAT: 3-5 Days		
CPT: 86804		
<b>Heavy Metal Screen, Urine 24 Hour</b>	Methods	Test Code: <b>4080US</b>
Components: Arsenic 24 hr Urine	ICP/MS	
Lead 24 hr Urine	ICP/MS	
Mercury 24 hr Urine	ICP/MS	
Specimen: 10 mL Urine 24 hour; Refrigerate		
TAT: 3-6 Days		
CPTs: 82175, 83655, 83825, 81050		
<b>Heavy Metal Screen Urine Random</b>	Methods	Test Code: <b>4080UR</b>
Components: Lead Random Urine	ICP/MS	
Arsenic Random Urine	ICP/MS	
Mercury Random Urine	ICP/MS	
Creatinine Random Urine	S	
Lead/Creatinine Ratio	CALC	
Arsenic/Creatinine Ratio	CALC	
Mercury/Creatinine Ratio	CALC	
Specimen: 10 mL Urine; Refrigerate		
TAT: 3-6 Days		
CPTs: 82175, 82570, 83655, 83825		
<b>Heavy Metal Screen Whole Blood</b>	Methods	Test Code: <b>4080W</b>
Components: Arsenic Whole Blood	ICP/MS	
Mercury Whole Blood	ICP/MS	
Lead Whole Blood	GF-ASS	
Specimen: 2 mL Whole Blood EDTA; Refrigerate		
TAT: 3-6 Days		
CPTs: 82175, 83655, 83825		
Collection Instructions: Carefully clean skin. Avoid hemolysis. Avoid worksite collection. Use the royal blue-topped 'Trace Metal' evacuated tube with EDTA for whole blood heavy metals.		
<b>H. Pylori, IgG</b>		Test Code: <b>HPYLOR</b>
Specimen: 2 mL Serum; Refrigerate		
Method: Chromatographic Assay		
TAT: 1-3 Days		
CPT: 86677		
<b>Helicobacter Pylori IgG Antibodies</b>		Test Code: <b>7761S</b>
Specimen: 1 mL Serum or plasma; ACD, EDTA, Refrigerate		
Method: Enzyme Immunoassay		
TAT: 3-4 Days		
CPT: 86677		
<b>H. Pylori IgG, IgM &amp; IgA Abs</b>	Methods	Test Code: <b>7741S</b>
Components: Helicobacter pylori IgG Antibodies	EIA	
Helicobacter pylori IgM Antibodies	EIA	
Helicobacter pylori IgA Antibodies	EIA	
Specimen: 1 mL Serum; Refrigerate		
Method: Enzyme Immunoassay		
TAT: 3-4 Days		
CPT: 86677x3		
<b>Hematocrit</b>		Test Code: <b>HCT</b>
Specimen: 2 mL Whole Blood; EDTA; Lavender; Refrigerate		
TAT: 1-3 Days		
CPT: 85014		

**Hemochromatosis GenotypR** Test Code: 5369S

Specimen: 5 mL Whole Blood EDTA; Lavender; Ambient  
Method: LLA MDX  
TAT: 4-11 Days  
CPTs: 83890, 83893 x4, 83896 x4, 83901, 83912

**Hemoglobin** Test Code: HGB

Specimen: 2 mL Whole Blood; EDTA; Lavender; Refrigerate  
TAT 1-3 Days  
CPT: 85018

**Hemoglobin A1C%** Test Code: A1C

Specimen: 2 mL Whole Blood EDTA; Lavender; Refrigerate  
Method: High Performance Liquid Chromatography  
TAT: 1-3 Days  
CPT: 83036

**Hemoglobin Variant Screen, Reflex To Electrophoresis** Test Code: 4984S

Components:	Methods
Hemoglobin A	HPLC
Hemoglobin A2	HPLC
Hemoglobin F	HPLC
Hemoglobin S	HPLC
Hemoglobin	HPLC

Specimen: 2 mL Whole Blood EDTA; Lavender; Refrigerate  
TAT: 3-11 Days  
CPT: 83021

**Hepatitis Panel, Acute** Test Code: 8091

Components:	Methods
Hepatitis A IgM Antibody	EIA
Hepatitis B Core IgM Antibody	EIA
Hepatitis B Surface Antigen	EIA
Hepatitis C IgG Antibody	EIA

Specimen: 2 mL Serum; Refrigerated  
TAT: 2-4 days  
CPT: 80074

**Hepatitis A Total Abs/Reflex to IgM** Test Code: 2450RS

Specimen: 2 mL Serum or Plasma ACD, EDTA Heparinized; Refrigerate  
Method: Enzyme Immunoassay  
TAT: 3-5 Days  
CPT: 86708

**Note: If positive, reflexes to Hepatitis A IgM**

**Hepatitis B Core Total Abs W/ reflex to IgM** Test Code: 2476S

Specimen: 1.5 mL Serum; Refrigerate  
Method: CEIA  
TAT: 3-5 Days  
CPT: 86704

**Note: If positive, reflexes to Hepatitis B Core IgM**

**Hepatitis B Surface Abs, Quantitation** Test Code: 2448S

Specimen: 1.5 mL Serum; Refrigerate  
Method: Enzyme Immunoassay (EIA)  
TAT: 3-5 Days  
CPT: 86317

**Hepatitis B Surface Antibodies** Test Code: HBSAB

Specimen: 2 mL Serum; Refrigerate  
Method: Enzyme Immunoassay (EIA)  
TAT: 1-3 Days  
CPT: 86706

<b>Hepatitis B Surface Antigen</b>	Test Code: <b>HBSAG</b>
Specimen: 2 mL Serum; Refrigerate Method: Enzyme Immunoassay (EIA) TAT: 4-7 Days CPT: 87340	
<b>Hepatitis Be Antigen</b>	Test Code: <b>2456S</b>
Specimen: 1.5 mL Serum; Refrigerate Method: Enzyme Immunoassay (EIA) TAT: 3-5 Days CPT: 87350	
<b>Hepatitis Be Total Antibodies</b>	Test Code: <b>2455S</b>
Specimen: 1 mL Serum; Refrigerate Method: Enzyme Immunoassay (EIA) TAT: 3-5 Days CPT: 86707	
<b>Hepatitis C RNA DetectR Reflex To Quant</b>	Test Code: <b>7518S</b>
Specimen: 5 mL plasma EDTA; Frozen Method: Transcription Mediated Amplification TAT: 4-8 Days CPT: 87521 Notes: Plasma must be separated and frozen within 4 hours of collection. Split into 2 plastic vials before freezing.	
<b>Hepatitis C RNA Quantitation</b>	Test Code: <b>7486S</b>
Specimen: 2 mL Plasma EDTA; Frozen Method: DNA TAT: 4-6 Days CPT: 87522 Notes: Plasma must be separated and frozen within 4 hours of collection. Record time of collection and freezing on container and requisition. Split into 2 plastic vials before freezing.	
<b>Hepatitis C Virus Antibodies</b>	Test Code: <b>HCV</b>
Specimen: 2 mL Serum; Refrigerate Method: TAT: 1-3 Days CPT: 86803	
<b>Hepatitis C Virus SubtypR</b>	Test Code: <b>7473S</b>
Specimen: 2 mL Plasma ACD; Yellow, Frozen Method: PCR TAT: 8-11 Days CPT: 87902 Collection Instructions: Plasma must be separated and frozen within 4 hours of collection to ensure accuracy. Please record time of collection and freezing on container and requisition. Plasma is recommended for maximum analytical sensitivity. Split into 2 plastic vials before freezing.	
<b>Herpes Simplex Virus Culture, Rapid &amp; Routine</b>	Test Code: <b>607214</b>
Specimen: 3 mL M4 Transport Media/Swab; Refrigerate Notes: Preliminary report within 48 hours. TAT: 5-7 Days CPT: 87252, 87253, & 87254 Collection Instructions: Specimens should be collected early in the acute phase of infection. Send specimens on cold pack. Please indicate specimen source, patient's symptoms and suspected virus on test requisition form. Do not use calcium alginate swabs or swabs with wooden shafts. Conjunctival Swab: Gently rub the conjunctiva with sterile swab and inoculate M4 Transport Media. Genital Swab: Rub lesion firmly with sterile swab and inoculate M4 Transport Media. Nasal Swab/Washings/Aspirate: Nasal swab –	

**Herpes Simplex Virus Culture, Rapid & Routine (cont)** Test Code: **607214**

collect secretions from anterior nasal mucosa with sterile swab and inoculate M4 Transport Media. Washings – expel into a sterile, leak proof container. Aspirate – add directly to liquid viral transport media. Throat Swab: Rub the posterior of the tonsils, soft palate and back wall of the lower pharynx with sterile swab and inoculate M4 Transport Media. Vesicle Swab or Fluid: rupture early-stage cutaneous vesicles with a sterile scalpel blade and gently rub the vesicle to collect the fluid with sterile swab. Inoculate M4 Transport Media. Or, aspirate vesicle with a sterile syringe and place aspirate in liquid viral transport media. Inoculation of M4 Transport Media: 1. After collection, immerse swab immediately into the M4 transport media tube. This will serve to stabilize the virus and inhibit undesirable fungal overgrowth. 2. After placing swab in transport tube break off the top so the cap will fit tightly.

**Herpes Simplex Virus Culture Reflex To Typing** Test Code: **2427S**

Specimen: 3 M4 Transport Media/Swab; Refrigerate  
Method: DFA  
TAT: 6-8 Days  
CPT: 87252

Collection Instructions: Specimens should be collected early in the acute phase of infection. Send all specimens on cold packs. Please indicate specimen source, patient’s symptoms and suspected virus on Test Requisition Form. **Do not use calcium alginate swabs or swabs with wooden shafts.** Conjunctival Swab: Gently rub the conjunctiva with sterile swab and inoculate M4 Transport Media. Genital Swab: Rub lesion firmly with sterile swab and inoculate M4 Transport Media. Nasal Swab/ Washings/ Aspirate: Nasal swab – collect secretions from anterior nasal mucosa with sterile swab and inoculate M4 Transport Media. Washings – expel into a sterile, leak-proof container. Aspirate – add directly to liquid viral transport media. Throat Swab: Rub the posterior of the tonsils, soft palate and back wall of the lower pharynx with sterile swab and inoculate M4 Transport Media. Vesicle Swab or Fluid: rupture early-stage cutaneous vesicles with a sterile scalpel blade and gently rub the vesicle to collect the fluid with sterile swab. Inoculate M4 Transport Media. Or, aspirate vesicle with a sterile syringe and place aspirate in liquid viral transport media. Inoculation of M4 Transport Media: 1. After collection, immerse swab immediately into the M4 transport media tube. This will serve to stabilize the virus and inhibit undesirable fungal overgrowth. 2. After placing swab in transport tube break off the top so the cap will fit tightly.

**Herpes Simplex Virus Types 1 & 2 AG Detection** Test Code: **2426S**

Specimen: Smear/Slides; Refrigerate  
Method: DFA  
TAT: 3-4 Days  
CPT: 87273, 87274

**High Density Lipoprotein** Test Code: **HDL**

Specimen: 2 mL Serum; Refrigerate  
Method:  
TAT: 1-2 Days  
CPT: 83718

**Hirsutism Evaluation, Female** Methods Test Code: **3188S**

Components: Dehydroepiandrosterone-sulfate	ICMA
Hydroxyprogesterone 17-Alpha	RIA
Testosterone	CL
Testosterone Free	RIA
Testosterone % Free	CALC

Specimen: 4 mL Serum; Refrigerate  
TAT: 3-7 Days  
CPTs: 82627, 83498, 84402, 84403

**Histone-DNA IgG Autoantibodies** Test Code: **1140S**

Specimen: 1 mL Serum or plasma ACD< EDTA, Heparinized; Refrigerate  
Method: Enzyme Immunoassay  
TAT: 3-5 Days

**Histone-DNA IgG Autoantibodies (cont)**Test Code: **1140S**

CPT: 83520

Notes: Also known as H2A-H2B

**Histoplasma Antigen, Urine**Test Code: **8315UR**

Specimen: 10 mL Urine; sterile; Refrigerate

Method: Enzyme Immunoassay

TAT: 3-9 Days

CPT: 87385

**HIV-1/HIV-2**Test Code: **HIV**

Specimen: 2 mL Serum; Refrigerate

Method: Enzyme Immunoassay (EIA)

TAT: 2-4 Days

CPT: 86703

**HIV-1 RNA UltraQuant (BDNA)**

Methods

Test Code: **9874S**

Components: HIV-1 RNA

bDNA

HIV-1 RNA (log 10)

CALC

Specimen: 5 mL Plasma PPT Tube x 2 (recommended); Refrigerate

Alternate Specimen: 5 mL Plasma EDTA; Frozen

TAT: 3-5 Days

CPT: 87536

Collection Instructions: Plasma EDTA in PPT tubes; ambient. Collect whole blood in two 5 mL PPT tubes (to yield 5 mL plasma); centrifuge at room temperature for 10 minutes at 1,1000xG RCF within 2 hours after blood collection. NOTE: If it is not possible to ship specimens on the date of collection, then freeze after centrifuging. Plasma EDTA; frozen. Plasma must be separated and frozen within 4 hours of collection to ensure accuracy. Please record time of collection and freezing on container and requisition. Plasma is recommended for maximum analytical sensitivity. Split into 2 plastic vials before freezing.

**HLA: B27 Typing**Test Code: **1350S**

Specimen: 10 mL Whole Blood ACD; Yellow; Ambient

Method: Lymphocyte Microcytotoxicity

TAT: 3-5 Days

CPT: 86812

Notes: Do not Refrigerate or freeze.

**Homocysteine Ultra Quant**Test Code: **3334S**

Specimen: 2 mL Serum; Refrigerate

Method: Capillary Electrophoresis Immunoassay

TAT: 3-4 Days

CPT: 83090

Notes: Patient should be fasting for 12 hours prior to collection. Specimen should be centrifuged within 1 hour of collection.

**Homovanillic Acid, 24-Hour Urine**Test Code: **S49863**

Components: HVA, 24hr Urine

Creatinine, Urine

Specimen: 10 mL Urine Boric Acid; Refrigerate

TAT: 3-5 Days

CPT: 83150

Collection Instructions: Collect 24-hour urine with 15 grams of boric acid. It is preferable for the patient to be off medications for three days prior to collection. However, common antihypertensives (diuretics, ACE inhibitors, calcium channel blockers, alpha and beta blockers) cause minimal or no interference. The patient should avoid alcohol, coffee, tea, tobacco and strenuous exercise prior to collection.

**HPV by PCR (Tissue Biopsy Only)** Test Code: **HPVT**

Specimen: Tissue biopsy (formalin fixed or paraffin embedded)  
 Method: Polymerase Chain Reaction  
 Note: Formalin degrades DNA. For uterine cervix, a ThinPrep sample is best.  
 TAT: 10-14 Days  
 CPT: 87621; if positive then 83892, 83894x2, and 83912

**HPV by PCR (ThinPrep)** Test Code: **HPVPCR**

Specimen: ThinPrep sample  
 Method: Polymerase Chain Reaction  
 Note: Sample should be less than 1 year, preferably less than 3 weeks.  
 TAT: 10-14 Days  
 CPT: 83898, 83894, 83898, 83912. If Positive add: 83892, 83894, 83903, 83912

**HSV 1 & 2 IgG Antibodies** Test Code: **9446S**

Components:	Methods
HSV 1 IgG Antibodies	EIA
HSV 2 IgG Antibodies	EIA

Specimen: 1 mL Serum; Refrigerate  
 TAT: 3-5 Days  
 CPTs: 86695, 86696

**HSV 1 & 2 IgM Antibodies** Test Code: **9471S**

Components:	Methods
HSV 1 IgM Antibodies	EIA
HSV 2 IgM Antibodies	EIA

Specimen: 1 mL Serum; Refrigerate  
 TAT: 3-5 Days  
 CPT: 86694

**HSV 1 & 2 IgG, IgM Antibodies** Test Code: **8051S**

Components:	Methods
HSV 1 IgG Antibodies	EIA
HSV 2 IgG Antibodies	EIA
HSV Types 1 & 2 IgM Abs	EIA

Specimen: 2 mL Serum; Refrigerate  
 TAT: 3-5 Days  
 CPTs: 86694, 86695, 86696

**HTLV 1/2 IgG Antibodies** Test Code: **9898S**

Specimen: 1 mL Serum or Plasma ACD; EDTA; Heparinized; Refrigerate  
 Method: Enzyme Immunoassay  
 TAT: 8-11 Days  
 CPT: 86790

**IgA, IgG, and IgM Immunoglobulin Quantitation** Test Code: **1045S**

Components:	Methods
IgG Total	NEPH
IgM Total	NEPH
IgA Total	NEPH

Specimen: 2 mL Serum; Refrigerate  
 TAT: 3-4 Days  
 CPT: 82784x3

**IgA Total** Test Code: **1506S**

Specimen: 1 mL Serum; Refrigerate  
 Method: Nephelometry  
 TAT: 3-5 Days  
 CPT: 82784

**IgE** Test Code: **1245S**

Specimen: 2 mL Serum; Refrigerate  
 Method: Enzyme Immunoassay  
 TAT: 3-7 Days  
 CPT: 82785

<b>IgG Total</b>		Test Code: <b>1505S</b>
Specimen: 1 mL Serum; Refrigerate Method: Nephelometry TAT: 3-4 Days CPT: 82784		
<b>IgM Total</b>		Test Code: <b>1508S</b>
Specimen: 1 mL Serum; Refrigerate Method: Nephelometry TAT: 3-5 Days CPT: 82784		
<b>Inhibin B</b>		Test Code: <b>S49016</b>
Specimen: 2 mL Serum; Frozen Method: ELISA TAT: 4-6 Days CPT: 83520		
<b>Insulin-Like Growth Factor 1</b>		Test Code: <b>3220S</b>
Specimen: 1 mL Serum; Frozen Method: Chemiluminescence TAT: 3-5 Days CPT: 84305 Notes: Avoid freeze/thaw cycles.		
<b>Intrinsic Factor Blocking Auto abs</b>		Test Code: <b>3196S</b>
Specimen: 1 mL Serum; Refrigerate Method: Radioimmunoassay TAT: 3-6 Days CPT: 86340		
<b>Iron</b>		Test Code: <b>IRON</b>
Specimen: 1 mL Serum; Refrigerate Method: Spectrophotometry/Ferene TAT: 1-3 Days CPT: 83540 Notes: Avoid hemolysis. Separate Serum/plasma from the clot within 1 hour after collection. Draw morning specimen.		
<b>Jo-1 IgG Autoantibodies</b>		Test Code: <b>1208S</b>
Specimen: 1 mL Serum or plasma ACD, EDTA, heparinized; Refrigerate Method: Enzyme Immunoassay TAT: 3-4 Days CPT: 86235		
<b>Kappa &amp; Lambda Light Chain Urine Random</b>	Methods	Test Code: <b>1741UR</b>
Components: Kappa Light Chain Urine	NEPH	
Lambda Light Chain Urine	NEPH	
Specimen: 2 mL Urine; Refrigerate TAT: 3-5 Days CPT: 83883x2		
<b>Ketones (Acetone), Serum</b>		Test Code: <b>KETSER</b>
Specimen: 1 mL Serum; Refrigerate Method: Qualitative TAT: 1-3 Days CPT: 82009		

**Kleihaur-Betke Stain, Fetal** Test Code: **S46525**  
 Specimen: 3 mL Purple; EDTA  
 TAT: 3-4 Days  
 CPT: 85460

**KOH** Test Code: **KOH1**  
 Specimen: Hair, Nails, Skin  
 Method: Microscopic  
 TAT: 1-3 Days  
 CPT: 87220

<b>Lactate Dehydrogenase (LD) Isoenzymes</b>	Methods	Test Code: <b>3453S</b>
Components: LD Isoenzyme 1	AE	
LD Isoenzyme 2	AE	
LD Isoenzyme 3	AE	
LD Isoenzyme 4	AE	
LD Isoenzyme 5	AE	
Lactate Dehydrogenase Total	KS	
Specimen: 2 mL Serum; Ambient		
TAT: 3-6 Days		
CPT: 83625		

**Lactic Acid Plasma** Test Code: **4128S**  
 Specimen: 1 mL Plasma Fluoridated/Oxalate; Gray; Frozen  
 Method: Spectrophotometry  
 TAT: 3-4 Days  
 CPT: 83605  
 Notes: Separate cells within 15 minutes of collection. Avoid hemolysis. Split into 2 plastic vials before freezing.

**Latex (Brazilian Rubber Tree) IgE** Test Code: **K82S**  
 Specimen: 2 mL Serum; Refrigerate  
 Method: FEIA  
 TAT: 3-4 Days  
 CPT: 86003

<b>Lead Urine Random</b>	Methods	Test Code: <b>4861UR</b>
Components: Lead Random Urine	ICP/MS	
Creatinine Random Urine	S	
Lead/Creatinine Ratio	CALC	
Specimen: 10 mL Urine; Refrigerate		
TAT: 3-6 Days		
CPTs: 82570, 83665		

**Lead Whole Blood** Test Code: **4861WS**  
 Specimen: 3 mL Whole Blood EDTA Trace Metal; Royal Blue; Refrigerate  
 Method: Graphite Furnace-Automatic Absorption Spectrophotometry  
 TAT: 4-6 Days  
 CPT: 83655

<b>Legionella Pneumophila IgG &amp; IgM Abs, Serotypes 1-6</b>	Methods	Test Code: <b>2156S</b>
Components: Legionella pneumophila 1 IgG Abs	IFA	
Legionella pneumophila 1 IgM Abs	IFA	
Legionella pneumophila 2 IgG Abs	IFA	
Legionella pneumophila 2 IgM Abs	IFA	
Legionella pneumophila 3 IgG Abs	IFA	
Legionella pneumophila 3 IgM Abs	IFA	
Legionella pneumophila 4 IgG Abs	IFA	
Legionella pneumophila 4 IgM Abs	IFA	
Legionella pneumophila 5 IgG Abs	IFA	
Legionella pneumophila 5 IgM Abs	IFA	

<b>Legionella Pneumophila IgG &amp; IgM Abs, Serotypes 1-6 (cont)</b>	<b>Methods</b>	<b>Test Code: 2156S</b>
Legionella pneumophila 6 IgG Abs	IFA	
Legionella pneumophila 6 IgM Abs	IFA	
Specimen: 1 mL Serum; Refrigerate		
TAT: 3-6 Days		
CPT: 86713x12		

<b>Legionella Pneumophila IgG &amp; IgM Abs, Serotypes 1-14</b>	<b>Method</b>	<b>Test Code: 2153S</b>
Components: Legionella pneumophila 1 IgG Abs	IFA	
Legionella pneumophila 1 IgM Abs	IFA	
Legionella pneumophila 2 IgG Abs	IFA	
Legionella pneumophila 2 IgM Abs	IFA	
Legionella pneumophila 3 IgG Abs	IFA	
Legionella pneumophila 3 IgM Abs	IFA	
Legionella pneumophila 4 IgG Abs	IFA	
Legionella pneumophila 4 IgM Abs	IFA	
Legionella pneumophila 5 IgG Abs	IFA	
Legionella pneumophila 5 IgM Abs	IFA	
Legionella pneumophila 6 IgG Abs	IFA	
Legionella pneumophila 6 IgM Abs	IFA	
Legionella pneumophila 7 IgG Abs	IFA	
Legionella pneumophila 7 IgM Abs	IFA	
Legionella pneumophila 8 IgG Abs	IFA	
Legionella pneumophila 8 IgM Abs	IFA	
Legionella pneumophila 9 IgG Abs	IFA	
Legionella pneumophila 9 IgM Abs	IFA	
Legionella pneumophila 10 IgG Abs	IFA	
Legionella pneumophila 10 IgM Abs	IFA	
Legionella pneumophila 11 IgG Abs	IFA	
Legionella pneumophila 11 IgM Abs	IFA	
Legionella pneumophila 12 IgG Abs	IFA	
Legionella pneumophila 12 IgM Abs	IFA	
Legionella pneumophila 13 IgG Abs	IFA	
Legionella pneumophila 13 IgM Abs	IFA	
Legionella pneumophila 14 IgG Abs	IFA	
Legionella pneumophila 14 IgM Abs	IFA	
Specimen: 1 mL Serum; Refrigerate		
TAT: 3-6 Days		
CPT: 86713x28		

<b>Leukocyte Alkaline Phosphatase</b>	<b>Test Code: 3978S</b>
Specimen: 5 mL Whole Blood Heparin; Ambient	
Method: Image Analysis	
TAT: 3-5 Days	
CPT: 85540	

<b>Levetiracetam (Keppra)</b>	<b>Test Code: 4963</b>
Specimen: 2 mL Serum; Red top tube, (Do not use SST); Refrigerate	
Method: High Performance Liquid Chromatography	
TAT: 3-4 Days	
CPT: 80299	

<b>Lipase, Serum</b>	<b>Test Code: LIPASE</b>
Specimen: 2 mL Serum; Refrigerate	
Method: Enzymatic with Co lipase	
TAT: 1-3 Days	
CPT: 83690	

<b>Lipid Panel</b>	<b>Test Code: 1050</b>
Component: Cholesterol	
HDL Cholesterol	

**Lipid Panel (cont)** Test Code: **1050**

LDL Cholesterol  
Triglycerides  
Specimen: 2 mL Serum; Refrigerate  
Method: Spectrophotometry  
TAT: 1-3 Days  
CPT: 80061

**Lipoprotein (A)** Test Code: **3446S**

Specimen: 1 mL Serum or EDTA plasma; Refrigerate  
Method: Spectrophotometry  
TAT: 4-5 Days  
CPT: 82172

**Liver Panel** Test Code: **LIVER**

Components: Albumin  
Alkaline Phosphatase  
ALT  
AST  
Total Bilirubin  
Direct Bilirubin  
Total Protein  
Specimen: 2 mL Serum; Refrigerate  
Method: Spectrophotometry  
TAT: 1-3 Days  
CPT: 80076

**Lupus Anticoagulant: Screen 1** Test Code: **5963S**

Components:	Methods
Cardiolipin IgG Autoantibodies	EIA
Cardiolipin IgM Autoantibodies	EIA
Cardiolipin IgA Autoantibodies	EIA
DRVVT Screen	CLOT DET
DRVVT Confirm	CLOT DET
DRVVT Mixing Study	CLOT DET
DRVVT Ratio	CALC
DRVVT Interpretation	CLOT DET
Activated PTT	CLOT DET
PTT 1: 1 Mixing Studies	CLOT DET

Specimen: 3 mL Plasma Citrated; Light Blue; Frozen; and 1 mL Serum; Refrigerate  
TAT: 3-5 Days  
CPTs: 85612, 85613, 85730, 85732 x 2, 86147 x3  
Collection Instructions: See instructions for platelet poor plasma. Send serum refrigerated

**Lyme Disease Antibodies** Test Code: **606123**

Components:	Methods
Borrelia burgdorferi IgG Antibodies	EIA
Borrelia burgdorferi IgM Antibodies	EIA

Specimen: 1 mL Serum  
TAT: 3-4 Days  
CPT: 86618x2

**Lymphocyte Enumeration, CD4** Test Code: **1656S**

Components:	Methods
WBC	FC
Total Lymphocyte	CALC
Total Lymphocyte Count	CALC
% CD4 (Helper/Inducer)	CALC
Absolute CD4	CELL CNT

Specimen 1: 7 mL Whole Blood ACD; Yellow; Ambient  
Specimen 2: 5 mL Whole Blood EDTA; Lavender; Ambient  
TAT: 3-4 days  
CPT: 85048, 86361

**Lymphocyte Enumeration, CD4 (cont)** Test Code: **1656S**

Collection Notes: Do not refrigerate or freeze. Tests can be performed on EDTA under 48 hours old. ACD is the preferred specimen for best stability.

**Magnesium, Serum** Test Code: **MG**

Specimen: 2 mL serum (SST or red top tube); refrigerate  
Method: Arsenazol  
TAT: 1-3 days  
CPT: 83735  
Note: Diagnostic code is required for third party reimbursement; refer to Medicare Part B Medical Review Policies.

**Magnesium, Urine** Test Code: **UMAG**

Specimen: 2 mL urine; refrigerate  
Method: Arsenazol  
TAT: 1-3 days  
CPT: 83735

**Malaria Blood Smear** Test Code: **MALARI**

Specimen: EDTA whole blood  
Method: Hematology (microscopic visual)  
TAT: 1-3 days  
CPT: 87207

**Manganese, Urine** Test Code: **S49958**

Specimen: Urine 24 hour; sterile; Refrigerate  
Method: Inductively Coupled Plasma/Mass Spectrometry  
TAT: 3-7 days  
CPT: 82570,83785  
Collection Note: Record total volume on container and requisition. Collect end of shift in trace metal free or acid washed container or plastic container washed with H<sub>2</sub>O.

**Manganese Whole Blood** Test Code: **4872WS**

Specimen: 2 mL serum trace metal (royal blue); Refrigerated  
Method: Inductively Coupled Plasma/Mass Spectrometry  
TAT: 3-7 days  
CPT: 83785  
Collection Note: Wrap in foil to protect from light.

**Mercury Urine Random** Test Code: **4873UR**

Components:	Methods	Test Code: <b>4873UR</b>
Mercury Random Urine	ICP/MS	
Creatinine Random Urine	S	
Mercury/Creatinine Ratio	CALC	

Specimen: 10 mL Urine Additive; Refrigerated  
TAT: 3-5 days  
CPT: 82570, 83825  
Collection Notes: After collection is complete, acidify with nitric acid or acetic acid; do not use HCl. Record total volume of urine in mL on container and requisition.

**Metanephrines, Fractionated Total 24 Urine** Test Code: **3315S**

Components:	Methods	Test Code: <b>3315S</b>
Metanephrines Total 24 hr Urine	HPLC	
Normetanephrine 24 hr Urine	HPLC	
Metanephrine 24 hr Urine	HPLC	
Metanephrine/Creatinine Ratio	CALC	
Creatinine 24 hr Urine	S	

Specimen: 30 mL Urine 24 hour; Sterile; Refrigerated  
TAT: 3-6 days  
CPTs: 82570, 83835, 81050  
Collection Notes: If possible, patients should discontinue all drugs at least 1 week prior to collection. Medications that can interfere with the assay include: L-DOPA, Alpha-methyldopa (Aldomet), Bupirone, Codeine, Isoetharine, Isoproterenol, Mandelamine, Metoclopramide, Aceta

**Metanephrines, Fractionated Total 24 Urine (cont)** Test Code: 3315S

-minophen, Labetalol, Catecholamine-containing drugs, MAO inhibitors, diuretics and vasodilators. 1. Refrigerate during and after collection. 2. After collection, mix the specimen, measure the total volume and transfer a 25 mL aliquot to a clean, leak proof screw cap container. 3. Record the 24 hr total volume on the requisition form or shipping manifest. 4. Store and ship refrigerated.

**Methotrexate** Test Code: 4135S

Specimen: 1mL Serum; Refrigerate

Collection note: Collect specimen at \_ hr or 2 hr post IV or PO low dose, respectively. Collect specimen at 24, 48, & 72 hr post high-dose infusion.

Method: Fluorescence Polarization Immunoassay

TAT: 3-4 days

CPT: 80299

**Methylmalonic Acid** Test Code: 3496S

Specimen: 3 mL Serum; Refrigerate

Method: Gas Chromatography/Mass Spectrometry

TAT: 3-6 days

CPT: 83918

**Methylmalonic Acid Urine** Test Code: 3496US

Specimen: 5 mL urine, sterile; Refrigerate

Method: Gas Chromatography/Mass Spectrometry

TAT: 3-6 days

CPT: 83918

**Microalbumin 24 Hour Urine** Test Code: 3441S

Components: Microalbumin Clearance

Methods

NEPH

Microalbumin Urine

NEPH

Specimen: 20 mL Urine 24 hour; Sterile; Refrigerate

TAT: 3-4 days

CPT: 82043, 81050

Collection Notes: Record total volume of urine in mL on container and requisition.

**Microalbumin Urine Random** Test Code: 3441UR

Components: Microalbumin Urine

Methods

NEPH

Creatinine Random Urine

S

Albumin/Creatinine Ratio

CALC

Specimen: 5 mL Urine; Refrigerate

TAT: 3-4 Days

CPTs: 82043, 82570

Collection Notes: After voided midstream urine collection is complete, mix the specimen and transfer a 10 mL aliquot of urine to a clean leak proof container with screw cap.

**Microsome Auto abs, Liver-Kidney** Test Code: 1115S

Specimen: 1mL serum; Refrigerate

Method: Indirect Fluorescent Antibody

TAT: 3-4 days

CPT: 86376

**Mitochondrial Autoantibodies** Test Code: 1102S

Specimen: 1mL serum; Refrigerate

Method: Indirect Fluorescent Antibody

TAT: 3-4 days

CPT: 86256

**Monoclonal Gammopathies, Serum** Test Code: 3125S

Components: IFE Paraprotein

Methods

CZE/I

Specimen: 1 mL Serum, Refrigerate

TAT: 3-5 days

CPT: 86334

<b>Monoclonal Gammopathies, Urine</b>	Methods	Test Code: <b>3125US</b>
Components: IFE Paraprotein Urine	AE	
Specimen: 20 mL Urine, Sterile; Refrigerate		
TAT: 3-5 days		
CPT: 86334		
Collection Notes: After the collection is complete, mix the specimen and transfer a 10 mL aliquot of urine to a transport tube closed tightly to avoid leakage.		
<b>Mono Screen</b>		Test Code: <b>MONO</b>
Specimen: 2 mL serum; Refrigerate		
Method: Latex Agglutination		
TAT: 1-3 days		
CPT: 86308		
<b>Mono Titer</b>		Test Code: <b>MONOTI</b>
Specimen: 2mL serum; Refrigerate		
Method: Latex Agglutination		
TAT: 1-3 days		
CPT: 86309		
<b>MTHFR-C677T Mutation</b>	Methods	Test Code: <b>4558S</b>
Components: 5, 10-MTHFR C677T Mutation	Invader	
Specimen: 5 mL Whole Blood EDTA; Ambient		
TAT: 4-11 days		
CPT: 83891, 83892x2, 83896x5, 83903, 83912		
Collection Notes: Heparinized whole blood is not acceptable. Do not refrigerate or freeze.		
<b>Mumps IgG Antibodies</b>		Test Code: <b>9716S</b>
Specimen: 2mL serum; refrigerate		
Method: Enzyme Immunoassay		
TAT: 3-5 days		
CPT: 86735		
<b>Myco Pneumoniae IgG &amp; IgM Abs</b>	Methods	Test Code: <b>8741S</b>
Components: Mycoplasma pneumoniae IgG Antibodies	EIA	
Mycoplasma pneumoniae IgM Antibodies	EIA	
Specimen: 1 mL Serum; Refrigerated		
TAT: 3-5 days		
CPT: 86738x2		
<b>Myco &amp; Urea Plasma Culture</b>		Test Code: <b>2408S</b>
Specimen: 3 mL M4 Transport Media/Swab; Refrigerate		
Method: Culture		
TAT: 25-27 Days		
CPT: 87109		
<b>Myelin Basic Protein Autoantibodies</b>		Test Code: <b>1056S</b>
Specimen: 2mL Serum; Refrigerate		
Method: EIA		
TAT: 3-9 days		
CPT: 83520		
<b>Myoglobin Serum</b>		Test Code: <b>4988S</b>
Specimen 1mL Serum; Refrigerate		
Method: Radioimmunoassay		
TAT: 3-5 days		
CPT: 83874		

**Myoglobin Urine Random** Test Code: 4988UR

Specimen: 10mL Urine, Sterile; Refrigerate

Method: Radioimmunoassay

TAT: 3-5days

CPT: 83874

Collection Note: After voided midstream urine collection is complete, mix the specimen and transfer a 10 mL aliquot of urine to a clean leak proof container with a screw cap.

**N-Telopeptides with Creatinine** Test Code: 4266US

Components: Creatinine Random Urine

Methods

S

N-Telopeptides/Creatinine Ratio

CALC

Specimen: 2 mL Urine; Sterile; Refrigerate

TAT: 3-5 days

CPT: 82523, 82570

Collection Notes: Discard first void. Collect second without preservative.

**N-Terminal PTH** Test Code: S44260

Components: PTH N-Terminal Specific

Methods

RIA

Calcium Serum

RIA

Specimen: 2 mL Serum; Refrigerate

TAT: 5 days

CPT: 83970, 82310

**Nasal Smear for Eosinophils** Test Code: NASEOS

Specimen: Culturette

Method: Microscopic Examination

TAT: 1-3 days

CPT: 89190

**Nicotine Screen, Urine** Test Code: 716555

Specimen: 10mL Urine, Sterile; Refrigerate

Method: Immunoassay

TAT: 3-5 days

CPT: 80101

**Occult Blood x1** Test Code: OB

Specimen: Stool on Occult Card; Room Temp.

Method: Guiac slide method

TAT: 1-3 days

CPT: 82270

**Occult Blood x2** Test Code: OB

Specimen: Stool on Occult Card; Room Temp.

Method: Guiac slide method

TAT: 1-3 days

CPT 82270

**Occult Blood x3** Test Code: OB

Specimen: Stool on Occult Card; Room Temp.

Method: Guiac slide method

TAT: 1-3 days

CPT: 82270

**Olanzapine (Zyprexa)** Test Code: 4933S

Specimen: 2 mL Serum; Refrigerate

Method: Gas Chromatography

TAT: 3-5days

CPT: 80299

**Osmolality Serum** Test Code: **3204S**

Specimen: 2 mL Serum; Frozen  
 Method: Freezing Point Depression  
 TAT: 3-5 days  
 CPT: 83930  
 Collection Note: State patient's age on requisition.

**Osterocalcin** Test Code: **3550S**

Specimen: 1mL Serum; Refrigerate  
 Method: Chemiluminescence  
 TAT: 3-6 days  
 CPT: 83937  
 Collection Notes: Patient should fast 12 hr prior to collection. Split serum into 2 plastic vials before freezing.

**Ova & Parasite (Routine Exam)** Test Code: **2361S**

<b>Components:</b> Routine Ova & Parasite	<b>Methods</b>
White Cells	LM
	LM

Specimen: 2g Stool; Refrigerate  
 TAT: 3-4 days  
 CPTs: 87177, 88312  
 Collection Note: Collect in a sterile container or O & P transport media.

**Ovarian Function Panel** Test Code: **OVARIA**

<b>Components:</b> Estrogens Total	<b>Method</b>
FSH	RIA
LH	Chemiluminescence
Progesterone	Chemiluminescence

Specimen: 5 mL of Serum; Frozen  
 TAT: 1-3 days  
 CPTs: 82672, 83001, 83002, 84144  
 Note: Please indicate if Estradiol testing is also needed.

**Oxalate 24 hr Urine** Test Code: **4332US**

<b>Components:</b> Oxalate 24 hr Urine	<b>Method</b>
Creatinine Urine	S
	S

Specimen: 10 mL Urine 24 hour; Refrigerate  
 TAT: 3-4 days  
 CPT: 83945, 81050  
 Notes: Collect urine with 25 mL of 6N HCL to maintain a pH below 3. Mix well before aliquotting.

**Parietal Cell Autoantibodies** Test Code: **1104S**

Specimen: 1 mL Serum; Refrigerate  
 Method: Indirect Fluorescent Antibody  
 TAT: 3-4 days  
 CPT: 86256

**Partial Thrombin Time (PTT)** Test Code: **PTT**

Specimen: Plasma Citrated (lt. blue top); Refrigerate  
 Method: Optical Clot Formation  
 TAT: 1-3 days  
 CPT: 85730  
 Collection Note: For short draw tubes fill to black tabs on label.

**Parvovirus B19 IgG & IgM Antibodies** Test Code: **608090**

<b>Components:</b> Parvovirus B19 IgG Antibodies	<b>Methods</b>
Parvovirus B19 IgM Antibodies	IFA
	IFA

Specimen: 1 mL Serum; Refrigerate  
 TAT: 3-5 days  
 CPT: 86747x2

**Phenobarbital** Test Code: **PHENO**

Specimen: 1 mL Serum (red top); Refrigerate  
Method: FPIA  
TAT: 1-3 days  
CPT: 80184

**Phenytoin (Dilantin)** Test Code: **PHENY**

Specimen: 1mL Serum (red top); Refrigerate  
Method: FPIA  
TAT: 1-3 days  
CPT: 80185

**Phosphatidylserine IgG, IgM, IgA Auto abs** Test Code: **1711S**

Components: Phosphatidylserine IgG Autoantibodies	EIA
Phosphatidylserine IgM Autoantibodies	EIA
Phosphatidylserine IgA Autoantibodies	EIA

Specimen: 2 mL Serum; Refrigerate  
TAT: 3-5 days  
CPT: 86148x3

**Phosphorous, Serum** Test Code: **PHOS**

Specimen: 1mL Serum; Refrigerate  
Method: Phosphomoly b, Dale-UV  
TAT: 1-3 days  
CPT: 84100

**Platelet Count** Test Code: **PLT**

Specimen: EDTA (lavender top); Refrigerate  
Method: Electrical Impedance  
TAT: 1-3 days  
CPT: 85049  
Collection Note: 2mL tubes, draw to black tab on label.

**Potassium, Serum** Test Code: **K**

Specimen: 1 mL Serum; Refrigerate  
Method: ISE indirect  
TAT: 1-3 days  
CPT: 84132

**Prealbumin** Test Code: **1549S**

Specimen: 1 mL Serum; Refrigerate  
Method: Nephelometry  
TAT: 3-5 days  
CPT: 84134

**Prenatal I** Test Code: **PREN1**

Components: Ab Screen	Tube Method
CBC	VCS
HBsAg	EIA
RPR	Carbon Latex Agglutination
Rubella	MEIA
ABO/RH Type	Tube Method

Specimen: 10 mL SST; 10 mL Red Top; 5 mL Purple Top EDTA; Refrigerated  
TAT: 2-4 Days  
CPT: 80055

**Prenatal II** Test Code: **PREN2**

Components: Ab Screen	Tube Method
CBC	VCS
HBsAg	EIA
RPR	Carbon Latex Agglutination

<b>Prenatal II (cont)</b>	Method	Test Code: <b>PREN2</b>
Rubella	MEIA	
ABO/RH Type	Tube Method	
Urinalysis		
Specimen: 10 mL SST; 10 mL Red Top; 5 mL Purple Top EDTA, Urine Cup; Refrigerated		
TAT: 2-4 Days		
CPT: 80055		

<b>Prenatal III</b>	Method	Test Code: <b>PREN3</b>
Components: Ab Screen	Tube Method	
CBC	VCS	
HBsAg	EIA	
RPR	Carbon Latex Agglutination	
Rubella	MEIA	
ABO/RH Type	Tube Method	
HIV	EIA	
Specimen: 10 mL SST; 10 mL Red Top; 5 mL Purple Top EDTA; Refrigerated		
TAT: 2-4 Days		
CPT: 86900, 86901, 85025, 86850, 87340, 86703, 86592, 86762		

<b>Primidone</b>	Test Code: <b>S49721</b>
Specimen: 1mL Serum; Refrigerate	
Method: Gas Chromatography	
TAT: 4-6 days	
CPT: 80188	

<b>Procainamide</b>	Methods	Test Code: <b>S49710</b>
Components: Procainamide	IA	
N-Acetylprocainamide	IA	
Procainamide Total	IA	
Specimen: 1 mL Serum; Refrigerate		
TAT: 3-4 Days		
CPT: 80192		

<b>Progesterone</b>	Test Code: <b>PROGES</b>
Specimen: 1 mL serum (red top); Refrigerate	
Method: Chemiluminescence	
TAT: 1-3 days	
CPT: 84144	
Note: Specimen is only stable for 48hrs. Please avoid gross lipemia and hemolysis.	

<b>Prolactin</b>	Test Code: <b>PROLAC</b>
Specimen: 1 mL serum; Refrigerate	
Method: Chemiluminescence	
TAT: 1-3 days	
CPT: 84146	
Note: Specimen only stable for 48hrs at 2-8°C	

<b>Propafenone (Rhythmol)</b>	Test Code: <b>S41550</b>
Specimen: 4 mL serum; Refrigerate	
Method: High Performance Liquid Chromatography	
TAT: 4-6 days	
CPT: 80299	

<b>Prostate Specific Antigen</b>	Test Code: <b>PSA</b>
Specimen: 1mL Serum; Refrigerate	
Method: Microparticle Enzyme Immunoassay (MEIA)	
TAT: 1-3 days	
CPT: 84153	

**Prostatic Acid Phosphatase** Test Code: **3100S**

Specimen: 2 mL Serum; Refrigerate  
Method: Immunochemiluminometric Assay  
TAT: 3-7 days  
CPT: 84066

**Protein C Activity** Test Code: **3836S**

Specimen: 3 mL Citrated Plasma (light blue top); Frozen  
Method: Chromogenic  
TAT: 3-4 days  
CPT: 85303  
Collection Note: Split platelet-poor plasma into 2 plastic vials before freezing. See instructions for platelet-poor plasma

**Protein C Antigen** Test Code: **5932S**

Specimen: 1 mL Citrated Plasma (light blue top); Frozen  
Method: Enzyme Immunoassay  
TAT: 3-6 days  
CPT: 85302  
Collection Note: Split platelet-poor plasma into 2 plastic vials before freezing. . See instructions for platelet-poor plasma

**Protein S Activity** Test Code: **3837S**

Specimen: 2 mL Citrated Plasma (light blue top); Frozen  
Method: Enzyme Immunoassay  
TAT: 3-5 days  
CPT: 85306  
Collection Note: Split platelet-poor plasma into 2 plastic vials before freezing. See instructions for platelet-poor plasma

**Protein S Antigen Total** Test Code: **5937S**

Specimen: 1 mL Citrated Plasma (light blue top); Frozen  
Method: Enzyme Immunoassay  
TAT: 3-6 days  
CPT: 85305  
Collection Note: Split platelet-poor plasma into 2 plastic vials before freezing. See instructions for platelet-poor plasma

**Protein, Body Fluid** Test Code: **019588**

Specimen: 2 mL Body Fluid; Refrigerate  
Method: Spectrophotometric  
TAT: 3-4 days  
CPT: 84155  
Collection Note: Sterile container, Tube must be labeled with patient's full name & type of fluid collected.

**Protein Electrophoresis, Serum** Test Code: **1580S**

	Methods
Components: Protein Total	TURB
Albumin	AE
Alpha 1	AE
Alpha 2	AE
Beta	AE
Gamma	AE
A/G Ratio	CALC

Specimen: 1.5 mL Serum; Refrigerate  
TAT: 3-5 days  
CPTs: 84165, 84155

<b>Protein Electrophoresis, Urine</b>	<b>Methods</b>	<b>Test Code: 1580US</b>
Components: Protein Total Urine	TURB	
Albumin	AE	
Alpha 1	AE	
Alpha 2	AE	
Beta	AE	
Gamma	AE	
Specimen: 10 mL Urine, Refrigerate		
TAT: 3-5 days		
CPT: 84155, 84165		

<b>Protein, Total</b>	<b>Test Code: PROT</b>
Specimen: 1 mL Serum; Refrigerate	
Method: Biuret	
TAT: 1-3 days	
CPT: 84155	

<b>Protein, Urine</b>	<b>Test Code: UPRO</b>
Specimen: Urine Cup; Refrigerate	
Method: Biuret	
TAT: 1-3 days	
CPT: 84155	

<b>Prothrombin Time</b>	<b>Test Code: PT</b>
Specimen: Plasma Citrated (lt. blue top); Refrigerate	
Method: Optical Clot Formation	
TAT: 1-3 days	
CPT: 85730	
Collection Note: For short draw tubes fill to black tabs on label.	

<b>PSA Free and Total</b>	<b>Method</b>	<b>Test Code: 600202</b>
Components: % Free PSA	ECLIA	
PSA Free		
PSA Total		
Specimen: 2 mL Serum, Refrigerate		
TAT: 3-4 days		
CPT: 84153, 84154		
Collection Notes: Ambient is not acceptable. Refrigerate and ship on cold pack within 24 h of collection or split specimen into two plastic tubes and freeze.		

<b>PTH, Intact Only</b>	<b>Test Code: 3941S</b>
Specimen: 1 mL Serum; Frozen	
Method: Immunochemiluminometric Assay	
TAT: 3-4 days	
CPT: 83970	
Note: Specimen must be frozen within 1 hour of collection	

<b>PTH Intact, including Ionized &amp; Total Calcium</b>	<b>Methods</b>	<b>Test Code: 3944S</b>
Components: Parathyroid Hormone, Intact	ICMA	
Calcium (Total)	CM	
Calcium (Ionized)	CM	
Calcium (Normalized)	CALC	
Specimen 1: 3 mL Serum; Frozen		
Specimen 2: 3 mL Serum Separator Tube; Red SST; Refrigerate		
TAT: 3-10 Days		
CPTs: 82310, 82330x2, 83970		
Collection Instructions: Specimen 1 for C-terminal PTH: Split frozen into 2 plastic vials before freezing. Specimen 2 for Ionized and Total Calcium: Only use Serum Separator tube for collection. Centrifuge after clotting. Do not remove stopper or expose to air. Frozen or aliquot specimens are NOT acceptable. Note: Calcium normalized to a pH of 7.4		

<b>PTH Intact, including Total Calcium only</b>	Methods	Test Code: <b>3943S</b>
Components: Parathyroid Hormone, Intact	ICMA	
Calcium Total	CM	
Specimen: 1 mL Serum; Frozen		
TAT: 3-4 days		
CPT: 82310, 83970		
Collection Note: Split into 2 plastic vials before freezing.		

<b>PTH, N-Terminal Including Calcium</b>	Methods	Test Code: <b>S44260</b>
Components: PTH N-Terminal Specific	RIA	
Calcium Serum	RIA	
Specimen: 2 mL Serum; Refrigerate		
TAT: 3-6 Days		
CPTs: 83970, 82310		

<b>Quetiapine (Seroquel)</b>	Test Code: <b>S48659</b>
Specimen: 2 mL Serum (red top); Refrigerate	
Method: Gas Chromatography	
TAT: 3-7 days	
CPT: 80299	
Collection Note: <b>DO NOT</b> collect in an SST tube.	

<b>Rast Midwest Panel</b>	Methods	Test Code: <b>3716S</b>
Components: Timothy IgE	FEIA	
June/Kentucky Blue IgE	FEIA	
Short (Common) Ragweed IgE	FEIA	
Mugwort (Sage) IgE	FEIA	
Box Elder IgE	FEIA	
Alternaria tenuis IgE	FEIA	
House Dust-Greer IgE	FEIA	
Dermatophagoides farinae IgE	FEIA	
Cat Epithelium IgE	FEIA	
Dog Dander IgE	FEIA	
Specimen: 3 mL Serum; Refrigerate		
TAT: 3-5 days		
CPT: 86003x10		

<b>Renal Function Panel</b>	Test Code: <b>RENAL</b>
Components: Fasting Glucose	
BUN	
CO <sub>2</sub>	
Calcium	
Chloride	
Creatinine	
Albumin	
Phosphorus	
Potassium	
Sodium	
Specimen: 3 mL Serum; Refrigerate	
TAT: 2-3 days	
CPT: 80069	

<b>Respiratory Syncytial Virus Antigen Detection</b>	Test Code: <b>2704S</b>
Specimen: Viral Transport Media; Refrigerate	
Method: Direct Fluorescent Antibody	
TAT: 3-4 days	
CPT: 87280	

<b>Reticulocyte Count</b>		Test Code: <b>RETI</b>
Specimen: EDTA (lavender top); Refrigerate		
Method: Automated Measurement using New Methylene Blue dyes		
TAT: 1-3 days		
CPT: 85045		
<b>Rh Type</b>		Test Code: <b>RH</b>
Specimen: 2 mL Serum (red top); Refrigerate		
Method: Modified Tube Test Agglutination		
TAT: 1-3 days		
CPT: 86901		
<b>Rheumatoid Factor</b>		Test Code: <b>RF</b>
Specimen: 1 mL Serum; Refrigerate		
Method: Latex Agglutination		
TAT: 1-3 days		
CPT: 86430		
<b>Rheumatoid Factor IgM Auto abs</b>		Test Code: <b>1540S</b>
Specimen: 1 mL Serum; Refrigerate		
Method: Nephelometry		
TAT: 2-3 days		
CPT: 86431		
<b>Rheumatoid Factor Titer</b>		Test Code: <b>RFTI</b>
Specimen: 1 mL Serum; Refrigerate		
Method: Latex Agglutination		
TAT: 1-3 days		
CPT: 86431		
<b>Ribosomal P Protein IgG Auto abs</b>		Test Code: <b>1271S</b>
Specimen: 1 mL Serum; Refrigerate		
Method: Enzyme Immunoassay		
TAT: 3-5 days		
CPT: 83520		
<b>R. Rickettsii IgG &amp; IgM Antibodies</b>		Test Code: <b>7896S</b>
Components: Rickettsia rickettsii IgG Antibodies	Methods	IFA
Rickettsia rickettsii IgM Antibodies		IFA
Specimen: 1 mL Serum; Refrigerate		
TAT: 3-5 days		
CPT: 86757x2		
<b>Risperidone</b>		Test Code: <b>4141S</b>
Components: Risperidone (Risperdal)	Method	LC/MS
9-Hydroxyrisperidone		LC/MS
Risperidone/9-Hydroxyrisperidone		LC/MS
Specimen: 4 mL Serum; Refrigerate		
TAT: 3-5 days		
CPT: 80299		
<b>Rotavirus Antigen Detection</b>		Test Code: <b>2472S</b>
Specimen: 1g Stool; Frozen		
Method: Enzyme Immunoassay		
TAT: 3-4 days		
CPT: 87425		
Collection Note: Collect fresh stool in a clean, leak proof plastic container (no preservatives). Diapers and rectal swabs for infants are acceptable. Specimens collected in formalin, PVA, or SAF are <b>NOT</b> acceptable. Collect specimen as soon after onset of symptoms as possible (3-5 days).		

**RPR** Test Code: **RPR**

Specimen: 1 mL Serum; Refrigerate  
Method: Carbon Latex Agglutination  
TAT: 1-3 days  
CPT: 86592

**Rubella IgG Antibody** Test Code: **RUB**

Specimen: 1 mL Serum; Refrigerate  
Method: MEIA  
TAT: 1-3 days  
CPT: 86762

**Rubella IgM Antibodies** Test Code: **2475S**

Specimen: 1 mL Serum; Refrigerate  
Method: Enzyme Immunoassay  
TAT: 3-5 days  
CPT: 86762

**Rubeola IgG Antibodies (Measles)** Test Code: **8776S**

Specimen: 1 mL Serum; Refrigerate  
Method: Enzyme Immunoassay  
TAT: 3-5 days  
CPT: 86765

**Rubeola IgM Antibodies (Measles)** Test Code: **8781S**

Specimen: 1 mL Serum; Refrigerate  
Method: Enzyme Immunoassay  
TAT: 3-5 days  
CPT: 86765

**Scl-70 IgG Autoantibodies** Test Code: **1235S**

Specimen: 1 mL Serum; Refrigerate  
Method: Enzyme Immunoassay  
TAT: 3-5 days  
CPT: 86235

**Sex Hormone Binding Globulin (SHBG)** Test Code: **3218S**

Specimen: 1 mL Serum; Refrigerate  
Method: Immunochemiluminometric Assay  
TAT: 3-4 days  
CPT: 84270

**Sinemet** Test Code: **S42170**

Components: Levodopa	HPLC
Carbidopa	HPLC
Specimen: 4 mL Serum Foil Wrapped; Frozen	
TAT: 3-4 days	
CPT: 82492	

**Skin Scraping for Scabies** Test Code: **SKISCR**

Specimen: skin scrapings  
Method: Microscopic  
TAT: 1-3 days  
CPT: 87220

**Sm (Smith) IgG Autoantibodies** Test Code: **1220S**

Specimen: 1 mL Serum; Refrigerate  
Method: Enzyme Immunoassay  
TAT: 3-5 days  
CPT: 86235

**Smooth Muscle Total Autoantibodies** Test Code: **1106S**

Specimen: 1 mL Serum; Refrigerate  
Method: Indirect Fluorescent Antibody  
TAT: 3-4 days  
CPT: 86256

**Sodium, Serum** Test Code: **NA**

Specimen: 1 mL Serum; Refrigerate  
Method: ISE Indirect  
TAT: 1-3 days  
CPT: 84295

**Sotalol** Test Code: **S44835**

Specimen: 4 mL Serum; Refrigerate  
Method: High Performance Liquid Chromatography  
TAT: 3-5 days  
CPT: 80299

**Sperm Antibodies** Test Code: **S50111**

Specimen: 1 mL Serum; Refrigerate  
Method: Immunobeads  
TAT: 3-10 days  
CPT: 89325x3

**SS-A IgG Autoantibodies** Test Code: **1204S**

Specimen: 1 mL Serum; Refrigerate  
Method: Enzyme Immunoassay  
TAT: 3-5 days  
CPT: 86235

**SS-B IgG Autoantibodies** Test Code: **1205S**

Specimen: 1 mL Serum; Refrigerate  
Method: Enzyme Immunoassay  
TAT: 3-5 days  
CPT: 86235

**Ss-DNA Auto abs, Single-Stranded** Test Code: **1290S**

Specimen: 1 mL Serum; Refrigerate  
Method: Enzyme Immunoassay  
TAT: 2-4 days  
CPT: 86226

**Stone Analysis** Test Code: **4160S**

	Methods
Components: Nidus	IR
Shell	IR
Stone	IR
Stone Weight	IR
Surface Crystals	IR

Specimen: Stone(s); Refrigerate

Notes: Specimens should be air-dried, then placed in a plastic tube or a urine collection cup. Do not use tape.  
Minute specimens may be placed in a gelatin capsule. Ship ambient.

TAT: 2-6 days  
CPT: 82365

**Sulfatide Autoantibodies** Test Code: **S48689**

	Methods
Components: Sulfatide Elisa IgM Titer	ELISA
Specificity	ELISA
Sulfatide Elisa IgG Titer	ELISA
Specificity	ELISA

Specimen: 2 mL Serum; Refrigerate  
TAT: 8-11 days

**Sulfatide Autoantibodies (cont.)** Test Code: **S48689**

CPT: 83520x4

Notes: Frozen samples are acceptable with one freeze/thaw cycle. Hemolysis is criteria for rejection for ALL Athena antibody tests.

**T4, Free** Test Code: **T4FREE**

Specimen: 1 mL Serum; Refrigerate

Method: EIA

TAT: 1-3 days

CPT: 84439

**T4, Total** Test Code: **T4**

Specimen: 1 mL Serum; Refrigerate

Method: FPIA

TAT: 1-3 days

CPT: 84436

**Testosterone Bioavailable** Test Code: **3916S**

Components: Testosterone Bioavailable

Methods

RIA

Testosterone

CL

Specimen: 4 mL Serum, Frozen

TAT: 2-9 days

CPTs: 83519, 84403

**Testosterone, Free and Total** Test Code: **3248S**

Components: Testosterone

Methods

CL

Testosterone Free

RIA

Testosterone % Free

CALC

Specimen: 1.5 mL Serum, Refrigerate

TAT: 2-6 days

CPT: 84402, 84403

Notes: Please supply age and gender of patient.

**Testosterone, Weakly Binding** Test Code: **3917S**

Components: Testosterone Free

Methods

CL

Testosterone Bioavailable

ASP

Testosterone

RIA

Specimen: 4 mL Serum, Frozen

TAT: 2-9 days

CPT: 83519, 84402, 84403.

**Thyroglobulin Evaluation** Test Code: **3251S**

Components: Thyroglobulin Autoantibodies

Methods

CL

Thyroglobulin

ICMA

Specimen: 2 mL Serum, Refrigerate

TAT: 3-5 days

CPT: 84432, 86800

**Thyroglobulin Serum** Test Code: **3255S**

Specimen: 2 mL Serum; Refrigerate

Method: Immunochemiluminometric Assay

TAT: 3-5 days

CPT: 84432

<b>Thyroid 1</b>	Methods	Test Code: <b>THY1</b>
Components: FTI	CALC	
T3UP	MEIA	
T4	MEIA	
TSH	MEIA	
Specimen:		
TAT: 1-3 Days		
CPT: 84479, 84436, and 84443		
<b>Thyroid 2</b>	Methods	Test Code: <b>THY2</b>
Components: T4FREE	MEIA	
TSH	MEIA	
Specimen: 2mL Serum		
TAT: 1-3 Days		
CPT: 84439, 84443		
<b>Thyroid 3</b>	Methods	Test Code: <b>THY3</b>
Components: FTI	CALC	
T3UP	MEIA	
T4	MEIA	
Specimen: 2mL Serum		
TAT: 1-3 Days		
CPT: 84479, 84436		
<b>Thyroid Autoantibodies</b>	Methods	Test Code: <b>1016S</b>
Components: Thyroglobulin Autoantibodies	CL	
Thyroid Peroxidase Autoantibodies	ICMA	
Specimen: 1.5 mL Serum; Refrigerate		
TAT: 2-3 days		
CPT: 86376, 86800		
<b>Thyroid Stimulating Hormone (TSH)</b>		Test Code: <b>TSH</b>
Specimen: 1 mL Serum; Refrigerate		
Method: EIA		
TAT: 1-3 days		
CPT: 84443		
<b>Thyroxine Binding Globulin</b>		Test Code: <b>3238S</b>
Specimen: 1 mL Serum; Refrigerate		
Method: Immunochemiluminometric Assay		
TAT: 2-3 days		
CPT: 84442		
<b>Thyroxine (T4) Free, Direct Dialysis</b>	Methods	Test Code: <b>3954S</b>
Components: Free Thyroxine Serum	DD	
Thyroxine (T4) Serum	DD	
Specimen: 1 mL Serum, Refrigerate		
TAT: 2-3 Days		
CPT: 84439, 84436		
<b>Topirmate</b>		Test Code: <b>4925S</b>
Specimen: 2 mL Serum; Frozen		
Method: Fluorescence Polarization Immunoassay		
TAT: 2-3 days		
CPT: 80201		
Collection Note: Specimens should be collected at trough (within 30 minutes prior to next dose) or peak concentrations (end of a 1 hr constant infusion, 30 minutes after the end for a 30 minute constant infusion, or 1 hr after an IM dose). For a peak concentration collect specimen 2-3 hrs after the last dose.		

<b>Torch IgG &amp; IgM Antibodies</b>	<b>Methods</b>	<b>Test Code: 9901S</b>
Components: <i>Toxoplasma</i> IgG Antibodies	EIA	
<i>Toxoplasma</i> IgM Antibodies	MAC EIA	
Rubella IgG Antibodies	EIA	
Rubella IgM Antibodies	EIA	
Cytomegalovirus IgG Antibodies	EIA	
Cytomegalovirus IgM Antibodies	EIA	
HSV 1 IgG Antibodies	EIA	
HSV 2 IgG Antibodies	EIA	
HSV Types 1/2 IgM Abs	EIA	
Specimen: 3.5 mL Serum, Refrigerate		
TAT: 3-5 days		
CPT: 86695x2, 86696x2, 86644, 86645, 86762x2, 86777, 86778		
Collection Instructions: Simultaneous serial testing of maternal and infant serum is strongly recommended, if clinically indicated		

<b>Torch IgG Antibodies</b>	<b>Methods</b>	<b>Test Code: 9911S</b>
Components: <i>Toxoplasma</i> IgG Antibodies	EIA	
Rubella IgG Antibodies	EIA	
Cytomegalovirus IgG Antibodies	EIA	
HSV 1 IgG Antibodies	EIA	
HSV 2 IgG Antibodies	EIA	
Specimen: 2 mL Serum, Refrigerate		
TAT: 3-5 days		
CPT: 86644, 86695, 86696, 86762, 86777		
Collection Instructions: Simultaneous serial testing of maternal and infant serum is strongly recommended, if clinically indicated.		

<b>Torch IgM Antibodies</b>	<b>Methods</b>	<b>Test Code: 2231S</b>
Components: HSV Types 1 & 2 IgM Abs	EIA	
<i>Toxoplasma</i> IgM Antibodies	MAC/EIA	
Rubella IgM Antibodies	EIA	
Cytomegalovirus IgM Antibodies	EIA	
Specimen: 2 mL Serum, Refrigerate		
TAT: 3-5 days, add 2 days to turnaround time for IFA.		
CPTs: 86695, 86696, 86645, 86762, and 86778		
Note: MDL strongly recommends simultaneous serial testing of maternal and infant serum, if clinically indicated. Indirect Fluorescence Assay confirms IgM-positive samples at no additional charge.		

<b>Total Iron Binding Capacity</b>	<b>Methods</b>	<b>Test Code: TIBC</b>
Components: IRON	Colormetric	
TIBC	CALC	
UIBC	Colormetric	
Specimen: Serum		
TAT: 48 hrs		
CPT: 83540, 83550		

<b>Toxoplasma IgG Abs</b>	<b>Test Code: TOXOG</b>
Specimen: 1 mL Serum; Refrigerate	
Method: MEIA	
TAT: 1-3 days	
CPT: 86777	

<b>Toxoplasma IgM Abs</b>	<b>Test Code: 606089</b>
Specimen: 1 mL Serum; Refrigerate	
Method: IFA	
TAT: 2-3 days	
CPT: 86778	

<b>Transferrin</b>	Test Code: <b>1519S</b>
Specimen: 1 mL Serum; Refrigerate Method: Nephelometry TAT: 2-3 days CPT: 84466	
<b>Transglutaminase IgA Autoantibodies</b>	Test Code: <b>1029S</b>
Specimen: 1 mL Serum; Refrigerate Method: Enzyme Immunoassay TAT: 9 days CPT: 83520	
<b>Treponema Pallidum Total Abs</b>	Test Code: <b>2104S</b>
Specimen: 1 mL Serum; Refrigerate Method: Indirect Fluorescent Antibody TAT: 2-5 days CPT: 86781	
<b>Triglyceride</b>	Test Code: <b>TRIG</b>
Specimen: 1 mL Serum; Refrigerate Method: Enzymatic, End Point TAT: 1-3 days CPT: 84478	
<b>Triiodothyronine (T3) Free</b>	Test Code: <b>3234S</b>
Specimen: 2 mL Serum; Refrigerate Method: ICMA TAT: 2-3 days CPT: 84481	
<b>Trileptal (Oxcarbazepine)</b>	Test Code: <b>S49002</b>
Specimen: 2 mL Serum (red top); Refrigerate Method: High Performance Liquid Chromatography TAT: 3-4 days CPT: 80299 Collection Note: <b>DO NOT</b> collect in an SST tube.	
<b>Troponin I</b>	Test Code: <b>3393S</b>
Specimen: 2 mL Serum; Refrigerate Method: Microparticle Enzyme Immunoassay TAT: 2-3 days CPT: 84484 Collection Note: Separate serum from cells within 8 hrs of collection.	
<b>Troponin T</b>	Test Code: <b>TROPT</b>
Specimen: 2 mL Serum; Refrigerate Method: Electro-Chemiluminescence Immunoassay TAT: 1-3 days CPT: 84484	
<b>U1 RNP/SnRNP IgG Auto abs</b>	Test Code: <b>1215S</b>
Specimen: 1 mL Serum; Refrigerate Method: Enzyme Immunoassay TAT: 3-5 days CPT: 86235	
<b>UIBC</b>	Test Code: <b>UIBC</b>
Specimen: 1 mL Serum; Refrigerate Method: Colormetric TAT: 1-3 days CPT: 83550	

**Urea Nitrogen, Random Urine** Test Code: **RUBUN**

Specimen: Sterile Urine Cup; Refrigerate  
Method: Urease, UV  
TAT: 1-3 days  
CPT: 84520

**Urinalysis with Microscopy** Test Code: **UA**

Specimen: Urine Cup, or Urinalysis tube (yellow top);  
Method:  
TAT: 1-2 Days  
CPT: 81001

**Urinalysis without Microscopy** Test Code: **UAOMIC**

Specimen: Urine Cup, or Urinalysis tube (yellow top);  
Method:  
TAT: 1-2 Days  
CPT: 81003

**Uric Acid, Random Urine** Test Code: **RUURC**

Specimen: Sterile Urine Cup; Refrigerate  
Method: Uricase, Colorimetric  
TAT: 1-3 days  
CPT: 84560

**Valproic Acid (Depakote)** Test Code: **VALA**

Specimen: 1 mL Serum (red top); Refrigerate  
Method: FPIA  
TAT: 1-3 days  
CPT: 80164  
Collection Note: **DO NOT** collect in an SST tube.

**Vancomycin, Peak** Test Code: **VANCP**

Specimen: 1 mL Serum (red top), Refrigerate  
Method: FPIA  
TAT: 1-3 days  
CPT: 80202  
Collection Note: **DO NOT** collect in an SST tube.

**Vancomycin, Random** Test Code: **VANR**

Specimen: 1 mL Serum (red top); Refrigerate  
Method: FPIA  
TAT: 1-3 days  
CPT: 80202  
Collection Note: **DO NOT** collect in an SST tube.

**Vancomycin, Trough** Test Code: **VANT**

Specimen: 1 mL Serum (red top); Refrigerate  
Method: FPIA  
TAT: 1-3 days  
CPT: 80202  
Collection Note: **DO NOT** collect in an SST tube.

**Vanillylmandelic Acid 24 hr Urine** Test Code: **3318US**

Specimen: 30 mL Urine 24 hour; Sterile  
Method: HPLC  
TAT: 2-5 Days  
CPT: 84585  
Collection Notes: If possible, patients should discontinue all drugs at least 1 week prior to collection. Medications that can interfere with the assay include: L-DOPA, Phenothiazines, Catecholamine-containing: drugs, diuretics and vasodilators. The effect of drugs on Homovanillic Acid result may not be predictable.

**Vanillylmandelic Acid 24 hr Urine (cont)** Test Code: **3318US**

24-HR COLLECTION INSTRUCTIONS: 1. Refrigerate during and after collection. 2. After collection, mix the specimen, measure the total volume and transfer a 25 mL aliquot to a clean, leak-proof screw cap container. 3. Record the 24 hr total volume on the requisition form or shipping manifest. 4. Store and ship refrigerated.

**Vanillylmandelic Acid, Urine Random** Test Code: **3318UR**

Specimen: 30 mL 24 hr urine, sterile; refrigerate  
Method: High Performance Liquid Chromatography  
TAT: 3-7 days  
CPT: 84585

Collection Note: 1. Refrigerate during and after collection. 2. After collection, mix the specimen, measure the total volume and transfer a 25mL aliquot to a clean, leak proof screw cap container.  
3. Record the 24hr total volume on the requisition form. 4. Store refrigerated.

**Varicella-Zoster Virus IgG Abs** Test Code: **8761S**

Specimen: 1 mL Serum; Refrigerate  
Method: Enzyme Immunoassay  
TAT: 2-4 days  
CPT: 86787

**Varicella-Zoster Virus IgM Abs** Test Code: **8766S**

Specimen: 1 mL Serum; Refrigerate  
Method: Enzyme Immunoassay  
TAT: 2-4 days  
CPT: 86787

**Viral Culture** Test Code: **2410S**

Specimen: Viral Transport Media; Refrigerate  
Method: Culture  
TAT: 11-27 days  
CPT: 87252  
Collection note: Please indicate specimen source, patient's symptoms and suspected virus(s) on requisition.

**Vitamin A (Retinol)** Test Code: **3502S**

Specimen: 1 mL Serum (red top); Frozen  
Method: High Performance Liquid Chromatography  
TAT: 2-4 days  
CPT: 84590

Collection Note: Wrap in foil to protect from light. Patient should not consume alcohol for 1 day prior to collection. Avoid hemolysis.

**Vitamin B1 (Thiamine)** Test Code: **3515S**

Specimen 4 mL Serum; Frozen  
Method: Fluorimetry  
TAT: 2-4 days  
CPT: 84425

Collection Note: Wrap in foil to protect from light. Split into 2 plastic vials before freezing.

**Vitamin B12** Test Code: **B12**

Specimen: 1 mL Serum; Refrigerate  
Method: Chemiluminescence  
TAT: 1-3 days  
CPT: 82607

**Vitamin B6 (Pyridoxal Phosphate)** Test Code: **3505S**

Specimen: 1 mL EDTA (lavender top); Frozen  
Method: Radioimmunoassay  
TAT: 2-6 days  
CPT: 84207

**Vitamin B6 (Pyridoxal Phosphate) (cont)** Test Code: **3505S**

Collection Note: Wrap in foil to protect from light. Split into 2 plastic vials before freezing. Fill tube to black line on label.

**Vitamin D 1,25-Dihydroxy (Calcifidol)** Test Code: **3520S**

Specimen: 4 mL Serum; Refrigerate  
Method: Radio Receptor Assay  
TAT: 5-9 days  
CPT: 82652

**Vitamin D 25 Hydroxy (Calciferol)** Test Code: **3521S**

Specimen: 1 mL Serum; Refrigerate  
Method: Chemiluminescence  
TAT: 2-4 days  
CPT: 82306

**Von Willebrand Factor Multimers** Methods Test Code: **1905S**

Components: von Willebrand Antigen EIA/LIA  
                  von Willebrand Multimers IB

Specimen: 2 mL Plasma Citrated; Light Blue; Frozen  
TAT: 4-8 days  
CPT: 85246, 85247

Collection Note: Split platelet-poor plasma into 2 plastic vials before freezing. See instructions for platelet-poor plasma

**Von Willebrand Profile** Methods Test Code: **5961S**

Components: Factor VIII Activity CLOT DET  
                  Von Willebrand Antigen EIA/LIA  
                  Ristocetin Cofactor AGGR  
                  Activated PTT CLOT DET

Specimen: 3 mL Plasma Citrated; Light Blue; Frozen  
TAT: 2-4 days  
CPT: 85240, 85245, 85246, 85730

Collection Instructions: See instructions for platelet poor plasma.

**Westergren Sed Rate** Test Code: **ESR**

Specimen: EDTA (lavender top); Refrigerate  
Method: Manual Westergren ESR System  
TAT: 1-3 days  
CPT: 85651

**Zinc** Test Code: **4877S**

Specimen: 2 mL Serum Trace Metal (royal blue); Refrigerate  
Method: Inductively Coupled Plasma/Mass Spectrometry  
TAT: 2-5 days  
CPT: 84630  
Collection Note: Collect fasting morning specimen. (Zinc levels decline after meals).

**Zinc Protoporphyrin** Test Code: **3275S**

Specimen: 1 mL Whole Blood EDTA (royal blue); Refrigerate  
Method: Hematofluorimetry  
TAT: 2-3 days  
CPT: 84202  
Collection Note: Wrap in foil to protect from light.

**Zonisamide** Test Code: **S4910S**

Specimen: 1 mL Serum (red top); Refrigerate  
Method: High Performance Liquid Chromatography  
TAT:  
CPT: 82491

# CYTOPATHOLOGY

## REGULATORY COMPLIANCE

MDL takes pride in performing cytopathology services in accordance with the requirements of State and Federal regulatory agencies. Our program is in full compliance with CLIA '88 and follows guidance provided by the College of American Pathologists (CAP).

## QUALITY ASSURANCE

MDL maintains a comprehensive Quality Assurance Program, designed in accordance with CLIA '88 and guidance from the College of American Pathologists.

### ORDERING INFORMATION

**Note:** In order for MDL to provide an accurate and timely cytologic interpretation is necessary that the submitting physician provides an adequate cytologic sample, submitted in a labeled container (or slide) with the proper fixative, and accompanied by a properly completed requisition form with the required demographic and clinical information.

#### **Cytology Requisition Form must include:**

1. Patient's name and social security number
2. Date of birth
3. Date of specimen collection
4. Source of material submitted (cervical, endocervical, vaginal, or other body site)
5. The submitting physician's name, UPIN, and phone number

#### **For GYN Specimens:**

##### **Provide the following clinical information:**

1. Last menstrual period (LMP)
2. Hormonal status (post menopausal, etc)
3. Exogenous hormone therapy (BCP, estrogen, progestin, tamoxifen, etc.)
4. Use of intrauterine device (IUD)
5. DES exposure
6. History of abnormal cytology, systemic chemotherapy, gynecologic surgery, cryosurgery, electrocautery or laser surgery
7. Patient's risk status for cervical cancer
8. Date and results of last Pap test
9. Results of HPV testing
10. Any other pertinent history (e.g., non-GYN history of previous surgery, presence of other masses, etc.)

#### **For Non-GYN Specimens:**

##### **Provide the following clinical information:**

1. Source and specific site (left/right, etc.)
2. Nature of lesion (solid/cystic, mobile/fixed)
3. Pertinent history & other findings

#### **For Breast Specimens:**

##### **Provide the following clinical information:**

1. Specific location: Rt./Lt, quadrant
2. Clinical examination findings:
3. Mammographic / ultrasound findings
4. Pertinent clinical history
5. Pertinent family history
6. Results of previous biopsy / cytology
7. Gail index (if known): \_\_\_\_\_

## GYN CYTOPATHOLOGY

A quality comprehensive screening program is essential for early detection and management of malignant and premalignant conditions of the cervix. A successful program depends on the patient presenting at the appropriate times for assessment, the physician obtaining an adequate cytologic sample, proper preservation of the cellular material, completion of the requisition form, including all relevant medical information, preparation of a quality microscopic slide by the cyto-technician, a clear, concise, accurate, and complete cytologic interpretation using standardized descriptive terminology by the Cytotechnologists (and pathologist), timely release of the report, followed by the appropriate clinical management by the patient's physician. Follow-up management may involve repeat pap testing, HPV DNA testing, and/or colposcopic evaluation. Current recommended guidelines may be found in:

1. 2001 Consensus Guidelines for the Management of Women With Cervical Cytological Abnormalities. JAMA. 2002;287:2120-2129.
2. The ASCUS LSIL Triage Study (ALTS). Comparison of Three Management Strategies for Patients With Atypical Squamous Cells of Undetermined Significance: Baseline Results From a Randomized Trial. J Nat'l Cancer Inst. 2001; 93:293-9.

## LIMITATIONS OF THE PAP TEST

**The Pap test is a screening procedure to aid in the detection of uterine cancer and its precursors. It is not a diagnostic procedure. Both false-positive and false-negative results occur. For this reason the Pap test must be followed by a tissue sample (cervical biopsy, endocervical curettage, etc.) whenever it is clinically appropriate to determine the true nature of a suspicious lesion or atypical cytology. The Pap test should not be used as the sole means to diagnose or exclude malignant and premalignant lesions. It is a screening procedure only.**

## CERVICAL COLLECTION (GYN) PAP SMEAR

Proper technique for the collection and preparation of cytological specimens by the clinician is just as important as the experience of the Cytotechnologists and pathologists who evaluate the specimens. There are various sites in the female genital tract that may be considered as a source for cytological specimens. However, for adequate study of the female genital tract for malignancy, we suggest a well-collected and prepared Pap s taken from the ectocervix and the endocervix. If a quantitative maturation index is requested, a portion of the specimen must be taken from the lateral vaginal wall and smeared separately from the cervical component and placed on a separate slide.

Label all slides and specimen containers with the patient's name and site(s) of specimen collected. We cannot accept specimens that are not properly labeled.

## GYN PAP SMEAR - SUPPLIES

Slides, fixative, spatulas, endocervical brushes, slide containers and directions for use of these materials are available from MDL.

### Unacceptable Specimens are defined as:

1. No patient identification on either slide or requisition
2. No account/physician number and none available
3. No account/physician name
4. Specimen leaked from container
5. Slides broken beyond repair on receipt
6. Slides/requisitions separated on receipt and neither is properly identified
7. Conflict between name of patient on specimen and name on requisition
8. Specimen obviously not properly preserved

### Unsatisfactory Smears are defined as:

1. No cells present
2. Insufficient epithelial cells present for adequate cytological evaluation
3. Epithelial cells are obscured by inflammation
4. Epithelial cells are obscured by blood
5. Extensive cellular degeneration or improper fixation
6. Presence of lubrication material which compromises evaluation
7. Cell preparation too thick for adequate cytological evaluation

## THINPREP PAP TEST SPECIMEN COLLECTION

### Endocervical Brush/Spatula Protocol

1. Obtain an adequate sampling from the ectocervix using a **plastic** spatula.
2. Rinse the spatula into the PreservCyt Solution vial by **swirling the spatula**

**vigorously in the vial 10 times.** Discard the spatula.

3. Obtain an adequate sampling from the endocervix using an endocervical brush device. Insert the brush into the cervix until only the bottommost fibers are exposed. Slowly rotate 1/4 or 1/2 turn in one direction. **DO NOT OVER-ROTATE.**
4. Rinse the brush in the PreservCyt Solution by rotating the device in the solution 10 times while pushing against the PreservCyt vial wall. **Swirl the brush vigorously to further release material.** Discard the brush.
5. Tighten the cap so that the torque line on the cap passes the torque line on the vial.
6. Record the patient's name and ID number on the vial; record the patient information and medical history on the cytology requisition form.
7. Place the vial and requisition in a specimen bag for transport to the laboratory.

### Broom-Like Device Protocol

1. Obtain an adequate sampling from the cervix using a broom-like device. Insert the central bristles of the broom into the endocervical canal deep enough to allow the shorter bristles to fully contact the ectocervix. Push gently, and rotate the broom in a clockwise direction five times.
2. Rinse the broom into the PreservCyt Solution vial by **pushing the broom into the bottom of the vial 10 times, forcing the bristles apart. As a final step, swirl the broom vigorously to further release material.** Discard the collection device.
3. Tighten the cap so that the torque line on the cap passes the torque line on the vial.
4. Record the patient's name and ID number on the vial; record the patient information and medical history on the cytology requisition form.
5. Place the vial and requisition in a specimen bag for transport to the laboratory.

## ROUTINE GYN PAP SMEAR SPECIMEN COLLECTION

### Sampling

1. Endocervix (cervical aspiration or brush of endocervical canal)
  - a) Insert endocervical brush into endocervical canal and rotate the brush.
  - b) Spread material onto labeled glass slide.
  - c) Fix immediately with spray fixative.
2. Ectocervical scrape
  - a) Thoroughly scrape the entire endocervix with an emphasis on the squamocolumnar junction with spatula.

- b) Spread material evenly onto labeled glass slide.
- c) Fix immediately with spray fixative.
- 3. Vaginal smear
  - a) Lightly scrape the posterior fornix with spatula.
  - b) Spread material evenly onto labeled glass slide.
  - c) Fix immediately with spray fixative.
  - d) NOTE: Make cell spread from the vaginal pool first; fix slide immediately, then make cell spread from the cervix and fix the slide immediately, before collecting the endocervical specimens.

**Fixation**

Spray fixation with cytospray fixative.

**Processing**

- 1. Place slides in cardboard or plastic holders.
- 2. Place the holder and complete requisition in specimen bag for transport to the laboratory.

**THE REVISED BETHESDA SYSTEM FOR REPORTING PAPANICOLAOU (PAP) SMEAR RESULTS**

Under the direction of The National Cancer Institute, MDL utilizes the Bethesda system of reporting cervical/ vaginal cytology specimens. This system of reporting replaces the traditional Pap class system, which does not accurately reflect the current understanding of the development of cervical and uterine cancer. The standardized language of the Bethesda system provides better and more consistent communication of Pap smear findings between physicians and laboratories. In 2001 MDL adopted the Bethesda System 2001 terminology.

Terminology used in the revised Bethesda system for reporting cervical/vaginal cytology:

**Specimen Type**

**Specimen Adequacy**

- 1. Satisfactory for evaluation
  - Describe presence or absence of endocervical/transformation zone component
  - Describe any other quality indicators (partially obscuring blood, inflammation, etc.)
- 2. Unsatisfactory for evaluation...(specify reason)
  - Specimen rejected/not processed (specify reason)
  - Specimen processed and examined, but unsatisfactory for evaluation of epithelial abnormality because of (specify reason)

**Interpretation**

- 1. Negative for Intraepithelial Lesion or Malignancy

**ORGANISMS:**

- Trichomonas vaginalis*
- Fungal organisms morphologically consistent with *Candida spp.*
- Bacteria morphologically consistent with *Actinomyces spp.*
- Cellular changes consistent with *Herpes simplex virus*

**OTHER NON-NEOPLASTIC FINDINGS**

- Reactive cellular changes associated with:
  - o Inflammation (includes repair)
  - o Radiation
  - o Intrauterine contraceptive device
- Glandular cells status-post hysterectomy
- Atrophy

**OTHER**

- Endometrial cells (woman >= 40)

**EPITHELIAL CELL ABNORMALITIES**

**SQUAMOUS CELL**

- ASCUS
- ASCUS cannot exclude HSIL
- LSIL
- HSIL
- HSIL, suspicious for invasion
- Squamous cell carcinoma

**GLANDULAR CELL**

Atypical

- Endocervical cells, NOS
- Endometrial cells, NOS
- Glandular cells, NOS
- Endocervical cells, favor neoplastic
- Glandular cells, favor neoplastic
- Endocervical adenocarcinoma in situ
- Adenocarcinoma
  - Endocervical
  - Endometrial
  - Extrauterine
  - Not otherwise specified (NOS)

**OTHER MALIGNANT NEOPLASMS**

## Ancillary Testing

HPV DNA testing by PCR

GC & Chlamydia testing by PCR

## Educational Notes and Suggestions

Suggestions should be concise and consistent with clinical follow-up guidelines published by professional organizations. Current recommended guidelines may be found in:

1. 2001 Consensus Guidelines for the Management of Women With Cervical Cytological Abnormalities. JAMA. 2002;287:2120-2129.
2. The ASCUS LSIL Triage Study (ALTS). Comparison of Three Management Strategies for Patients With Atypical Squamous Cells of Undetermined Significance: Baseline Results From a Randomized Trial. J Nat'l Cancer Inst. 2001;93:293-9.

## FINE NEEDLE ASPIRATION CYTOLOGY

### Special Instructions

It is recommended to do an aspirate only on a palpable mass. "Blind" sticks are discouraged except for those under radiologic guidance. A minimum of two separate passes should be done, preferably more. Inadequate specimens result in false-negative diagnosis.

Specify the source of the specimen along with clinical history and clinical impression. If a cyst is aspirated, indicate this fact on the request form; it will most likely be hypocellular but will not be a false negative. If the patient has a known diagnosis of malignancy, please include that information on the request form. Whatever the specimen source; include clinical impressions and reason for doing the aspiration.

If an infectious process is in the differential, submit a portion of the specimen to microbiology in an appropriate sterile medium or transport container. Once the specimen is smeared and/or put in an alcohol container, it is unsuitable for culture.

### Collection

#### Fine Needle Aspiration (FNA)

Use a small gauge (e.g. 25- or 22-g) needle to avoid dilution with blood. Immobilize the palpable mass with your nondominant hand. Using a syringe holder will allow you to keep your nondominant hand on the mass. Insert the needle into the mass and use it as a cutting tool. Make short 5 mm "in-and-out" motions until you see material coming into the hub of the needle.

**When you start to see material in the hub, stop, release negative pressure on the syringe, and**

**pull out to make the slides.**

Do not aspirate material into the syringe or dilute with blood or saline. This interferes with making good direct smears. If you do not see any material at all in the hub or syringe, continue the short 5 mm strokes until you have done 15-20 strokes. Pull out and attempt to express material on slides. Repeat the above procedure again using a clean needle for a second pass (and more passes if needed). Many physicians use no local anesthesia. If you decide to give a local, avoid aspirating the local anesthetic into the needle. It will dilute as well as distort the specimen.

### Submission Requirements (other than ThinPrep)

**Breast Discharge:** Drops of fluid from the nipple are smeared directly on clean glass slides and fix immediately, preferably by immersion in alcohol for 3-5 minutes.

**Breast Cyst:** If aspirate is scanty, fluid may be smeared one drop at a time on clean, dry slides and immediately fixed. If aspirate is abundant, mix material with an equal volume of fixative (or submit using ThinPrep technique).

**Skin Lesions:** Remove crust or dome from lesion. Scrape ulceration with a curette, Spread material on alcohol-moistened slide. Fix in alcohol.

### Making Direct Smears

1. Label 4-8 slides with the patient's name before starting the procedure.
2. After aspiration, make sure to have positive pressure in the syringe. If need be, remove the needle, pull back the plunger, then reattach the needle to gain positive pressure. Avoid aspirating the material from the needle into the syringe.
3. Touch the end of the needle to the end of the glass slide and express one to two drops of material. If too much material is expressed, the slides will be too thick for optimal interpretation. A thin monolayer of cells is desired.
4. Place a second slide on top of the first, allowing the drop to spread, then gently pull slides apart toward opposite end.
5. Fix immediately in 95% ethyl alcohol.  
**NOTE: It is imperative to fix the slides immediately to avoid air-drying.**
6. Continue making more slides in this fashion until all the material in the needle is used.
7. Do not discard the needle yet. Rinse the needle in a labeled container of balanced salt solution and an equal volume of 50% ethanol. Send all material to the lab.

### **Alternative to Making Direct Smears**

- 1.** Express the specimen directly into a balanced salt solution and an equal volume of either 50% ethyl alcohol or Saccomanno fixative. Send to the laboratory for slide preparation. ***If a cyst is aspirated, use this method, and the laboratory will spin the specimen for concentration.***
- 2.** Use ThinPrep technique

## COLLECTION OF NON-GYN SAMPLES FOR THINPREP

### REQUIRED SOLUTIONS

1. CytoLyt Solution (30 ml)
2. PreservCyt Solution (20 ml) – may also use ThinPrep Pap Test vial (20 ml)

### FINE NEEDLE ASPIRATES (FNA)

Collection: Collect sample directly into 30 ml of CytoLyt Solution.

Immersion fixation in 95% alcohol is the best option for direct smears. Spray fixative is less effective. Direct smears may be necessary when a rapid analysis of specimen adequacy is required. These may be air-dried and stained using a rapid technique such as Dif-Quik.

If possible, flush the needle and syringe with sterile anticoagulant solution prior to aspirating the sample. Some anticoagulants may interfere with other cell processing techniques. Use caution if planning to use the specimen for other testing.

### MUCOID SPECIMENS:

Respiratory and Gastrointestinal specimens

Collection: Collect sample directly into 30 ml of CytoLyt Solution. Or add 30 ml of CytoLyt Solution to the fresh specimen as soon as possible to allow the CytoLyt Solution to initiate the mucus dissolution process.

Note: Large specimens (greater than 20 ml) should be concentrated before addition of CytoLyt Solution to the sample. Contact MDL for instructions. Indicate on specimen requisition that sample may be mucoid

### BODY FLUIDS AND BREAST DUCTAL LAVAGE

Pleural, pericardial, peritoneal fluid, synovial fluid, urine, and CSF.

Collection: Collect sample (up to 30 ml) directly into 30 ml of CytoLyt Solution.

Note: For extremely bloody fluids place only 10 ml of fresh fluid into each CytoLyt Solution vial.

### SUPERFICIAL BRUSHINGS AND SCRAPINGS

Oral cavity specimens, nipple secretions, skin lesions (Tzanck Test), and eye brushings.

Collection: Deposit the specimen directly into a PreservCyt Solution Vial.

Note: It may be useful to also submit the end of the brush in the vial.

## GYN ThinPrep Pap Test REFLEX TESTING AGREEMENT

Dear Provider:

1. **Purpose.** To provide an agreement for reflex testing (HPV, GC & Chlamydia) based on the GYN ThinPrep pap test interpretive findings; and the CPT codes used for billing purposes.
2. **Description of HPV Testing:** Using PCR technology, ThinPrep samples are screened first for the presence of HPV DNA. If absent for HPV, testing is complete and sample is reported as negative for HPV. If positive, then the HPV type is determined and a risk assessment provided.
3. **Agreement:** To perform reflex testing in accordance with the selection(s) provided below.
4. **MDL ThinPrep Reflex Testing Policy:** MDL will perform reflex testing when:
  - a) You have selected one of the options below, and
  - b) The microscopic interpretation meets one of the selected reflex criteria, and
  - c) MDL has a current signed agreement with you.
5. **Acknowledgement and Approval.** By signing this Agreement, you acknowledge and agree that whenever the reflex criteria are met, the reflex testing can be performed, reported, and billed.
6. **Option.** You maintain the option of selecting additional testing (HPV, GC & Chlamydia) on the sample requisition form without a reflex testing agreement.
7. **In Absence of a Reflex Agreement.** Microscopic interpretation only will be provided if this agreement is not signed and returned, unless, of course, additional testing is requested on the requisition.
8. **Medical Necessity.** By completing and signing this agreement, in your judgment the requested reflex testing is medically necessary for your patient.
9. **Execution of Agreement.** After signing this agreement, please make a copy for your records and return the original to MDL.
10. **Annual Re-approval and Discontinuation:** This Agreement will remain in effect for one year. Thereafter, you will be asked to re-approve the Agreement annually for it to remain in effect. You may discontinue this Agreement for any reason at any time upon giving written notice to MDL with acknowledgment of receipt.
11. **Billing:** Client and patient billing information are provided in a separate agreement.
12. **CPT codes:**
  - HPV screen: 83890, 83894, 83898, 83912.
  - HPV typing: 83892, 83894, 83903, & 83894-76, 83912-76
  - GC & Chlamydia: 87491, 87591.

13. **Client Selection:** (Select one or more)

	Initial Test	Reflex Criteria	Reflex Test
	ThinPrep Pap Test	ASCUS or AGUS	HPV by PCR
	ThinPrep Pap Test	LSIL	HPV by PCR
	ThinPrep Pap Test	Patient age: 15-25 yrs	GC & Chlamydia

**Initial execution:**

Printed name of physician: \_\_\_\_\_ UPIN#: \_\_\_\_\_

Signature of physician: \_\_\_\_\_ Date: \_\_\_\_\_

**Annual Re-approval:**

Annual re-approval date: \_\_\_\_\_ Initials: \_\_\_\_\_ Annual re-approval date: \_\_\_\_\_ Initials: \_\_\_\_\_

Annual re-approval date: \_\_\_\_\_ Initials: \_\_\_\_\_ Annual re-approval date: \_\_\_\_\_ Initials: \_\_\_\_\_

**Discontinuation date:** \_\_\_\_\_ Initials: \_\_\_\_\_

## CYTOPATHOLOGY TESTING

**12000 Routine Pap Smear, Screening**

TAT: 3-5 days

Note: A pathologist if indicated will review the smear and an additional fee will be charged. Diagnostic code is required for third party reimbursement; refer to Medicare Part B Medical Review Policies.

**12005 Routine Pap Smear, Diagnostic**

TAT: 3-5 days

Note: A pathologist if indicated will review the smear and an additional fee will be charged. Diagnostic code is required for third party reimbursement; refer to Medicare Part B Medical Review Policies.

**12010 Routine Pap Smear with Maturation Index**

TAT: 3-5 days

Note: A pathologist if indicated will review the smear and an additional fee will be charged. Diagnostic code is required for third party reimbursement; refer to Medicare Part B Medical Review Policies.

**12080 ThinPrep Pap Test, Screening**

TAT: 3-5 days

Note: A pathologist if indicated will review the smear and an additional fee will be charged. Diagnostic code is required for third party reimbursement; refer to Medicare Part B Medical Review Policies.

**12085 ThinPrep Pap Test, Diagnostic**

TAT: 3-5 days

Note: A pathologist if indicated will review the smear and an additional fee will be charged. Diagnostic code is required for third party reimbursement; refer to Medicare Part B Medical Review Policies.

**12020 Cytology, Non-GYN**

TAT: 5-7 days

## HISTOPATHOLOGY

*Surgical, anatomical and consultative pathology services are available through pathologists associated with MDL. A request for diagnosis based upon histopathology should be viewed as a request for consultation from another physician. Please feel free to contact our pathologists.*

### ROUTINE SPECIMEN HANDLING

1. Immediately place each specimen in a tightly secured container with 10% neutral buffered formalin.
  - a. Use a separate container for each separately identified specimen. Only one requisition is needed for multiple specimens.
  - b. Do not crush specimen with forceps, hemostats, or other instruments.
  - c. Do not freeze formalin fixed tissue.
  - d. Do not force a large specimen in small container. Make sure formalin volume to specimen ratio is 10:1.
  - e. Label each container wall (not lid) with patient's name, source of specimen and any ID number specific to that patient.
  - f. All specimens should be sent to laboratory as soon as possible to ensure timely specimen processing and consequently diagnosis.
  
2. Tissue and Cytology Requisition form should contain pertinent clinical information including patient's age, sex, clinical impression, clinical history and anatomical location of tissue.

The extent of tissue examination can be determined only at the time that the pathologist examines the specimen. Multiple sections, special stains, etc. may be needed. There may be multiple biopsies. The fee for service will vary based on the number of specimens, size and complexity of the specimen and difficulty of diagnosis. The fees for service and submission of bills to patients, clients and third parties will be based upon Current Procedural Terminology (CPT-4).

## HISTOPATHOLOGY PROCEDURES

A specimen is defined as *tissue or tissues that is (are) submitted for individual and separate attention, requiring individual examination and pathologic diagnosis*. Two or more such specimens from the same patient (e.g., separately identified endoscopic biopsies, skin lesions, etc.) are each appropriately assigned an individual code and charge reflective of its proper level of service.

Level I is used for any specimen that in the opinion of the examining pathologists can be accurately diagnosed without microscopic examination. Level II is used when gross and microscopic examination is performed on a specimen to confirm identification and the absence of disease. Levels III, IV, V, and VI describe all other specimens requiring gross and microscopic examination, and represent additional ascending levels of physician work. Levels II through VI are specifically defined by the assigned specimens.

The surgical pathology services include accession, examination, and reporting. If additional services are required (e.g., decalcification, special stains, histochemistry, etc.), they will be coded and charged in addition to the surgical pathology service.

### **Surgical Pathology, Gross Examination Only (Level I)**

### **Surgical Pathology, Gross and Microscopic Examination (Level II)**

Includes:

Appendix, Incidental	Nerve
Fallopian Tube, Sterilization	Skin, Plastic Repair
Fingers/Toes, Amputation, Traumatic	Sympathetic Ganglion
Foreskin, Newborn	Testis, Castration
Hernia Sac, Any Location	Vaginal Mucosa, Incidental
Hydrocele Sac	Vas Deferens, Sterilization

### **Surgical Pathology, Gross and Microscopic Examination (Level III)**

Includes:

Abortion, induced	Gallbladder
Abscess	Ganglion cyst
Aneurysm-Arterial/Ventricular	Hematoma
Anus, tag	Hemorrhoids
Appendix, other than incidental	Hydatid of Morgagni
Artery, Atheromatous plaque	Thrombus or embolus
Batholin's Gland Cyst	Intervertebral disc
Bone fragment(s), other than pathologic fracture	Joint, loose body
Bowel	Meniscus
Bursa/Synovial Cyst	Mucocele, salivary
Carpal Tunnel Tissue	Neuroma-Morton's/traumatic
Cartilage, Shavings	Polyps, inflammatory-nasal/sinusoidal
Cholesteatoma	Pilonidal cyst/sinus
Colon, Colostomy Stoma	Skin-cyst/tag/debridement
Conjunctiva-Biopsy/Ptergium	Soft tissue, lipoma
Cornea	Spermatocele
Diverticulum-Esophagus/Small	Testicular appendage
Dupuytren's Contracture Tissue	Tonsil and/or adenoids
Femoral head, other than	Tendon/tendon sheath
Fisure/Fistula	Varicocele
Foreskin, other than newborn fracture	Vas Deferens, other than sterilization
	Vein, varicosity

### **Surgical Pathology, Gross and Microscopic Examination (Level IV)**

Includes:

Abortion-spontaneous/missed	Nerve, biopsy
Artery, biopsy	Odontogenic/dental cyst
Bone marrow, biopsy	Omentum, biopsy
Bone exostosis	Ovary with or without tube, non-neoplastic
Brain/meninges, other than for tumor resection	Ovary, biopsy/wedge resection parathyroid gland
Breast, biopsy	Peritoneum biopsy
Breast, reduction mammoplasty	Pituitary tumor
Bronchus, biopsy	Placenta, other than third trimester
Cellblock, any source	Pleura/pericardium-biopsy/tissue
Cervix, biopsy	Polyp, cervical/endometrial
Colon, biopsy	Polyp, colorectal
Duodenum, biopsy	Polyp, stomach/small bowel
Endocervix, curettings/biopsy	Prostate, needle biopsy
Endometrium, curettings/biopsy	Prostate, TUR
Esophagus biopsy	Salivary gland, biopsy
Extremity, amputation, traumatic	Sinus, paranasal biopsy
Fallopian tube, biopsy	Skin, other than cyst/tag/debridement/plastic repair
Fallopian tube, ectopic pregnancy	Small intestine, biopsy
Femoral head, fracture	Soft tissue, other than tumor/ mass/lipoma/ debridement
Fingers/toes, amputation, non-traumatic	Spleen
Gingiva/oral mucosa, biopsy	Stomach, biopsy
Heart valve	Synovium
Joint, resection	Testis, other than tumor/biopsy/castration
Kidney, biopsy	Thyroglossal duct/brachial cleft cyst
Larynx, biopsy	Tongue, biopsy
Leiomyoma(s), uterine	Tonsil, biopsy
Myomectomy-without uterus	Trachea, biopsy
Lip, biopsy/wedge resection	Ureter, biopsy
Lung, transbronchial biopsy	Urethra, biopsy
Lymph node; biopsy	Urinary bladder, biopsy
Muscle, biopsy	Uterus, with or without tubes and ovaries for prolapse
Nasal mucosa, biopsy	Vagina, biopsy
Nasopharynx/oropharynx, biopsy	Vulva/labia, biopsy

### **Surgical Pathology, Gross and Microscopic Examination (Level V)**

Includes:

Adrenal, resection	Mediastinum, mass
Bone fragment(s), pathologic fracture	Myocardium, biopsy
Bone-biopsy/curettings	Odontogenic tumor
Brain, biopsy	Ovary with or without tube, neoplastic
Brain/Meninges, Tumor resection	Pancreas, biopsy
Breast mastectomy-partial/simple	Placenta, third trimester
Breast, Excision of lesion, requiring microscopic evaluation of surgical margins	Prostate, except radical resection
Cervix, conization	Salivary gland
Colon, segmental resection, other than for tumor	Small intestine, resection, other than for tumor
Extremity amputation, non-traumatic	Soft tissue mass (except lipoma)-biopsy/simple excision
Eye, enucleation	Stomach-subtotal/total resection, other than for tumor
Kidney, partial/total nephrectomy	Testis, biopsy
Larynx, partial/total resection	Thymus, tumor
Liver, biopsy-needle/wedge	Thyroid, total/lobe
Liver, partial resection	Ureter, resection
Lung, wedge biopsy	Urinary bladder, TUR
Lymph nodes, regional resection	Uterus, with or without tubes and ovaries, other than neoplastic/ prolapse

## **Surgical Pathology, Gross and Microscopic Examination (Level VI)**

Includes:

Bone resection  
Breast mastectomy-with regional lymph nodes  
Colon, segmental resection for tumor  
Colon, total resection  
Esophagus, partial/total resection  
Extremity, disarticulation  
Fetus, with dissection  
Larynx, partial/total resection-with regional lymph nodes  
Lung-total/lobe/segment resection  
Pancreas, total/subtotal resection  
Prostate, radical resection  
Small intestine, resection for tumor  
Soft tissue tumor, extensive resection  
Stomach-subtotal/total resection for tumor  
Testis, tumor  
Tongue/tonsil-resection for tumor  
Urinary bladder, partial/total resection  
Uterus, with or without tubes and ovaries, neoplastic  
Vulva, total/subtotal resection

**Acid Fast Stain**

**Alcian Blue Stain**

**Congo Red Stain**

**Elastic Stain**

**Giemsa Stain**

**Gram Stain**

**Iron Stain**

**Methamine Silver Stain**

**Mucicarmine Stain**

**PAS (Periodic Acid Schiff) Stain**

**Reticulum Stain**

**Trichrome Stain**

**PATIENT PREPARATION INSTRUCTIONS**

*These instructions may be duplicated without authorization for use with the collection of patient samples submitted to Medical Diagnostic Laboratory Inc. for testing.*

# Medical Diagnostic Laboratory, Inc.

45 Sheffield Drive – Belleville, Illinois 62223

Phone: (618) 233-0522, (800) 593-0522

Fax: (618) 233-8335

**Malcolm N. Goodwin, Jr., M.D., M.S., FCAP, FACFE**

Medical Director

**Paul Pongpitoon, M.P.H, MT (ASCP)**

President

## **PATIENT PREPARATION DIRECTIONS FOR TWO-HOUR POSTPRANDIAL GLUCOSE TEST**

### **DIET**

You should eat a diet containing a minimum of 150 grams of carbohydrate per day for at least 3 days before the test. If you consume an average diet, you should meet the carbohydrate requirements. Rapid reducing diets should be avoided. You should follow the diet for two additional days (at least 5 days) if you previously have not been on a diet sufficient in carbohydrates. The presence of anorexia or any other condition precluding adequate food intake automatically invalidates the test.

### **PRIOR TO TESTING**

You should eat a breakfast of orange juice, cereal with sugar, toast, and milk. Note the time you completed eating the breakfast. You will need to be at the laboratory no later than 90 minutes after the completion of the breakfast. If you prefer, you could come to the laboratory without eating the breakfast and we would give you a measured amount of glucose solution.

### **PHYSICAL ACTIVITY**

The test should be performed on ambulatory, active patients. Inactivity, such as bed rest, has been reported to reduce glucose tolerance. You will need to remain at rest the two hours following the completion of the breakfast or ingestion of glucose solution.

### **SMOKING**

No smoking is permitted during the test.

### **ILLNESS**

Infectious diseases and surgical or other trauma will affect the tolerance test. If possible, several days of recovery should be allowed before the test.

### **PREGNANCY**

The effect of pregnancy on the body's tolerance to glucose may affect the interpretation of the results. Laboratory staff will ask female patients if they are pregnant before starting the test.

### **DRUGS**

If possible, drugs should be discontinued for three days before the test. Drugs such as salicylates, diuretics and anticonvulsants decrease insulin secretion. These and all nonessential medications should be avoided. Oral, contraceptives should be omitted for one complete cycle prior to the test.

### **WHAT TO EXPECT DURING THE TEST**

When you come to the laboratory, give the doctor's order for the test to the receptionist. She will process some paperwork and notify a phlebotomist (blood drawer) that you are here. You do not need to schedule an appointment in advance. Come on a day that is convenient for your schedule.

A phlebotomist will ask you a few questions that pertain to the preparation items mentioned above. They will bring the questionnaire to a member of our technical testing staff for review and approval to begin the test.

A blood sample will be taken 2 hours after you completed your meal or ingested the glucose solution.

Notify the receptionist or phlebotomist if nausea, fainting, sweating or any other unusual condition occurs. A glucose specimen will be drawn immediately and the laboratory technical supervisor will determine if the test should be discontinued and repeated at a later date if indicated.

If you have further questions about this procedure, feel free to call our customer service department at (618) 233-0522 or (800) 593-0522 and they will be happy to assist you.

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President

## **PATIENT PREPARATION DIRECTIONS FOR ONE-HOUR POST-50 GRAM LOAD GLUCOSE TEST**

### **DIET**

You should eat a diet containing a minimum of 150 grams of carbohydrate per day for at least 3 days before the test. If you consume an average diet, you should meet the carbohydrate requirements. Rapid reducing diets should be avoided. You should follow the diet for two additional days (at least 5 days) if you previously have not been on a diet sufficient in carbohydrates. The presence of anorexia or any other condition precluding adequate food intake automatically invalidates the test.

### **PRIOR TO TESTING**

You should be fasting (no eating or drinking) for at least 8 and not more than 16 hours before the test. The test is best performed in the morning, beginning between 7:00 and 9:00 a.m. with no food taken after the previous midnight. No alcohol should be taken during the previous evening. Water may be taken freely.

### **PHYSICAL ACTIVITY**

The test should be performed on ambulatory, active patients. Inactivity, such as bed rest, has been reported to reduce glucose tolerance. During the test, not even mild exercise is permitted.

### **SMOKING**

No smoking is permitted during the test.

### **ILLNESS**

Infectious diseases and surgical or other trauma will affect the tolerance test. If possible, several days of recovery should be allowed before the test.

### **DRUGS**

If possible, drugs should be discontinued for three days before the test. Drugs such as salicylates, diuretics and anticonvulsants decrease insulin secretion. These and all nonessential medications should be avoided. Oral contraceptives should be omitted for one complete cycle prior to the test.

### **WHAT TO EXPECT DURING THE TEST**

When you come to the laboratory, give the doctor's order for the test to the receptionist. She will process some paperwork and notify a phlebotomist (blood drawer) that you are here. You do not need to schedule an appointment in advance. Come on a day that is convenient for your schedule.

A phlebotomist will ask you a few questions that pertain to the preparation items mentioned above. They will bring the questionnaire to a member of our technical testing staff for review and approval to begin the test.

You will be given a measured amount of glucose solution to drink. The ingestion should be over a period of not more than 5 minutes. The timing of the test is started after the glucose solution has been completely ingested.

A blood sample will be taken 60 minutes after the ingestion of the glucose solution. During this time, you are encouraged to remain comfortably at rest. You are permitted to use the restroom as well as have small amount of water. Once again, smoking or eating is not allowed during the test.

Notify the receptionist or phlebotomist if nausea, fainting, sweating or any other unusual condition occurs. A glucose specimen will be drawn immediately and the laboratory technical supervisor will determine if the test should be discontinued and repeated at a later date if indicated.

If you have further questions about this procedure, feel free to call our customer service department at (618) 233-0522 or (800) 593-0522 and they will be happy to assist you.

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## **PATIENT PREPARATION DIRECTIONS FOR HOUR GLUCOSE TOLERANCE TEST**

### **DIET**

You should eat a diet containing a minimum of 150 grams of carbohydrate per day for at least 3 days before the test. If you consume an average diet, you should meet the carbohydrate requirements. Rapid reducing diets should be avoided. You should follow the diet for two additional days (at least 5 days) if you previously have not been on a diet sufficient in carbohydrates. The presence of anorexia or any other condition precluding adequate food intake automatically invalidates the test.

### **PRIOR TO TESTING**

You should be fasting (no eating or drinking) for at least 8 and not more than 16 hours before the test. The test is best performed in the morning, beginning between 7:00 and 9:00 a.m. with no food taken after the previous midnight. No alcohol should be taken during the previous evening. Water may be taken freely.

### **PHYSICAL ACTIVITY**

The test should be performed on ambulatory, active patients. Inactivity, such as bed rest, has been reported to reduce glucose tolerance. During the test, not even mild exercise is permitted.

### **ILLNESS**

Infectious diseases and surgical or other trauma will affect the tolerance test. If possible, several days of recovery should be allowed before the test.

### **PREGNANCY**

The effect of pregnancy on the body's tolerance to glucose may affect the interpretation of the results. Laboratory staff will ask female patients if they are pregnant before starting the test.

### **DRUGS**

If possible, drugs should be discontinued for three days before the test. Drugs such as salicylates, diuretics and anticonvulsants decrease insulin secretion. These and all nonessential medications should be

avoided. Oral, contraceptives should be omitted for one complete cycle prior to the test.

### **SMOKING**

No smoking is permitted during the test.

### **WHAT TO EXPECT DURING THE TEST**

When you come to the laboratory, give the doctor's order for the test to the receptionist. She will process some paperwork and notify a phlebotomist (blood drawer) that you are here. You do not need to schedule an appointment in advance. Come on a day that is convenient for your schedule.

A phlebotomist will ask you a few questions that pertain to the preparation items mentioned above. They will bring the questionnaire to a member of our technical testing staff for review and approval to begin the test.

Next, a phlebotomist will draw a sample of your blood in order for us to establish a baseline or fasting glucose value.

You will be given a measured amount of glucose solution to drink. The ingestion should be over a period of not more than 5 minutes. The timing of the test is started after the glucose solution has been completely ingested.

Further blood samples are taken at intervals of 30,60, 120, 180, (240 and 360) minutes depending on the test ordered by the physician. During this time, you are encouraged to remain comfortably at rest. You are permitted to use the restroom as well as have small amount of water. Once again, smoking or eating is not allowed during the test.

Notify the receptionist or phlebotomist if nausea, fainting, sweating or any other unusual condition occurs. A glucose specimen will be drawn immediately and the laboratory technical supervisor will determine if the test should be discontinued and repeated at a later date if indicated.

If you have further questions about this procedure, feel free to call our customer service department at (618) 233-0522 or (800) 593-0522 and they will be happy to assist you.

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### **PATIENT INSTRUCTIONS FOR COLLECTION OF 24-HOUR URINE SAMPLE**

Your doctor has requested a test that requires a complete 24-hour sample of urine.

***Please advise the receptionist or nurse of any medications you are currently taking before starting collection.***

The container you have received has the proper preservative in it if one is required and **must be refrigerated** while you are collecting the sample.

1. Empty your bladder when you get up in the morning. **Discard this urine.** Please note time and date, \_\_\_\_\_ a.m. \_\_\_\_\_ (date) on instructions.
2. From then on, collect **all** urine you pass during the day and night and pour it into the container. **Do not** urinate directly into the container since the preservative could be harmful if splashed on skin.
3. Make your final collection when you empty your bladder' the next morning at the same hour \_\_\_\_\_ a.m.
4. If you find an additional container is necessary for the complete collection, you may use a clean glass jar.
5. Deliver the container to the laboratory as soon as possible after the collection is complete. If you forget or accidentally fail to save some of the specimen, return the container for another. There will be no extra charge.

**WARNING: HANDLE WITH CARE!** Some test procedures require the addition of preservatives to the container before the beginning of the collection. This preservative may be harmful or fatal if swallowed. Contact with skin may cause burns. Accidental spillage may result in surface damage. Your container will be labeled accordingly if a preservative has been added

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### **PATIENT INSTRUCTIONS FOR COLLECTION OF CLEAN CATCH URINE SAMPLE**

#### **MALES**

1. Wash your hands thoroughly with soap and water. Rinse them well and dry with a paper towel.
2. Tear open the towelette packages so that the towels can be easily removed with one hand, as they are needed. Open the urine container. Do not touch any of the inside surfaces of container or lid.
3. Pull back the foreskin to completely expose the head of the penis.
4. Wash the head of the penis thoroughly using first one towelette then the other. Discard the used towelettes into the toilet bowl.
5. Pass a small amount of urine into the toilet bowl, and then pass a sample into the container. Do not allow the container to touch the legs or the penis. Keep your fingers away from the rim and inner surface of the container. Fill the container half full.
6. Replace the lid on the container. The urine specimen should be refrigerated within 10 minutes of collection or taken immediately to the laboratory.

#### **FEMALES**

1. Wash your hands thoroughly with soap and water. Rinse them well and dry with a paper towel.
2. Tear open the towelette packages so that the towels can be easily removed with one hand, as they are needed. Open the urine container. Do not touch any of the inside surfaces of the container or the lid.
3. Remove your undergarments and sit on the toilet seat with your legs spread widely apart.
4. With one hand, spread your labia apart to expose the vulva. Keep this hand in place during the washing and urinating procedure.
5. Use one towelette to wash the vulva well passing the towelette only from front to back, not back and forth.
6. Repeat this procedure using the second towelette. Discard the used towelettes into the toilet bowl.
7. Begin urinating into the toilet bowl. Without stopping the stream, insert the container. Do not touch the legs, vulva, or clothing.
8. Keep your fingers away from the rim and inner surface of the container. Fill the container about half full.
9. Replace the lid on the container, the urine specimen should be refrigerated within 10 minutes of collection or taken immediately to the laboratory.

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### SEMEN ANALYSIS COLLECTION INSTRUCTIONS

Collection:

- Specimen must arrive in the laboratory within 30 minutes of collection
- Fertility analysis is performed on Thursdays and Fridays only. An appointment must be scheduled with technical staff, (618) 233-0522 ext. 105
- Specimen must be kept at body temperature
- Specimen must be collected in a wide mouth glass/plastic sterile container
- Fertility studies are done following a 3-day period of abstinence. Post vasectomy specimens are collected following a 2-7 day abstinence period.

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Please answer the following questions:

1. Was an appointment set up with MDL prior to specimen collection? *Unscheduled semen analysis will not be accepted for fertility studies. Post vasectomy specimens will be accepted without appointment.*

YES \_\_\_\_\_ NO \_\_\_\_\_

2. Was the sample collected following a 3-day period of abstinence?

YES \_\_\_\_\_ NO \_\_\_\_\_

3. In the specimen in a glass or plastic container?

Glass \_\_\_\_\_ Plastic \_\_\_\_\_ *MDL recommends a glass container*

4. Time specimen was collected \_\_\_\_\_

5. Time specimen arrived at laboratory \_\_\_\_\_

6. Has the specimen been kept at body temperature?

YES \_\_\_\_\_ NO \_\_\_\_\_

---

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

Time: \_\_\_\_\_

*\*If questions 1, 2, or 6 are answered "NO": specimen must be rejected.*

*\*\*If the time period between collection and arrival to the laboratory is greater than 30 minutes: specimen must be rejected.*

## MICROBIOLOGY PROCEDURES

Many factors contribute to the successful isolation of potential pathogens ranging from specimen selection and collection to proper transport and timely delivery to the laboratory. Specific plating media and procedures depend on proper specimen handling for pathogen isolation.

**NOTE:** *Not all specimens contain clinically significant pathogens. Antimicrobial susceptibility studies will be performed only on appropriate isolates at an additional charge.*

### SPECIMEN COLLECTION

There are three general categories of specimen collection based on the relationship of the site to indigenous flora. To obtain a quality specimen, first carefully select the optimal site for the disease process. Next, prepare the site and remove the material according to one of the three general categories of specimen handling instructions provided.

#### Category I - Specimens from a Normally Sterile Site

Specimen collection from these sites requires a needle puncture or a surgical procedure. The following procedures are designed to reduce the risk of contamination with skin flora.

##### ❖ Decontamination of Skin

This procedure must be performed prior to the collection of specimens such as blood, CSF and aspirates.

1. Clean the puncture site with 70% alcohol.
2. Clean the puncture site with an antiseptic povidone-iodine preparation. Allow to remain on the skin for at least 1 to 2 minutes. Do **not** probe with your finger after puncture site has been decontaminated.
3. Following venipuncture, remove iodine solution with 70% alcohol.

##### ❖ Collection of Clinical Material

###### **Blood Culture**

1. Since blood cultures are processed using special media, it is necessary to submit all blood cultures in the appropriate bottles supplied by your laboratory. Most often, two separate sets of blood cultures will suffice. More may be required for certain suspected diagnoses.
2. Multiple bottles filled from a single venipuncture site should be interpreted as a

single blood culture set. Preferably, blood for culture should **not** be drawn through an indwelling or intra-arterial catheter.

3. Draw the sample for each set of blood cultures (minimum 10 ml from adult patients and 1-6 ml from pediatric patients) with a needle and syringe.
4. Before injecting the blood into the bottles, decontaminate the diaphragm tops by swabbing with 70% alcohol and allow to dry.
5. Using a new sterile needle, immediately transfer 3-5 ml of blood into each of the two culture bottles (one aerobic and one anaerobic). In cases of "hard to stick" patients, patients yielding insufficient blood, or pediatric patients, the priority culture is the aerobic bottle. Gently mix the bottle(s) following inoculation. Do **not** vent or refrigerate.
6. We recommend the following procedure for the timing of blood cultures and optimal recovery of microorganisms present:
  - a) Before the use of systemic antimicrobials, obtain 2 separate sets of blood cultures when there is a fever (exceeding 38°C or 100°F) combined with significant leukocytosis or leukopenia.
  - b) Systemic and localized infections:
    - 1) **Suspected acute sepsis, meningitis, osteomyelitis, arthritis, or acute, untreated bacterial pneumonia:** obtain 2 sets of blood cultures.
    - 2) **Fever of unknown origin:** initially, obtain 2 sets of blood cultures; 24-36 hours later obtain 2 additional sets of blood cultures. **Note:** The yield beyond 4 sets of blood cultures is often negligible!
    - 3) **Suspected early typhoid fever or Brucellosis:** owing to the low-grade bacteremia present in these infections, obtain 4 sets of blood cultures (the same venipuncture site may be used) over a 24-36 hour period.
  - c) Infective endocarditis
    - 1) **Acute** Obtain 3 sets of blood cultures during the first 1-2 hours of evaluation.
    - 2) **Subacute** Obtain 3 sets of blood cultures on the first day (ideally 15 or more minutes apart; the same venipuncture site may be used). If all 3 sets are negative 24 hrs later, obtain 2 additional sets of cultures.

### ***Cerebrospinal Fluid (CSF)***

Submit a separate sterile screw-capped tube containing at least 2 ml of CSF. For microbiological analysis, it is advantageous to submit the second or third tube drawn.

### ***Other Body Fluids***

Follow standard procedures and obtain the specimen by aspiration. The specimen should be submitted in both aerobic and anaerobic transport systems.

### ❖ **Specimens for Anaerobic Culture**

1. Specimens must be transported in an anaerobic transport system.
2. Specimens from these sites are acceptable
  - a) Bronchoscopic specimens obtained by the Double Lumen Technique.
  - b) Transtracheal aspiration
  - c) Suprapubic urines from:
    - 1) Percutaneous suprapubic bladder aspiration
    - 2) Nephrostomy tube
    - 3) Suprapubic catheter
  - d) Genital specimens from these sites only:
    - 1) Cul-de-sac aspiration
    - 2) Culdocentesis
    - 3) Percutaneous transfundal aspiration
    - 4) Placenta
    - 5) Fallopian tube
    - 6) Septic abortion
    - 7) Prostatic or seminal fluid
  - e) Surgical specimens
  - f) Exudates, aspirated pus from deep wounds or abscesses
  - g) Normally sterile body fluids
  - h) **Note:** Specimens not mentioned above may be processed anaerobically only after consultation with Microbiology Supervisor.
3. Specimens from the following sites are **not** acceptable for anaerobic culture:
  - a) Throat and nasopharyngeal swabs
  - b) Sputum and Bronchoscopic specimens
  - c) Feces and rectal swabs, except for Clostridium difficile cultures
  - d) Voided or catheterized urines
  - e) Vaginal and cervical swabs, except to rule out Actinomyces
  - f) Specimens from sites contaminated with intestinal contents
  - g) Superficial wounds

### **Category II - Specimens from Sites Normally Colonized by Microorganisms**

Specimens such as urine and sputum are routinely collected through contaminated pathways.

### ❖ **Urine**

#### ***Clean-Catch: Patient Guidelines***

1. Females
  - a) Prepare a sterile gauze pad for washing by wetting it and placing a small amount of soap on the surface. Prepare two more sterile gauze pads for rinsing by moistening. Finally, open a fourth gauze pad, but do not moisten.
  - b) Wash the vaginal area from the front to the back, using the soapy gauze pad. Discard the gauze in the wastebasket. Rinse the area from front to the back, using first one moistened pad then the second moistened pad. Last, dry the area from the front to the back with the dry gauze pad.
  - c) Lean slightly forward so that the urine flows directly down the toilet without running along the skin. After voiding the first portion of urine, place the clean container under the stream of urine and collect the rest of the urine into the container.
2. Males
  - a) Prepare a sterile gauze pad for washing by wetting it and placing a small amount of soap on the surface. Prepare two more sterile gauze pads for rinsing by moistening. Finally, open a fourth gauze pad, but do not moisten.
  - b) Use the soapy gauze pad to wash the end of the penis. Discard the gauze into the wastebasket.
  - c) Rinse, using first one moistened gauze pad and then the other, discarding them in the wastebasket. Use the fourth gauze pad to dry. Begin to urinate into the toilet. After voiding the first part, place the clean container under the stream of urine and collect the rest of the urine into the container.

#### ***Indwelling Catheter***

1. Obtain the specimen with a needle and syringe. Select the puncture site 1-2 inches away from the catheter tube entry point.
2. Cleanse the area to be punctured with 70% alcohol.
3. Aspirate exactly 5 ml of urine with a sterile needle and syringe.

4. Disinfect the rubber stopper and aseptically transfer the specimen to the sterile urine container.

Specimens obtained from the collection bag are **not** suitable for analysis. Foley tips will not be accepted.

#### ***Cystoscopic or Suprapubic Aspiration***

These urine specimens should be submitted in both aerobic and anaerobic transport systems.

### ❖ **Sputum**

#### ***Sputum, Routine***

1. The preferred specimen is a early morning expectorated sputum obtained after a deep cough. Do **not** pool multiple samples collected during a 24-hour period. The patient should rinse mouth with water before sputum is collected. Instruct the patient to avoid adding saliva or nasopharyngeal discharges to the sputum sample, as they will contaminate it with indigenous microorganisms.
2. Collect the expectorate in the leak-proof container. Refrigerate the specimen (2-8°C) until it is picked up by the courier.

#### ***Sputum, Special***

1. Specimens for Mycobacteria and Fungi
  - a) The preferred specimen is an early morning expectorated sputum obtained after a deep cough. Do **not** pool multiple samples collected during a 24-hour period. The patient should rinse mouth with water before sputum is collected. Instruct the patient to avoid adding saliva or nasopharyngeal discharges to the sputum sample as they will contaminate it with indigenous microorganisms.
  - b) We recommend submitting three specimens obtained on consecutive mornings. Collect expectorate in the leak proof container. Submit to the laboratory immediately. Refrigerate specimen (2-8°C) until it is picked up by the courier. Requests must be specific for mycobacterial or fungal culture.

### ❖ **Nasopharyngeal Specimens**

Nasopharyngeal secretions obtained by aspiration or washings are the preferred specimens.

Alternate: Obtain specimen using a swab on fine wire. Immobilize patient's head and insert swab into the nostril to the posterior nares. Leave in place for a few seconds and remove. Submit swab in transport medium.

### **Category III - Specimens Usually Containing Commensal Microorganisms**

Specimens from sites such as skin, mucous membranes, and the gastrointestinal tract are populated by indigenous microflora. Microbiological efforts must be directed, therefore, at the isolation of the specific etiologic agents.

Stool, throat, urogenital, and nasopharyngeal are the most common specimens in this category.

### ❖ **Specimen Transport**

The integrity of specimens must be maintained during transport. To accomplish this, various media and preservatives are provided. If the specimen is not properly submitted, results may not provide accurate clinical information.

The following is a list of the transport media and preservatives to be used for submission of samples for testing in the Microbiology Laboratory.

#### ***Anaerobic Transport***

1. **Anaerobic Transport Swab:** Use for swab specimens for aerobic and/or anaerobic culture. Contains a special holding medium, which maintains microorganism viability but does not promote growth.
2. **Note:** Submit swab specimens only when more suitable fluid aspirates are not obtainable.
3. Store transport tube at room temperature prior to shipping. Do **not** refrigerate.
4. **Anaerobic Transport Vial<sub>1</sub>:** Use for fluid specimens and tissue specimens.
  - a) Instructions for fluid specimens
    - 1) Examine vial for evidence of deterioration (pink to blue medium, dried or cracked medium is unacceptable). Check expiration date.
    - 2) Vial should remain closed at all times. After removing the flip cap, disinfect exposed portion of the rubber stopper.
    - 3) Expel air from the syringe and needle, aseptically obtain the specimen, push needle through the disinfected rubber stopper, and slowly inject fluid on top of the agar. Do **not** submit syringe.

- 4) Store transport vial at room temperature prior to shipping. Do **not** refrigerate.
- b) Instructions for tissue specimens
- 1) Examine vial for evidence of deterioration (pink to blue medium, dried or cracked medium is unacceptable). Check expiration date.
  - 2) Holding the vial upright, carefully remove the rubber stopper. It is important to keep the vial from tipping. Tipping will cause the loss of the anaerobic atmosphere (CO<sub>2</sub>).
  - 3) Carefully place the tissue sample into the vial; do not press it into the agar.
  - 4) Disinfect the rubber stopper and replace it onto the vial.
  - 5) Store transport vial at room temperature prior to shipping. Do **not** refrigerate.

#### ***Blood Culture Transport***

1. Non-radiometric bottles (aerobic and anaerobic) are available. Using the instructions given in the Microbiology Specimen Collection section (Specimens from a Normally Sterile Site), inoculate two bottles each time a blood culture is drawn. Store the bottles at room temperature prior to shipping. Do **not** refrigerate.
2. **Precaution:** Broth should be clear. Do **not** use bottles containing turbid broth.

#### ***Neisseria gonorrhoeae (GC)/Chlamydia Trachomatis by DNA Probe Transport***

1. Use only special collection kit (Gen-Probe) provided by laboratory.
2. Collect specimen and insert one swab into transport medium provided.
3. Other swabs/transport media are **not** acceptable.

#### ***Parasite Exam, Stool Transport***

1. Since many protozoa are passed intermittently, multiple stool examinations are required before a parasitic infection can be ruled out. It is recommended that at least three stool specimens, collected at 1-3 day intervals, be submitted for examination.
2. Each specimen must be preserved in one vial of 10% Formalin and in one vial of PVA. Formalin preserves helminth eggs and larvae. PVA is an excellent fixative for the preservation of trophozoite stages of protozoa. A complete examination for para-

sites cannot be made unless both types of preservative vials are submitted.

3. It is important to indicate specimen consistency (formed, soft, loose or watery) by checking the appropriate box on the transport vial label.

#### **Precautions:**

- a) Specimens collected within five days of a barium enema are unsuitable for examination.
- b) Specimens should never be frozen or placed in an incubator.
- c) Parasite examination **cannot** be performed on specimens submitted in Stool Culture Transport Vials.

#### ***Sputum Transport***

1. Sputum for bacteriology, mycobacteriology, or mycology should be transported in a sterile 50 ml conical centrifuge tube or other sterile, screw cap container.
2. Twist the cap securely closed after placing the specimen in the container.
3. Double bag the specimen and refrigerate the specimen if transport to the laboratory will be delayed by one hour or more.

#### ***Stool Culture Transport***

1. The stool culture transport vial contains a non-nutritive solution to maintain the viability of enteric pathogens.
2. Instructions for Use
  - a) Collect the stool specimen in a clean, dry container (do **not** use a toilet).
  - b) Open the transport vial.
  - c) Using the collection spoon built into the lid, obtain scoops of stool from areas that appear bloody, slimy or watery and place them into the vial until the volume rises to the red line. If the stool is formed (hard), sample small amounts from each end and the middle.
  - d) Mix the contents of the vial with the spoon, twist the cap tightly closed, and shake until the contents are well mixed.
3. **Precautions:**
  - a) Check the cap to be certain it is tightly closed.
  - b) Stool cultures will **not** be performed on any specimens submitted in Formalin or PVA.

#### ***Swab Transport***

1. Swab Transport Systems are dacron-tipped swabs in a plastic protector. Below the tip of the swab is a gel transport medium to prevent drying.

## MICROBIOLOGY CULTURES

### Culture, AFB with Smear

Test Code: 2419S

- Includes: AFB Smear  
Culture  
If positive, identification will be performed at an additional charge  
If *Mycobacterium tuberculosis* is isolated, acid-fast bacilli susceptibility will be performed at an additional charge
- Acceptable Specimen: Body fluids (>10 ml)  
Bone  
Bone marrow 5 cc  
CSF  
Entire first morning urine  
Fasting early morning gastric lavage fluid 5 ml  
Scraping or biopsy of skin  
Respiratory secretions 5-10ml (first morning deep cough sputum, bronchial washings, transtracheal aspirates, broncho-alveolar lavage, bronchial brushings)  
Stool 10 ml  
Tissue biopsy  
Whole blood 10 ml  
Wound aspirates
- Unacceptable Specimen: 24 hour pooled sputum  
24 hour pooled urine  
Blood collected in EDTA specimen submitted in formalin  
Dry swab  
Frozen stool  
Gastric lavage specimen that has not been neutralized  
Specimen collected in a waxed container  
Saliva  
Urine in catheter bag
- Transport Medium: Sterile leak proof screw cap container
- Storage/ Stability: Ambient/ 72 hours: 2-4°C: 7 days
- Collection: Instruct the patient to avoid contaminating with saliva or nasopharyngeal discharges. Collect an early morning expectorated specimen obtained after a deep productive cough. The expectorated sputum should be collected directly into a sterile screw capped container. It is recommended to collect sputum on three consecutive days and submit each sample separately. For follow-up of patients on therapy, collect at weekly intervals beginning three weeks after initiation of therapy. Avoid contamination with tap water or other fluids that may contain environmental mycobacteria. For specimens other than Sputum refer to the Bacteriology Specimen Collection & Transport table.
- Method: Microscopic  
Bactec culture  
Conventional culture identification methods  
Probes  
Bactec susceptibilities
- TAT: Preliminary -3 to 4 weeks  
Final - 8 weeks
- CPT: 87118

Includes:	Gram Stain Anaerobic culture If culture is positive, identification will be performed at an additional charge on each pathogen isolated Susceptibilities will be performed by request only at an additional charge
Acceptable Specimen:	Abscess material Bartholin gland Deep wounds Exudated pus from genital abscesses Intrauterine devices (for <i>Actinomyces</i> only) Sterile body fluids Supra-pubic urine Tissue Trans-tracheal aspirates Tympanocentesis fluid Uterus (endometrium)
Unacceptable Specimen:	Cervical swabs Expired transport culturette Feces and rectal swabs (except for <i>C. difficile</i> cultures) Refrigerated specimens Sputum and bronchoscopic specimens (with the exception of collection by Double Lumen technique) Superficial wounds Throat and nasopharyngeal swabs Vaginal swabs Voided or catheterized urine
Transport Medium:	Sterile Aimes culturette or culturette suitable for anaerobic organisms, anaerobic vial with indicator
Storage/ Stability:	Ambient/ < 24 hours <b>Do not refrigerate</b>
Collection:	Overlying and adjacent areas must be carefully disinfected to eliminate contamination with indigenous flora. Ideally, pus or other fluid obtained by needle aspiration through intact skin or mucosal surface that has been cleaned with antiseptic should be collected. <b>Do not submit syringe with needle attached.</b> If syringe must be submitted, remove needle, expel air and recap syringe * Lesions: Sampling of open lesions is enhanced by deep aspiration using a sterile plastic catheter. Curettings of an open lesion are optimal. If irrigation is necessary, non- bacteria static sterile normal saline may be used. * Lower respiratory: Samples must be obtained by transtracheal percutaneous needle aspiration, transbronchial biopsy, transthoracic needle biopsy, or open lung biopsy by physicians trained in these procedures. * Swab: If swabs must be used collect two, one for Gram stain and one for culture. Anaerobic transports must be used for swabs and for aspirates. Specimens are to be collected from a prepared site using sterile technique. Contamination with normal flora from skin, rectum, vaginal tract, or other body surfaces must be avoided.
Method:	Microscopic Conventional culture identification methods
TAT:	Preliminary – 48 hours Final – 7 days
CPT:	87075

**Culture, Blood**Test Code: **CULBL**

- Includes: Aerobic culture  
Anaerobic culture  
If positive, identification and susceptibilities will be performed at additional charge.
- Acceptable Specimen: 10-30 ml Blood collected in two 70 ml BBL Septi-Check BHI Blood culture bottles (adults)  
5-10 ml Blood collected in two 20 ml BBL Septi-Check BHI Blood culture bottles (pediatric)
- Unacceptable Specimen: Blood submitted in Vacutainer collection tubes (e.g. SST, Heparin, EDTA, Sodium Citrate)  
Expired blood culture bottles
- Transport Medium: Aerobic and Anaerobic culture bottles. Do **not** vent.
- Storage/ Stability: Ambient/<24 hours  
**Do not refrigerate**
- Collection: Disinfect the venipuncture site and the stoppers of the blood culture bottles with 70% isopropyl alcohol. Swab the venipuncture site concentrically, starting at the center with 10% povidone iodine solution. Allow the disinfectant to dry. Draw 20 ml blood and deliver 10 ml each into two Blood culture bottles. Dispose of collection system according to Universal Precautions. Label bottles with site, date and time of collection
- Method: Culture  
TAT: Preliminary – 48 hours  
Final – 7 days  
CPT: 87040

**NOTE: Single blood culture sets make it difficult to interpret clinical significance of certain isolated organisms.** Prior to therapy it is recommended for fever of unknown origin; to obtain 2 separate sets of blood cultures 1hour apart, acute sepsis; 2 or 3 cultures from separately prepared sites and endocarditis; 3 blood cultures with 3 separate venipunctures over 1 – 2 hours.

**Culture, Body Fluid**Test Code: **CULFLD**

- Includes: Gram Stain  
Aerobic culture  
Identification and susceptibility testing will be performed on any potential pathogen isolated at additional charges  
**NOTE:** Anaerobic, viral or fungus cultures must be requested separately
- Acceptable Specimen: Aseptically aspirated sterile body fluid  
CSF  
Pericardial  
Peritoneal  
Pleural  
Synovial
- Unacceptable Specimen: Syringe with needle attached  
Volume: 1-5 ml (for bacterial)
- Transport Medium: Sterile tube or other sterile leak proof screw cap container
- Storage/ Stability: Ambient/ < 24 hours (Transport CSF to lab immediately)
- Collection: \* CSF: Clean puncture site with antiseptic solution and alcohol before needle insertion. Insert needle with stylet at the L3-L4, L4-L5, or L5-S interspaces. When the subarachnoid space is reached, remove the stylet and spinal fluid will appear in the needle hub. Slowly drain the CSF into sterile leak proof tubes. Three tubes are to be collected. Generally the second tube will go to microbiology (NOTE: always send the most turbid tube to microbiology)  
\* Body fluids other than CSF: Clean the needle puncture site with alcohol. Disinfect with iodine. Physician is to perform aseptic percutaneous aspiration. Expel any air bubbles from syringe and immediately inject fluid into an anaerobic transport system or screw cap container. If syringe must be submitted, **remove needle**, expel air and recap syringe. **Do not submit syringe with needle attached.**

**Culture, Body Fluid (cont)**Test Code: **CULFLD**

Method: Gram Stain  
 Conventional culture identification and susceptibility methods  
 TAT: Preliminary – 48 hours  
 Final – 14 days (Required time for complete incubation of liquid media)  
 CPT: 87070

**Culture, Cornea**Test Code: **CULCOR**

Includes: Culture in liquid media  
 Acceptable Specimen: Cornea ring; **for Corneal scrapings order CULEYE for Eye Culture.**  
 Transport Medium: Thioglycolate medium  
 Storage/ Stability: Ambient/ < 24 hours  
 Collection: Liquid broth culture  
 Method: Conventional culture, identification and susceptibility methods  
 TAT: Preliminary – 48 hours  
 Final – 14 days  
 CPT: 87070

**Culture, CSF**Test Code: **CULFLD**

Includes: Gram stain  
 Culture  
 Identification and susceptibility testing will be performed on all potential pathogens isolated at an additional charge  
 Acceptable Specimen: > 2 ml aseptically aspirated cerebrospinal fluid in a sterile tube (prefer second tube)  
 Unacceptable Specimen: <0.5 ml submitted  
 Transport Medium: Sterile tube or other sterile leak proof container  
 Storage/ Stability: Ambient/ Transport immediately to lab  
 Collection: Clean puncture site with antiseptic solution and alcohol before needle insertion. Insert needle with stylet at the L3-L4, L4-L5, or L5-S interspaces. When the subarachnoid space is reached, remove the stylet and spinal fluid will appear in the hub. Slowly drain the CSF into the sterile leak proof tubes. Three tubes are required. The second tube drawn is to be submitted to microbiology (**NOTE:** always send the most turbid tube to microbiology).  
 Method: Microscopic  
 Conventional culture identification and susceptibility methods  
 TAT: Preliminary – 48 hours  
 Final – 14 days (Required incubation of liquid media)  
 CPT: 87070

**Culture, Ear**Test Code: **CULEYE**

Includes: Gram Stain  
 Culture  
 Identification and susceptibility testing will be performed on pathogens isolated at an additional charge  
**Note:** For inner ear anaerobic culture must be requested separately  
 Acceptable Specimen: Swab of exudate from external canal  
 Tympanocentesis fluid  
 Unacceptable Specimen: Expired transport culturette  
 Throat or nasopharyngeal swabs are not acceptable to predict the responsible agents of otitis media  
 Transport Medium: Amies Swab Transport or other transport swab suitable for fastidious organisms  
 Storage/ Stability: Ambient/ < 24 hours

**Culture, Ear (cont)**Test Code: **CULEYE**

- Collection: \* Outer Ear: Obtain specimen by rotating swab in the outer ear canal.  
 \* Inner Ear (Tympanocentesis reserved for chronic, complicated or recurrent otitis media):  
 For intact eardrum, clean ear canal with soap solution and collect fluid via syringe. For ruptured eardrum, collect fluid on a flexible shaft swab via an auditory speculum.
- Method: Microscopic  
 Conventional culture identification and susceptibility methods
- TAT: 48 hours  
 CPT: 87070

**Culture, Eye**Test Code: **CULEYE**

- Included: Gram Stain  
 Culture  
 Identification and susceptibility testing will be performed on pathogens isolated at an additional charge
- Acceptable Specimen: Direct culture on BAP and CHOC  
 Eye swab; **for Donor Corneal ring order CULCOR for Cornea Culture**
- Unacceptable Specimen: Expired transport culturette
- Transport Medium: Amies swab transport
- Storage/ Stability: Ambient/ < 24 hours
- Collection: \*Conjunctiva: Collect sample by rolling a swab pre-moistened with sterile saline over conjunctiva. Inoculate BAP and CHOC at time of collection or insert swab back into the culturette transport.  
 \*Corneal scrapings: Obtain conjunctival swab specimen as described above prior to anesthetic. Instill 2 drops of local anesthetic. Using sterile spatula, scrape ulcers or lesions and inoculate scraping directly onto BAP and CHOC. Apply remaining material to slide for Gram Stain.
- TAT: 48 hours  
 CPT: 87070

**Culture, Fungus**Test Code: **CULFUN**

- Includes: KOH Examination  
 Culture  
 If positive, identification testing will be performed at an additional charge  
 Susceptibility testing is performed by request only
- Acceptable Specimen: Blood (10 ml)  
 Body Fluids (>10 ml)  
 Bone Marrow (3 – 5 ml)  
 Bronchoscopy specimens  
 Cervix  
 CSF (5ml)  
 Drainage  
 Hairs (at least 10)  
 Lung biopsy  
 Miliary abscess  
 Nail (whole nail or clippings)  
 Skin scrapings  
 Sputum (5 – 10 ml)  
 Tissue (1 cm)  
 Throat  
 Tracheal aspirates  
 Urine  
 Vaginal

**Culture, Fungus (cont)**

Test Code: CULFUN

Unacceptable Specimen:	Swabs (Except from mucousal surfaces) 24hour collections Transport Medium: Amies culturette swab (for specimen from mucousal surfaces only) Blood culture bottle Clean envelope Green-stopper (heparin) tube for Bone Marrow Sterile leak proof screw top container
Storage/ Stability:	Refrigerate at 4°C ( <b>except</b> Blood, CSF, dermatological specimens and swabs, maintain at ambient temperature)/ < 24 hours
Collection:	<ul style="list-style-type: none"> <li>* Blood: Clean the collection site with disinfectant. Collect 10 ml of blood aseptically into a 70ml BBL Septi Check blood culture bottle.</li> <li>* Body fluids: Aspirate specimen aseptically and place material in a screw cap leak proof container</li> <li>*Bone marrow: Aspirate approximately 3 to 5 ml of bone marrow and place it in a sterile screw cap leak proof container</li> <li>*Drainage: Collect material from an undrained abscess using a sterile needle and syringe and place in a screw cap container</li> <li>*Hair: No cleaning of scalp is necessary. Select infected area and with forceps remove at least 10 hairs with the base of the shaft intact. For hairs broken off at the scalp, use a scalpel. Place hairs in a clean envelope or sterile container</li> <li>* Military abscess: Express pus using a sterile scalpel blade and place in a screw cap container</li> <li>*Nails: Clean nail with 70% alcohol. For the dorsal plate, scrape the outer surface and discard the scrapings. Scrape deeper portion of nail and place in a screw cap container. Remove a portion of debris under the nail with a sterile blade. Collect the whole nail or clippings of nail and please all materials in a clean envelope or screw cap container.</li> <li>*Skin: Wipe lesions (and interspaces between toes) with alcohol. Scrape the entire lesion with a sterile scalpel. Place scrapings in a clean envelope labeled with the patient data</li> <li>*Sputum: Collect a fresh specimen in the early morning. Have patients remove dentures and rinse mouth. Sputum should be induced or from a deep cough. Saliva is not acceptable. Collect 5-10 ml in a sterile leak proof container</li> <li>*Tissue: Collect tissue aseptically from the center and edge of the lesion. Place specimen in a sterile leak proof container. A small amount of sterile 0.85% NaCL may be added to container to prevent drying.</li> </ul> <p><b>NOTE:</b> Refrigerate specimen for no more than 8 hours</p> <ul style="list-style-type: none"> <li>*Urine: A catheterized specimen is optimal for diagnoses of mycoses of the urinary tract. Clean-catch midstream is acceptable when catheterization is not an option. Collect early morning specimen aseptically in a sterile leak proof container.</li> <li>*Vaginal: obtain secretions from the mucousal membrane of the vaginal vault using a sterile swab. Insert swab into Amies culture transport or other suitable transport media</li> </ul>
Method:	Microscopic Conventional culture identification methods
TAT:	Preliminary – 1 week Final – 4 weeks
CPT:	87101 (skin, hair or nail) 87102 (other sources) 87103 (blood)

**Culture, Group A Strep Only (Throat)**

Test Code: CULAST

Includes:	Culture If positive, identification testing will performed at additional charge
Acceptable Specimen:	Throat swab
UnacceptableSpecimen:	Expired transport culturette
Transport Medium:	Sterile Amies transport culturette or equivalent
Storage/ Stability:	Ambient: < 48 hours

**Culture, Group A Strep Only (Throat)**

Test Code: CULAST

- Collection: Gently depress tongue with tongue depressor. Extend sterile swab between the tonsillar pillars and posterior pharynx using a back and forth motion. Include any exudates, ulcerated or inflamed areas. **Do not allow the swab to touch cheeks, teeth, tongue or gums.**
- Method: Conventional culture identification methods
- TAT: 24 – 48 hours
- CPT: 87081

**Culture, Group B Strep Only (Genital)**

Test Code: CULGB

- Includes: Culture  
If positive, identification testing will be performed at an additional charge  
**NOTE:** Susceptibility testing will be performed by special request at an additional charge for patients with a verified reported history of penicillin allergy
- Acceptable Specimen: 2 swabs, one from the vaginal introitus and the second from the anorectum
- Unacceptable Specimen: Cervical  
Cultures collected by speculum  
Expired transport culturette
- Transport Medium: Amies culturette transport swab (without charcoal)
- Storage/ Stability: Ambient: <96 hours
- Collection: The CDC recommends that all prepartum women should be screened at 35-37 weeks gestation. Collect one swab from the vaginal introitus and one swab from the rectum through the anal sphincter. Label each swab with the specific source. Both swabs may be submitted as one culture. **Failure to specifically mark the request for Group B Strep Culture on the requisition may result in alternate processing of the swab.**
- Method: Enhancement/Selective broth culture  
Conventional culture identification methods
- TAT: 24 – 72 hours
- CPT: 87081

**Culture, GC Only**

Test Code: CULGC

- Includes: Gram Stain  
Culture  
If positive, identification and susceptibility testing will be performed at an additional charge
- Acceptable Specimen: Anorectal  
Cervical/ Genital tract  
Conjunctival  
Throat  
Urethra
- Unacceptable Specimen: Anal specimens contaminated with fecal material  
Expired transport culturette  
Refrigerated specimens  
Specimens in transport medium that do not provide CO<sub>2</sub>  
Specimen >24 hours
- Transport Medium: Amies culture swab with charcoal
- Storage/ Stability: Ambient/<24 hours
- Collection: Disinfect contiguous areas of skin or mucous membrane containing resident normal flora prior to culture collection. Collect exudates from the interior of productive lesions. A thin, air-dried smear for Gram stain obtained from the same site as the culture is strongly recommended.
- Method: Microscopic  
Conventional culture identification methods
- TAT: 72 hours
- CPT: 87081

**Culture, Genital**Test Code: **CULGEN**

Includes:	Gram Stain Culture Identification and susceptibilities performed at an additional charge only on potential pathogens isolated
Specimen:	Bartholin Cervical Endometrial Lesion Prostate Urethral discharge
Unacceptable Specimen:	Expired transport culturette Transport Medium: Amies culture transport swab preferably with charcoal
Storage/ Stability:	Ambient: <24 hours
Collection:	* Bartholin: Disinfect skin with iodine preparation and aspirate fluid from ducts. *Cervical: Using a speculum <b>without</b> lubricant remove cervical mucous and secretions with a swab. Discard swab. Insert fresh sterile swab into endocervical canal, move swab from side to side allowing several seconds for absorption. Return swab to the culture transport medium. * Endometrial: Collect transcervical aspirate using a telescoping catheter. * Lesion: Clean lesion with sterile saline and remove surface of lesion with a scalpel. Allow transudate to accumulate. Firmly obtain exudate with a sterile swab. * Prostate: Cleanse the glans with soap and water. Massage prostate through the rectum. Collect fluid on swab and inert into culture transport medium. *Urethra: Insert a small wire swab 2 to 4 cm into the urethral lumen, rotate swab and leave it in place for at least 2 seconds to absorb. * Vaginal: Wipe away excessive amount of discharge. Obtain secretions from the mucousal membrane of the vaginal vault using a sterile swab. Insert swab into Amies culture transport or other suitable transport media. Second swab suggested for gram stain.
Method:	Microscopic Conventional culture identification and susceptibility methods
TAT:	72 hours
CPT:	87070

**Culture, MRSA**Test Code: **CULMR**

Includes:	Culture <b>NOTE:</b> Gram stain performed by separate request only If culture is positive, identification and susceptibility testing will be performed at an additional charge
Acceptable Specimen:	Sputum Swab from anatomical site suspected of MRSA ( <b>label with specific anatomic site</b> ) Urine
Unacceptable Specimen:	Expired culture transport swab
Transport Medium:	Amies transport swab Sterile leak proof screw cap container
Storage/ Stability:	Ambient/<48 hours
Collection:	Refer to specific anatomical site collection methods in the Microbiology Specimen collection section.
Method:	Conventional culture identification and susceptibility methods
TAT:	48 hours
CAP:	87081

**Culture, Nose/Nares**Test Code: **CULNOS**

Includes: Culture  
**NOTE:** Cultures of the nose are intended to detect staphylococcal and streptococcal carriers or for nasal lesions.

Acceptable Specimen: Anterior nasal swab  
Unacceptable Specimen: Expired culturette  
Transport Medium: Amies culture transport swab  
Storage/ Stability: Ambient/<48 hours  
Collection: Insert a swab that is pre-moistened with sterile saline approximately 2 cm into the nares. Rotate the swab against the nasal mucosa. Insert swab into transport medium.  
Method: Conventional culture identification methods  
TAT: 48 hours  
CPT: 87070

**Culture, Other**Test Code: **CULOTH**

Includes: Gram stain  
Culture

Acceptable Specimen: Anatomical sites for which no specific test code exists  
Unacceptable Specimen: Expired transport  
Transport Medium: Amies transport swab  
Storage/ Stability: Ambient/<48 hours  
Collection: Refer to specific anatomical site collection methods in the Microbiology Specimen Collection Section  
Method: Microscopic  
Conventional culture identification and susceptibility methods  
TAT: 48 hours  
CPT: 87070

**Culture, Spore**Test Code: **SPORE**

Includes: Culture

Acceptable Specimen: Sterilized spore test strips  
Unacceptable Specimen: Expired spore kit  
Test strips whose lot number does not match the envelope lot number.  
Transport Medium: Spore biological indicator test kit  
Storage/ Stability: Ambient  
Collection: Check expiration date on kit. Discard if expired. Remove the 2 test strips from the test strip pocket of the envelope. Do not remove strips from the glassine envelopes. Place the test strips in the center of the load (where penetration of the sterilant will be most restricted). Sterilize according to normal sterilization procedures. After cycle, retrieve test strips from the load and place them in the test strip pocket of the kit envelope and seal. Label the envelope with the information requested.  
Method: Broth culture  
TAT: 7 days  
CPT: N/A

**Culture, Sputum**Test Code: **CULSPU**

Includes: Gram stain  
Culture  
Identification and susceptibility testing will be performed on potential pathogen at an additional charge

Acceptable Specimen: 5-10 ml Sputum (first morning specimen preferred)  
Unacceptable Specimen: Frozen specimen  
24 hour pooled specimens  
Specimens with >25 squamous epithelial cells/low power field

**Culture, Sputum (cont)**Test Code: **CULSPU**

Transport Medium: Leak proof screw top sterile container  
Storage/ Stability: Refrigerated at 4°C/<24 hours  
Collection: \* Expectorated: Have patient rinse or gargle with water before attempting to collect the specimen to reduce the possibility of contaminating the specimen with superficial flora. Instruct the patient to cough deeply and produce a lower respiratory specimen not postnasal fluid. Collect in a sterile leak proof screw cap container.  
\*Induced: Have patient rinse mouth with water after brushing gums and tongue. Utilize a nebulizer and have patient inhale ≈ 25 ml of 3-10% saline. Collect the induced sputum into a sterile leak proof screw cap container.  
Method: Microscopic  
Convention identification and susceptibility methods  
TAT: 48 hours  
CPT: 87070

**Culture, Stool**Test Code: **CULFE**

Includes: Culture for *Salmonella*, *Shigella*, or *Campylobacter*.  
**NOTE: If organism other than *Salmonella*, *Shigella* or *Campylobacter* is suspected please specify pathogen**  
Acceptable Specimen: > 2 g Fresh stool  
Rectal swab (only for infants and patients with active diarrhea)  
Unacceptable Specimen: Diaper  
Rectal swab (except for infants or patients with active diarrhea)  
Specimen from patients whose hospital stay is > 3 days and the admitting diagnosis is not gastroenteritis.  
Refrigerated stool culture transport vial  
Transport Medium: Culture collection swab  
Para-Pak Stool **Culture** transport system  
Clean leak proof wide mouth container  
Storage/ Stability: Ambient/<1 hour (unpreserved), 96 hours (preserved in stool culture transport vial)  
Refrigerated at 4°C/<24 hours (unpreserved)  
Collection: \* Stool: Pass stool directly into a clean dry wide mouth container. For patients who are unable to collect a specimen, collect stool in a clean bedpan, not contaminated with urine, residual soap, or disinfectants. Those portions of stool which contain pus, blood, or mucous should be transferred to a sterile specimen container or stool culture transport vial.  
\*Rectal: Carefully insert a swab ≈ 1 inch beyond the anal sphincter, gently rotate to swab the anal crypts, and withdraw. Feces should be visible on the swab. Insert swab into the culture transport medium.  
Method: Conventional culture identification and susceptibility methods  
TAT: 72 hours  
CPT: 87045

**Culture, Throat**Test Code: **CULTHR**

Included: Culture  
If positive, identification testing and when appropriate susceptibility testing will be performed at an additional charge  
Acceptable Specimen: Throat Swab  
Unacceptable Specimen: Expired culture transport swab  
Transport Medium: Amies transport culture swab  
Storage/ Stability: Ambient/<48 hours  
Collection: Depress tongue with a tongue depressor. Extend sterile swab between the tonsillar pillars and posterior pharynx using a back and forth motion. Include any exudates, ulcerated or inflamed areas. **Do not allow the swab to touch cheeks, teeth, tongue or gums.**  
TAT: 48 hours  
CPT: 87070

**Culture, Urine**Test Code: **CULUR**

Included:	Culture When indicated identification and susceptibility testing will be performed at an additional charge
Acceptable Specimen:	Clean catch midstream urine Catherized urine
Unacceptable Specimen:	Foley tips Frozen specimen Specimen from catheter bag Unpreserved specimen >24 hours Urinalysis transport tube 24 hour pooled urine
Transport Medium:	Sterile leak proof screw cap container Urine culture transport tube with Boric Acid
Storage/ Stability:	Refrigerated at 4°C/<24 hours (unpreserved): 3 days (preserved)
Collection:	* Female midstream: Clean the urethral with soap and water, rinse with wet gauze. While holding the labia apart begin voiding. After passing several millimeters collect a portion midstream without stopping the flow of urine. *Male midstream: Cleans the glans with soap and water, rinse with wet gauze. While holding the foreskin back begin voiding. After passing several millimeters collect a portion midstream without stopping the flow of urine. *Straight catheter: Clean urethral area with soap and water, rinse with wet gauze. Aseptically insert the catheter into the bladder. After allowing ≈ 15 ml to pass collect urine in sterile container. If delay in transport is expected submit in urine culture transport tube. *Indwelling catheter: Disinfect catheter collection port with 70% alcohol, using a needle and syringe aseptically collect 5-10 ml of urine. Transfer to urine culture transport tube. <b>Note:</b> Early morning specimens yield highest bacterial counts. Colony count interpretation standards are based on controlled studies from first early morning collections. Forced fluids or random specimens dilute the urine. Specimen not collected according to collection guidelines may be contaminated. When using a receptacle for collection, receptacle must be sterile.
Method:	Conventional identification and susceptibility methods
TAT:	48 hours
CPT:	87086

**Culture, Vaginal**Test Code: **CULVAG**

Includes:	Gram stain Culture
Acceptable Specimen:	Vaginal swab
Unacceptable Specimen:	Expired transport swab Transport
Transport Medium:	Amies culture transport swab with charcoal
Storage/ Stability:	Ambient/ <24
Collection:	Vaginal: Wipe away excessive amount of discharge. Obtain secretions from the mucosal membrane of the vaginal vault using a sterile swab. Insert swab into Amies culture transport or other suitable transport media. Second swab suggested for gram stain.
Method:	Microscopic Conventional culture identification and susceptibility methods
TAT:	72 hours
CPT:	87070

**Culture, VRE**Test Code: **CULVRE**

Includes:	Culture If culture is positive, identification and susceptibility testing will be performed at an additional charge
Acceptable Specimen:	Sputum Stool Swab from anatomical site suspected of VRE ( <b>label with specific anatomic site</b> ) Urine
Unacceptable Specimen:	Expired transport swab
Transport Medium:	Amies culture transport swab Sterile leak proof screw cap container
Storage/ Stability:	Ambient/<48 hours (swab) <24 hours (sputum, stool, urine)
Collection:	Refer to specific anatomical site collection methods in the Microbiology Specimen collection section.
Method:	Conventional culture identification and susceptibility methods
TAT:	48 hours
CPT:	87081

**Culture, Wound**Test Code: **CULWD**

Includes:	Gram Stain Culture <b>NOTE:</b> Request form <b>must</b> state specific site of specimen and whether it is a superficial or deep wound. Current antibiotic therapy, and suspected organism should also be specifically noted on the request form.
Acceptable Specimen:	Abscess Cellulitis specimen Decubitis ulcer Deep wound swab Fluid Tissue Superficial wound swab
Unacceptable Specimen:	Expired transport swab
Transport Medium:	Amies culture transport swabs Sterile leak proof screw cap container
Storage/ Stability:	Ambient/ <24 hours (aspirate/fluids), <48 (swab)
Collection:	* Abscess: Remove surface exudates by wiping with sterile saline or 70 % alcohol. Swab deep into lesion and firmly sample the advancing edge or aspirate abscess wall with needle and syringe. Transfer all aspirates into transport device. *Cellulitis: Cleanse site by wiping with sterile saline or 70% alcohol. Aspirate area of maximum inflammation with a fine needle and syringe. Draw a small amount of sterile saline into syringe and aspirate into a sterile screw cap container. * Decubitis ulcer: Cleanse surface with sterile saline, swab the base of the lesion vigorously.
Method:	Microscopic Conventional culture identification and susceptibility methods
TAT:	48 hours
CPT:	87070

**Culture, Yeast**Test Code: **CULYEA**

Includes:	KOH Culture If positive, identification testing performed at an additional charge Susceptibility testing performed by request only
Acceptable Specimen:	Blood (10 ml)

	<ul style="list-style-type: none"> <li>Body Fluids (&gt;10 ml)</li> <li>Bone Marrow (3 – 5 ml)</li> <li>Bronchoscopy specimens</li> <li>Cervix</li> <li>CSF (5ml)</li> <li>Drainage</li> <li>Hairs (at least 10)</li> <li>Lung biopsy</li> <li>Miliary abscess</li> <li>Nail (whole nail or clippings)</li> <li>Skin scrapings</li> <li>Sputum (5 – 10 ml)</li> <li>Tissue (1 cm)</li> <li>Throat</li> <li>Tracheal aspirates</li> <li>Urine</li> <li>Vaginal</li> </ul>
Unacceptable Specimen:	<ul style="list-style-type: none"> <li>Swabs (Except from mucousal surfaces)</li> <li>24hour collections</li> </ul>
Medium:	<ul style="list-style-type: none"> <li>Amies culturette swab (for specimen from mucousal surfaces only)</li> <li>Blood culture bottle</li> <li>Clean envelope</li> <li>Green-stopper (heparin) tube for Bone Marrow</li> <li>Sterile leak proof screw top container</li> </ul>
Storage/ Stability:	Refrigerate at 4°C ( <b>except</b> Blood, CSF, dermatological specimens and swabs, maintain at ambient temperature)/ < 24 hours
Collection:	<ul style="list-style-type: none"> <li>* Blood: Clean the collection site with disinfectant. Collect 10 ml of blood aseptically into a 70ml BBL Septi Check blood culture bottle.</li> <li>* Body fluids: Aspirate specimen aseptically and place material in a screw cap leak proof container</li> <li>*Bone marrow: Aspirate approximately 3 to 5 ml of bone marrow and place it in a sterile screw cap leak proof container</li> <li>*Drainage: Collect material from an un-drained abscess using a sterile needle and syringe and place in a screw cap container</li> <li>* Hair: No cleaning of scalp is necessary. Select infected area and with forceps remove at least 10 hairs with the base of the shaft intact. For hairs broken off at the scalp, use a scalpel. Place hairs in a clean envelope or sterile container</li> <li>* Military abscess: Express pus using a sterile scalpel blade and place in a screw cap container</li> <li>*Nails: Clean nail with 70% alcohol. For the dorsal plate, scrape the outer surface and discard the scrapings. Scrape a deeper portion of nail and place in a screw cap container. Remove a portion of debris under the nail with a sterile blade. Collect the whole nail or clippings of nail and please all materials in a clean envelope or screw cap container.</li> <li>*Skin: Wipe lesions (and interspaces between toes) with alcohol. Scrape the entire lesion with a sterile scalpel. Place scrapings in a clean envelope labeled with the patient data</li> <li>*Sputum: Collect a fresh specimen in the early morning. Have patients remove dentures and rinse mouth. Sputum should be induced or from a deep cough. Saliva is not acceptable. Collect 5-10 ml in a sterile leak proof container</li> <li>*Tissue: Collect tissue aseptically from the center and edge of the lesion. Place specimen in a sterile leak proof container. A small amount of sterile 0.85% NaCl may be added to container to prevent drying.</li> </ul> <p><b>NOTE:</b> Refrigerate specimen for no more than 8 hours</p> <ul style="list-style-type: none"> <li>*Urine: A catheterized specimen is optimal for diagnoses of mycoses of the urinary tract. Clean-catch midstream is acceptable when catheterization is not an option. Collect early morning specimen aseptically in a sterile leak proof container.</li> </ul>

**Culture, Yeast (cont)**Test Code: **CULYEA**

\*Vaginal: Obtain secretions from the mucousal membrane of the vaginal vault using a sterile swab. Insert swab into Amies culture transport or other suitable transport media (ambient temperature)/ < 24 hours

Method: Microscopic  
Conventional culture identification methods

TAT: 7 Days  
CPT: 87101

**Occult Blood**Test Code: **OB**  
**OB x 2**  
**OB x 3**

Includes: Occult blood test

Acceptable Specimen: Fresh stool  
Stool applied to the center of the HEMA-SCREEN™ test slide

Unacceptable Specimens: Specimens >14 days

Transport Medium: HEMA-SCREEN™ test slide (preferred)  
Clean screw cap container

Storage/ Stability: HEMA-SCREEN™ test slide - Ambient/14 days  
Screw cap container – Frozen preferred/ refrigerated acceptable

Collection: Instruct patient to collect a small amount of stool on an applicator stick and apply as a thin smear to one window of the test slide. Using a fresh applicator stick collect another small amount of stool from a different part of the stool and apply to second window of the test slide. Test slide may be stored at room temperature and protected from heat and light.

Interfering Substances: Aspirin, corticosteroids, reserpine, phenylbutazone, indomethacin. > 250mg/day  
Ascorbic acid  
(Vitamin C) may cause false negative results. Iron or preparations containing iron may cause false positive results.

Method: Guaiac slide method

TAT: 24 hours  
CPT: 82270

**Fecal Leukocytes**Test Code: **SMWBC**

Includes: Gram Stain

Acceptable Specimen: 1 gram fresh stool

Transport Medium: Para-Pak Stool **Culture** transport system  
Clean leak proof wide mouth container

Storage/ Stability: Refrigerated at 4°C/<24 hours (unpreserved)

Collection: \* Stool: Pass stool directly into a clean dry wide mouth container. For patients who are unable to collect a specimen, collect stool in a clean bedpan, not contaminated with urine, residual soap, or disinfectants. Those portions of stool which contain pus, blood, or mucous should be transferred to a sterile specimen container or stool culture transport vial.

Method: Microscopic

TAT: 24 hours  
CPT: 85048

**Skin Scraping for Scabies**Test Code: **SKISCR**

Includes: Microscopic exam

Acceptable Specimen: Skin scraping

Transport Medium: Clean screw cap container

Storage: Ambient

**Skin Scraping for Scabies (cont)**Test Code: **SKISCR**

Collection: Identify the burrow using a magnifying lens to see recent papules, which appear as tiny dark specs at the end of the burrow or use the ink test. To identify burrows by the ink test use a wide felt tip blue or green pen over the burrows and then wipe off the ink with an alcohol pad. The alcohol will remove most of the surface ink, but will not remove the ink taken up by the burrow, leaving a dark irregular line. Apply mineral oil or preferably microscope immersion oil to the lesions or a sterile scalpel blade. Scrape vigorously with a scapel blade at a 90° angle to the skin while holding the skin taut until the epidermis is removed. Vigorous scraping results in a few red blood cells but there should not be frank bleeding. Place blade in a clean screw cap container and submit to the laboratory.

Method: Microscopic

TAT: 24 hours

CPT: 87220

**KOH**Test Code: **KOH1**

Includes: KOH test

Acceptable Specimen: Hair

Nails

Skin

Transport Medium: Envelope

Clean screw cap container

Storage: Ambient/ <24 hours

Collection: \* Hair: No cleaning of scalp is necessary. Select infected area and with forceps remove at least 10 hairs with the base of the shaft intact. For hairs broken off at the scalp, use a scalpel. Place hairs in a clean envelope or sterile container

\*Nails: Clean nail with 70% alcohol. For the dorsal plate, scrape the outer surface and discard the scrapings. Scrape deeper portion of nail and place in a screw cap container. Remove a portion of debris under the nail with a sterile blade. Collect the whole nail or clippings of nail and please all materials in a clean envelope or screw cap container.

\*Skin: Wipe lesions (and interspaces between toes) with alcohol. Scrape the entire lesion with a sterile scalpel. Place scrapings in a clean envelope labeled with the patient data

Method: Microscopic

TAT: 24 hours

CPT: 87220