

Lab-Gen-Pol#113-023d

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Pathology
&
Laboratory Medicine Service

Reference Manual

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Distribution and Review

The Laboratory Reference Manual is managed under document control as Lab-Gen-Pol#023 and is distributed to all inpatient wards, outpatient areas, and community based outpatient clinics. **Additionally, this manual is available on the Pathology & Laboratory tab in MedForms manager from all sites connected to the VAMC computer system. Click on the FORMS icon, and then click on the Pathology/ Lab tab, the volume is titled LABORATORY REFERENCE MANUAL. Once you have opened the document, you will be able to follow links in the table of contents to the appropriate page in the manual by clicking on the page number.**

Effective with the August 2004 revision, the manual has undergone annual review, changed to biennial effective in 2015. The review verifies that all aspects of the manual have been reviewed and are current. If no changes are made, the signature documenting this review will be maintained in the original document in the Pathology & Laboratory Medicine Service office. If any changes are made, all paper copies and the electronic copy on the MedForms Manager will be replaced with the updated version and this update is communicated to all staff via the electronic mail.

The Chief, Pathology & Laboratory Medicine Service has delegated the responsibility for annual review to the Manager, Pathology & Laboratory Medicine Service. The Chief, Pathology & Laboratory Medicine Service retains the responsibility of reviewing of all changes prior to implementation.

GENERAL/PHONE INFORMATION

The Laboratory Service is located on the fourth floor, east wing of the main hospital building.

Hours of Operation

Clinical Laboratory: daily, 24 hours
Anatomic Pathology (Surgical Pathology, Cytology and Autopsy):
Mon - Fri, 0730 - 1630

If a technical problem occurs with the laboratory, you are asked to contact the appropriate section or section supervisor. In addition, a staff pathologist is available at all times for problems or consultations.

Pathology staff may be contacted from 0800 - 1630 on weekdays at extension 6822. On weekends and evenings, the "on call" pathologist's pager number is available using the "OC" display in the VistA computer.

Telephone and Room numbers:

	Room #	Phone
Service Chief, S. Sridhar, MD.....	4A-112	6825
Secretary to the Chief.....	4A-110	6822
Transcription/ Surgical Pathology support.....	4A-110	6826
Laboratory Manager, Peggy Chesnut-Via.....	4A-116	6821

<u>Evening / Night calls</u>	4A-201	5751
Shift Supervisor, Frank Mandarano	4A-201	5751

<u>Accessioning/Specimen Receiving</u>	4A-205	6305/6306
Add-on tests requests	4A-205	6305/6306
Supervisor, Ramon Alvarez	4A-203A	6298

Chemistry

General Chemistry.....	4A-201	5751/5657
Therapeutic Drug Monitoring	4A-201	5658
Supervisor, Sally Pessagno.....	4A-201	6297

Hematology

Hematology	4A-134	6318/6321
Special Hematology/Coagulation	4A-134	6321
Flow Cytometry.....	4A-207	6308
Supervisor, Mari Maldonado.....	4A-201	6299

<u>Microbiology</u>	4A-136	6315/6316
Urinalysis	4A-201	5662
Serology	4A-134A	6315/6316
Supervisor, James Fountain.....	4A-201	6296

Immunohematology

Blood Bank.....	4A-203	6303/6830
Viral Testing (Hepatitis/HIV)	4A-207	6307
Supervisor, Ramon Alvarez	4A-203A	6298

Surgical and Cytological Pathology

Histology	4A-304	6325
Cytology	4A-304A	6328
Frozen Section/Grossing Room.....	4A306	6324
Lead Histotechnologist, Heather Gallo	4A-304B	6331
Pathologist Assistant, Jeannette Perry	4A-138	6332
Cytology, Hector Soto.....	4A-304A	6328

GENERAL/PHONE INFORMATION

Cytology, Arthur Macatangay4A-304A6946

Laboratory Program Coordinators

Point of Care Testing, Susan Weir4A-2016295

ADP (Computer Support), Michi Bowman.....4A-3166829

BCE Coord / ADP /PA, Linda Birmingham.....4A-1388730

COMPUTER INFORMATION

INTRODUCTION

The VA Hospital Information System, often referred to as VistA, is used in all Veteran's Affairs health care facilities in conjunction with the Computerized Patient Record System (CPRS) also known as the Electronic Medical Record (EMR).

CPRS LAB OPTIONS

The Computerized Patient Record System (CPRS) is accessed through a Graphical User Interface (GUI). The VistA system is an older system, which is no longer being supported for test ordering.

TO ACCESS CPRS

Click the CPRS button on your Window toolbar (usually at bottom of screen) or via the shortcut on your desktop. Sign on using VistA access and verify codes. Patient name can be called up by using first letter of last name and SSN last four. Once the list of patients with this limited identifier is on screen, the correct patient must be selected utilizing the full name and the full SSN. The "COVER SHEET" is displayed first. To navigate between parts of the chart, use the tabs at the bottom of the screen.

ORDER ENTRY

To order a Lab test go to the "ORDERS" tab of the chart where you can enter a new order. There are numerous choices of Laboratory Order Menus and these can be seen by clicking on "Lab Order Set" in the Write Orders column at left of screen. The different order menus have been customized to serve the needs of staff in ER, Primary Care, Medicine Specialty clinics and numerous other groups. Other order menus have been designed to group certain laboratory tests together such as Blood Bank for transfusion orders, Microbiology menu for cultures, Anatomic Pathology/Cytology for tissue and cytology orders.

Once you have selected the order menu to use, click on tests or groups of tests desired. Some order sets have complete defaults for date, type of order and urgency, but all orders can have these parameters edited. Once orders are placed, all orders must be signed by highlighting all orders to be signed, then clicking action – sign orders. Enter your electronic signature in the box and orders are placed.

COMPUTER INFORMATION

TO VIEW LABORATORY TEST RESULTS

Select the “Labs” tab at bottom of patient Electronic Medical record. Laboratory results can be viewed in numerous ways by clicking on the different options on the left of the screen. All options will display the results with the reference (normal) ranges and interpretation. This section will not include results for Blood Bank or Anatomic Pathology.

Most recent

This option is most often utilized to see results from patient’s most recent appointment or set of inpatient laboratories. Be aware that comments associated with the results are displayed in the comment window just below the actual results window.

Cumulative

This option allows you to see numerous labs grouped together by type (Hematology, Chemistry, Coagulation) with multiple sets of results on a single page for trending over time. Once you have selected Cumulative on left hand side of Labs page, you can select the appropriate timeframe to view in the “Date Range” box on bottom left of screen.

Graph

This is an option to graph a test single result over time and can be useful for looking at trends of results.

Microbiology

Displays all culture results. Each accession is listed on screen and user can double click to see the associated report.

Anatomic Path – All reports

Displays all surgical and cytology results. Each accession is listed on screen and user can double click to see the associated report.

Blood Bank Report (Blood Bank/Blood Products Information):

This report gives a summary of blood bank activity including ABO, RH results, units crossmatched / available, component requests, results of antibody screening, a list of any antibodies detected, and a summary of units that have been transfused for a patient.

Autopsy Reports

Autopsy reports are only available under the Cumulative reports, to go directly to AU report, click on Autopsy in the headings area in left side of screen.

COMPUTER INFORMATION

LABORATORY COMPUTER RELATED FREQUENTLY ASKED QUESTIONS (FAQs)

- Q. How can I tell the status of lab orders?
A. In the Orders Tab, the status of pending indicates that the specimen is awaiting collection. A status of active indicates that the specimen is either on a collection list awaiting collection or is in lab; to determine which, you may go to the Labs Tab, where the result area for the test in question will indicate either "On Collection List" or "Collected – Specimen in Lab". Once complete, the status will change to complete and results will be displays in the Labs tab.
- Q. How soon are answers available in the computer?
A. As soon as a test is completed and verified/released by the technologist or pathologist, it can be viewed at any ward/clinic location within the VAMC West Palm Beach network.
- Q. What do the symbols "*" and "H" or "L" by a test result mean?
A. An asterisk * means this result is a critical value; H or L designate results above (H = high) or below (L = low) the normal range.
- Q. How can I find the "reference or normal range" for a test?
A. In CPRS click on Tools, Lab Test Information
- Q. How do I look up a biopsy or cytology result?
A. In CPRS, click on laboratory tab, and then click on Anatomic Pathology or Cytology in the left hand column.
- Q. What if I am interested in all lab work collected during the last 24 hours?
A. Click on "Labs" tab in CPRS, then click on most recent. You can additionally set the time frame of recent results displayed to past day, week, year etc.
- Q. How can I identify a patient if I only know which ward he is located on?
A. At the Patient Selection screen in CPRS, click radio button for "Ward" and then select your patient from the list of patients on the ward. You must still confirm patient identification is correct by confirming two identifiers prior to taking any action in the record.
- Q. If I am repeatedly looking up results on one patient, can I streamline the inquiry process?
A. You can create lists of patients and save this as your default list, then you can easily select the patient. Also, you can set your default view to see all your clinic patients for the current day.
- Q. In order to review all microbiology results, which option is best?
A. In the lab tab, click on Microbiology reports.
- Q. Sometimes I cannot see a comment about a laboratory report that I know should be there – why does this happen?
A. In CPRS, the space allotted for comments at the bottom of the screen is limited. When there are more than three comments or evaluation remarks, an up/down scroll bar appears at the right side in this lower area of the display. Just press down to see more comments. Also remember that using the cumulative display shows all comments without the need for a scroll bar.

COMPUTER INFORMATION

LABORATORY PLAN FOR COMPUTER DOWN-TIME

The following protocol has been established to accommodate computer downtime:

ORDERING / TRANSPORT OF LAB TESTS/SPECIMENS

Requesting locations will submit STAT requests on Lab-Gen-Form#100, Lab Computer Downtime Test Request Form if the system is down 5 minutes or longer. In the event that the system is down for 1 hour or longer, Lab-Gen-Form#100, Lab Computer Downtime Test Request Forms will be prepared for all other specimens by the wards and clinics. Downtime forms may be obtained from the laboratory, call ext.6305 or 6306. Orders submitted on the downtime forms are to be transported with the appropriate specimens to the Laboratory via an authorized courier, via the tube system or by using the TELECAR System which connects the first floor to the ACCESSIONING Area of the Laboratory.

REPORTING OF LAB TEST RESULTS

Lab test orders that are submitted manually (on computer downtime form) will be reported on manual paper forms and sent to ordering location via pneumatic tube or fax. After the system is back on line, Laboratory staff will enter the orders from the manual request forms generating a request for electronic signature from the requesting physician. Test results will be entered and should appear in the patient's medical record within 24 hours.

Orders that are placed in the computer and received in the Lab will be fulfilled, but reported manually if the system is down for 1 hour or more after receipt of the specimen(s). After the system is back on line, the original electronic order will be accessioned and reported.

STAT results will be phoned or faxed.

EXTENDED DOWN-TIME

Protocol for re-entering lab test results into the system following periods of extended computer down-time will vary based on the length of time that the system is unavailable, workload, and staffing.

TEST ORDERS

Except during periods of computer inactivity when paper backup documents are utilized, ALL LAB TESTS must be ordered in the computer. Orders must be placed by a licensed and credentialed healthcare provider. Only authorized providers are given the keys to sign lab orders. The security settings on the CPRS system preclude anyone who does not meet these requirements from placing an order. No "Direct to Consumer" testing is performed at this time. Should there be a need to implement "Direct to Consumer" testing; the regulatory requirements associated with this testing must be implemented prior to offering such testing.

All specimens must be accompanied by either paper requisitions of lab orders or by notation of order number linking to the electronic requisition. In outpatient phlebotomy clinics, patients who report for collection must have pending orders in the CPRS chart. Staff printing orders for collection will print orders that are up to one month in future and up to three months in past. Additionally, PT/INR coagulation orders are to be for a period within 2 weeks of the date of collection.

Most orders are entered by selecting a test from the lab test file. Certain tests such as those for Anatomic Pathology, Cytology and Flow Cytometry, may require the ordering clinician to fill in data to relay additional test requests or clinical information. If any of this information is unclear due to non-standard or non-specific terms, a lab staff member will contact the provider for clarification.

Verbal orders are NOT accepted by laboratory staff. If you wish to add on testing to a specimen currently in the lab, you must place the electronic order in CPRS and then call the laboratory Accessioning area at ext. 6305 or 6306 to notify them of the additional order.

TEST URGENCIES AND AVAILABILITY

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Not all tests can be ordered for the highest urgency, due to their relative significance in emergency patient care, or to the limitations of laboratory staffing or facilities. Check the individual test listings for specific test availability information.

Laboratory test orders must specify a priority for test performance (Routine, ASAP, or STAT). All STAT test requests (STAT or ASAP) must be specified as such in the physician's written orders or they should be requested as routine.

°Routine Tests performed on the next Routine run which for most tests is the same day and a turnaround time of approximately 4-8 hours. Additionally, some tests are performed in batches on site with a turnaround time of 1- 5 days, and certain tests are sent to reference lab with anticipated turnaround time of 5-10 days.

°ASAP Tests performed STAT with an anticipated turnaround time of less than 2 hours.

°STAT Tests performed STAT with an anticipated turnaround time of less than 1 hour.

If the priority is required to be changed after tests are ordered in the computer you will have to reorder the test in the computer to reflect the change of urgency.

A physician may request any procedure to be performed STAT. If it is not usually available as a STAT request a phone call to the laboratory will be required, the laboratory personnel will determine if it can actually be performed STAT in-house or by another local hospital and then confer with a pathologist on duty who will contact the requesting physician.

The need to have a result paged to a physician may be relayed to the laboratory by notifying the appropriate laboratory section by phone, although due to volume this may not always be feasible.

If test reporting is to be delayed significantly from the above, the provider will be notified via phone or e-mail. For delays that affect multiple providers, a single e-mail to all medical staff may be sent.

PHLEBOTOMY POLICIES

Phlebotomy services for in-patients and patients seen in the out-patient clinics will be performed by nursing, medicine and primary care service personnel. Feedback regarding phlebotomy related problems (labeling, specimen quality) is relayed to phlebotomy staff via the nurse manager for each outpatient and inpatient area. Specimen requirements for specific tests/analytes can be found in the VistA computer system and/or this manual.

Phlebotomy volumes are reviewed periodically and updated in this manual with the goal of reducing unnecessary large blood draws. Staff performing phlebotomy should only collect the required number of tubes; no "extra" tubes should be collected. Reduced volume tubes have been added to stocks and should be drawn for all ICU patients, hematology/oncology patients, patients with known anemia and any patient getting frequent phlebotomy.

Prior to performing phlebotomy, it is important to verify that all necessary supplies are available and that all supplies are within the expiration date and have been stored according to manufacturer instructions. Phlebotomy supplies are stocked by staff members of the SPD service and by policy are stocked according to manufacturer instructions.

Always wear gloves and use Standard Precautions when collecting and handling blood and body fluids. Gloves must be changed and hands washed in between each patient, according to the Medical Center Memorandum, 548-99-134, Hand Hygiene Guidelines.

PROCEDURE FOR VENIPUNCTURE

Detailed instructions are contained in your Point of Care Testing Manual

Materials:

1. Gloves
2. Safety blood collectors (vacutainer/needle combination with safety device)
3. Vacutainer Tubes
4. Tourniquets
5. Antiseptics (70% isopropyl alcohol is used routinely)
6. Sterile gauze and gauze pads.

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7. Waste containers.
8. Adhesive bandage

Procedure:

1. **Positive Identification - follow Patient Identification guidelines, using two patient identifiers as per MCM 548-99-102 to assure patient identity prior to phlebotomy.**
2. **Positioning Patient**
Ambulatory patients -- The patient should be comfortable, seated and position his or her arm on the armrest. Extend the arm to form a straight line from the shoulder to the wrist in a downward position to prevent reflux on blood flow back into the arm. Bring the elbow up so that the elbow is not bent when performing the actual venipuncture.
Bed patients -- a terry towel or a pillow is sometimes necessary to support the elbow. Have the patient extend the arm to form a straight line from the shoulder to the wrist in a downward position to prevent reflux or blood flowing back into the arm.
3. Re-verify paperwork, labels and tubes. Again, **positive identification is crucial**. Assemble all necessary supplies: gauze, 70% isopropyl alcohol, collection tubes, tourniquet, blood collection set.
4. Select a suitable vein. There are 2 main veins that are most often used. The median cubital and cephalic veins are preferred. Areas scarred from burns or intravenous drug use should be avoided. In most instances "feeling for" the vein and making a selection will not be difficult. When encountering a difficult vein, sometimes applying very light pressure enables the phlebotomist to locate or palpate a vein. Tapping a vein sharply several times will cause the vein to dilate. Superficial veins are loosely fixed, look thin and will have a tendency to roll away as the needle tries to enter the vein, they also have a tendency to collapse due to the vacuum pressure and should be avoided. Applying a warm washcloth for about 5 minutes may help to dilate the vein. Observe the following situations:
Mastectomy - Blood should be drawn from the opposite side of the mastectomy.
Hematoma - Specimens drawn from a hematoma area may cause erroneous test results. If another vein is not available the specimen is collected distal to the hematoma.
Tattoos - Avoid performing venipuncture through a tattoo site.
Intravenous therapy - Never collect a specimen from the same arm that is receiving intravenous therapy, **this includes blood transfusions**. If this is not possible, first check with the doctor before specimen is collected. **Never** collect the blood above the I.V. site.
Other - Fistula or vascular grafts are used only after consulting nephrologist and by specially trained dialysis personnel.
5. Cleanse the venipuncture site with 70% isopropyl prep pads. Allow the area to air dry and **DO NOT** touch the area with any unsterile object. If the vein is palpated again, the site needs to be cleansed again.
6. Apply Tourniquet. Wrap the tourniquet around the arm 3 to 4 inches above the site. Tuck the end under the last round.
CAUTION: Do not leave tourniquet on for longer than 1 minute. Longer may cause hematomas, nerve damage and cause erroneous test results. If procedure is going to take longer, release the tourniquet and reapply after **two** minutes.
7. Inspect Equipment. All needle systems used for phlebotomy will include a safety system to contain the needle at the completion of the phlebotomy. Visually inspect the tip of the needle for burrs or hooks at the end of the point. Occasionally there are defective needles. Tap all tubes to dislodge any additives from the stopper and wall. Insert the vacutainer only to the recessed guideline which does not puncture rubber stopper. Stabilize the entire assembly with one hand only. The other hand is then used for retracting and inserting other vacutainers during a multiple draw. The use of syringes should be avoided. If necessary to use a syringe, check to verify that the plunger moves with ease within the barrel of the syringe before attempting venipuncture.
8. Perform Venipuncture
 - a. Anchor the vein firmly both above and below the vein using the thumb and the index or middle finger.
 - b. At a 15° angle and with the bevel up, insert the needle into the skin following the geography of the vein. Use a fairly fast and smooth motion. **Do not hesitate** once insertion has begun in order to minimize pain.
 - c. If using a vacutainer, it will fill automatically to the predetermined amount. **AVOID** - blood should not make contact with the stopper during phlebotomy. A rocking motion may cause blood to flow back into the patient's arm and possibly cause adverse reaction.
 - d. The use of syringes should be avoided. If a syringe is being used, pull back slowly. **AVOID** forcefully pulling back on the plunger as this will cause hemolysis or collapse the vein.
 - e. When a good blood flow has started, release the tourniquet. Have the patient relax the fist **after** all blood has been drawn.
 - f. When collecting multiple tubes during one phlebotomy, the **order of tube draw is:**

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1. First - blood culture bottle or tube (yellow or yellow-black top)
2. Second - coagulation tube (light blue top). If just a routine coagulation assay is the only test ordered, then a single light blue top tube may be drawn. If there is a concern regarding contamination by tissue fluids or thromboplastins, then one may draw a non-additive tube first, followed by the light blue top tube. When using a butterfly collection device and drawing a coagulation tube: prime the tubing with a discard tube prior to collection. Air in the tubing displaces the volume of blood required in the coagulation tube and may render the sample inadequate for testing.
3. Third - non-additive tube (red top without clot activator or dark blue tube with red label)
4. Last draw - additive tubes in this order:
 - i. Clot Activator tube (red top tube with white residue in tube)
 - ii. SST (red-gray or gold top). Contains a gel separator and clot activator.
 - iii. Sodium heparin (dark green top)
 - iv. PST (light green top). Contains lithium heparin anticoagulant and a gel separator.
 - v. EDTA (lavender top)
 - vi. ACDA or ACDB (pale yellow top). Contains acid citrate dextrose.
 - vii. Oxalate/fluoride (light gray top)
- g. Once phlebotomy is complete remove the needle in a single smooth motion and engage the safety device.
- h. Place a clean sterile gauze or cotton ball over the site and with-draw the needle in the same direction that was used for insertion to minimize trauma to surrounding tissue. Place a Band-Aid over the site and instruct the **patient** to apply pressure for several minutes. If the patient is unable to perform this task, it is the responsibility of the phlebotomist to apply pressure until bleeding has stopped.
9. Mix **all** tubes. **INVERT GENTLY** about 5 -7 times. **Do not shake.** Appropriately label all tubes before leaving the patient using the **correct label on the correct tube.**
10. Label all tubes according to the guidelines in the specimen identification section.
11. Make sure bleeding has stopped, patient is O.K. and not feeling faint. If bleeding persists longer than 5 minutes, the primary provider should be notified.
12. Follow special handling instructions, e.g., chilling the specimen, exposure to light.
13. Dispose of all contaminated material following the Medical Center Infection Control Policy. For example, observe protocol when leaving an isolation room, sharps disposal, syringes, gauze, etc.

Limitations and special considerations:

1. Do not attempt a venipuncture more than twice. Have another person try. If still unsuccessful on third attempt, notify doctor and indicate on draw list "unable to draw". DO NOT PROBE. Probing is moving the needle from side to side looking for a vein. It is very painful to the patient and destructive to surrounding tissue.
2. Gel separator tubes (SST) must not be used for Blood Bank and other special tests.
3. Always stand tubes upright to reduce hemolysis.
4. When drawing a specimen for alcohol, do NOT use alcohol to cleanse the arm (e.g., soap).
5. Indwelling Lines/Catheters -- these lines are generally flushed to reduce the risk of thrombosis with heparin. About 5 ml of blood should be withdrawn prior to drawing a blood specimen to prevent the specimen from being diluted with the flush solution. Dialysis catheters may NOT be used/accessed except by specially trained dialysis personnel. Indicate on draw list label "Line Draw". Follow nursing guidelines for using sterile techniques. It is not recommended that indwelling lines or catheters be used unless absolutely necessary, and especially for coagulation studies. If a coagulation test is being collected withdraw a 10 ml sample prior to sample collection.
6. Intravenous fluids including blood transfusions -- when a patient has an I.V. solution being administered draw from the opposite arm. Blood drawn from an I.V. arm will be diluted. Test results will be erroneous and misleading to the physician. If no site is available notify the charge nurse or doctor.
7. Fistulas and grafts are permanently implanted in the arms of dialysis patients. Only specially trained dialysis personnel should draw from this site if unable to use other arm.
8. Isolation - Be familiar with Medical Center Infection Control Policies before entering a patient isolation room.

FINGERSTICK PROCEDURE

Detailed instructions are contained in your Point of Care Testing Manual

Materials:

1. Gloves
2. 70% Isopropyl alcohol pads.
3. 2 x 2 sterile gauze.
4. Sterile single-use Lancet device.

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Note: There are a variety of lancet devices. They all perform in a similar manner. Use according to the manufacturer's guidelines. The most common device used in this facility is the SurgiLance safety lancet.

5. As needed per test order: strips for whole blood glucose testing, i-STAT testing cartridges and necessary supplies specific to procedure.
6. Biohazard waste containers

Procedure:

1. Gather all necessary materials, recheck orders, **properly identify the patient according to protocol.**
2. Prepare the lancing Device: For Surgilance safety lancet
 - a. Remove clear plastic cap.
3. Sites for Collecting Skin-Puncture Blood
 - a. Palmar surface of the distal phalanx of a finger. The puncture shall be on the palmar surface of the distal phalanx and not the side or tip of the finger because the tissue on the side and tip of the finger is about half as thick as the tissue in the center of the finger. The fifth finger shall not be punctured because the tissue is considerably thinner than the tissue of the thumb, index, middle, and ring fingers.
 - b. The earlobe is not recommended.
4. Prepare the Finger /Skin Puncture Site
 - a. Cleanse the finger (site) with 70% isopropyl alcohol in a non-callused area and usually off to the side. Allow to air dry or use a sterile gauze pad to dry.
 - b. Hold the hand below the level of the heart when performing the puncture.
5. Perform skin puncture
 - a. Place the red raised platform end of the Surgilance lancet firmly against the patient's finger and push down to activate the lancet mechanism. The needle automatically retracts after use. Gently squeeze the patient's finger to obtain a hanging drop of blood.
 - c. **The first drop of blood should be wiped away with a gauze pad due to excess tissue fluid in the first drop for glucose meter testing.**
Do not wipe away the first drop of blood prior to filling the test cartridge for i-STAT INR testing.
 - d. **Avoid squeezing around the puncture site. Gently stroke the hand from wrist to palm of finger to form a large drop of blood. Hard repetitive pressure (milking the finger) should be avoided. This can cause hemolysis or contamination of the specimen with tissue fluid.**
 - e. Remove disposable gloves and dispose of the lancing device and materials in the appropriate biohazard containers according to the Medical Center's Infection control policies. Follow Standard precautions.

BLOOD CULTURE COLLECTION

Materials

1. Routine blood culture: 1 BacT/Alert aerobic bottle (blue)*
1 BacT/Alert anaerobic bottle (burgandy)

*If the patient is on antibiotics FAN bottle (light green) is used in place of the aerobic (blue) bottle. It can be obtained from the Microbiology Lab.

2. Fungal culture: Routine set
3. AFB blood culture (MAI): Wampole Isolator tube (yellow tube obtained from Micro)
4. Chlorohexadine Gluconate (CHG) swabs.
5. 2-3 70% isopropyl alcohol pads
6. Angel Wing BacT/Alert Blood Collection Set
7. Vacutainer holder/ needle assembly
8. 2X2 gauze and band-aid or tape

Procedure

A. ROUTINE BLOOD CULTURE

1. **Positive Identification - follow Patient identification guidelines using two patient identifiers to assure patient identity prior to phlebotomy.** Assemble materials required.
2. Determine which blood culture bottles to draw based on physician's orders. You will need one set of bottles for each site ordered (X2 means 2 sets of one each, aerobic and anaerobic bottles).
3. Select venipuncture site and scrub using CHG swab. Scrub vigorously for 60 seconds. Allow to air dry.
4. If further palpation of the vein is necessary during aspiration, a sterile glove must be worn or the site must be re-scrubbed with CHG swab.

LABORATORY GENERAL

5. Remove the plastic flip top from each bottle and disinfect the rubber tops with an alcohol pad. **DO NOT USE IODINE OR BETADINE.**
6. Using vacutainer holder/needle assembly with the Angel Wing BacT/Alert Blood Collection Set, aseptically insert the aerobic bottle into the Angel Wing Collection set. When the desired amount has been injected into the bottle, remove the first bottle and insert the anaerobic bottle. Fill each bottle with 5-10 ml of blood.
7. Properly label each bottle with the full name of the patient, the full SSN, date and time of collection and collector's initials. Also note where the blood was obtained: right antecubital, A-line, etc. If using printed label, do not cover barcode label. The blood culture system must use the label as a means of identification.
8. Transport bottles immediately to the laboratory.

B. AFB AND FUNGAL BLOOD CULTURE:

1. Clean the venipuncture site as described above. Clean the top of the Isolator tube with alcohol swab. Draw blood through basic venipuncture holder and needle apparatus. Allow the Isolator tube to fill, approximately 10 ml. Label and submit to Microbiology immediately.

Limitations:

1. Care must be taken to prevent contamination of the sample during collection and inoculation into the blood culture vial. A contaminated sample will give a positive reading, but will not indicate a relevant clinical sample.
2. Optimal recovery of isolates will be achieved by adding maximum allowed amounts of blood. Use of lower volumes or volumes in excess of allowed, may adversely affect recovery and/or detection times.

PATIENT IDENTIFICATION

All **inpatients and outpatients with blood bank orders** (type and crossmatch, type and screen, FFP, platelets, etc.) **are required to have a West Palm Beach VA wristband fastened on their wrists** (or elsewhere on their bodies, e.g., ankles). The wristband cannot be attached to clothing, a clipboard or the bed. The wristband must have at least the patient's full name (including his middle name or initial), date of birth, and a printed barcode in which the patient's full social security number is embedded. **Check any paper requisitions or other documents and all labels against the wristband to assure that all information matches. Two identifiers (full name, DOB) are used for inpatient phlebotomy. For blood bank orders, prior to obtaining blood for compatibility testing, the person drawing the blood will scan the patient's wristband to identify and confirm the patient / residents full name, full date of birth and full social security number.**

All other **outpatients** must have identity verified by **asking the patient to STATE their full name and social security number (SSN)**. As an alternative to having patient state their SSN in public areas, the date of birth (DOB) may be used as confirmation of ID in place of the SSN. This is then checked against a document which provides both the date of birth and the SSN as the SSN will still be required on the specimen label. This information is compared to the **lab order sheet** and **all labels** to be used by person obtaining specimen(s).

Once patient identification is assured, **recheck all labels to be used on the specimens to assure that EACH LABEL matches with the confirmed patient identification**. Assure that any paperwork to be submitted with the specimens matches with the confirmed patient identification.

REQUISITION FORMS (including Blood or Blood Component Transfusion Standard Form 518, Electronic Tissue Exam Standard Form 515, computer-generated source documents and laboratory requisition/report forms).

- (1) All requisition forms must be legible and have at least the patient's full name (including middle name or initial), social security number, ward/clinic, name of physician or authorized person ordering the test, the test(s) ordered and time and date of specimen collection (if appropriate).
- (2) In addition, the electronic surgical pathology and cytology requests require additional clinical data such as clinical history, pre-op/post-op diagnosis (if applicable), name of staff physician, and the source of tissue.
- (3) Blood or Blood Component Transfusion Standard Form 518 requires name of the staff physician.

SPECIMEN IDENTIFICATION

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- (1) All **Blood Specimen** tubes must be properly labeled as soon as possible **after** the blood has been collected from the patient. **This should be done at patient's bedside (in presence of patient for outpatients) before obtaining blood from the next patient to avoid sample mix-ups.** All label information listed below is mandatory.
 - (a) If a **preprinted label containing Full Name and Full SSN** is to be used
 - (1) Place the label on the tube so that the left edge of the label starts just below the tube stopper and extends straight down the tube. **Do not wrap the label around the tube or spiral the label on the tube.** Label should be placed vertically on the tube. The patient name will then be at the top of the tube. Do not place the label with the name at the bottom of the tube. Do not place the label over the stopper.
 - (2) Phlebotomist's (your) initials.
 - (3) Time of draw. **This time of draw must also be placed on the accompanying requisition.**
 - (b) If a label is handwritten.

With the rubber stoppers pointing to the left, PRINT CLEARLY on the blank tube label near the top edge:

 - (1) Patient's last name, first name, social security number
 - (2) Phlebotomist's (your) initials.
 - (3) Date and time of draw. This time of draw must also be placed on the accompanying requisition.
- (2) For **Blood Bank**, tubes must be properly labeled as soon as possible **after** the blood has been collected from the patient. **This should be done at patient's bedside before obtaining blood from the next patient to avoid sample mix-ups.** All label information listed below is mandatory.
 - (a) If a **preprinted label containing Full Name and Full SSN** is to be used
 - (1) Place the label on the tube so that the left edge of the label starts just below the tube stopper and extends straight down the tube. Label should be placed vertically on the tube. The patient name will then be at the top of the tube. Do not place the label with the name at the bottom of the tube. Do not place the label over the stopper. Do not wrap the label around the tube or spiral the label on the tube.
 - (2) Phlebotomist's **full signature - must be legible, if signature is not legible, please print phlebotomist name.** The phlebotomists' full signature and the full signature of the second verifier must also be included on the SF-518.
 - (3) Date & time of draw. This time of draw must also be placed on the accompanying requisition (SF-518).
 - (b) If a label is handwritten.

With the rubber stoppers pointing to the left, PRINT CLEARLY on the blank tube label near the top edge:

 - (1) patient's full name, including middle name and/or initial, and full social security number, i.e., Duck, Daffy Fat, xxx-xx-xxxx (This information must be identical to the wristband and SF-518).
 - (2) Phlebotomist's **full signature - must be legible, if signature is not legible, please print phlebotomist name.**
 - (3) Date & time of draw. This time of draw and signature must also be placed on the accompanying SF-518. The verification boxes on the SF-518 must also be signed legibly and dated.
- (3) For **Blood Culture specimens**:
 - (a) If there are pre-stamped labels **containing Full Name and Full SSN**: Attach pre-printed lab labels over the existing vial label. Do not cover the bar-code label on the blood culture bottle. PRINT CLEARLY:
 - 1 phlebotomist's (your) initials.
 - 2 date and time of draw.*
 - 3 collection site (e.g. L arm, R arm, Line)*

*** This information must also be placed on the accompanying requisition.**
 - (b) If there are no pre-stamped labels: With the rubber stoppers pointing to the right, PRINT CLEARLY on the pre-fixed blank vial label near the upper edge:
 - 1 patient's full name and full social security number
 - 2 phlebotomist's (your) initials.
 - 3 date and time of draw.*
 - 4 collection site (e.g. L arm, R arm, Line)*

*** This information must also be placed on the accompanying requisition.**
- (4) For **surgical/cytology and other specimens**:

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- (a) All specimens collected in the operating rooms or on the ward/clinic must be properly labeled and uniquely identified so as to minimize sample mix-ups. As with blood specimens, all labeling occurs after collection, in the presence of the patient. After collection is completed all “extra” labels are discarded.
- (b) Whenever possible, use pre-printed lab labels for the patient. These labels will include:
 - 1 patient's full name including middle name or initial
 - 2 patient's full social security number
 - 3 specimen source for clinical lab specimens
- (c) If pre-stamped labels are not available, PRINT CLEARLY on a blank label:
 - 1 patient's full name including middle name or initial
 - 2 the patient's full social security number
 - 3 specimen source (urine, stool, specific tissue/site)
- (d) Affix label on the specimen container.
- (e) Print the following information on label:
 - 1 Your initials
 - 2 Date and time of collection.
 - 3 Source of tissue/* **specimen sites, including** laterality

This information should also be placed on the accompanying requisition, ensuring all specimen sites are listed and match site designations on containers.

SPECIMEN REJECTION

There are several problems that may lead to the rejection of a specimen including improper/inadequate specimen labeling, broken or leaking collection container, broken slides etc. Rejected specimens will not be discarded until the collector or ordering physician has been contacted by laboratory personnel. **Unlabeled and mislabeled specimens are not acceptable and will not be used, nor is relabeling of mislabeled blood and urine specimens allowed.** In the case of specimens which are unique or irretrievable (such as a surgical pathology specimen) or which are the result of invasive procedure (such as joint fluids or CSF), the person responsible for the specimen identification will be required to correctly label and sign a statement as documentation of the identification problem. Specimen containers with external contamination will be rejected.

SPECIMEN COLLECTION FEEDBACK

When issues of significance are detected that preclude a specimen from being accepted for testing and for all mislabeled specimens, feedback is given to the nurse manager who oversees the area of specimens collection. This is done via e-mail communication. All mislabeled specimens are documented and submitted to Quality Management Service using the Patient Incident Worksheet (PIW). Additionally, these types of unacceptable specimens as well as trends in sub-optimal specimens are documented in Quality Assurance data that is presented to the Performance Improvement Board.

SPECIMEN TRANSPORT

- (1) **For specimens collected on all nursing wards, outpatient clinics, ER and urgent care areas**, specimen delivery to the receiving window in the 4A hallway is the responsibility of specimen collection personnel. Each patient's specimens are to be transported in a separate biohazard specimen bag with appropriate order information provided either on the specimen label or accompanying the specimen in the form of paper requisition. These specimens must be transported in an approved well-constructed transport container with a closed, secure lid. Insulated biohazard transport bags are provided to the trained escort staff, patient care areas, and outpatient collection areas for this use. Specimen transport for routine specimens is to occur within two hours of collection unless otherwise preserved.
- (2) **For specimens collected in the operating rooms and recovery area**, transport of **routine specimens** for histology and cytology, **STAT (frozen section or clinical lab test)** and return of units for the Blood Bank are performed by operating room personnel utilizing the dumbwaiter or by hand delivery to room 4A304.

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- (3) Specimens may be transported by means of transport to 4A specimen receiving window, TELECAR system from 1A area, dumb waiter transport from OR area, and for **small** specimens in biohazard bags inside of bubble wrap bags, the pneumatic tube system may be used. The pneumatic tube system is not to be used for urine specimens in specimen cups, blood cultures, or any other large volume specimen, or for transporting blood components. In the event of a spill within a pneumatic tube, the tube is removed from service for decontamination. Initial decontamination is done by absorbing the spill, disinfecting with 10% bleach solution. The tube is then submitted to processing and decontamination section of patient support service for steam sterilization.
- (4) **Specimens transported from outlying clinics (CBOCs, PSL, and Rural Health sites)** must be processed (centrifuged and/or refrigerated) to ensure specimen stability and packaged according to the following:
- a. All tubes with gel barriers (light green tube, yellow top serum tube, and marbled top serum tube) require centrifugation in a swinging head centrifuge at sufficient speed to allow for adequate separation of serum or plasma from cells prior to storage and transport. Centrifugation is to occur not less than 15 minutes and not more than 2 hours after collection. A minimum centrifugation time of 10 minutes is necessary for most centrifuges. Follow manufacturer guidelines for specific centrifuge operation.
 - b. After centrifugation, all blood specimens for a single patient are to be packaged together using either of the two methods below (single patient bagging for sites sending 3 or less patients, rack packaging for sites who have 4 or more patient specimens).
 - i. Individual Patient Bag: in a single biohazard bag and refrigerated until transport, this requires tubes that do not require centrifugation be re-packaged with tubes from the same patient that were centrifuged. Care must be taken to verify two identifiers in this re-packaging process. Urine specimens must be in a separate bag. Each specimen must be submitted with appropriate order information provided either on the specimen label or accompanying the specimen in the form of paper requisition in the outer pouch of the sealed plastic bag.
 - ii. Rack packaging:
 1. After collection of specimens for a patient, place a patient label in CBOC transport log, noting the specific rack number on the log and matching the specific row number with the row number (1-24) that the blood specimens are placed in rack.
 2. Place all blood specimens in the row that corresponds to the row number on the log. If there are more than three blood specimens for a single patient, use two rows and mark this on the transport log.
 3. Specimens that require centrifugation are removed from rack for centrifugation and returned to same row after centrifugation. It is critical to verify that specimens are returned to the correct row.
 4. Each rack holds a maximum of 24 different patient's specimens. The patient specimen will be in the same order in the rack as on the accompanying CBOC transport log, a notation of position for each patient is noted on the transport log.
 5. Other specimens such as urine specimens in cups, stool cards, or other larger liquid specimens for each patient are placed individually in a separate zippered biohazard bag (with an accompanying requisition in the outer pouch if applicable).
 6. The need to submit paper requisition is eliminated if all order numbers for which testing is desired are present on the transport log and the specimen containers. Cytology requisitions must be submitted in the paper form.
 7. To pack specimen in transport cooler: Place each rack into a large biohazard bag designed to hold a rack or multiple specimens.
 8. Place all other bagged specimens for the same transport time in a separate large biohazard bag.
 9. Place each rack in the bottom of the cooler to retain in upright position and place the bagged specimens on top of beside the racked specimens. All urine specimens will now be in two bags to prevent leakage into cooler.
 10. Check the transport log to verify that the rack number for each sheet is filled in, put packager initials, and the date and time packaged on the top sheet, staple all sheets for a single delivery together, and hand to courier.
 - c. HBPC specimens may be dropped off at CBOC sites for delivery to VA West Palm Beach. When these specimens are delivered to CBOC, they should be checked prior to the HBPC staff member departure so that any labeling deviations can be addressed. These specimens are to be processed in the same manner

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as CBOC specimen, but can be bagged separate from the specimens in the rack. It is important to reflect these specimens on the transport log with a notation that these are HBPC specimens.

- d. Transport personnel or collection site personnel place all bagged or racked specimens into the transport cooler. Cooler is labeled "Biohazard Laboratory Specimens, VAMC Laboratory West Palm Beach, FL 561-422-6305".
- e. Cooler is placed into trunk of transport vehicle during transport. If cooler is to be placed in passenger compartment, it must be secured closed and secured in place in the rear seat. No back seat passengers are allowed with the cooler.
- f. When transport vehicle arrives at Medical Center, deliver specimens in coolers to specimen receiving window in the 4A hallway, or directly into lab accessioning room 4A205. Laboratory personnel will unload the specimens.
- g. All Deliveries from CBOCs must be accompanied by a "CBOC Specimen Transport Log" with the following information: Date and time of packaging, initials of packaging staff member, initials of courier, and a list of all specimens included in the shipment.
- h. When the shipment is received by laboratory staff, the time and signature of tech receiving shipment, status of shipment and documentation of notification of any problems is additionally completed.

(5) **Specimens transported from Home Based Primary Care (HBPC) sites must be packaged as follows:**

- a. All blood specimens for a single patient are to be packaged together in a single biohazard bag and placed into biohazard cooler until transport. Urine specimens must be in a separate bag. Each specimen must be submitted with appropriate order information provided either on the specimen label or accompanying the specimen in the form of paper requisition in the outer pouch of the sealed plastic bag.
- b. Cooler is placed into trunk of vehicle during transport. If cooler is to be placed in passenger compartment, it must be secured closed and secured in place in the rear seat with the seat belt. No back seat passengers are allowed with the cooler.
- c. When HBPC staff arrives at Medical Center, deliver specimens in cooler to specimen receiving window in the 4A hallway.
- d. HBPC staff must verify that patient specimens that require centrifugation (all tubes with a gel barrier) are delivered to the specimen receiving window not more than two hours after collection.
- e. Alternately, HBPC specimen may be delivered to CBOC for processing and stabilization prior to deliver to West Palm Beach VA Lab. This will allow for specimens to be received at CBOC within two hours. This option is only available if delivery is made prior to the published CBOC driver scheduled pick-up time.

RESULTS REPORTING

Manual and automated result entries are verified before final acceptance and reporting by the computer. As laboratory testing is completed and verified by technical and professional staff, the report will automatically be available to the clinical staff via both VistA and the CPRS Chart. All clinical laboratory tests ordered by on-site providers, inclusive of results referred for reference laboratory testing, are reported in the laboratory package with a reference range or therapeutic range as appropriate. Results which are outside the reference ranges will generate a High or Low flag based on the ranges.

Any time a significant change is made to test interpretation, this change is explained via one of the following: Explanatory comments reported with test result, e-mail update to providers, Quarterly Lab update presented at Medical Staff meeting. Test results are displayed with a header that indicates test performed at VAMC West Palm Beach. Tests ordered at VA West Palm Beach, but referred to a reference lab for testing are reported with a comment indicating the name and address of the testing (reference) laboratory.

Outside laboratory results (whether brought to the VA by the patient or acquired by the patient provider) can be added to the scanned medical record if desired by the patients provider. These are not displayed with laboratory results ordered onsite, but are included in the patient chart as "Outside Medical Records".

CRITICAL VALUES

When the laboratory obtains a critical value, the following guidelines will be used to notify the requesting clinician or covering clinician of the test and value. When critical values are communicated verbally, the information relayed will

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include the patient name, SSN, name of test and the critical result. This information must be written down by the care provider receiving the result and read back to the lab staff member relaying the information. This communication, inclusive of read back is documented in the comments of the lab report. In addition to telephone notification of critical values, a "View Alert" will flag on the VistA screen for the ordering provider. The following is a listing by Laboratory Section of posted critical limits and call back protocol:

CHEMISTRY

<u>Test</u>	<u>Less Than</u>	<u>Greater Than</u>	<u>Units</u>
Calcium	7.0	12.0	mg/dl
Glucose	50	450	mg/dl
Potassium	3.0	6.0	mmol/L
Sodium	120	155	mmol/L
CSF Glucose	30.0	350.0	mg/dl
CK-MB relative %		15.0	Relative %
Troponin		0.5	ng/ml Refer to "**NOTE"
Ethanol (Blood alcohol)		350	mg/dl

***NOTE: Exception to Troponin I critical value reporting protocol.**

After a critical Troponin I value has been confirmed and called to the ordering physician, additional critical values occurring during the patient's current admission will not be called.

THERAPEUTIC DRUG MONITORING

<u>Test</u>	<u>Greater Than</u>	<u>Units</u>
Acetaminophen	200	mcg/ml
Carbamazepine	15.0	mcg/ml
Digoxin	2.4	ng/ml
Gentamicin (peak)	12.0	mcg/ml
Gentamicin (trough)	3.0	mcg/ml
Lithium	2.0	mEq/L
Phenobarbital	50.0	mcg/ml
Phenytoin	20.0	mcg/ml
Salicylate	30.0	mg/dl
Theophylline	20.0	mcg/ml
Tobramycin (Peak)	12.0	mcg/ml
Tobramycin (Trough)	2.0	mcg/ml
Valproic Acid	120.0	mcg/ml
Vancomycin (Peak)	80.0	mcg/ml
Vancomycin (Trough)	20.0	mcg/ml

When a critical value is confirmed, Chemistry personnel will immediately notify the requesting physician or responsible surrogate with the value.

HEMATOLOGY

<u>Test</u>	<u>Less Than</u>	<u>Greater Than</u>	<u>Units</u>
WBC	2.0	30.0	K / ul
Hemoglobin	8.0	20.0	g/dl
HCT (Hematocrit)	25.0	60.0	%
Platelet	50	1,000	K / ul
Absolute Neutrophils	0.5		K/ul
INR		4.9	ratio
APTT		110.0	seconds
Fibrinogen	100.0		mg / dl

LABORATORY GENERAL

Malaria

Present

Hematology Panic Value Call Back Protocol:

When a critical value has been confirmed by the Hematology section, the requesting physician or responsible surrogate will be called with results:

- a. All coagulation critical values will be called each time.
- b. For hematology critical values (WBC, Hgb, Hct, Plt, ANC):
 - i. If the previous result was not a critical value, the new critical value will be called.
 - ii. If the last called critical value was greater than 10 days ago, new critical value will be called.
 - iii. If the critical value does not represent a significant change from the last value phoned, no additional notification will be made. Determination for significant changes includes:
 1. WBC of >30.0 increases by >33%
 2. WBC between 1.0 and 2.0 K/ul decreases by 50%
 3. Hematocrit of <25% decreases by 3.0
 4. Hematocrit of >60% increases by 5.0
 5. Platelet between 20 and 50 K/ul decreases by 10 K/ul or more
 6. Platelet <20 K/ul decreases by 20% or more
 7. An absolute neutrophils count <0.5 K/ul call only once per 10 days.
 8. Platelet count > 1000 K/ul, call only once per 10 days.

MICROBIOLOGY

The following is a list of Microbiology results that will be immediately called to requesting physician or a responsible surrogate:

Positive culture or result for:

Spinal Fluids- positive gram stain, India ink, culture or cryptococcal antigen.
Blood Cultures
Body Fluids and sterile body sites
Acid Fast Bacillus Smear
Eye Culture (positive for *Pseudomonas aeruginosa* & *Moraxella lacunata*)
Intravenous (IV) Catheter Tip Culture
Stool Culture (positive for *Salmonella*, *Shigella*, *Campylobacter*, *C. difficile*, *Y. enterocolitica*)
Staphylococcus aureus resistant to Vancomycin
New Methicillin Resistant *Staphylococcus aureus* (except nares screen)
Positive growth for dimorphic fungus
Positive Blood Parasite film

Additional Non-critical Notifications: Any significant abnormal culture is reported electronically via the “Bad Bugs” e-mail rapid communication system. This includes notification to infection control practitioners of all reportable organisms and diseases as determined by the State of Florida Department of Public Health (FL DOH). Nares screen positive MRSA results are notified to RN in charge of patient and are not considered critical – for infection control practices only. See Attachment B for detailed listing of “Bad Bugs” and FL DOH notification requirements. Notification to FL DOH is made by the Microbiology Supervisor or Quality Management Infection Control Nurse.

TRANSFUSION MEDICINE

The following is a list of Transfusion Medicine results that will be immediately called to requesting physician or a responsible provider:

- Unidentified antibody
- Positive Direct Antiglobulin Test (DAT) Post Transfusion
- Unresolved ABO type when transfusion is required
- Hemolytic Transfusion Reactions
- Switch in Rh type for Red Cell product transfusion from Rh negative to Rh positive for Rh-negative patient

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Additional Non-critical Notifications: Confirmed positive results for HIV Western Blot are called to the healthcare provider. Positive Hepatitis C screen results generate an electronic notification to the provider and a monthly list of all positive HCV antibody results is sent to the ID clinic Nurse Practitioner for follow-up review.

SURGICAL PATHOLOGY & CYTOLOGY

The following is a list of Surgical Pathology results that will be immediately called to requesting physician or a responsible surrogate:

Critical values are best defined as those results, based on which the clinicians have to act immediately, and take action or make a therapeutic intervention.

- Life threatening infections, such as PCP, fungal, TB, and other infections in HIV or other immunologically compromised hosts.
- Bacteria in a heart valve or bone marrow.
- Skin conditions such as vasculitis, Toxic epidermal Necrolysis, Coumadin induced skin necrosis etc.
- Certain significant malignancies, Superior vena cava syndrome, Neoplasms causing paralysis, needing immediate Radiation, Chemotherapy or other interventions.
- Temporal artery biopsies with arteritis.
- Transplant rejection.
- Crescents in Kidney biopsy specimens.
- Hematological malignancies such as acute leukemia or bone marrow abnormalities or transformations in preexisting malignancies.
- Significant discrepancies between clinical and pathological diagnoses (i.e. rectal carcinoma clinically with Pathology diagnosis of Ulcerative colitis, active).
- Adipose tissue in the specimens after colonoscopies and endometrial curettings.
- All rush biopsies indicated by clinicians (for various reasons including discharges).
- Critical findings identified in Autopsies which will impact patient care or would necessitate changes in Infection control or other policies in the Hospital.
- Unusual or unexpected findings

Additional Non-critical Notifications: Notification of all first time malignancies, with the exception of basal cell carcinomas or squamous cell carcinomas of the skin, is required to the healthcare provider or his/her surrogate as per VA Central Office directive.

REFERENCE TESTING

Any value designated as “critical” or “phone results” from any reference laboratory used by Pathology & Laboratory Medicine Service.

POINT OF CARE TESTING

LABORATORY GENERAL

<u>Test</u>	<u>Less Than</u>	<u>Greater Than</u>	<u>Units</u>
Glucose	50 mg/dl	450 mg/dl	
ISTAT INR:		3.9	ratio
ISTAT Troponin:		0.5	ng/ml
ABG – ISTAT pH	7.2	7.6	pH
ABG – ISTAT PO2	50		mm Hg
ABG – ISTAT PCO2	15	60	mmHg
ABG – ISTAT Sodium	120	155	mmol/L
ABG – ISTAT Potassium	3.0	6.0	mmol/L
ABG – ISTAT Ionized Ca	0.78	1.58	mmol/L
ABG – ISTAT Hematocrit	20	60	%

NOTIFICATION

Clinical lab critical result notifications are to be completed within 30 minutes of result confirmation. Critical AP/CP critical notifications are to be completed within 24 hours of determination. Other non-critical AP/CP notifications are to be completed within 2 business days of the result determination. Notifications to State of Florida Department of Public Health (FL DOH) are made as per FL DOH guidance.

DOCUMENTATION

Critical result notification is documented in the comments of clinical laboratory reports and in the body of anatomic pathology report. The documentation will include the result (test name and value), name of provider notified, date and time of notification, person completing notification and read-back confirmation indicating that the result and patient identifier was documented by recipient and read back. Readback verification can be noted with RB or RB complete. First time malignancies are also added to the patient problem list in the electronic medical record (EMR) by the pathologist. Point of care documentation is made in the electronic medical record or maintained in u:drive logs as noted in each specific point of care procedure.

For critical POC-glucose results : Enter notification information in BCMA (Must Add a Comment) or in a Nursing Note for outpatient clinics without BCMA.

EXAMPLE: 5/19/15 14:20 BS 45/Dr. Smith/read-back@14:30/Action: OJ given

BLOOD BANK

ORDERING COMPONENTS

Prior to ordering blood components it is advisable to check the Cover Sheet on CPRS. Blood Bank Alerts are displayed under postings in the upper right. Please pay close attention to such postings, since additional samples may be necessary for the patient workup. Please call the Blood Bank if a blood bank alert is present.

To place any Blood Bank Order in CPRS, Click Orders tab, then click on the appropriate product or test order. This will bring up the "Blood Component and Diagnostic Test Order Form". You can order multiple products and tests in the same form. There is a tab for Patient Information in this form where the following information is displayed if available: current Blood Bank sample expiration, Antibodies Identified, Transfusion Requirements, Transfusion Reactions, and Units available for transfusion.

Type and Crossmatch involves typing the patient's blood, screening for irregular antibodies, and crossmatching a specified number of units with the patient's serum. **All crossmatches will be drawn by responsible nursing service, medical staff, or laboratory personnel.** The crossmatched units expire in 72 hrs from the time the patient is drawn. A routine crossmatch takes approximately 60 minutes to complete. One (1) SF 518 is required per sample. Infusion of the unit must be completed within 4 hours or discontinued.

Type and Screen involves typing the patient's blood and screening for irregular antibodies. **No units are crossmatched.** This should be used when blood may possibly be needed, but not probably. Two units of type specific blood will be available in Blood Bank. If irregular antibodies are found, two units of blood will be crossmatched with blood negative for the corresponding antigen. If more than two units are anticipated the Blood Bank should be notified in advance. A Type and Screen will expire 72 hours from the time the specimen is drawn.

Fresh Frozen Plasma (FFP) is thawed as needed. It takes approximately 30 minutes to thaw. Once thawed, expiration time is 24 hours. Infusion of the unit must be completed within a 4 hour time frame. Plasma Frozen within 24 Hours (P24) may be substituted for Fresh Frozen Plasma, and will have an expiration date of 5 days after thawing.

Platelets are supplied as single donor (pheresis) platelet units whenever available. A single pheresis unit is equivalent to approximately 6 single platelet units. If Pheresis platelets are unavailable, then the blood bank staff will substitute 6 pooled single units. If pooled single platelets are substituted for pheresis platelets, the pooled platelets must be infused within 4 hrs of being pooled.

PROSPECTIVE REVIEW OF BLOOD PRODUCTS

When any component is ordered and does not meet the guidelines established by the Transfusion Committee, a staff Pathologist will make a utilization call to the physician and ascertain the reason for the transfusion order. This will be reviewed by the Patient Care Review Committee.

BLOOD CONSENT FORM

Prior to the administration of any blood product, the patient must sign the consent for administration of blood products. The consent form is to be completed via IMED consent except in cases where IMED is not available. The consent form must be signed by the patient or other individual authorized on behalf of the patient, a witness and the physician explaining the blood product administration risks and benefits. The consent form is valid for a period of up to 60 days.

COMPONENT INDICATION

The physician that orders a red blood cell, platelet, fresh frozen plasma, or cryoprecipitate component to be transfused must order the transfusion on the CPRS order screen and document the indication for the transfusion. To order in CPRS: Click on orders tab, click on Lab Order Set in the left column, click on Blood Bank, Click on the appropriate transfusion order, fill in all boxes, click the drop down arrow to see all choices for any box, click accept order, select and sign the order. This will result in the indication for transfusion being incorporated into the nursing order to transfuse. The indication is reviewed by the laboratory personnel prior to release of units. Any units transfused which do not meet indications are then referred to the

Transfusion Committee for appropriateness of care review. A copy of the transfusion order must be brought to the lab each time a unit is picked up.

SUSPECTED TRANSFUSION REACTION

Any adverse reaction of the patient associated with a transfusion is a Suspected Transfusion Reaction. A Suspected Transfusion Reaction should be considered a potentially life threatening reaction. Acute transfusion reactions may include: acute hemolytic reactions, non-hemolytic febrile reactions, circulatory overload, allergic reactions, non-cardiogenic pulmonary edema, TRALI (Transfusion Related Acute Lung Injury), non-immune hemolysis, and bacterial sepsis. Delayed transfusion reactions may include: delayed hemolytic reactions, infectious disease (e.g., hepatitis, HIV, EBV, CMV, malaria, toxoplasmosis), RBC alloimmunization, HLA alloimmunization, iron overload and graft vs. host disease.

Although hemolytic transfusion reactions are the most serious and potentially life-threatening, non-hemolytic febrile and allergic reactions make up the majority of the immediate (acute) reactions. The seriousness and the signs and symptoms of clinical transfusion reactions vary greatly. All patients must be carefully monitored during transfusion for reactions and any adverse sign/symptom should be promptly investigated.

Circulatory overload (increased cough, increased systolic hypertension, headache, shortness of breath, tightness of chest, and hypervolemia) is probably more common than suspected due to under reporting. **FEVER** and chills are the most common symptoms associated with a transfusion reaction: the significance of the fever (temperature rise > 1 degree Centigrade or 1.8 degree Fahrenheit) may vary from a simple reaction to donor leukocytes or platelets (non-hemolytic febrile reaction) to a serious, potentially life-threatening hemolytic reaction. For this reason, **all acute, unexplained temperature rises of > 1 degree C (1.8 degree F) in association with a transfusion should be promptly investigated as a Suspected Transfusion Reaction.**

Since the physical findings and symptoms of significant transfusion reactions are often nonspecific, any adverse reaction should be clinically evaluated. Signs and symptoms of the serious **acute hemolytic transfusion reaction** may include: fever, anxiety, chest pain, flank pain, headache, dyspnea, chills, red urine, agitation, shock, hypotension, unexplained bleeding or hemoglobinemia.

The Delayed Hemolytic Transfusion Reaction occurs 3-14 days post-transfusion and may present as fever, malaise, indirect hyperbilirubinemia or an unexplained falling hematocrit. This reaction is due to alloimmunization or an anamnestic response to transfused red cell antigens.

If a transfusion reaction is suspected, follow these steps:

1. **Stop the transfusion immediately and keep the IV line open with sterile normal saline.**
2. Complete area on the BTRF (Blood Transfusion Record Form) titled: Transfusion Reaction Data.
3. At the patient's bedside, perform a clerical check by examining all labels, including caution tag, BTRF, blood bag and **patient's identification wristband** to make sure that this is the correct patient receiving the corresponding component. **Remember clerical/identification errors are the most common cause of serious transfusion reactions, so the patient/blood product check is very important.**
4. Notify the ordering or on-call physician **immediately**. If physician orders a transfusion reaction workup, the physician must order a Transfusion Reaction workup in CPRS notify the Blood Bank and proceed with the following steps.
5. Draw one Large K2 EDTA tube (pink top) – no gel (avoid mechanical hemolysis).
6. Send the blood specimens, the source document, and the discontinued unit of blood, administration set (without the IV needle), attached IV solutions and the BTRF form to the Blood Bank **immediately**.
7. Collect the first urine sample after reaction noted and send to the Blood Bank. The Blood Bank will notify the floor if a 24 hour urine collection is necessary.

8. Blood Bank will notify the floor of the preliminary testing results as soon as possible. This will be handled as an **emergency** situation.
9. All suspected transfusion reaction workups are reviewed expeditiously by the Blood Bank Medical Director or designee pathologist for assessment and recommendations.

CLINICAL CHEMISTRY

The Chemistry section offers a wide menu of testing. Many tests are available 24 hours a day. Testing schedules for each test are listed in the alphabetical listing of this directory. Also found there is STAT availability of individual tests. If any test in Chemistry has certain specimen or testing requirements, this will be listed for each individual test in the alphabetical test listing under "Special Instructions".

Patient Challenge Testing

A limited number of Stimulation or Challenge tests may be requested to determine patient disease states. Many of these tests require that the patient be given a specific dose of a medication, with specimens then collected over a period of time at specific intervals for the test. A summary of these tests can be found in Appendix II, detailed information for some of the more common tests is also found in the alphabetical test list.

Renal Vein Sampling

Physicians may consult with interventional radiology to collect blood samples (generally for aldosterone or renin) from various renal veins to aid in diagnosis of disease. This service is performed entirely by radiology with specimens submitted to lab for testing once the interventional collection is complete. It is vital that the provider place a separate order for each test at each collection site and label the specimens with the specific collection site. Specimen collected is specific to the test to be performed. See collection sample requirements in alphabetic listing of tests. Due to the critical nature of this type of collection, it is recommended that lab staff be notified of these collections prior to the procedure.

24 Hour Urine Collection

Note the exact time the collection is started. Discard the **first** specimen obtained at this time. Then save all urine specimens for the next 24 hrs. Collect in a plastic 1500 ml container, which is kept at the nursing stations. **Loss of any urine will invalidate the test.** Label the container with the patient's name, social security number, the collection time and date, and collector's initials. Refrigerate the specimen during the collection. When the 24 hr. collection is complete, bring specimen, order requisition and the 24 hour urine information sheet with collection times noted to the laboratory.

Acid Preservatives

Some 24 hour urine collections will require an acid preservative. You will receive the preservative in the 24 hour urine container if indicated. It will be marked with the name of the acid and a hazard sticker. **If you have an acid preservative, you must handle it with caution.** When the first specimen is added to the 24 hour urine container, pour slowly into the container to avoid splashing. **If acid splashes on your skin, flush the affected area with a large amount of water.** If acid is rinsed off promptly, there should be no resulting injury. For inpatient collections requiring acid, it is the responsibility of the nursing personnel to convey all of these precautions to the patient. For outpatient collections, it is the responsibility of the laboratory personnel issuing the container to convey all of these precautions to the patient. In either case, a written instruction sheet with detailed collection instructions is supplied to the patient.

THERAPEUTIC DRUG MONITORING

The following delineates the scope and limitations of drug monitoring available.

General comments

- When ordering drug levels, keep in mind that there are patient variables affecting the absorption, metabolism, and renal clearance as well as interference from other drugs. Also consider the patient's hepatic, renal, and electrolyte status.

- ° Specify the following when ordering any drug level:
 - a. The generic name of the drug to be measured.
 - b. Whether the drug is pre-dose (trough) or post-dose (peak), and the correct time for the drug to be drawn. See "Special Instructions" within the individual drug listings in the Alphabetical Listing of Tests section for appropriate draw times.

Drug Monitoring offered at this VAMC

- ° Approved ASAP (2 hour turnaround): acetaminophen, alcohol, carbamazepine, digoxin, gentamicin, lithium, phenobarbital, phenytoin, salicylate, theophylline, tobramycin, valproic acid, and vancomycin.
- ° All drugs levels performed on site are available on weekends and holidays.

FLOW CYTOMETRY

Tests currently offered are **T-Cell Subsets**, **CDC Panel** and a **Leukemia/Lymphoma Panel**. One lavender top tube (containing EDTA) and one yellow top tube (containing ACD-A) are required specimens for both tests. Please **consult** with a staff pathologist before ordering the leukemia/lymphoma panel. If the panel is warranted, then **schedule** the test with Flow Cytometry lab or the pathologist to ensure optimum handling of the specimen which will prevent having the patient redrawn. This is especially critical with bone marrow specimens, since obtaining a new specimen is not a realistic expectation. The yellow top tubes are a 10 ml draw tube, and at least 8 ml are required for optimum results. When it is likely that Flow Cytometry will be needed on a lymph node or body fluid, please consult with pathologist prior to scheduling the procedure to insure that appropriate transport media is provided for specimen submission and that specialized staff will be available to perform analysis.

HEMATOLOGY AND COAGULATION

A **CBC** consists of WBC, RBC, HGB, HCT, MCV, MCH, MCHC, RDW, PLT, and MPV. The **Differential** is the automated 5 part white cell differential which is derived from the Hematology instrumentation. When certain Red Cell and White Cell flagging criteria are met, a manual 100 or 200 cell differential is performed including manual red cell, white cell, and platelet morphology as appropriate. Repeat differentials within a day are not clinically indicated in most circumstances. For this reason, a second request for CBC with differential within a day will not normally have a differential reported. Exceptions to this are:

- specimen is from a patient in the ER or ICU areas
- total WBC count is significantly different from previous specimen
- requested by the physician (call hematology lab ext. 6318)

Coagulation testing is done on specimens anticoagulated with 3.2% sodium citrate (blue top tube). The coagulation tube is a full draw tube which draws 2.7 ml blood into 0.3 ml citrate. **Clinically significant error** can be prevented by properly filling the tube. The tubes must be filled at least to the top of the paper label. Under filling can cause significant prolongation of the clotting times due to an increased dilution factor. This is absolutely critical in specimens drawn from patients on oral anticoagulation therapy. If more than one special coagulation test is ordered in addition to the PT/PTT, an additional full tube is needed for each special test.

With the exception of CSF, **body fluids** other than blood submitted for cell counts and differentials must be placed in a lavender top tube. Cytospin smears will be prepared and examined on all body fluids that yield more than five (5) WBC.

Semen Analysis must be scheduled with the Hematology Lab by sending the patient to the Laboratory Office. The lab will arrange with the patient a mutually acceptable day and time. The lab will issue the pre-collection instruction sheet at that time. Please inform the patient of this protocol so that he does not arrive at the lab expecting to have the test done the same day. **Unscheduled collections and specimens delivered to the lab will NOT be routinely performed.** When the patient returns on the day of the test, he must report to the laboratory where he will be issued a labeled sterile cup for collection.

Many tests in Hematology or Coagulation have certain specimen or testing requirements; these will be listed individually in the Alphabetical Listing of Tests under "Special Instructions".

MICROBIOLOGY

INDIVIDUAL SECTION POLICIES

The collection of a useful specimen is a prerequisite to the effective and rapid detection of disease causing microorganisms. A useful specimen: (1) contains organisms of the same kinds and numbers as those present in the area of clinical disease; (2) is not contaminated with extraneous bacteria or fungi; (3) is of large enough volume to permit finding small numbers of pathogens; (4) is promptly transferred to culture medium in the laboratory.

All specimens must be collected in sterile containers and properly labeled with the patient's name, social security number, date and time of collection and source of specimen. **An unlabeled or insufficiently labeled specimen or a leaking container is not acceptable. Specimens in syringes will not be accepted if transported with the needle.**

All specimens are to be transported to the laboratory in plastic bags. An individual computer generated source document must accompany each specimen. The source document specifies the tests requested by the physician. The actual date and time of collection must be written on the source document in the appropriate area.

Keep tubes and containers upright with caps and lids tightly sealed. Leaking or spilled specimens are not acceptable.

Prompt delivery of specimens to the laboratory is essential. Most specimens should be refrigerated immediately after collection if they cannot be delivered to the laboratory within 30 minutes.

DO NOT refrigerate the following specimens:

- Thayer Martin cultures (for *Neisseria gonorrhoeae*)
- Blood Cultures (routine aerobic/anaerobic)
- Blood Cultures (for mycology or fungus cultures)
- Blood Cultures (for *Mycobacterium*, TB or AFB culture)
- Wet prep

Deliver the following to the laboratory immediately:

- Cerebral Spinal Fluid (CSF)
- Stool or Fecal specimens
- Knee or Synovial fluid
- Eye or corneal scraping cultures
- Trans-tracheal Aspirates
- Tissue Samples

Questions concerning specimen collection for optimal recovery of microorganisms should be directed to the Microbiology section.

URINALYSIS / URINE CULTURES

Urine is normally a sterile body fluid. However, it must be collected correctly to avoid contamination with microorganisms from the perineum, prostate, urethra, or vagina. While specimens collected for immediate urinalysis need not be sterile, contaminated specimens quickly lose their chemical and physical characteristics. In addition, urinalysis specimens are often referred for culture. Therefore, all urine specimens should be collected as clean catch midstream. Specimens for culture can be clean-catch midstream urines, catheterized urine, urine from an iliac conduit or urine collected by suprapubic needle aspiration from the bladder.

Urine Specimen Guidelines:

- Foley catheter tips are unacceptable for culture.
- Early morning specimens should be submitted, when possible, because of increased bacterial counts.
- Never collect urine from a bedpan or urinal.
- Urine should be transported to the laboratory as soon as possible after collection.
- If urine cannot be cultured or analyzed within 2 hours of collection, refrigerate at 4-10° C.
- If the specimen is received in the laboratory more than 2 hours after collection and there is no evidence of refrigeration, specimen will be rejected and a new one requested.
- Do not submit 24 hour urine specimens for culture or urinalysis.

Urine Collection Technique:

The person obtaining the urine specimen should wash hands with soap and water, rinse, and dry. If the patient is collecting the specimen, he/she should be given detailed instructions including diagrams or a pictorial display.

Females:

- Cleanse the urethral opening and vaginal vestibule area with soapy water or provided soaked gauze pad
- Hold labia apart during voiding
- Allow a few milliliters of urine to pass. (Do not stop the flow of urine.)
- Collect the midstream portion of urine in a sterile container.

Males:

- Cleanse the penis, retract the foreskin (if not circumcised), and wash with soapy water or provided soaked gauze pad
- Rinse with sterile water or wipe
- Keeping foreskin retracted (to minimize contamination with skin flora), allow a few milliliters of urine to pass. (Do not stop the flow of urine.)
- Collect the midstream portion of urine in a sterile container

POINT OF CARE TESTING

Point of Care Testing can only be performed within the scope of the program that is defined and approved by the Point of Care Testing Committee. Testing is only performed at the request of a licensed, credentialed healthcare provider. Testing is only performed by trained staff. All point of care test results are entered into the electronic medical record and testing staff must adhere to the same critical notification requirements defined for testing that occurs within the clinical laboratory spaces. Detailed information regarding the point of care testing program is available on MCM 548-113-074; and testing procedures are made available to staff in the pink Point of Care Testing Manuals distributed to all areas performing Point of Care testing.

The current scope of point of care testing at this institution is limited to the following tests, locations and staff – detailed information about locations and trained testing staff is available in the Point of Care office:

- Glucose (waived) – numerous locations, numerous trained staff members
- Urine Pregnancy (waived) – limited to CBOC sites, limited trained staff members
- i-STAT Troponin – ER only, trained, licensed nursing staff only
- i-STAT EG7 (Arterial Blood Gases) – OR and other clinical areas by trained licensed staff; throughout Medical Center by trained Respiratory Therapist staff
- i-STAT PT/INR – Anti-Coagulation clinic; performed by trained, licensed clinical staff only
- i-STAT ACT – Cardiac Cath Lab / Angiography and OR; performed by trained, licensed clinical staff only
- i-STAT Creatinine (waived) – Imaging; performed by trained, licensed clinical staff only

GENETIC GERMLINE TESTING INFORMATION

Genetic Germline Testing (GGT) requires informed patient understanding and consent. Genetic Counselors (GC) via the Telehealth program facilitate this process ensuring that the specific elements are documented in CPRS, the appropriate testing is ordered, and the patient understands the potential consequences of test results on their personal life and family members.

Order Process: Place an Outpatient Consult in the Orders tab in the Computerized Patient Record (CPRS), select Special Programs/105 Genomic Counseling. If the Provider has a question regarding management/testing that does not require that the GC have a conversation with the Veteran, an E-Consult can be placed. The GC will review the chart and the telehealth team will schedule the counseling, generally within 2 business days.

Refer to Pathology and Laboratory Medicine's Genetic Germline MCM 548-113-448 for further information regarding the process.

The following list of tests (not all-inclusive) is typical GGT that require informed consent:

Oncology	APC
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INDIVIDUAL SECTION POLICIES

	BRCA
	CDH1
	Lynch Syndrome
	MEN2
	MUTYH/MYH
	PALB2
	PTEN
	STK11
	TP53
Cardiology	Brugada Syndrome
	Cardiomyopathy (Hypertrophic and dilated)
	Long or Short QT Syndrome
Neurology	Ataxia
	CADASIL
	Charcot-Marie-Tooth
	DM1,DM2
	Familial ALS
	Huntington Disease (written consent form required)
	Muscular Dystrophies
	Spastic Paraplegia
Miscellaneous GGT	Chromosome analysis, whole blood
	Thrombophilia screen
	Y-microdeletion analysis
Prenatal	Carrier screening for conception purposes; genetic screening for male Veteran whose wife is a carrier and treated outside of the VA.

SURGICAL PATHOLOGY

Any material removed from a patient during a procedure must be submitted to Laboratory Service accompanied by the printed electronically entered order. Fee basis providers may submit Standard Form 515 with handwritten information.

Tissue specimens are brought directly to the Specimen Receiving window in Laboratory Service, sent via the dumbwaiter, or delivered to the histology laboratory. Voluntary staff are not to be utilized to deliver Surgical Pathology specimens.

Each specimen container must be labeled with the patient's full name, full SS#, and specimen source/ specimen site.

The date and time of collection as well as the collector's initials are also to be written on the label. When the specimens is entered (accessioned) into the laboratory's data base, an electronic log, a listing of the specimens received that day is created. If you feel that your service would benefit from an additional system (manual logs, forms, etc.) to track Anatomic Pathology specimens, the laboratory will cooperate with you within limitations of regulations on Information Security, and such additional system will have to be approved by the facility's ISO and must be administered by the service desiring it.

Surgical specimens received by 3:00 pm Monday through Friday will be processed that day, with results generally available the following business day. Specimens requiring longer fixation, extensive dissection, special stains, or submission to a reference lab for additional testing will have extended turnaround times. For questions regarding specimen submission during administrative hours, please contact the histology laboratory at extension 6325.

Non-Administrative Hours

The laboratory must be notified to retrieve specimens which have been placed in the dumbwaiter after administrative hours, or the specimen integrity may be compromised. The after-hours laboratory contact number is ext. 5751. The laboratory can also accommodate requests for larger specimen containers and / or formalin. Contact the pathologist on call for specific specimen submission questions.

Placing Anatomic Pathology Orders

Orders for surgical pathology or cytology are entered by selecting the Main Order Screen → Lab Order Sets (#68). Select #1 'Tissue Examination' for surgical pathology specimens. Select the appropriate cytology order from the list provided. All fields must be completed. Multiple numerically sequentialled specimens may be entered into the 'Specimen' field. Print

the order as follows: Highlight the order→File→Print→ Chart Copy (check box) →Change (select) →enter printer number→OK→Print all checked items.

SURGICAL PATHOLOGY SPECIMEN COLLECTION AND PREPARATION

Tissue specimens for routine processing

Tissue is placed in 10% neutral buffered formalin except as indicated below. The minimum ratio of fixative to tissue is 10:1. Fixation is the single most important step in specimen processing. Insufficient fixative volume causes autolysis and compromises cellular morphology. Formalin filled containers are provided by Logistics Service, ext. 5297. Larger specimen containers and bulk formalin are ordered by individual services.

Prostate Biopsies

Prostate biopsies are submitted in glyoxal-based, non-formalin fixative, such as Glyo-Fixx®, which is provided by Logistics Service.

Intra-operative Consultation (Frozen Section)

An intra-operative pathology consultation may be obtained by calling ext. 6325 or ext. 6822. Frozen Sections on nights, weekends, and holidays may be obtained by consultation with the pathologist on call. The tissue for frozen section must be sent without fixative. Tissue may be placed on Telfa dampened with sterile physiologic saline to prevent the tissue from drying out. Frozen sections reports requiring that a single block of tissue be submitted are generally available within 20 minutes of receipt. Specimens requiring extensive dissection or that multiple blocks be frozen, may take up to 1 hour to complete.

Lymph nodes

Lymph nodes for suspected lymphoma are handled similarly to tissue for intra-operative consultation. The histology laboratory is called at ext. 6325 and notified that a lymph node is being sent. Send the specimen immediately, **without fixative**, in a sterile container. It is imperative that the specimen be received fresh, as live cells are required if flow cytometry studies are indicated.

Urinary Stones

Urinary stones are submitted without fixative along with a copy of the tissue examination order as above. Calculi are forwarded to a reference laboratory for crystallographic analysis. Results are available in 7-10 days. Analyses of subsequent urinary calculi on the same patient will not be repeated for 2 years, unless specifically requested by the provider.

Bacteriological/histological tissue

Tissues that require bacteriological and histological examination must be submitted **fresh** (without formalin fixative) in sterile containers, writing 'C&S' on the container. It is advisable to print the microbiology orders along with the tissue examination form to ensure the cultures are taken first and then forwarded to the surgical pathology laboratory.

Direct Immunofluorescence (DIF)

Specimens for DIF are forwarded to a reference laboratory. Submit a 4mm punch biopsy of skin or mucosa in Michel's transport media (available from Histology Laboratory, extension 6325) and request Direct Immunofluorescence testing on the requisition along with detailed description of the duration and appearance of the lesion(s). Submit a second biopsy in formalin for routine histology. Indicate whether the biopsies are lesional, perilesional, or uninvolved. Results are generally available within 5 working days of receipt by the reference lab.

Renal Biopsies (for diseases other than tumors)

Biopsies may be scheduled Monday through Thursdays. (Friday biopsies are not advised, as the reference lab does not accept Saturday delivery which may compromise the specimen in Michel's transport media.) The histology laboratory is notified by radiology staff at least one day in advance. A laboratory staff member will be present in the radiology suite, during the procedure to assess the adequacy of the core(s) obtained. The analyses require that the tissue cores contain a certain number of glomeruli as well as sufficient tubules. Presence of these structures will be determined by the laboratory staff member. Depending on sampling, more than one core may be necessary for analyses. Specific detailed collection instructions are available upon request from the histology lab. The specimens are forwarded to a reference lab. The reference lab will verbally notify the nephrologist of the light microscopy results the day after receipt. The final report is generally available within 5 days after receipt by the reference lab.

Muscle Biopsies

Routine muscle biopsies may be scheduled Monday through Friday. The specimen must be received by 1:00 pm to allow for sample preparation and overnight shipment to the reference lab. Select a moderately affected muscle that has not been subjected to EMG in the preceding month. Use care to avoid injecting local anesthetic into the area of the biopsy specimen or stretching the tissue. One longitudinal strip of moderately affected muscle measuring 2.5 – 3.0 cm in length x 1.0 x 1.0 cm. across is wrapped in moist (not wet) physiologic saline, immediately placed on the dumbwaiter, and notify the histology lab at ext. 6325. Specific detailed collection instructions are available upon request from the histology laboratory.

Invasive Breast Procedures - mastectomies (full and segmental), core biopsies

Due to the stringent limits on fixation and processing times for breast cancer predictive markers, first time breast biopsies to rule out malignancy, such as MR guided biopsies, must be placed in formalin, and must be accompanied by the usual electronic requisition which details the timeline of the collection procedure. Specifically, please provide the exact time of the deployment of the needle and the time the tissue touches formalin fixative (cold ischemic time). All fresh (unfixed) breast specimens must be delivered to the laboratory within 45 minutes of collection if prognostic markers (ER/PR, Her2) are desired. Orientation of the segmental resections, should be as follows: short suture = superior, long suture = lateral, and double suture= deep margin. If an Accu-Grid® is used, the specimen is taken from the OR to radiology, and then delivered to the pathology lab with accompanying radiograph. The grid should be kept leveled during transport in order to preserve orientation on the grid. Since majority of the time a segmental/total resections would have been preceded by biopsy, and therefore, prognostic marker would have been already performed, a less stringent time line may be used, however, all breast tissue specimens should arrive in the laboratory within 2 hours of collection.

Bone Marrow Biopsy

Technical assistance must be scheduled with the Hematology Lab (x 6318) for all marrow aspirations and biopsies. This must be done at least 1 day preceding the scheduled procedure. On the same day as the scheduled marrow, a CBC, Differential, and Reticulocyte Panel must be ordered and collected. Also a Tissue Exam Request must be ordered in the computer. Biopsies received in the Histology Lab by 1:00 PM can be processed for viewing the following day. A one day delay may occur if received after 1:00 PM. If a bone marrow procedure is requested on off-hours (evening, night, weekends, holidays), the pathologist on call must be called for approval. If it is a justifiable emergency (rare), technical assistance will be called in on overtime. Prior to starting the procedure, please inform the assisting technologist of any special testing needed (cytogenetics, markers, cultures, etc.) so that any special preparations (such as heparinized syringes or the volume requirements for the tests desired) can be communicated.

CYTOLOGY SPECIMEN COLLECTION AND PREPARATION

Cytology specimens must be submitted to Laboratory Service accompanied by the printed electronically entered order. Cytology specimens are brought directly to the Specimen Receiving window in Laboratory Service, sent via the dumbwaiter, or delivered to the cytology laboratory. Voluntary staff is not to be utilized to deliver cytology specimens.

Each specimen container must be labeled with the patient's full name, full SS#, and specimen source/ specimen site. The date and time of collection as well as the collector's initials are also to be written on the label. A label containing this information is also placed on the appropriate clipboard at each of the receiving areas. Laboratory staff will record the date/time of receipt and the number of specimens received and place their initials adjacent to the label.

With the exception of gynecologic specimens which are collected in a fixative, cytology specimens are received in the fresh state and must be delivered to the lab as soon as possible (not to exceed one hour) to avoid degeneration of the cells.

Handling

To ensure cytologic specimens are optimally handled, specimens should be sent to the histology/cytology (Room 4A-304) between 0800 and 1630 hours, Monday through Friday. Specimens received by 1430 hours are processed the same day as receipt. Specimen received after 1630 hours will be stored in the microbiology refrigerator until the next business day. Specific instructions for collection of specimens and preparation of slides are contained in the following sections according to site of origin of the specimen.

Non-gynecologic reports are generally available the following day. Gynecologic reports are usually available within 5 business days. Gynecologic specimens forwarded to a reference laboratory for HPV testing have an approximate turnaround time of 10 business days. For questions regarding specimen submission during administrative hours, please contact the cytology laboratory at extension 6328 or 6946.

Specimen processing may be expedited as needed for urgent patient care. Contact the cytology laboratory or the staff pathologist on service to request that a specimen be rushed.

Unacceptable Cytology Specimens

The following omissions or discrepancies are unacceptable:

1. Container (s) and/or requisition lacking 2 patient identifiers.
2. Container (s) and/or requisition with alternate patient identifiers.
3. Discrepancies in specimen site(s) listed on container and requisition.
4. Samples of insufficient quantity.
5. Air dried samples or smears.
6. Urine or body fluids left at room temperature for more than 1 hour.
7. Body fluid specimens received in formalin.
8. Specimens with obvious blood/body fluid contamination on the exterior container surface.

The requestor that submitted the rejected specimen will be contacted and the resolution discussed. **Urine or Pap smear specimens received without labels or with erroneous patient identification are discarded following discussions with responsible clinical staff.** Unlabeled specimens obtained by an invasive procedure may be returned for labeling and subsequently accepted providing the provider sign the provided form assuming responsibility for the accuracy of the patient identification.

NON-GYNECOLOGIC CYTOLOGY SPECIMENS

Brushings (Bronchial, Esophageal, GI, Common Bile duct)

Withdraw the brush from the selected body site and cut the brush off directly into a 50ml conical tube with 30ml of CytoLyt solution. CytoLyt may be obtained from cytology department room 4A304. Cells suspended in this solution are stable for many hours. **Do not put the brush in formalin - the specimen will be irretrievably fixed to the bristles of the brush and will be unsuitable for Cytologic processing.**

Bronchial Washings/Lavage

These specimens must be sent to the laboratory immediately. If simultaneous microbiology and cytology studies are needed, it is recommended that the aspirated material be collected in two sterile containers and sent to the appropriate lab sections with the appropriate requisition forms. If one specimen is submitted, it is mandatory that all microbiology orders and cytology requests be submitted with the specimen. Specimens received after administrative hours will be refrigerated until processing.

Sputum Cytology

Sputum cytology provides significant clinical information in the diagnosis of respiratory tract malignancy as well as other pathologic conditions such as viral disease and fungal infections. An adequate clinical history and proper collection and preparation of the specimen are necessary.

Patient Preparation:

- First morning sputum is suggested.
- Upon awakening have patient cough deeply into a clean sputum cup. Encourage the patient to expectorate sputum - not saliva. If the patient cannot produce sputum, try again the following morning or ask the physician to order induced sputum.
- Have patient continue deep cough and expectoration until cup is picked up.
- Sputum cup should be collected at 8:30 a.m. and transported IMMEDIATELY to the laboratory with a completed cytology requisition. Please transport fresh specimen to lab immediately (within 30 minutes of collection) without fixative.
- Sputum specimens may be collected on outpatients and kept refrigerated until delivered to laboratory. Every effort should be made to deliver specimen to laboratory within one hour of collection. Specimens that are not delivered within one hour should be maintained and delivered on ice.

If microbiology studies on sputum are ordered at the same time as cytology, it is preferred that the patient cough material into two sterile sputum cups so that both procedures can be performed on fresh material. One specimen may be shared only if both the microbiology orders and the cytology request form accompany the specimen.

Urine Cytology

INDIVIDUAL SECTION POLICIES

Urine is a very hostile environment for exfoliated cells and degeneration occurs very rapidly. Therefore, the urinary specimens must be submitted to the lab as soon as possible. Three methods are used in obtaining cytological material from the urinary tract:

- 1 - Voided urine
- 2 - Catheterized urine
- 3 - Washings of urinary tract with or without brushing

Voided urine

The first morning voided urine is not desirable for cytologic examination, since the exfoliated cells are in a hostile environment overnight and have undergone degenerative changes. The first morning urine must be discarded and approximately 3 hours later voided urine can be collected for cytologic examination.

The specimen must be sent to the Cytology laboratory room 4A-304 within one hour of collection. Voided urine in females may be contaminated by cells exfoliated from other areas such as vagina. In older male patients, presence of residual urine in bladder may contribute to significant degeneration of the urothelial cells.

Catheterized urine

Although the catheterized urine shows less contamination by cells from outside the urinary tract, the catheter causes denudation of the urothelium which creates difficulty in the interpretation of the cytologic material.

Irrigation or washing

Cytologic material from the bladder or other sites of the urinary tract can be obtained by insertion of a catheter into the lumen of the bladder and obtaining the specimen after forceful irrigation and washing of the site with saline or similar solutions.

GYNECOLOGIC CYTOLOGY SPECIMENS

Patient Preparation

It is advisable for the patient to avoid using vaginal suppositories, creams, or douches for 24 hours prior to collection. Once the patient is positioned, an appropriately sized bivalve speculum should be inserted in the vagina. Water may be used to lubricate and warm the speculum; however, lubricant jellies should not be used. The speculum must be positioned so that the entire face of the cervix appears at the end of the instrument since a sample from this area is necessary for adequate specimen collection.

Sample Collection

Note: Cytological specimens should be considered infectious until fixed with a germicidal fixative. Observe universal precautions.

ThinPrep PAP smear collection

For a sample to be considered adequate, it is necessary to obtain a specimen from both the ectocervix and the endocervix. This requires careful inspection of the cervix and localization of the transformation zone. When the endocervix is sampled, the endocervical brush is gently inserted into the endocervix, turned 90 degrees, and withdrawn. The endocervical brush should be used with caution during pregnancy. When the ectocervix is scraped, care should be taken to sample the transformation zone (squamocolumnar junction). The scraping should be firm but gentle; the spatula should be rotated 5 complete turns. Removal of pieces of tissue with the scraper should be avoided. Both the collection brush and spatula are immersed into PreservCyt solution and twirled to remove material from the collection device into the solution. PreservCyt solution and collection kits with brushes and scrapers are obtained from the cytology laboratory room 4A304.

For optimal evaluation of the pap smear, it is required that the cytology requisition form include the first day of the last menstrual period (LMP), hormonal status, abnormal findings, and history of previous abnormal smears and therapy.

HPV Reflex Testing

High risk subtypes of HPV have been determined to increase the risk of development of cervical cancer. Cytology specimens with a cytologic diagnosis of ASCUS are routinely forwarded to our reference laboratory, Quest Diagnostics, to test for infection with high risk subtypes of Human Papillomavirus (HPV). Specimens may also be forwarded for testing upon request by the clinician. HPV testing may also be performed on formalin fixed tissue (HPV In-Situ Hybridization).

Fine Needle Aspiration Cytology without Radiologic Guidance

Fine needle aspiration provides cytologic material from either superficial subcutaneous sites or from deep lesions which can be used for diagnosis. Pathology staff may be requested to assist with the evaluation of adequacy as necessary. Requests for assistance with adequacy determinations are made via the VistA email group g.cyto or by calling the cytology laboratory at ext. 6328 or ext. 6946 during administrative hours.

Specimen collection

As with all invasive procedures, the clinician obtaining the FNA specimen must adhere to time out procedures to verify patient identification and procedure site as outlined in Medical Center Memorandum 548-112-161, Correct-Site Surgery and Invasive Procedures.

Obtain glass slides, a slide container with 95% ethanol, and CytoLyt preservative solution from the cytology laboratory room 4A-304.

For FNA procedures without radiological guidance, the lesion is first palpated and localized. The skin surface is kept firmly in place with one hand. The needle is inserted into the lesion and negative pressure or vacuum is created in the syringe. The needle is moved up and down in the lesion to dislodge cellular material. The cellular material is collected in the lumen of the needle and **before removing the needle from the lesion; the piston of the syringe must be released so the aspirated material remains in the lumen of the needle and is not drawn up into the syringe.** The needle and the syringe are then removed from the lesion.

If smears are desired, a drop of the material may be placed on a glass slide, smeared with a second slide and both slides immediately placed into the 95% alcohol. Each slide must be labeled with two patient identifiers. If multiple specimen sites are taken, the slides must also include the specimen site.

The needle is then detached from the syringe and a small amount of air is aspirated into the syringe. The material within the needle is expressed into a 50 ml conical tube with 30 ml CytoLyt solution. The plunger is withdrawn and depressed several times to express any additional material within the lumen.

CORNEAL AND CONJUNCTIVAL SCRAPING

For diagnosis of Chlamydia inclusion conjunctivitis a corneal or conjunctival scrapings/swab may be submitted for DNA probe or Chlamydia culture. Please contact the Microbiology section (ext. 6315) to obtain the specimen collection kit if the direct immunofluorescence is ordered and closely follow the instructions in the kit including the use of the special fixative. If a Chlamydia culture is ordered, please contact the Microbiology section.

TZANCK SMEARS FOR VIRAL INCLUSION BODIES OF SKIN OR MUCOSA

Tzanck test is a practical diagnostic and screening procedure for viral lesions of skin and/or mucosa. The roof of a vesicle is carefully removed by a sharp and sterile scalpel and the content of the vesicle are submitted in a sterile tube or rinsed directly into a 50 ml conical tube with 30 ml of CytoLyt solution. Do not obtain the Tzanck smear from an old lesion such as a previously opened pustule. The CytoLyt solution can be obtained from Cytology lab room 4A-304.

AUTOPSY REQUEST INFORMATION

The primary objective of the autopsy is to assist the clinician in the determination of the cause of death and document the nature and extent of disease for the benefit of the deceased's family and physicians. It is VHA policy that permission to perform an autopsy (i.e., post mortem examination) must be requested in every instance when a patient dies while an inpatient at a VHA facility or under the immediate care of a VHA facility (such as during an outpatient or emergency care visit, or during an ambulatory care procedure). An autopsy is also performed if the next-of-kin requests an autopsy for concerns regarding specific diagnoses/conditions the patient may have had. Information gained from an autopsy may be particularly useful in the following situations:

1. Deaths in which an autopsy may help explain unknown or unanticipated medical complications.
2. Deaths in which the cause is not known with certainty on clinical grounds.
3. Deaths in which an autopsy may help allay concerns or provide reassurance to the family.
4. Unexpected or unexplained deaths occurring during or within 48 hours of any dental, medical, surgical, or diagnostic procedures and/or therapies.
5. Deaths occurring in patients who have participated in clinical trials or protocols that are approved by the Research and Development Committee.
6. Sudden, unexpected, or unexplained deaths which are apparently natural and not subject to forensic medical jurisdiction.
7. Natural deaths that are subject to, but waived by, forensic jurisdiction such as the following: (1) persons dead on arrival at the hospital; (2) deaths occurring in the hospital within 48 hours of admission; and (3) deaths in which the patient sustained or apparently sustained an injury while hospitalized.
8. Deaths from high-risk infectious and contagious diseases.
9. Deaths occurring in the outpatient setting.
10. Deaths occurring on the psychiatric service.
11. Deaths associated with a possible drug reaction or blood product transfusion.
12. Deaths known or suspected to have resulted from environmental or occupational hazards.

A legal authorization for a post-mortem examination using SF523 signed by the appropriate next-of-kin is required. The health care provider responsible for the care of the patient at the time of death is the designated person to request permission from the next of kin to perform a post-mortem examination. The extent of the autopsy may be limited to specific organs of interest or body cavities if a full autopsy is not indicated. Efforts to obtain permission for an autopsy must be documented in the medical record.

Clinical questions or concerns related to possible post-mortem findings should be communicated to the pathologist by the attending physician prior to beginning the post-mortem examination.

If the cause of death may be considered reportable to the Medical Examiners' Office, the pathologist on duty is available to assist the clinician or AOD in determining whether it falls under their jurisdiction. A complete listing of deaths reportable to the Medical Examiners' Office is available in the Decedent Affairs MCM (MCM-548-293) and in the Medical Staff By-Laws.

The deceased is taken to the hospital morgue BA 304A within 2 hours of death by nursing staff following the Post Mortem Care Guideline in the Nursing SharePoint.

The Decedent Affairs clerk or AOD will notify Laboratory Service that an autopsy is pending and will deliver a copy of the signed consent to the Laboratory Office 4A-201.

Prior to the start of an autopsy, an e-mail is sent to medical staff notifying them of the time of the autopsy so that staff with clinical interest in the case may attend.

After the autopsy, a Laboratory Service employee will transfer the deceased back to the morgue for release by Decedent Affairs/AOD.

The preliminary anatomical diagnosis report is available within 24 hours or 72 hours for weekend autopsies. The final autopsy report will be available within 30 working days.

INDIVIDUAL SECTION POLICIES

The next-of-kin who authorized the performance of the autopsy will be notified by the Decedent Affairs clerk that the autopsy report is available. The reporting pathologist is available to the family to clarify the autopsy report as needed.

The following are common lab test panels that may be requested through GUI:

CBC (Complete Blood Count)

WBC	MCH
RBC	MCHC
HGB	RDW
HCT	PLT
MCV	MPV

Differential – (Diff Count –Blood)

Neutrophils %	Eosinophils %
Segs %	Basophil %
Lymphs %	RBC Morphology
Monos %	WBC Morphology

(Note: Cell types reported as seen; abnormal RBC, WBC, and Platelet morphology reported—normal morphology not reported)

Electrolytes

Sodium	Chloride
Potassium	Bicarbonate

Basic Metabolic Profile

BUN	Potassium
Creatinine	Chloride
Glucose	Bicarbonate
Sodium	Calcium

Iron group

Iron	TIBC
Ferritin	Calculated Transferrin Saturation

Renal Function Panel

BUN	Potassium
Creatinine	Chloride
Glucose	Bicarbonate
Sodium	Calcium
Phosphorus	Albumin

Hepatitis B Profile

Hepatitis B Core Antibody (Total)
Hepatitis B Surface Antigen
Hepatitis B Surface Antibody

LA Panel (Lupus Anticoagulant Panel)

Dilute Russell Viper Venom Time (DRVVT or LA Check)
Lupus Anticoagulant Confirmatory Test (LA Confirm or LA Check)
Lupus Anticoagulant Ratio (LA Ratio)
The panel also includes the PT/INR and PTT and, if indicated, mixing studies on the DRVVT, LA Confirm, and PTT.

Lipid Profile

Cholesterol	LDL Cholesterol (calculated)*
Triglyceride	HDL Cholesterol

Cholesterol / HDL Cholesterol Ratio

* In cases when the Calculated LDL is not valid, a measured LDL will be performed.

Hepatic Function Panel (Liver Profile)

Albumin	AST (SGOT)
Alkaline Phosphatase	Bilirubin, total
ALT (SGPT)	Bilirubin, direct
Total Protein	

Reticulocyte Panel (RETIC PANEL)

Reticulocyte Count (Retic %)
Retic Count, Absolute (Retic #)
IRF (Immature Reticulocyte Fraction %)

Thyroid Profile

Thyroid Stimulating Hormone (TSH)
Free Thyroxine

PSA Panel

Prostate Specific Antigen (PSA)
Free PSA (performed only for PSA between 4.0 and 10.0 ng/ml)
Percent Free PSA (reported only when Free PSA is performed)

REFLEX TESTING INFORMATION

The following is a list of reflex testing currently approved by the VA WPB Medical Staff – the reflex test will be performed in the circumstances described.

Calculus Chemical Analysis: Performed only on the first submission of a Surgical Pathology Stone Analysis request for a patient.

CK-MB: Performed when CK/CK-MB panel is requested and the CK- Total is ≥ 80 U/L

Differential (Blood): Performed when a CBC is requested for outpatient testing and an abnormality in WBC differential parameters such as abnormal cell morphology or abnormal numerical count is noted on the automated differential screen

Direct (measured) LDL: Performed when a calculated LDL is requested but cannot be reported due to high triglycerides (>400 mg/dl) or linear low HDL (<20 mg/dl)

ER/PR DNA Ploidy Her2: Performed on all new breast cancer specimens

FE Quantitation: Performed on tissue blocks when Hemochromatosis is suspected

Fluid Cytology: Performed on body fluids submitted for Hematology Cell Count where there abnormal cells suspicious for malignancy noted and where there is sufficient volume for cytology testing.

Fluorescent Treponemal Antibody (FTA): Performed as a confirmation test for all reactive RPR tests

HCV RNA PCR Quant: Performed as the confirmation test when an HCV Antibody test is reactive

Hemoglobin Variants Panel: Performed whenever a Sick cell screen is positive or equivocal

HIV 1/2 Differentiation: Performed as the confirmation test when an HIV Antibody test is reactive.

Human Papilloma Virus (HPV) DNA High Risk: Performed when PAP smear results are determined to be Atypical Squamous Cells (ASCUS), Atypical Glandular Cells (AGC), or first time Low Grade Squamous Intraepithelial Lesions (LSIL)

Immunoelectrophoresis: Performed when Serum Protein Electrophoresis (SPE) results indicate or are suspicious for monoclonal protein band.

Free PSA: Performed when PSA panel is requested and the PSA Total is ≥ 4.0 ng/ml and ≤ 10.0 ng/ml

ALPHABETICAL

LISTING

OF TESTS

NOTES:

This list includes all tests performed on site, but is not all inclusive of every lab test available at reference laboratories. For information on tests not listed in this manual, use “Test Description Information” in VistA or Tools, “Lab Test Information” in CPRS.

Certain referred tests are screened as part of utilization management to determine appropriate utilization prior to sending. These tests may not appear in the order list in CPRS and will then require the requesting physician call the Sendout section at ext. 5751 to request access to order the test.

Synonym, as used in this test listing, is defined as an alternate name, which can be used during computer order entry.

ABO/RH Typing

Synonyms: ABO Group and Rh Type

Lab section: Blood Bank

Availability: Daily; routine, ASAP, and STAT

Specimen: Large K2 EDTA tube (pink top) – no gel

Minimum volume: 3 ml whole blood

Form 518 must accompany the specimen.

Acetaminophen

Synonyms: Tylenol

Lab section: Chemistry

Availability: Daily; routine and ASAP

Specimen: Small PST (light green top) or SST (gold top)

Minimum volume: 0.5 ml serum

Acetone

Synonyms: Ketone

Lab Section: Chemistry

Availability: Daily, routine, ASAP, STAT

Specimen: Small PST (light green top) or SST (gold top)

Minimum volume: 0.5 ml serum

ACTH

Synonyms: Corticotropin, adrenocorticotrophic hormone

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Special Instructions: specimen should be drawn between-0700- 1000

Specimen: small EDTA tube (lavender top)

Minimum volume: 5 ml whole blood

AFB Culture & Smear

Synonyms: TB Culture & Smear, Mycobacteria culture

Test includes: Culture for Mycobacteria and acid-fast smear

Lab section: Microbiology

Availability: Routine, Monday through Friday (8:00 am - 11:00 am)

Special Instructions: Culturette swabs **SHOULD NOT** be used for specimen collection.

Container and specimen:

1. Sterile, plastic 4 oz. cup with lid:
 - Urine - 50 ml required
 - Pleural, thoracentesis fluid: 10-50 cc
 - Tissue
 - Exudates or abscess drainage: 5-10 cc
 - Stool
2. Sterile tube with screw cap:
 - Body fluids - 10-50 cc
 - CSF or synovial fluid (minimum of 2 cc required)
 - Exudates or abscess drainage
3. Orange sputum collection kit:
 - Sputum (requires 5-10 cc)
4. Blood - (see **BLOOD CULTURE** section)
5. Sterile, plastic suction container:
 - Sputum
 - Bronch wash

Maximum number of cultures: one sputum culture per day until a total of 5 sputum specimens have been submitted.

Albumin, total

Lab section: Chemistry

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Availability: Daily; routine and ASAP
Specimen: Small PST (light green top) or SST (gold top)
Minimum volume: 0.5 ml serum

Albumin, Urine

Synonyms: Microalbumin, urine albumin
Lab Section: Chemistry
Availability: Routine only; test performed each weekday
Specimen: 20 ml random urine or 24 hour urine collection

Aldolase

Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: small clot tube (red top) or SST (gold-top)
Minimum volume: 1 ml serum

Aldosterone

Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: small clot tube (red top – no gel)
Special instructions: Draw “upright” samples at least ½ hour after patient sits up
Minimum volume: 1 ml serum

Aldosterone, urine

Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Special Instructions: 24 hour urine preserved with 10g Boric Acid. Call lab for Boric Acid prior to collection.
Specimen: 24 hour urine collection
Minimum volume: entire 24 hour collection

Alkaline Phosphatase

Synonyms: Alk phos, alk PO₄
Lab section: Chemistry
Availability: Daily; routine and ASAP
Specimen: Small PST (light green top) or SST (gold top)
Minimum volume: 0.5 ml serum

Alkaline Phosphatase Isoenzymes

Synonyms: Heat labile Alk Phos, Alk phos isos
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: small clot tube (gold/marbled SST top)
Minimum volume: 1 ml serum

Alpha 1 Antitrypsin Quantitation

Synonyms: Alpha-1-Antitrypsin, A-1-A-T, A1AT
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: small clot tube (gold/marbled SST top)
Special instructions: overnight fasting is preferred
Minimum volume: 1 ml serum

Alphafetoprotein

Synonyms: AFP; AFP-AF; Alpha Fetoprotein; AFP, tumor marker
Lab section: Chemistry
Availability: Routine, performed daily
Specimen: small clot tube (gold/marbled SST top)

Minimum volume: 1 ml serum

ALT

Synonyms: SGPT

Lab section: Chemistry

Availability: Daily; routine and ASAP

Specimen: Small PST (light green top) or SST (gold top)

Minimum volume: 0.5 ml serum

Aluminum

Synonyms: AL

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: Royal blue clot tube (Dark blue top, red label)

Special instructions: Draw one royal blue top tube of blood and discard. Draw second royal blue top tube. Allow to clot in an upright position.

Minimum volume: 1 ml serum

Amikacin, peak (Post Dose)

Synonyms: Amikin

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday.

Special instructions: Peak levels: draw at end of 60 minute IV infusion or 30 minutes after the end of 30minute I.V. infusion, 60 minutes post I.M. dose.

Specimen: small clot tube red-no gel)

Minimum volume: 0.5 ml serum

Amikacin, trough (Pre Dose)

Synonym: Amikin

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday.

Special Instructions: Draw trough just prior to next dose.

Specimen: Small clot tube (red no-gel)

Minimum volume: 0.5 ml serum

Amitriptyline/Nortriptyline

Test includes: Amitriptyline and Nortriptyline (metabolite)

Synonyms: Elavil, Endep, Etrafon, Triavil

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Special instructions: Collect at steady state trough concentration; >12 hours after dose

Specimen: small clot tube (red no-gel) Minimum volume: 1 ml serum

Ammonia

Synonyms: NH₃

Lab section: Chemistry

Availability: Daily; routine and ASAP

Special instructions: **Specimen must be placed on ice, bring to lab promptly after collection.**

Specimen: small lithium heparin tube ON ICE

Minimum volume: 1 ml plasma

Amiodarone

Test includes: Amiodarone and Desethylamiodarone (metabolite)

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: small clot tube (**plain red**) **DO NOT USE GEL BARRIER TUBE**

Minimum volume: 1 ml serum

Amylase

Lab section: Chemistry
Availability: Daily; routine, ASAP, and STAT
Specimen: Small PST (light green top) or SST (gold top)
Minimum volume: 0.5 ml serum

Amylase, urine

Synonym: Urine Amylase
Lab section: Chemistry
Availability: Daily; routine only
Specimen: 2 - 24 hour timed urine or random urine
Minimum volume: 20 ml random urine or entire collection timed urine

Anaerobic Culture

Synonyms: ANAC
Lab section: Microbiology
Availability: Daily; routine
Specimen: fluids or tissues or aspirates (best sources), routine culturette (if minimal volume). The following specimens **are not** routinely set up for anaerobic culture: cervical or vaginal swab, throat swab, gastric contents, small bowel contents, feces, sputum, mouth swab, eye swab, nose swab, bronchial washing, voided or cath. urine and rectal swab.
Minimum volume: 2 ml (fluid)

Angiotensin Converting Enzyme

Synonyms: ACE Angiotensin 1
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: small clot tube (gold/marbled SST top)
Minimum volume: 1 ml serum

Anti-Cardiolipin Antibody

Synonyms: Anti cardiolipin, cardiolipin
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: small clot tube (gold/marbled SST top)
Minimum volume: 1 ml serum

Anti-Centromere Antibody

Synonyms: Centromere Antibody
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: small clot tube (gold/marbled SST)
Minimum volume: 1 ml serum

Anti-DNA Antibody (Double stranded)

Synonyms: Anti DNA , DS DNA Ab, Double stranded DNA Ab
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: small clot tube (gold/marbled SST)
Minimum volume: 1 ml serum

Anti-gliadin Antibody Panel

Test includes: Gliadin IgG, Gliadin IgA
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: small clot tube (gold/marbled SST)
Minimum volume: 1 ml serum

Anti-glomerular Basement Membrane Antibody

Synonyms: Anti-GBM

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: small clot tube (gold/marbled SST)

Minimum volume: 1 ml serum

Anti-Histone Antibodies

Synonyms: Histone Antibody

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: small clot tube (gold/marbled SST)

Minimum volume: 1 ml serum

Anti-mitochondrial Antibody

Synonyms: Mitochondrial Antibody

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: small clot tube (gold/marbled SST top)

Minimum volume: 1 ml serum

Anti-Neutrophil Cytoplasmic Antibodies

Synonyms: ANCA, Cytoplasmic Antibody

Test includes: Antiproteinase-3 Antibody, Antimyeloperoxidase Antibody

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: small clot tube (gold/marbled SST top)

Minimum volume: 1 ml serum

Anti-Nuclear Antibody

Synonyms: ANA titer, FANA, Fluorescent Antinuclear Ab, ANA

Lab section: Serology

Availability: Routine performed once each week

Specimen: small clot tube (gold/marbled SST top)

Minimum volume: 0.5 ml serum

Anti-Platelet Antibodies, Indirect (Polyvalent)

Synonyms: Platelet Antibody

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: small clot tube (gold/marbled SST tube)

Minimum volume: 1 ml serum

Anti-Smooth Muscle Antibody

Synonyms: Anti-SMA, Anti Smooth Muscle

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: small clot tube (gold/marbled SST top)

Minimum volume: 1 ml serum

Anti-thrombin III

Synonyms: AT III

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Special instructions: **Tube must be completely filled.**

Specimen: sodium citrate tube (blue top) **tube must be full**

Anti-Thyroglobulin Antibody

Synonyms: Thyroglobulin Antibody

ALPHABETICAL LISTING OF TESTS

Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: small clot tube (gold/marbled SST top)
Minimum volume: 1 ml serum

Anti-thyroid Peroxidase Antibody

Synonyms: Anti TPO, Microsomal Antibody
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: small clot tube (gold/marbled SST top)
Minimum volume: 1 ml serum

Arterial Blood Gases

Synonyms: ABG,)
Lab Section: Performed by **Pulmonary Lab**
Contact Respiratory Therapy department for this test.

Aspergillus Titer (Complement Fixation)

Lab Section: sent to reference lab
Availability: Daily; routine
Specimen: large clot (marbled SST top) tube (10 ml)
Minimum volume: 1 ml serum

AST

Synonyms: SGOT
Lab section: Chemistry
Availability: Daily, Routine and ASAP
Specimen: Small PST (light green top) or SST (gold top)
Minimum volume: 0.5 ml serum

Bacterial Meningitis Antigen Panel

Synonyms: BAD, Bacterial Antigen Detection
Test includes: latex test for Strep. pneumoniae, Neisseria meningitis, group B strep, and Haemophilus influenza
Lab Section: Sent to reference laboratory
Availability: Routine, sent Monday through Friday
Specimen: serum, urine, or spinal fluid
Minimum volume: 1 ml (fluids) **or** 10 ml (urine)

Basic Metabolic Panel (Glu, Lytes, BUN, Creat, Ca)

Synonyms: BMP, Chem 7 + Ca, Profile 7 + Ca
Lab section: Chemistry
Availability: Daily; routine, ASAP and STAT
Specimen: Small PST (light green top) or SST (gold top)
Minimum volume: 1 ml serum

Beta 2 Microglobulin

Synonyms: B2 Microglobulin
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: small clot tube (gold/marbled SST top)
Minimum volume: 1 ml serum

Bilirubin, direct

Synonyms: D Bili, direct bilirubin
Lab section: Chemistry
Availability: Daily, routine and ASAP
Specimen: Small PST (light green top) or SST (gold top)
Minimum volume: 0.5 ml serum

Bilirubin, total

Synonyms: T Bili, total bilirubin, bilirubin

Lab section: Chemistry

Availability: Daily, routine and ASAP

Specimen: Small PST (light green top) or SST (gold top)

Minimum volume: 0.5 ml serum

Blood Culture (Aerobic, Anaerobic)

Synonyms: BC, BCX1, BCX2, BCX3

Test includes: Aerobic and Anaerobic Culture

Lab section: Microbiology

Availability: daily, routine

Special Instructions: **Do not refrigerate!** An automated BacT/Alert instrument is used for processing blood cultures in the laboratory. Special bottles are used for specific types of cultures.

COLLECTION PROCEDURE:

1. Select an optimal site for venipuncture.
2. Scrub the site for one minute with a chlorohexodine gluconate swab. **Allow to dry.**
3. Do not wipe with cotton or palpate the prepared site after cleansing.
4. Disinfect the rubber stopper on the collection bottles using an isopropyl alcohol pad.
5. Using the collection device and butterfly, insert the needle directly into the vein and allow the appropriate amount of blood to inoculate each bottle, filling the aerobic bottle first.

PROPER SPECIMEN IS DETERMINED BY CLINICAL CIRCUMSTANCES:

1. Bacteremia (septicemia) suspected:
 - a. A "blood culture" consists of 5-8 ml of blood in each of two 30 ml broth "BacT/Alert" bottles: one aerobic (blue) and one anaerobic (purple) bottle. These bottles are supplied on the wards. Less than the recommended amount of blood reduces the chances of organism recovery.
 - b. If the patient is on antibiotics, call lab ext. 6305 to obtain special FAN bottle (light green) to use in place of the aerobic (blue) bottle.
 - c. Draw two to three cultures (two bottles each) before treatment is started. Draw each culture from a separate venipuncture site.
 - d. Intervals between cultures are determined by clinical circumstances. Typically, two sets of bottles (two cultures) are drawn from two different sites 15 minutes apart.
 - e. Unless specified otherwise by the clinician, the cultures should be drawn from a peripheral vein rather than from a catheter. If a catheter is used it should only be used for one set and a peripheral vein used for the other.
 - f. Less than two cultures per 24 hours lowers the chances of recovering an etiologic agent.
2. CVP/Swan-Ganz Catheters:
 - a. It is recommended that a blood culture be drawn whenever a CVP/Swan-ganz line is removed for culture.
 - b. Do not place these catheter tips in broth! Use a sterile tube or sterile sputum (4 oz. plastic) cup to transport to the lab.
 - c. Submit one inch section of catheter tip that was removed from under skin.
3. Fungi - suspected systemic mycoses:
 - a. Yellow top tubes containing SPS are available from the Microbiology section of the clinical laboratory.
 - b. Clean arm as described above. Fill Wampole Isolator tube (yellow top tube) using a vacutainer apparatus. This tube must be drawn first before other vacutainer tubes are collected.
 - c. Deliver to the laboratory immediately!
 - d. Collect three samples within a 24-hour period..
4. Mycobacteria (AFB) - suspected systemic TB:
 - a. Yellow top tubes containing SPS are available from the Microbiology section of the clinical laboratory.
 - b. Clean arm as described above. Fill Wampole Isolator tube (yellow top tube) using a vacutainer apparatus. This tube must be drawn first before other vacutainer tubes are collected.
 - c. Deliver to the laboratory immediately!
 - d. Collect three samples within a 24-hour period.

CA 125

Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: small clot tube (gold/marbled SST top)
Minimum volume: 1 ml serum

CA 19-9

Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: small clot tube (gold/marbled SST top)
Minimum volume: 1 ml serum

CA 27.29

Synonyms: CA 15-3, Cancer Antigen-Breast
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: small clot tube (gold/marbled SST top)
Minimum volume: 1 ml serum

Calcium

Synonyms: CA
Lab section: Chemistry
Availability: Daily; routine, ASAP, and STAT
Special Instructions: 6 hour fasting specimen is preferred
Specimen: Small PST (light green top) or SST (gold top)
Minimum volume: 0.5 ml serum

Calcium, Ionized

Synonyms: Ionized calcium, CA ionized
Lab section: Sent to reference lab
Availability: Routine only, sent Monday through Friday
Special instructions: **Tube must be full and cannot be opened prior to analysis. A separate tube must be collected for this test.**
Note: Arterial Ionized calcium is available through Respiratory Therapy.
Specimen: small clot tube (gold/marbled SST top)
Minimum volume: full tube

Calcium, Urine

Synonyms: Urine Calcium
Lab section: Chemistry
Availability: Daily; routine only
Specimen: 24 hour timed urine, preserved with 6N HCl. Call lab for HCl prior to collection.
Minimum volume: entire 24 hour collection

Carbamazepine

Synonyms: Tegretol
Lab section: Chemistry
Availability: Daily; routine and ASAP
Special instructions: Draw just prior to next dose.
Specimen: Small PST (light green top) or SST (gold top)
Minimum volume: 0.5 ml serum

Carbon Monoxide

Synonyms: Carboxyhemoglobin
Lab section: Sent to local community reference hospital.
Availability: ASAP – turnaround time dependent on reference site.
Specimen: Arterial blood ; consult Respiratory Therapy for collection.

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Carcinoembryonic Antigen (CEA),

Lab section: Chemistry

Availability: Routine, performed daily

Specimen: small clot tube (gold/marbled SST top)

Minimum volume: 1 ml serum

Cardiolipin Antibody screen

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: large clot tube (marbled SST top)

Minimum volume: 1 ml serum

Catecholamines, Plasma Fractionated

Test includes: Epinephrine, norepinephrine, dopamine

Synonyms: Epinephrine, Norepinephrine

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Special instructions: **Chill tube before collection, send to lab on ice**

Specimen: heparin tube (green top)

Minimum volume: 2 ml plasma

Catecholamines, Urine Fractionated

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Special instructions: 24 hour urine must be collected with 25 ml 6N HCl. **Contact lab ext. 6305 for container with preservative.**

Specimen: 24 hour urine

Minimum volume: complete 24 hour collection

CBC (Complete Blood Count)

Synonyms: Blood Count, Complete Blood Count

Test includes: WBC, RBC, HGB, HCT, MCV, MCH, MCHC, RDW, PLT, MPV.

Lab section: Hematology

Availability: Daily; routine, ASAP, and STAT

Specimen: small EDTA tube (lavender top)

Minimum volume: one (2.0) ml whole blood

C difficile Toxin

Synonyms: CDT, Clostridium difficile Toxin

Lab section: Microbiology

Availability: Routine, Daily (8:00 am - 3:00 pm)

Special Instructions: Must be delivered to Microbiology before 3:00 pm for processing that day.

Specimen: Liquid or soft stool only. Positive results will not be retested in the same admission.

Minimum volume: 5 ml

Cell Count with Differential (Fluid)

Test includes: WBC, RBC, gross appearance, WBC differential, and scan for abnormal morphology or cells

Synonyms: Body fluid cell count

Lab section: Hematology

Availability: Daily; routine and ASAP

Specimen: Place all fluids except CSF in EDTA tube (lavender top) to prevent clotting. CSF for cell count is placed in a standard clear plastic tube labeled #3 indicating the 3rd tube withdrawn from the patient.

Minimum volume: 2 ml fluid

Ceruloplasmin

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

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Specimen: small clot tube (gold/marbled SST top)

Minimum volume: 1 ml serum

Chlamydia Antibody Titer

Synonyms: Chlamydia titer, Chlamydia Trachomatis antibody, Psittacosis serology, viral titer

Lab Section: Sent to reference lab

Availability: Daily; routine

Special Instructions: Recommendation: Obtain ACUTE and CONVALESCENT specimens 2 - 3 weeks apart.

Specimen: large clot (marbled SST top) tube (10 ml)

Minimum volume: 1 ml serum

Chlamydia by LCR Probe

Lab Section: Microbiology, sent to reference lab

Availability: Daily; routine

Special Instructions: For urethral, conjunctival, or cervical specimens, call Microbiology ext. 6315 to obtain LCR probe

Specimen: Urine (1st morning specimen preferred)

Urethral or cervical: LCR probe

Chlordiazepoxide

Synonyms: Librium

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: small clot tube (gold/marbled SST top)

Minimum volume: 1 ml serum

Chloride

Synonyms: Cl, Cl-

Lab section: Chemistry

Availability: Daily; routine, ASAP, and STAT

Specimen: Small PST (light green top) or SST (gold top)

Minimum volume: 0.5 ml serum

Chloride, urine

Synonyms: Urine Chloride

Lab section: Chemistry

Availability: Daily; routine, ASAP, and STAT

Specimen: 24 hour urine

Minimum volume: entire 24 hr collection

Cholesterol

Lab section: Chemistry

Availability: Daily; routine

Specimen: Small PST (light green top) or SST (gold top)

Minimum volume: 0.5 ml serum

Chromosome analysis

Synonyms: Cytogenetic study, Karyotyping, Philadelphia chromosome

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Special instructions: Pertinent medical findings must accompany request. Include date of birth, suspected diagnosis, medications, last WBC count. Deliver to laboratory ASAP.

Specimen: small heparin tube (green top) or heparinized bone marrow

Minimum volume: 2 ml whole blood

Citrate, urine

Synonym: urine citrate

Lab Section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

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Special Instructions: 24 hour urine, keep refrigerated during collection
Specimen: 24 hour urine specimen
Minimum volume: entire 24 hour urine collection

CK (Total)

Synonyms: CK, Creatine Phosphokinase
Lab section: Chemistry
Availability: Daily; routine and ASAP
Specimen: Small PST (light green top) or SST (gold top)
Minimum volume: 0.5 ml serum

CK and CK-MB

Synonym: CK Isos, CK-MB
Lab section: Chemistry
Availability: Daily; routine and ASAP
Special instructions: CK-MB is performed only on specimens with total CK of ≥ 80 IU/L.
Specimen: Small PST (light green top) or SST (gold top)
Minimum volume: 0.5 ml serum

Clonazepam

Synonyms: Clonopin, Rivotril
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: small clot tube (Plain red) **DO NOT USE GEL BARRIER TUBES**
Minimum volume: 1 ml serum

Clozapine

Synonyms: Clozaril
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: small EDTA tube (lavender top)
Minimum volume: 3 ml plasma

CMV Ab, Acute Infection

Synonyms: CMV, IgG; CMV, IgM
Test includes: CMV IgG and IgM
Lab Section: Sent to reference laboratory
Specimen: small clot tube (gold/marbled SST top)
Minimum volume: 1 ml serum

CMV Immune Status

Synonyms: Cytomegalovirus, CMV Total
Test includes: CMV (Total)
Lab Section: Serology
Availability: Performed once weekly
Special instructions: Titer is available on request.
Contact Serology ext. 6315.
Specimen: small clot tube (gold/marbled SST top)
Minimum volume: 1 ml serum

CO2

Synonyms: Carbon Dioxide
Lab section: Chemistry
Availability: Daily; routine and ASAP
Specimen: Small PST (light green top) or SST (gold top)
Minimum volume: 0.5 ml serum

Coagulation Factors (Factors II,V,VII,VIII,IX,X,XI,XII)

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Lab section: Hematology
Availability: M-F 8-430
Specimen: 1 full blue top tube (Citrated)
Minimum volume: 2 full tubes. If other Coagulation testing is needed extra tubes must be collected.

Cold Agglutinins

Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Special instructions: Do not draw with a cold syringe. Send STAT to Lab
Specimen: small clot tube (red top)
Minimum volume: 1 ml serum

Complement C2

Synonyms: C2
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: small clot tube (gold/marbled SST top)
Minimum volume: 1 ml serum

Complement C3

Synonyms: C3
Lab section: Chemistry
Availability: Routine, performed twice weekly
Specimen: Small PST (light green top) or SST (gold top)
Minimum volume: 0.5 ml serum

Complement C4

Synonyms: C4, C'4
Lab section: Chemistry
Availability: Routine, performed twice weekly
Specimen: Small PST (light green top) or SST (gold top)
Minimum volume: 0.5 ml serum

Complement CH50

Synonyms: Total Complement CH50, CH50, Complement Total
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: small clot tube (plain red - no gel)
Minimum volume: 1 ml serum

Coombs, Direct

Lab section: Blood Bank
Availability: Daily; routine, ASAP, and STAT
Specimen: Large K2 EDTA tube (pink top) – no gel
Minimum volume: Full pink top tube

Coombs, Indirect

Lab section: Blood Bank
Availability: Daily; routine, ASAP, and STAT
Specimen: Large K2 EDTA tube (pink top) – no gel
Minimum volume: Full pink top tube

Copper, serum

Synonyms: Cu
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: dark blue clot tube (royal blue top, red label)

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Minimum volume: 1 ml serum

Copper, urine (24 hr or random)

Synonyms: Cu urine; urine copper

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Special instructions: collect in acid washed container

Specimen: 24 hour or random urine

Minimum volume: submit entire collection

Cortisol Response, Serum

Synonyms: Corticotropin Panel, ACTH (Cortrosin) Stimulation Test, ACTS

Lab Section : Chemistry

Availability: Daily; routine only

Special Instructions: Draw baseline specimen (label tube 0 minutes), Inject ACTH, draw specimens at 30 minutes and 60 minutes. Send all tubes to lab together.

Specimen: small clot tube (gold/marbled SST top)

Minimum volume: 0.5 ml serum

Cortisol, serum

Synonyms: DST

Lab section: Chemistry

Availability: Routine, performed twice weekly

Specimen: small clot tube (gold/marbled SST top)

Minimum volume: 0.5 ml serum

Cortisol, 24 Hour Urine Free

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Special instructions: 24 hour urine, preserved with 10 gm of Boric Acid. Call lab for Boric acid prior to collection

Specimen: 24 hour urine

Minimum volume: Entire 24 hour collection

C-Peptide

Synonyms: C Peptide, Proinsulin

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: EDTA tube (lavender top)

Minimum volume: 1 ml plasma

C-Reactive Protein

Synonyms: CRP

Lab section: Chemistry

Availability: Routine only, performed Monday through Friday

Specimen: Small PST (light green top) or SST (gold top)

Minimum volume: 0.5 ml serum

Creatinine clearance

Synonyms: CR CL

Lab section: Chemistry

Availability: Daily; routine only

Special instructions: A serum creatinine must be ordered separately and submitted within 24 hours of the urine collection.

Specimen: 24 hour timed urine

Minimum volume: entire collection timed urine

Creatinine, serum

Synonyms: serum creatinine

Lab section: Chemistry

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Availability: Daily; routine and ASAP
Specimen: Small PST (light green top) or SST (gold top)
Minimum volume: 0.5 ml serum

Creatinine, urine

Synonyms: urine creatinine
Lab section: Chemistry
Availability: Daily; routine and ASAP
Specimen: 24 hour timed urine
Minimum volume: entire collection timed urine

Cryptococcal Antigen Screen

Synonyms: Cryptococcal antigen, CAS
Test includes: Cryptococcal Antigen-Latex and Cryptococcal Antigen-Titer (if positive)
Lab section: Serology
Availability: Routine, Monday through Friday (8:00 am -2:30 pm)
Specimen: Cerebral spinal fluid (CSF) **or** small clot tube (gold/marbled SST top)
Minimum volume: 1 ml CSF **or** 1 ml serum

Cryptosporidium

Test includes: Smear for detection of Cryptosporidium
Lab section: Microbiology
Availability: Routine, Monday through Friday
Specimen: liquid or soft stool (feces)
Minimum volume: 5 ml

Crystals, joint fluid

Synonyms: synovial fluid crystals
Lab section: Hematology
Availability: Daily, routine and ASAP.
Specimen: Place fluid in small EDTA tube (lavender top)
Minimum volume: 1 ml fluid

Culture and Susceptibility (C&S)

Synonym: Culture, C&S; urine culture; throat culture; stool culture; sputum culture; wound culture

Test includes: aerobic culture and susceptibility testing of pathogens

Lab Section: Microbiology

Availability: Routine, any time

Special Instructions:

1. Gram stains must also be ordered for any respiratory or wound sources including tissue, fluids, culturettes and aspirates. Gram stains can be ordered as STAT, ASAP or routine.

2. **Prompt delivery of specimens to the laboratory is essential.** Most specimens should be refrigerated immediately after collection if they cannot be delivered within 30 minutes.

DO NOT refrigerate the following specimens:

- Anaerobic cultures
- GC Cultures (Thayer Martin plates)
- Blood Cultures (routine, fungal or AFB)

Deliver to the laboratory immediately:

- Cerebral Spinal Fluid (CSF)
- Stool or Fecal specimens
- Knee or Synovial Fluid
- Eye or corneal scraping cultures
- Transtracheal aspirates

3. Urine: All urine submitted for culture should be collected using the “mid-stream clean catch” technique (see instructions in the Microbiology section of this manual) Specimens from patients with indwelling catheters may be obtained by aspiration through the wall of the plastic catheter. (A new external catheter may also yield reliable culture results). Urine from females may be obtained by the “mid-stream” collection technique or by “straight catheterization”. **It**

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is important that any urine specimen for culture be delivered to the laboratory within 30 minutes or refrigerated immediately after collection.

4. Specimens for culture include tissue, fluid, aspirates, urines, and culturettes. All specimens must be delivered in sterile containers.
5. Minimum volume: Varies with source. Contact Microbiology section (Ext. 6315) for specific requirements.

Culture and Susceptibility (GC) for *Neisseria gonorrhoeae*

Synonym: GC Culture, Thayer Martin, Gonorrhea culture, *Neisseria gonorrhoeae* culture

Test Includes: Culture for *Neisseria gonorrhoeae*

Lab Section: Microbiology

Availability: Daily

Specimen: Urethral, vaginal, rectal, body fluid or throat. **Culture media must be inoculated at the bedside and submitted to the laboratory in CO₂ environment.**

Special Instructions: Prior to collecting the specimen, obtain Thayer-Martin media and a Type C Bio-bag kit from the laboratory. Use calcium alginate swab or culturette to collect specimen. Inoculate the Thayer-Martin media by rolling the swab in a large "Z" pattern on the agar surface. Properly label the plates and insert into the Type C Bio-bag. Place CO₂-generating ampule into the bag so that the arrow points upward. Seal the bag. Crush the ampule in the generator. Gently flick the generator to initiate the CO₂-generating reaction (indicated by bubbling). The generator must remain upright for at least 30 seconds. A slide for Gram stain should be prepared and submitted with the specimen to the laboratory as soon as possible. Order Gram stain in DHCP as ASAP, STAT or routine.

Culture and Susceptibility (STOOL)

Synonym: Stool Culture, Feces Culture

Test Includes: Culture for *Salmonella*, *Shigella*, and *Campylobacter* identifications and susceptibility testing. Overgrowth of normal flora by *Staph aureus*, yeast, *Aeromonas* or *Pseudomonas* will be noted.

Availability : Daily

Specimen: Stool sample submitted in sterile cup or stool specimen container or rectal swab. Stool submitted on toilet paper or diaper will not be accepted. Stool cannot be contaminated with urine or water.

Minimum Amount: approximately 3 cm³.

Special Instructions: No more than two stool specimens for routine culture will be accepted per patient per 7 day period without prior consultation. Stool cultures will not be accepted from inpatients that have been in house for more than three days (unless admitted for diarrhea or GI problems). The *C. difficile* toxin assay should be considered as an alternative to routine microbiology studies for any inpatients with clinically significant diarrhea (three or more diarrhetic stools per day) and a history of antibiotic exposure. Contact Microbiology at ext. 6315 if additional information is needed.

Culture and Susceptibility (THROAT)

Synonym: Throat Culture, Strep Throat Culture

Test Includes: Culture for and identification of Group A, C and/or G Beta Streptococcus

Availability: Daily

Specimen: A throat swab taken from the tonsillar area and/or posterior pharynx, with care taken to avoid the tongue and uvula. Submit to laboratory in culturette.

Culture and Susceptibility (YERSINIA)

Synonym: Yersinia Culture

Test Includes: Culture for and identification of *Yersinia* spp.

Availability: Daily

Specimen: Stool sample submitted in sterile cup or rectal swab.

Stool submitted on toilet paper or diaper will not be accepted. Stool cannot be contaminated with urine or water.

Minimum Amount: approximately 3 ml

Cutaneous Immunofluorescence

Synonyms: Direct Immunofluorescence, Immunofluorescence

Lab section: Histology receives and sends to reference lab

Availability: Routine, sent out Monday through Friday

Specimen: 4mm punch biopsy of oral mucosa, conjunctiva, or skin in Michel's fixative Second punch biopsy in formalin is also recommended

Special Instructions: Obtain fixative and Cutaneous Immunofluorescence form from Histology. Deliver specimen immediately, as Michel's is a transport media.

Cyclosporine, whole blood

Lab section: sent to reference lab
Availability: Routine, sent out Monday through Friday
Specimen: EDTA tube (lavender top)
Minimum volume: 2 ml whole blood

Cystine, Quantitative, Urine

Synonyms: Urine Cystine
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: Refrigerated Urine
Minimum volume: entire urine collection

D-Dimer ,Quant

Synonyms: Fibrin Degradation Products, FDP
Lab Section: Hematology
Availability: Daily, routine STAT and ASAP
Specimen: 1 full blue top tube (Citrate)

Desipramine

Synonyms: Norpramin, Pertofrane
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: small clot tube (plain red top) **DO NOT USE GEL BARRIER TUBES**
Minimum volume: 1 ml serum

Diazepam

Synonyms: Valium
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: small clot tube (plain red top) **DO NOT USE GEL BARRIER TUBES**
Minimum volume: 1 ml serum

Differential Count (Blood)

Synonyms: WBC Differential, Diff
Test includes: At least a five part automated differential including Neutrophil %, Lymph %, Mono %, Eos % and Baso %.
When automated diff is flagged, a manual differential is performed with RBC, WBC and Plt morphology also noted. Must be ordered in conjunction with a CBC.
Lab section: Hematology
Availability: Daily; routine
Special instructions: Physician may order this test STAT or ASAP by phoning Hematology section (X6318).
Specimen: EDTA tube (lavender top)
Minimum volume: 1 ml whole blood

Disopyramide

Synonyms: Norpace
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: small clot tube (plain red top) **DO NOT USE GEL BARRIER TUBES**
Minimum volume: 1 ml serum

Digoxin

Synonyms: Lanoxin
Lab section: Chemistry
Availability: Daily; routine and ASAP
Special instructions: Draw 6 or more hours post dose
Specimen: small clot tube (gold/marbled SST top)

Minimum volume: 0.5 ml serum

Doxepin

Synonyms: Adapin, Sinequan

Test included: N-desmethyldoxepin (metabolite)

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: small clot tube (plain red top) **DO NOT USE GEL BARRIER TUBES**

Minimum volume: 1 ml serum

Drug Analysis, Blood

Synonyms: Serum drug screen, Serum Toxicology Screen

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Special instructions: **2 plain red tubes must be collected**

Specimen: 2 large clot tube (plain red - no gel)

Minimum volume: 5 ml serum

Drug Screen, urine

Synonyms: Toxicology profile, urine toxicology, drug screen

Lab section: Chemistry

Availability: Routine or ASAP

Specimen: 100 ml random urine

Minimum volume: 50 ml random urine in sterile urine cup

eGFR

Synonyms: Estimated Glomerular Filtration Rate,

Lab section: Chemistry

Availability: Daily; routine, ASAP, and STAT

Note: eGFR is a calculation of the estimated glomerular filtration rate and is done via an automated calculation. This calculation is reported for each serum or plasma creatinine result.

Electrolytes, Blood (Na,K,Cl,CO2)

Test includes: Sodium, Potassium, Chloride, CO2

Synonyms: Electrolytes, lytes

Lab section: Chemistry

Availability: Daily; routine, ASAP, and STAT

Specimen: Small PST (light green top) or SST (gold top)

Minimum volume: 1 ml serum

Electrolytes, Stool

Test includes: Sodium, Potassium, Chloride

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Special instructions: **Stool must be liquid**, formed stools will not be accepted.

Specimen: 100 ml **liquid** stool

Minimum volume: 50 ml stool

Electrolytes, Urine

Synonyms: lytes, urine; urine electrolytes, urine lytes

Test includes: Sodium, Potassium, Chloride

Lab section: Chemistry

Availability: Daily, routine only

Specimen: 24 hour timed urine or random urine

Minimum volume: entire collection timed urine or 50 ml random urine

Eosinophil Count

Synonyms: Absolute Eosinophil Count, EO count

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Lab section: Hematology
Availability: Daily, routine only
Specimen: small EDTA tube (lavender top)
Minimum volume: 1.0 ml whole blood

Eosinophil Stain

Synonyms: Stain for Eosinophils
Lab section: Hematology
Availability: Daily, routine only
Specimen: Nasal exudate (submitted on a sterile swab), sputum, urine (minimum 6 ml, fresh, first AM specimen). All specimens must be submitted in a sterile container.

Epstein-Barr Panel

Test includes: Antibody to EBV - early antigen, viral capsid antigen, nuclear antigen
Synonyms: EBV
Lab Section: Sent to reference laboratory
Availability: Daily; routine
Special Instructions: Recommendation: Obtain ACUTE and CONVALESCENT specimens 2 - 3 weeks apart.
Specimen: large clot (marbled SST top) tube (10 ml)
Minimum volume: 1 ml serum

Erythropoietin

Synonyms: EPO
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: small clot tube (gold/marbled SST top)
Minimum volume: 1 ml serum

Estradiol, Serum

Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: small clot tube (gold/marbled SST top)
Minimum volume: 1 ml serum

Ethanol

Synonyms: Alcohol, ETOH, blood alcohol
Lab section: Chemistry
Availability: Daily; routine, ASAP and STAT
Specimen: Small PST (light green top) or SST (gold top) or random urine
Minimum volume: 0.5 ml serum

Fecal Fat, Qualitative

Synonyms: Sudan
Test includes: qualitative measurement of Neutral Fats
Lab section: Microbiology
Availability: Routine, Monday through Friday
Specimen: Stool (feces)(fresh, single specimen)
Minimum volume: 5 ml (stool)

Fecal fat, Quantitative

Synonyms: Quantitative fecal fat; 24, 48, or 72 hour fecal fat
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Special instructions: Write collection time period on source document. Submit all stool for the entire period requested in a pre-weighed can obtained in the laboratory. Do not put specimen in plastic bag inside can, **specimens in plastic will be rejected.**
Specimen: All stool for the entire collection period (24, 48, or 72 hours)

Fecal Leukocytes

Synonyms: Stool for WBC, WBC Stool, Stool for Wright's Stain

Lab section: Hematology

Availability: Daily, routine only

Special instructions: Formed stools are not acceptable.

Specimen: Muroid, loose stool

Minimum volume: 5 ml

Ferritin

Lab section: Chemistry

Availability: Daily, routine only

Specimen: Small PST (light green top) or SST (gold top)

Minimum volume: 0.5 ml serum

Fibrinogen

Lab section: Hematology

Availability: Daily; routine and ASAP

Specimen: 1 full blue top tube (Citrate)

Minimum volume: full tube

Flecainide

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: small clot tube (plain red top) **DO NOT USE GEL BARRIER TUBES**

Minimum volume: 2 ml

Fluoxetine

Synonyms: Prozac

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: small clot tube (plain red top) **DO NOT USE GEL BARRIER TUBES**

Minimum volume: 1 ml serum

Fluphenazine

Synonyms: Prolixin

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: small clot tube (gold/marbled SST top)

Minimum volume: 2 ml

Folate

Synonyms: Serum folate, Folic Acid

Lab Section: Chemistry

Availability: Routine only; test performed each weekday

Special Instructions: Specimen must be free of phlebotomy induced hemolysis.

Specimen: Small PST (light green top) or SST (gold top)

Minimum volume: 0.5 ml serum

Folate, RBC

Synonyms: Red cell folate, Folate, RBC

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: small EDTA tube (lavender top)

Minimum volume: 5 ml whole blood

Follicle Stimulating Hormone

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Synonyms: FSH
Lab section: Chemistry
Availability: Routine, performed twice weekly
Specimen: small clot tube (gold/marbled SST top)
Minimum volume: 0.5 ml serum

Free PSA

Synonyms: PSA Panel, Free and Total PSA
Lab section: Chemistry
Availability: Routine only; test performed each weekday
Special instructions: The PSA panel is ordered as a screening test, the Free PSA will only be performed if the patient has a current PSA > 4.0 ng/ml and <10.0 ng/ml.
Specimen: small clot tube (gold/marbled SST top)
Minimum volume: 1 ml serum

Free T-3

Synonyms: T-3 Free, Triiodothyronine Free, T3
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: small clot tube (gold/marbled SST top)
Minimum volume: 1 ml serum

Free Thyroxine

Synonyms: Free T4, T4 Free, T4
Lab section: Chemistry
Availability: Routine only; Daily
Specimen: Small PST (light green top) or SST (gold top)
Minimum volume: 0.5 ml serum

Fructosamine

Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: small clot tube (gold/marbled SST top)
Minimum volume: 1 ml serum

FTA

Synonyms: FTA-ABS, Fluorescent Treponemal Antibody Absorpt
Referral to: Sent to Reference Laboratory
Availability: Weekdays
Specimen: small clot tube (red top)
Minimum volume: 1 ml serum

Fungal serology

Synonyms: Fungal Panel
Test Includes: Aspergillus spp., Blastomyces dermatitidis, Coccidioides immitis, Histoplasma capsulatum spp.
Lab Section: Sent to reference laboratory
Specimen: small clot tube (gold/marbled SST top)
Minimum volume: 1 ml serum

Gabapentin, Plasma

Synonyms: Neurontin
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: small EDTA tube (lavender top)
Minimum volume: 2 ml plasma

Gastrin

Lab section: Sent to reference laboratory

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Availability: Routine, sent out Monday through Friday
Specimen: small clot tube (gold/marbled SST top)
Minimum volume: 1 ml serum

GC/Chlamydia PCR Panel

Synonyms: Neisseria gonorrhea, Chlamydia by PCR, CT/NG Panel
Lab section: Microbiology, sent to reference laboratory
Availability: Routine, sent out Tuesday and Thursday
Specimen: Urine Men or Women (1st morning specimen preferred, patient should not urinate for one hour prior to specimen collection and should catch beginning of urine stream); Vaginal Swab (obtain from Microbiology)

Gentamicin, Peak (Post Dose)

Synonyms: Garamycin
Lab section: Chemistry
Availability: Daily; routine and ASAP
Special instructions: Peak levels are drawn 30 min post I.V. dose, 60 min post I.M. dose.
Specimen: Small PST (light green top) or SST (gold top)
Minimum volume: 0.5 ml serum

Gentamicin, Trough (Pre Dose)

Synonyms: Garamycin
Lab section: Chemistry
Availability: Daily, routine and ASAP
Special Instructions: Trough level is drawn just prior to next dose
Specimen: Small PST (light green top) or SST (gold top)
Minimum volume: 0.5 ml serum

Giardia Antigen, EIA

Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: fresh stool
Minimum volume: 2 g stool

GGT

Synonyms: GGTP, Gamma Glutamyl Transpeptidase
Lab Section: Chemistry
Availability: Daily, routine and ASAP
Specimen: Small PST (light green top) or SST (gold top)
Minimum Volume: 0.5 ml serum

Glucagon

Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: small EDTA tube (lavender top)
Minimum volume: 2 ml plasma

Glucose

Synonyms: BS, FBS, Blood Sugar
Lab section: Chemistry
Availability: Daily; routine, ASAP, and STAT
Specimen: Small PST (light green top) or SST (gold top), fluids
Minimum volume: 0.5 ml serum

Glucose, Ancillary

Lab section: Point of Care Testing
Availability: Daily, routine, ASAP & STAT.

ALPHABETICAL LISTING OF TESTS

Special Instructions: Test is performed on **glucometer** by Nursing Personnel who have completed a basic training course provided by the Point of Care Testing Coordinator from the Lab. Personnel performing this point of care test must be certified initially and currently compliant with our certification policies.

Specimen: Fingertstick, venous or arterial whole blood samples.

Glucose, 2 HR Postprandial

Synonyms: Postprandial glucose, 2 hr glucose, 2 hour PP

Lab section: Chemistry

Test Includes: Fasting glucose, 2 hour glucose

Availability: Daily; routine only

Special instructions: Collect fasting glucose blood specimen and deliver to lab. Follow the fingerstick glucose screening procedure in the Point of Care Testing Manual prior to administration of beverage to patient. Call the lab (ext. 6305) to obtain glucose tolerance beverage. Patient is to ingest all of the glucose solution ideally within 5 minutes, but in a period of time not to exceed 15 minutes. Second blood specimen is to be obtained 2 hours after the ingestion of 100 grams glucose drink.

Specimen: Small PST (light green top) or SST (gold top) for each collection (fasting and two hour)

Minimum volume: 0.5 ml serum

Glucose Tolerance, 3, 4 or 5 hour

Synonyms: GTT

Lab section: Chemistry

Availability: Daily; routine only

Special instructions: Eight hour fasting blood and urine specimens are collected prior to administration of glucose beverage containing 100g glucose. Nursing personnel are to transport fasting specimens to Lab. Follow the fingerstick glucose screening procedure in the Point of Care Testing Manual prior to administration of beverage to patient. Call the lab (ext. 6305) to obtain glucose tolerance beverage. Patient is to ingest all of the glucose solution ideally within 5 minutes, but in a period of time not to exceed 15 minutes. Additional blood and urine specimens are collected 1/2 hour post glucose, 1 hour post glucose, 2 hours post glucose, and 3 hours post glucose beverage (add additional 4th and 5th hour specimen as ordered). See "Tolerance Tests" in the Chemistry Section policies for additional information.

Specimen: Small PST (light green top) or SST (gold top) and random urine at each collection time

Minimum volume: 0.5 ml serum and 10 ml urine

Glucose, Urine Quant

Lab section: Chemistry

Availability: Daily, routine only

Specimen: 24 hour timed urine, no preservative

Minimum volume: entire collection timed urine or 50 ml random urine

Glucose-6-Phosphate Dehydrogenase, Quantitative

Synonyms: G-6-PD, G6PD

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: small EDTA tube (lavender top)

Minimum volume: 2 ml whole blood

Gram Stain

Synonyms: GS, Smear

Lab section: Microbiology

Availability: Daily; routine **or** ASAP, or STAT

Special Instructions: NOT performed on stools or catheter tips

Specimen: tissue, fluid, culturette, aspirates, respiratory specimens

Growth Hormone

Synonyms: HGH, Human Growth Hormone

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Special instructions: Fasting specimen. Patient should be at rest for 30 minutes prior to collection.

ALPHABETICAL LISTING OF TESTS

Specimen: small clot tube (gold/marbled SST top). Minimum volume: 1 ml serum

Growth Hormone Stimulation - Arginine

Synonyms: Arginine Stimulation Test,

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Special Instructions: Arginine will need to be administered to patient per clinician order. Arginine HCL 0.5 g/kg is acquired from pharmacy. Patient must be fasting and in a non-stressful state, ideally all specimens are collected with an indwelling catheter placed at least 30 minutes prior to blood sampling.

Draw baseline specimen (label tube 0 minutes), administer Clonidine, draw specimens at 30 minutes, 60 minutes, 90 minutes and 120 minutes. Send all tubes to lab together.

Specimen: large clot tube (marbled SST top)

Minimum volume: 1 ml serum

Growth Hormone Stimulation - Clonidine

Synonyms: Clonidine Stimulation Test,

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Special Instructions: Clonidine will need to be administered to patient per clinician order. Clonidine 300 ul or 5 ug/kg orally is acquired from pharmacy. Patient must be fasting and in a non-stressful state, ideally all specimens are collected with an indwelling catheter placed at least 30 minutes prior to blood sampling.

Draw baseline specimen (label tube 0 minutes), administer Clonidine, draw specimens at 30 minutes, 60 minutes, 90 minutes and 120 minutes. Send all tubes to lab together.

Specimen: large clot tube (marbled SST top)

Minimum volume: 1 ml serum

Haloperidol

Synonyms: Haldol

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Special instructions: Collect specimen 11 – 17 hours after last dose

Specimen: small clot tube (plain red top) **DO NOT USE GEL BARRIER TUBES**

Minimum volume: 3 ml serum

Haptoglobin

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: small clot tube (gold/marbled SST top)

Minimum volume: 0.5 ml serum

HCG, Quantitative (Pregnancy)

Synonyms: Quant HCG

Lab section: Chemistry

Availability: Daily; routine, ASAP, and STAT

Specimen: Small PST (light green top) or SST (gold top)

Minimum volume: 1 ml plasma or serum

HCG, Quantitative (Tumor marker)

Synonyms: Quant HCG

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: small clot tube (gold/marbled SST top)

Minimum volume: 1 ml serum

HDL cholesterol

Synonyms: High Density Lipoproteins, HDL, Lipoprotein - HDL

Lab section: Chemistry

Availability: Weekdays, routine only

ALPHABETICAL LISTING OF TESTS

Special instructions: fasting specimen
Specimen: Small PST (light green top) or SST (gold top)
Minimum volume: 0.5 ml serum
Reference range: gender dependent, interpretative criteria reported with result

Heavy Metals Screen, urine

Test Includes: Arsenic, Lead, Mercury
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Special instructions: 24 hour urine to be collected in acid washed container (6N HCl) obtained from laboratory.
Refrigerate urine during collection.
Specimen: 24 hour urine specimen
Minimum volume: entire 24 hour urine collection

Helicobacter pylori, IgG

Synonyms: H. pylori
Lab section: Serology
Availability: Routine, performed once each week
Specimen: small clot tube (gold/marbled SST top)
Minimum volume: 1.0 ml serum

Helicobacter pylori Stool Antigen

Synonyms: H. pylori Stool Ag
Lab section: Microbiology
Availability: Routine, performed each weekday
Specimen: Stool, formed or semi formed (watery, diarrheal samples are not acceptable)

Hemoglobin A1C

Synonyms: Glycohemoglobin, A1C, HGB A1C, Glycosolated Hemoglobin
Lab section: Chemistry
Availability: Performed each weekday
Specimen: small EDTA tube (lavender top)
Minimum volume: 1 ml whole blood

Hemoglobin and Hematocrit

Synonyms: H and H, H & H, H/H, Hgb/Hct
Lab section: Hematology
Availability: Daily; routine, ASAP, and STAT
Specimen: small EDTA tube (lavender top)
Minimum volume: 1.0 ml whole blood

Hemoglobin Variants Analysis

Synonyms: Hemoglobin Electrophoresis
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: EDTA tube (lavender top)
Minimum volume: 2 ml whole blood

Hemosiderin, urine

Synonyms: urine hemosiderin
Lab section: Hematology
Availability: Weekdays, routine only
Specimen: freshly voided random urine
Minimum volume: 20 ml random urine

Heparin Induced Antibody

Synonyms: Anti-platelet Antibody (Heparin Dependent)
Lab section: Sent to reference laboratory

ALPHABETICAL LISTING OF TESTS

Availability: Routine, sent out Monday through Friday
Specimen: small clot tube (gold/marbled SST top)
Minimum volume: 1 ml serum

Hepatic Function Panel

Test includes: Alkaline phosphatase; AST; LDH; Bilirubin, total
Synonyms: LFT, LFP
Lab section: Chemistry
Availability: Daily; routine and ASAP
Specimen: Small PST (light green top) or SST (gold top)
Minimum volume: 1 ml plasma or serum

Hepatitis A Profile

Synonyms: Hep A
Test includes: HA Ab Total, HA Ab Igm (if total is positive)
Lab section: Viral
Availability: Routine, performed once weekly
Specimen: 10 ml clot tube (gold/marbled SST top)
Minimum volume: 1 ml serum

Hepatitis A Pre-vaccine Screen

Synonyms: Pre-vaccine Hep A screen, Hep A
Test includes: HA Ab Total
Lab section: Viral
Availability: Routine, performed once weekly
Specimen: 10 ml clot tube (gold/marbled SST top)
Minimum volume: 1 ml serum

Hepatitis B Profile

Synonyms: Hep B
Test includes: HBsAg, HBsAb, HBcAb
Lab section: Virology
Availability: Routine only
Specimen: 10 ml clot tube (gold/marbled SST top)
Minimum volume: 5 ml serum

Hepatitis B Core Ab

Synonyms: Core Ab; HBcAb; HBcAb, total; Hepatitis B Core Antibody
Lab section: Virology
Availability: Routine only
Specimen: 10 ml clot tube (gold/marbled SST top)
Minimum volume: 1 ml serum

Hepatitis B Core Antibody (IgM)

Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: 10 ml clot tube (gold/marbled SST top)
Minimum volume: 1 ml serum

Hepatitis B Surface Antibody

Synonyms: HBS AB, HEP B SURFACE AB, HBsAb
Lab section: Virology
Availability: Routine only
Specimen: 10 ml clot tube (gold/marbled SST top)
Minimum volume: 1 ml serum

Hepatitis B Surface Antigen

ALPHABETICAL LISTING OF TESTS

Synonyms: Hep B, HBSAG
Lab section: Viral
Availability: Routine only
Specimen: 10 ml clot tube (gold/marbled SST top)
Minimum volume: 1 ml serum

Hepatitis B Surface Antigen Confirmation

Lab section: sent to reference lab
Availability: Test is sent automatically by lab personnel after determination of positive Hep B Surface Antigen.
Specimen: 10 ml clot tube (gold/marbled SST top)
Minimum volume: 1 ml serum

HEPATITIS B DNA PCR (TAMPA)

Synonyms: ~~HBV~~, **HBV-DNA TAMPA**
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: ~~Blood~~ (PPT Tube-Special) Pearlescent
Minimum volume:
2 ml plasma
Special instructions: **To be ordered by GI clinic physicians only**

Hepatitis Be Antibody

Synonyms: HEAB, HBE AB, Hepatitis B E Antibody, Hepatitis E Antibody, HBeAB
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: small clot tube (gold/marbled SST top)
Minimum volume: 1 ml serum

Hepatitis Be Antigen

Synonyms: HBE AG
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: small clot tube (gold/marbled SST top)
Minimum volume: 1 ml serum

Hepatitis C Antibody

Synonyms: HEP C, HCV, HEP C AB, HEPATITIS C, HEPATITIS NON A - NON B
Lab section: Viral
Availability: Routine only
Specimen: large clot tube (marbled SST top) is recommended that a separate tube be collected for the HCV test.
Minimum volume: 3 ml serum

Hepatitis C RNA, Qual by TMA

Synonyms: HCV QUAL BY TMA,
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: large clot tube (marbled SST top) is recommended that a separate tube be collected for the HCV test.
Minimum volume: 2 ml SERUM
Special instructions: **To be ordered by GI / ID clinic physicians only**

HCV RNA PCR QUANT (TAMPA) PNL

Synonyms: HCV Tampa
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: Blood (PPT Tube-Special) Pearlescent or Two EDTA tubes (lavender top)
Minimum volume: 3 ml plasma
Special instructions: **To be ordered by GI / ID clinic physicians only**

Herpes Simplex Virus IgG (1,2) (EIA)

Synonyms: HSV,
Lab Section: Microbiology
Availability: Routine. Batched, performed once weekly
Specimen: large clot (marbled SST top) tube (10 ml)
Minimum volume: 1 ml serum

Herpes Simplex Virus Culture w/reflex typing)

Synonyms: HSV Culture
Lab Section: Sent to reference lab
Availability: Routine, sent out Monday through Friday
Specimen: Swab submitted in Viral Transport Media (call Micro at 5342 for collection kit)

Histamine, Plasma

Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: small EDTA tube (lavender top)
Minimum volume: 2 ml plasma

Histoplasma Titer (Complement Fixation)

Synonyms: Fungal serology
Lab Section: Sent to reference laboratory
Availability: Daily; routine
Specimen: large clot (marbled SST top) tube (10 ml)
Minimum volume: 1 ml serum

HIV Ab

Lab section: Virology
Availability: Routine only
Specimen: small clot tube (gold/marbled SST top) a separate tube must be collected for HIV Test.
Minimum volume: 1 ml serum
Special Instructions: Providers must order the HIV test by entering a new note titled VERBAL LAB CONSENT – HIV. In notes tab, provider should select new note and enter a New Note using the template titled “VERBAL LAB CONSENT – HIV”, which will generate both a note and an HIV test order with the appropriate verbal consent documented.

Progress Note Properties

Progress Note Title: VERBAL LAB CONSENT - HIV

VERBAL LAB CONSENT - HIV
VERIFICATION <BRC NURSING WEEKLY MED VERIFICATION>
VERO <VERO ADMINISTRATIVE>
VERO <VERO COUMADIN>
VERO <VERO FLU>
VERO <VERO LAB>
VERO <VERO MH CONSULT>

Date/Time of Note: Mar 6, 2014@12:01

Author: Woods, Garold R - HEALTH INFORMATICS SI

Providers must check the radio button to reflect the actual patient situation. If the patient gives verbal consent, after clicking FINISH, both the note and the order will be generated. Providers will need to sign the note in the NOTES tab and sign the order in the ORDERS tab.

In certain circumstances when it is necessary for providers to know a patients HIV status sooner that the routine screen will allow, providers must order both the routine HIV Ab screen following the process above, then call the lab to have lab staff add the HIV Rapid Screen (Lab). Both specimens must then be collected – One (1) small clot tube (gold/marbled SST top) and one (1) small EDTA tube (lavender top)

HIV Rapid Screen (Lab)

Synonyms: Rapid HIV Screen, Post Exposure HIV Screen,

Lab section: Serology

Availability: Daily; routine, ASAP, STAT

Specimen: small EDTA tube (lavender top)

Minimum volume: 1 ml whole blood

Special Instructions: Providers cannot place the rapid HIV order and must first obtain verbal consent and order the HIV Ab using the process above. The provider must then call lab staff to have lab staff add the HIV Rapid Screen using the lab option 'Add tests to an already existing order number'. If already received, lab staff will use the function 'Lab add test(s) to an existing order number' to add the test RAPID HIV (LAB). This method can be used when a needle stick occurs and there is a need for rapid testing of a source patient.

HIV Screen for Employees

Lab section: Virology

Availability: Routine only

Specimen: small clot tube (gold/marbled SST top) a separate tube must be collected for HIV Test and labelled with the Occupations Health numeric identifier to assure employee identification remains private.

Minimum volume: 1 ml serum

Special Instructions: Occupational Health RNs will create a special numeric identifier and will use the lab option Fast lab test order (ROUTINE) to place an order for either or both of the tests noted above. These staff members have been given a lab key and trained to perform this function. When Occupational Health is closed, the next sequential numeric identifier has been communicated from Occupational Health to the ED and there are specified ER Nursing staff that have been trained and have the options to follow this process. In rare cases when these staff members are not available, direct the ED staff to collect the specimen and label with the next sequential employee identifier and deliver specimen to lab with a laboratory downtime form noting the test needed, provider, etc. Lab staff can then save the specimen and follow-up with Occupational Health RN.

HIV 1/2 Differentiation

Lab section: Sent to reference laboratory

Availability: **Test is only sent by laboratory personnel after positive HIV Ab is determined.**

Specimen: small clot tube (gold/marbled SST top)

Minimum volume: 1 ml serum

HLA B27

Synonym: B27

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: small EDTA tube (lavender top)

Minimum volume: 5 ml Whole Blood

Homocysteine

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: small clot tube (plain red-top no-gel)

Special Instructions: 10 Hr fasting spec **TRANSPORT PROMPTLY TO LAB ON ICE**

Minimum volume: 1 ml serum

HTLV I/II SCREEN

Synonyms: HTLV-I, HTLV-II

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: small clot tube (gold/marbled SST top)

Minimum volume: 1 ml serum

Hypersensitivity panel, Pneumonitis (Immunodiffusion)

Synonyms: Pneumonitis Hypersensitivity, Farmers Lung Panel

Test includes: Aspergillus sp., Aureobasidium sp., Micropolyspora sp., Thermactinomyces sp., Pigeon serum

ALPHABETICAL LISTING OF TESTS

Lab section: Sent to reference laboratory
Availability: Daily; routine
Specimen: large clot (marbled SST top) tube (10 ml)
Minimum volume: 1 ml serum

IgA

Synonyms: Immunoglobulin A
Lab section: Chemistry
Availability: Routine only, performed twice weekly
Specimen: small clot tube (gold/marbled SST top)
Minimum volume: 0.5 ml serum

IgD, Serum

Synonyms: Immunoglobulin D
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: small clot tube (red-top no gel)
Minimum volume: 1 ml serum

IgE, Serum

Synonyms: Immunoglobulin E
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: small clot tube (red-top no gel)
Minimum volume: 1 ml serum

IgG

Synonyms: Immunoglobulin G
Lab section: Chemistry
Availability: Routine only, performed twice weekly
Specimen: small clot tube (gold/marbled SST top)
Minimum volume: 0.5 ml serum

IgM

Synonyms: Immunoglobulin M
Lab section: Chemistry
Availability: Routine only, performed twice weekly
Specimen: small clot tube (gold/marbled SST top)
Minimum volume: 0.5 ml serum

Imipramine & Desipramine

Synonyms: Tofranil, Norpramine
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Special instructions: Collect >12 hours after dose
Specimen: small clot tube (red - **no gel**), DO NOT USE SERUM SEPARATOR TUBE.
Minimum volume: 1 ml serum

Immunofixation, Serum (Immunoelectrophoresis)

Synonyms: Immunofix, IFE
Lab section: Chemistry
Availability: Routine, sent out Monday through Friday
Special Instructions: **Serum Protein Electrophoresis is performed in Chemistry section, IFE will be sent out only if indicated.**
Specimen: small clot tube (gold/marbled SST top)
Minimum volume: 1 ml serum

Immunofixation, urine

ALPHABETICAL LISTING OF TESTS

Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: 24 hour urine
Minimum volume: entire collection of 24 hour urine

Immunoglobulins Profile

Test includes: IgG, IgA, IgM
Lab section: Chemistry
Availability: Routine only, performed twice weekly
Specimen: small clot tube (gold/marbled SST top)
Minimum volume: 0.5 ml serum

Influenza Type A/B Antigen

Synonyms: Flu
Lab Section: Microbiology
Availability: Daily; routine
Specimen: nasopharyngeal swab, collected in viral transport media (Call Microbiology at ext. 6519 for kit).

Insulin

Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: small clot tube (gold/marbled SST top)
Minimum volume: 1 ml serum

Iron

Synonyms: Fe
Lab section: Chemistry
Availability: Routine only, performed daily
Specimen: Small PST (light green top) or SST (gold top)
Minimum volume: 1 ml serum

Iron group

Test includes: Iron, TIBC, Ferritin, Calculated Transferrin Saturation
Synonyms: TIBC, Fe, Fe & TIBC, Iron
Lab section: Chemistry
Availability: Routine only, performed daily
Specimen: Small PST (light green top) or SST (gold top)
Minimum volume: 1 ml serum

i-Stat testing

Testing cartridges available: EG7 Cartridge (ABG, Glucose, Bun, Electrolytes, ionized Calcium, Hgb, Hct), ACT, Troponin I, Creatinine, PT/INR
Lab Section: Point of care
Availability: Daily, routine, ASAP & STAT
Special Instructions: Test is performed by Personnel who have completed a basic training course provided by the Point of Care Testing Coordinator from the Lab. Personnel performing this lab test must be certified and currently compliant with our certification policies.
Specimen: Fingerstick, venous or arterial whole blood samples
Minimum volume: See Point of Care Testing manual

Kappa/Lambda Light Chain

Synonyms: Light Chains, Kappa Light Chains, Lambda Light Chains
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: small clot tube (gold/marbled SST top)
Minimum volume: 1 ml serum

Kidney Biopsy

Lab section: Histology receives and sends to reference lab

Availability: Routine, schedule biopsies Monday through Thursday mornings

Specimen: Needle biopsies in formalin, 2% glutaraldehyde, and Michel's fixative; supplied by Histology lab

Special instructions: Prior notification of Histology lab and completion of reference lab requisition form is required

KOH Fungal Prep

Lab section: Microbiology

Availability: Daily; routine

Special Instructions: submit specimen in sterile container

Specimen: skin scrapings, hair or nail clippings

Lactic Acid

Synonyms: Lactate

Lab section: Chemistry

Availability: Routine and ASAP

Special instructions: Collect specimen without patient clenching fist. **Put specimen on ice and deliver to lab promptly.**

Specimen: small potassium oxalate tube (gray top)

Minimum volume: 1 ml plasma

Lamotrigine

Synonyms: Lamictal

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Special instructions: Draw ½ to 1 hour before next dose at steady-state

Specimen: small clot tube (red-top no gel) Minimum volume: 1 ml serum

LDH (Total)

Synonyms: LD, Lactate Dehydrogenase

Lab section: Chemistry

Availability: Daily; routine and ASAP

Specimen: Small PST (light green top) or SST (gold top)

Minimum volume: 0.5 ml serum

Lead

Synonyms: Pb

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: Royal blue EDTA tube (dark blue tube, lavender label)

Minimum volume: 2 ml whole blood

Lead, 24 Hour Urine

Synonyms: Urine Lead, Lead, Urine

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: 24 Hour urine collected in acid washed container

Minimum volume: entire urine collection

Special instructions: call lab ext. 6305 for Acid washed container prior to collection

Legionella Antibody Titer (IFA)

Test includes: IFA (serogroups 1-6)

Lab Section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Special Instructions: Recommendation: Obtain ACUTE and CONVALESCENT specimens 2 - 3 weeks apart

Specimen: large clot (marbled SST top) tube (10 ml)

Minimum volume: 1 ml serum

Legionella Culture

Test includes: culture and identification

Lab section: Sent to Reference Laboratory

Availability: Routine, sent out Monday through Friday

Specimen: Lung or other body tissue, pleural or other body fluid, transtracheal aspirate, bronch wash/lavage, sputum

Legionella (Direct Fluorescence)

Synonyms: Legionella DFA

Lab Section: Sent to Reference Laboratory

Availability: Routine, sent out Monday through Friday

Specimen: pleural fluid, bronchial wash/lavage (not performed on sputum)

Legionella Urinary Antigen

Synonyms: Legionella antigen

Lab Section: Sent to Reference Lab

Availability: Routine, sent out daily

Specimen: Random urine

Leukemia/Lymphoma Panel

Synonyms: Lymphocyte surface markers, cell surface markers, lymphocyte phenotyping

Lab section: Flow Cytometry

Availability: Scheduled with Hematology (ext. 6318) or Pathologist (ext. 6824)

Specimen: 1 EDTA lavender top **AND** 1 ACD-A yellow top

Minimum volume: 2.5 ml lavender top **AND** 8 ml yellow top

Lidocaine

Synonyms: Xylocaine

Lab Section: Sent to Reference Laboratory

Availability: Routine, sent out Monday through Friday

Special instructions: Collect as trough prior to next dose

Specimen: small clot tube-(red-top no gel)

Minimum volume: 0.5 ml serum

Lipase

Lab section: Chemistry

Availability: Daily; routine only

Specimen: Small PST (light green top) or SST (gold top)

Minimum volume: 0.5 ml serum

Lipid Profile

Test includes: Cholesterol, Triglyceride, HDL, Calculated LDL, Cholesterol:HDL Cholesterol ratio – measured LDL is performed whenever the calculation cannot be performed.

Synonyms: Lipids, Lipoprotein electrophoresis, LDL

Availability: Daily, routine only

Special Instructions: **8 hour fasting specimen is required for this test.**

Specimen: Small PST (light green top) or SST (gold top)

Minimum volume: 1 ml plasma or serum

Lithium

Synonyms: Li

Lab section: Chemistry

Availability: Daily; routine and ASAP

Specimen: small clot tube (gold/marbled SST top)

Minimum volume: 0.5 ml serum

Lupus Screen (latex agglutination)

Synonyms: LE, LE Screen, SLE, SLE Screen, SLE Latex

Lab section: Sent to reference laboratory

ALPHABETICAL LISTING OF TESTS

Availability: Routine, sent out Monday through Friday
Specimen: small clot tube (gold/marbled SST top)
Minimum volume: 1 ml serum

Lupus Anticoagulant

Synonyms: LA Panel, DRVVT, Dilute Russell Viper Venom Time
Lab Section: Hematology
Availability: Daily, routine only
Special Instructions: Tube must be completely filled and **delivered to lab within 30 minutes**.
Specimen: 2 regular sodium citrate blue tops (2.7 ml blood, each)

Luteinizing Hormone

Synonyms: LH
Lab section: Chemistry
Availability: Routine, performed twice weekly
Specimen: small clot tube (gold/marbled SST top)
Minimum volume: 0.5 ml serum

Lyme Disease Antibody (EIA screen, IFA on positive screens)

Synonyms: Borrelia burgdorferi
Lab Section: Sent to reference laboratory
Availability: Daily; routine
Special Instructions: Recommendation: Obtain ACUTE and CONVALESCENT specimens 2 - 3 weeks apart.
Specimen: large clot (marbled SST top) tube (10 ml)
Minimum volume: 1 ml serum

Magnesium

Synonyms: Mg
Lab section: Chemistry
Availability: Daily; routine and ASAP
Specimen: Small PST (light green top) or SST (gold top)
Minimum volume: 0.5 ml serum

Magnesium, Urine

Lab section: Chemistry
Availability: Daily, routine only
Specimen: 24 hour timed urine with 25 ml glacial HCl as preservative. Call lab ext. 6305 to obtain preservative at start of collection.
Minimum volume: entire collection timed urine or 50 ml random urine

Malaria Smear

Lab section: Hematology
Availability: Routine, Monday through Friday (8:00 am - 3:30 pm)
Specimen: small EDTA tube (lavender top), (within 1/2 hr of temp peak)
Minimum volume: 2 ml blood

Mercury, Blood

Synonyms: HG, Heavy Metal
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Special instructions: Avoid seafood consumption for 48 hours prior to sample collection.
Specimen: Royal blue EDTA tube (Dark blue top, lavender label) Minimum volume: **4 ml** whole blood

Mercury, 24 hour Urine

Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Special instructions: Avoid seafood consumption for 48 hours prior to collection.
Specimen: 24 hour urine collected in Acid washed container

ALPHABETICAL LISTING OF TESTS

Minimum volume: entire urine collection

Special instructions: Call lab for Acid washed container prior to collection

Metanephrines, urine

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Special instructions: 24 hour urine preserved with 6NHCl. Contact lab for HC1 prior to collection.

It is preferable for the patient to be off medications for three days prior to collection. Patient should avoid tobacco, tea, coffee, for three days prior to specimen collection. Common antihypertensives (diuretics, ACE inhibitors, calcium channel blockers, alpha and beta blockers) cause minimal or no interference. Medications which are alpha agonists (Aldomet), alpha blockers (Dibenzylamine) should be avoided 18-24 hours prior to specimen collection.

Specimen: 24 hour urine

Methadone screen, Urine

Synonyms: Urine Methadone

Lab Section: Chemistry section

Availability: Routine, performed daily

Specimen: 20 ml urine

Minimum volume: 20 ml urine

Methadone, Quantitative Urine

Synonyms: Urine Methadone

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: Random Urine

Minimum volume: 50 ml urine

Methylmalonic Acid

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: small clot tube (gold/marbled SST top) Minimum volume: 1 ml serum

MHA-TP Panel

Referral to: Sent to Reference Laboratory

Availability: Weekdays

Specimen: small clot tube (red top)

Minimum volume: 1 ml serum

Mono Test

Synonyms: Heterophile, Infectious Mononucleosis

Lab section: Serology

Availability: Daily; routine and ASAP

Specimen: small clot tube (gold/marbled SST top)

Minimum volume: 0.5 ml serum

MRSA Surveillance Nares Agar

Synonyms: MRSA Screen Nares

Lab section: Microbiology

Availability: Routine, Daily

Special Instructions: Use ONLY as a screening test for the MRSA PREVENTION INITIATIVE. It provides only epidemiological data; SENSITIVITIES ARE NOT PERFORMED ON THIS TEST.

Specimen: Anterior nares swab

MRSA Surveillance Nares DNA

Synonyms: MRSA By PCR, PCR MRSA

Lab section: Microbiology

Availability: Routine, Daily

ALPHABETICAL LISTING OF TESTS

Special Instructions: Use ONLY as a screening test for the MRSA PREVENTION INITIATIVE. It provides only epidemiological data; SENSITIVITIES ARE NOT PERFORMED ON THIS TEST.

Specimen: Anterior nares swab

Mumps Immunity (IgG)

Synonyms: Mumps Virus Titer, Immunity

Lab section: Serology

Availability: Routine, performed weekly

Specimen: small clot tube (gold/marbled SST top)

Minimum volume: 1 ml serum

Muscle Biopsy

Lab section: Histology receives and sends to reference lab

Availability: Routine, schedule biopsies Monday through Thursday mornings

Specimen: Fresh muscle tissue as per procedure

Special Instructions: Prior notification of Histology lab required to coordinate highly specific collection and transport protocol

Mycology Culture

Synonyms: MYC/Fungus Culture, Fungal Culture

Test includes: isolation and identification of yeast and molds

Lab section: Microbiology

Availability: Daily; routine

Specimen and container:

1. Sterile, plastic 4 oz. cup with lid:
 - Urine - 50 ml required
 - Pleural, thoracentesis fluid - 10-50 cc
 - Tissue
 - Exudates or abscess drainage - 5-10 cc
 - Skin, nails and/or scrapings for dermatophytes
 - Sputum, respiratory specimens
2. Sterile tube with screw cap:
 - Body fluids - 10-50 cc
 - CSF or synovial fluid (min. 2 cc required)
 - Exudates or abscess drainage
3. Culturettes:
 - Exudates or abscess drainage
 - Throat swabs for Candida
4. Sterile, plastic suction container:
 - Sputum
 - Bronch wash

Mycoplasma Culture

Lab Section: Sent to reference Laboratory

Availability: Routine, Monday through Friday (8:00 am - 3:30 pm)

Special Instructions: Special transport media may be obtained from Microbiology (ext. 6315)

Specimen: throat swabs, sputum, bronchial wash/lavage, tracheal aspirate, urethral swab, vaginal swab, cervical swab, or urine

Mycoplasma Titer (IgG)

Lab Section: Sent to reference laboratory

Availability: Daily; routine

Special Instructions: Recommendation: Obtain ACUTE and CONVALESCENT specimens 2 - 3 weeks apart.

Specimen: large clot (marbled SST top) tube (10 ml)

Minimum volume: 1 ml serum

Myelin Basic Protein

Synonyms: MBP

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: CSF

Minimum volume: 1 ml CSF

Myoglobin, serum

Synonyms: myoglobin

Lab Section: Sent to reference laboratory.

Availability: Routine, sent out Monday through Friday

Specimen: small clot tube (gold/marbled SST top)

Minimum volume: 1 ml serum

Myoglobin, quantitative urine

Synonyms: urine myoglobin

Lab Section: Sent to reference laboratory.

Availability: Routine, sent out Monday through Friday

Specimen: first morning urine

Special instructions: Add EXACTLY 4 mL random urine to a Myoglobin Transport tube, within 1 hour of collection.

Wrap in a cold pack and deliver to lab within one hour after collection!

Myoglobin transport tubes are available in the laboratory

Minimum volume: 20 ml random urine

Neuronal Nuclear (Anti-Hu) Antibody, IFA/Western Blot

Synonyms: Hu Ab, Anti Hu, Anti-Hu, Anti-Hu Ab

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: small clot tube (red no-gel)

Minimum volume: 1 ml serum

Niacin

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: small EDTA tube (lavender top)

Minimum volume: 2.0 ml whole blood

Nortriptyline

Synonyms: Pamelor, Aventyl

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Special instructions: Collect at steady-state trough concentration. Specimen should be collected >12 hours after dose.

Specimen: small clot tube (red top), do not use serum separator tube

Minimum volume: 1 ml serum

Occult Blood Random Test (from DRE)

Synonym: STAT Occult Blood

Lab Section: Microbiology

Availability: Daily; routine, ASAP and STAT

Specimen: DRE Collected Stool specimen submitted in proprietary FIT sample collection device

1. Obtain FIT occult blood devices from Processing and Distribution (PAD)
2. **Identification:** Be sure that collection device is properly labeled with full name and SSN
3. After stool specimen collection by DRE, remove cap of collection device to reveal collection wand, gently scrape the wand across the freshly voided stool, then re-insert the wand into the collection device
4. To order this test, use the "STAT Occult Blood Test" available only on the Lab order sets: #20 Emergency Room and #70 STAT Orders

Occult Blood Screen

Synonym: Fecal Immunochemical Test, IFOBT, FOBT, Fecal Occult Blood, FIT

ALPHABETICAL LISTING OF TESTS

Lab Section: Microbiology

Availability: Routine, Monday through Friday

Specimen: Stool specimen submitted in proprietary FIT sample collection device

1. Obtain FIT occult blood devices and mailers from Processing and Distribution (PAD)
2. Instruct patient to follow collection instructions given with FIT Collection supplies:
 - a. **Identification:** Be sure that collection device is properly labeled with full name and SSN
 - b. Place tissue paper into toilet prior to voiding the stool specimen
 - c. While stool specimen is on surface of tissue paper, remove cap of collection device to reveal collection wand, gently scrape the wand across the freshly voided stool, then re-insert the wand into the collection device
 - d. **Important Note:** Current U. S. Postal Regulations prohibit mailing completed test slides in standard paper envelopes. Collection device **MUST BE MAILED IN APPROVED MAILING POUCHES.**
3. Samples should not be collected during, or until 3 days after menstrual period, or if bleeding hemorrhoids are present or there is blood in patient's urine.

Oligoclonal Bands, CSF

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: small clot tube (gold/marbled SST top) **AND** CSF

Minimum volume: 1 ml serum **AND** 2 ml CSF

Special instructions: Collection date and time **MUST** be the same for both specimens

Osmolality

Lab section: Chemistry

Availability: daily; routine and ASAP

Specimen: small clot tube (gold/marbled SST top)

Minimum volume: 0.5 ml serum

Osmolality, urine

Lab section: Chemistry

Availability: Daily; routine and ASAP

Specimen: random urine

Minimum volume: 20 ml urine

Ova & Parasite Exam

Synonyms: O&P, OVA, Giardia, Trichrome stain

Lab section: Microbiology

Availability: Routine, Monday through Friday

Specimen: fresh, single stool (feces), duodenal aspirate. Submit in Para-Pak collection system

Minimum volume: 10 ml

Note: O&P exam is not accepted on inpatients that have been in-house for more than 4 days

Special Instructions:

1. Obtain Para-Pak Collection Vial for Parasitology from the laboratory
2. The patient should not have recently used antacids, barium, bismuth, anti-diarrheal medications, oily laxatives or antibiotics prior to collection of the specimen.
3. The specimen is ideally passed into a bedpan but must not be contaminated with urine. Alternately, "saran wrap" may be placed in the toilet seat opening and the specimen passed.
4. An appropriate (i.e. bloody, slimy, watery) area of stool should be selected and sampled with the collection spoons provided in the caps of the containers. Sufficient stool must be added to the container to bring the liquid level up to the "Fill to Here" line.
This will result in approx. 5 ml of sample. To insure ideal sampling of a formed stool, material must be removed from the sides, end and middle of the bolus.
5. Agitate each specimen with the spoon along the sides of the container, tighten the cap and shake firmly to insure that the specimen is adequately mixed. When mixing is completed the specimen should appear homogenous.
6. Return the vials to their container, seal the container, and label appropriately with name, SSN, date and time of collection. Submit to laboratory.

Precautions:

ALPHABETICAL LISTING OF TESTS

1. Avoid contact of fixative solutions with the skin and eyes. If contact occurs, flush with running water. See physician if irritation develops.
2. Fixative solutions are poisonous. If ingested, dilute by drinking milk or water. Call local poison center or physician immediately.
3. Due to the infectious nature of unpreserved stools, care and hand washing should be employed when the specimen is collected and handled. Gloves should be worn.

Oxalate, urine

Lab Section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Special Instructions: 24 hour urine preserved with 6NHC1. Contact lab for HC1 prior to collection.

Patient should refrain from taking excessive amounts of Ascorbic Acid or Oxalate-rich foods (i.e., spinach, coffee, tea, chocolate, rhubarb) for at least 48 hours before the collection period.

Specimen: 24 hour urine specimen

Minimum volume: entire 24 hour collection

Oxycodone, serum

Lab Section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: large clot tube (plain red top) **DO NOT USE GEL BARRIER TUBES**

Minimum volume: 3 ml serum

Special Instructions: For patients on lower dose oxycodone (5-10mg, 2-3 times per day), test must be collected 1-3 hours post dose. When using serum oxycodone for the monitoring of compliance with oxycodone medication administration, results should be evaluated in conjunction with dosing information (time and amount of last dose) as results can vary with each patient due to dose amount and frequency, as well as patient weight and metabolism..

Oxycodone screen, Urine

Synonyms: Urine Oxycodone

Lab Section: Chemistry section

Availability: Routine, performed daily

Specimen: 20 ml urine in sterile urine cup

Minimum volume: 20 ml urine

Special Instructions: When using urine oxycodone screen for the monitoring of compliance with oxycodone medication administration, results should be evaluated in conjunction with dosing information (time and amount of last dose) as results can vary with each patient due to dose amount and frequency, as well as patient weight and metabolism.

Parietal Cell Ab

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: small clot tube (gold/marbled SST top)

Minimum volume: 1 ml serum

Paroxetine

Synonyms: Paxil

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: small clot tube (plain red top) **DO NOT USE GEL BARRIER TUBES**

Minimum volume: 1 ml serum

PBNP (Brain Natriuretic Peptide)

Synonyms: BNP NT Pro BNP Brain Natriuretic Peptide

Lab section: Chemistry

Availability: Daily; routine and ASAP

Special instructions: Test ordering restricted – one PBNP per admission

Specimen: Small PST (light green top) or SST (gold top)

Minimum volume: 0.5 ml serum

PFA (Platelet Function Analysis)

Synonyms: PFA, Bleeding Time, PFT

Lab section: Hematology

Availability: Daily; routine

Specimen: 2 sodium citrate blue top must be delivered to the Lab ASAP (<30 minutes)

Minimum volume: Full tubes. If other Coagulation

testing is needed extra tubes must be collected.

Ph, Fluid (semi-quantitative)

Lab Section: Chemistry

Availability: Daily; routine and ASAP

Specimen: 10 ml of fluid (specimen must be liquid)

Phenobarbital

Synonyms: Eskabarb, Luminol

Lab section: Chemistry

Availability: Daily; routine and ASAP

Special instructions: Draw just prior to next dose

Specimen: Small PST (light green top) or SST (gold top)

Minimum volume: 0.5 ml serum

Phenytoin

Synonyms: Dilantin

Lab section: Chemistry

Availability: Daily; routine and ASAP

Special instructions: Draw just prior to next dose

Specimen: Small PST (light green top) or SST (gold top)

Minimum volume: 0.5 ml serum

Phenytoin, Free

Synonyms: Dilantin, Free, Free Phenytoin

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Special instructions: Draw just prior to next dose. For patients receiving fosphenytoin therapy, collect as peak (at least 2 hours after IV infusion or at least 4 hours after IM injection).

Specimen: small clot tube (plain red top) **Do not use gel barrier tubes**

Minimum volume: 1 ml serum

Phosphorus

Synonyms: PO₄, Phosphate

Lab section: Chemistry

Availability: Daily; routine and ASAP

Specimen: Small PST (light green top) or SST (gold top)

Minimum volume: 0.5 ml serum

Phosphorus, urine

Synonyms: PO₄, urine; phosphate, urine; urine phosphorous

Lab section: Chemistry

Availability: Daily; routine only

Specimen: 24 hour urine, preserved with 6N HCl Contact lab for HCl prior to collection

Plasminogen, Functional

Synonyms: Plasminogen Total

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: Two Sodium Citrate tubes (blue top)(2.7 ml blood, each)

Minimum volume: 2 ml plasma

Platelet Count

Synonyms: Platelets, Plt. Count,
Lab section: Hematology
Availability: Daily; routine, ASAP and STAT
Specimen: EDTA tube (lavender top), tube must be at least ½ full
Minimum volume: 2.0 ml whole blood

Pneumococcal Antibody (IgG), EIA

Synonyms: Pneumococcal Antibody I
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: small clot tube (gold/marbled SST top)
Minimum volume: 1 ml serum

Porphyryns, Total Plasma

Lab Section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: sodium Heparin tube (green top) Protect from light
Minimum volume: 3 ml heparin plasma

Potassium

Synonyms: K, K⁺
Lab section: Chemistry
Availability: Daily; routine, ASAP, and emergency.
Specimen: Small PST (light green top) or SST (gold top)
Minimum volume: 0.5 ml serum

Potassium, urine

Synonyms: Urine K, urine potassium
Lab section: Chemistry
Availability: Daily; routine and ASAP
Specimen: 24 hour timed urine or random urine
Minimum volume: 20 ml random urine or entire collection timed urine

Pregnancy Test (HCG, Qualitative)

Synonyms: HCG, Pregnancy, Beta Hcg
Lab section: Serology
Availability: Daily; routine and ASAP
Specimen: small clot tube (gold/marbled SST top) or random urine
Minimum volume: 0.5 ml serum or 10 ml urine

Primidone

Synonyms: Mysoline
Lab Section: sent to reference lab
Availability: Routine, sent Monday through Friday
Specimen: small clot tube (plain red top) **Do not use gel barrier tubes**
Minimum volume: 0.5 ml serum

Procainamide and NAPA

Synonyms: Pronestyl, NAPA, Procan
Lab section: sent to reference lab
Availability: Routine, sent Monday through Friday
Special instructions: Trough levels are drawn just prior to next dose. Peak levels: Pronestyl - 60 to 90 minutes post dose, Procan - 2 hours post dose.
Specimen: small clot tube (red no-gel)
Minimum volume: 0.5 ml serum

Progesterone, serum

Lab section: Sent to reference laboratory
Availability: routine, sent out Monday through Friday
Special instructions: Early morning specimen is preferred
Specimen: small clot tube (red no-gel) Minimum volume: 1 ml serum

Prolactin

Lab section: Chemistry
Availability: Routine, performed twice weekly
Specimen: small clot tube (gold/marbled SST top)
Minimum volume: 0.5 ml serum

Prostate Specific Antigen, Panel

Synonyms: PSA Panel
Lab section: Chemistry
Availability: Routine only; test performed each weekday
Specimen: small clot tube (gold/marbled SST top)
Minimum volume: 0.5 ml serum

Protein C

Lab section: Hematology
Availability: Routine
Special instructions: **Tubes must be completely filled and delivered to lab within thirty minutes of collection**
Specimen: 1 sodium citrate tube blue top (3.5 ml)
Minimum Volume: full tube

Protein electrophoresis (fluid)

Test includes: Total protein and electrophoresis
Synonyms: CSF protein electrophoresis, fluid protein electrophoresis
Lab section: sent to reference lab
Availability: Routine, sent Monday through Friday
Specimen: body fluid, CSF
Minimum volume: 3 ml

Protein electrophoresis (serum)

Test includes: Total protein and electrophoresis
Synonyms: electrophoresis, SPEP, SPE
Lab section: Chemistry
Availability: routine, performed twice weekly
Specimen: small clot tube (gold/marbled SST top)
Minimum volume: 0.5 ml serum
Reference range: Interpretation sent to chart with results

Protein electrophoresis (urine-24 hour)

Test includes: Total urine protein and electrophoresis
Synonyms: Urine protein electrophoresis
Lab section: sent to reference lab
Availability: Routine, sent Monday through Friday
Special instructions: Must be 24 hour urine collection
Specimen: Entire 24 hour urine collection

Protein S

Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Special instructions: **Tubes must be completely filled and delivered to lab within 30 minutes.**
Specimen: Two 2.7 ml sodium citrate tubes (blue top)

ALPHABETICAL LISTING OF TESTS

Minimum Volume: two full tubes

Protein, total

Synonyms: Total protein, TSP, T.P., CSF protein

Lab section: Chemistry

Availability: Daily; routine and ASAP

Special instructions: This test not to be used for urine protein

Specimen: Small PST (light green top) or SST (gold top)

Minimum volume: 0.5 ml serum, 1 ml CSF or other body fluid

Protein, urine (Quant)

Synonyms: Total urine protein, urine protein

Lab section: Chemistry

Availability: Daily; routine only

Specimen: 24 hour urine, refrigerate during collection

Minimum volume: entire collection

Protein/Creatinine Ratio, urine

Synonyms: Urine Protein/Creatinine Ratio

Lab section: Chemistry

Availability: Daily; routine only

Specimen: random urine collection

Minimum volume: 20 ml

Prothrombin Time

Synonyms: PT, Protine, PT/INR

Lab section: Hematology

Availability: Daily; routine, ASAP, STAT

Specimen: 1 sodium citrate blue top

Minimum volume: Full tube

PT with 1:2 Dilution

Synonyms: PT Mix, PT (1:1), PT (1:2)

Lab section: Hematology

Availability: Daily; routine, ASAP, STAT

Specimen: 1 sodium citrate blue top

Minimum volume: Full tube

PTH Intact Panel

Test includes: Intact PTH and Calcium

Synonyms: PTH Intact, Parathyroid Hormone, PTH N Terminal

Lab section: Chemistry

Availability: Routine, performed three days weekly

Specimen: small clot tube (gold/marbled SST top)

Minimum volume: 1 ml serum

PTH-Related Protein

Synonyms: PTH-RP, PTH-Related Peptide

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen:

1 sodium heparin tube (Dark green)

Minimum volume: 2 ml plasma

PTT

Synonyms: APTT, Activated Partial Thromboplastin Time

Lab section: Hematology

Availability: Daily; routine, ASAP, STAT

ALPHABETICAL LISTING OF TESTS

Specimen: 1 sodium citrate blue top
Minimum volume: Full tube

PTT with 1:2 Dilution

Synonyms: PTT Mix, PTT (1:1), PTT (1:2)
Lab section: Hematology
Availability: Daily; routine, ASAP, STAT
Specimen: 1 sodium citrate blue top
Minimum volume: Full tube

Quinidine

Synonyms: Cardioquin, Duraquin, Quinidex, Quinaglute, Quinora
Lab section: sent to reference lab
Availability: Routine, sent out Monday through Friday
Special instructions: Trough levels are drawn just prior to next dose. Peak levels: Quinidine sulfate - 90 minutes post dose, Quinidine gluconate - 6 hours post dose.
Specimen: small clot tube (red no-gel)
Minimum volume: 0.5 ml serum

RA Qualitative

Synonyms: RA screen, Rheumatoid Factor, RF, RA Latex, RA Agglutination
Lab section: Serology
Availability: Daily; routine only
Special instructions: If test is positive, RA Quantitative will automatically be performed.
Specimen: small clot tube (gold/marbled SST top)
Minimum volume: 0.5 ml serum

Reducing Substances, Fecal

Synonyms: Fecal Reducing Substances
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: random stool specimen 30g
Minimum volume: 10 grams stool

Renal Function Panel (Glu, Lytes, BUN, Creat, Ca, Phos, Albumin)

Synonyms: RFP, Renal Profile
Lab section: Chemistry
Availability: Daily; routine, ASAP and STAT
Specimen: Small PST (light green top) or SST (gold top)
Minimum volume: 1 ml serum

Renin

Synonyms: Renin activity, Plasma Renin
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Special instructions: Specimen should be collected after patient has been ambulatory for two or more hours.
Specimen: 1 EDTA tube (lavender top)
Minimum volume: 3 ml EDTA plasma

Reticulocyte Panel (includes retic %, retic #, IRF, IPF)

Synonyms: Retic Panel
Lab section: Hematology
Availability: Daily; routine
Specimen: EDTA tube (lavender top) , tube must be at least ½ full
Minimum volume: 2.0 ml whole blood

Ristocetin Cofactor

ALPHABETICAL LISTING OF TESTS

Synonyms: von Willebrand factor activity

Lab Section: Sent to reference lab

Availability: Monday - Friday

Special Instructions: Collection after at least 8 hours fasting is optimum.

Specimen: 2 sodium citrate blue top tubes (4.5 ml, each). Both tubes must be completely filled.

Rocky Mountain Spotted Fever Antibodies

Synonyms: RMSP Antibodies IgG, IgM, Rickettsia rickettsii

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: small clot tube (gold/marbled SST top)

Minimum volume: 1 ml serum

RPR (Qualitative)

Synonyms: Syphilis test, VDRL (serum), Serum RPR

Lab section: Serology

Availability: Routine, batch testing

Special instructions: If test is positive, RPR Quantitative will be done. Positive RPRs are submitted to State Lab for confirmatory FTA testing.

Specimen: small clot tube (gold/marbled SST top)

Minimum volume: 0.5 ml serum

Rubella IgG (Immunity Screen)

Lab section: Microbiology

Availability: Routine, performed once weekly

Specimen: small clot tube (gold/marbled SST top)

Minimum volume: 0.5 ml serum

Rubeola Antibody IgG (Immunity Screen)

Synonyms: Rubeola IgG, Measles Immunity

Lab section: Microbiology

Availability: Routine, performed once weekly

Specimen: small clot tube (gold/marbled SST top)

Minimum volume: 1 ml serum

Salicylate

Synonyms: ASA, Aspirin

Lab section: Chemistry

Availability: Daily; routine and ASAP

Specimen: Small SST (gold top)

Minimum volume: 0.5 ml serum

Sedimentation Rate

Synonyms: Sed rate, ESR, Westergren Sedimentation Rate

Lab section: Hematology

Availability: Daily; routine and ASAP

Specimen: small EDTA tube (lavender top)

Minimum volume: 2.5 ml whole blood

Semen Analysis

Test includes: Liquefaction, volume, viscosity, motility, progression, pH, total sperm count, and sperm morphology.

Smear will be examined for WBC and RBC presence.

Synonyms: Sperm Analysis, Seminal Fluid Analysis

Lab section: Hematology

Availability: Monday through Friday, must be scheduled with Hematology (ext. 6318)

Special instructions: **Test MUST be scheduled in advance.** Send patient to lab office (Room 4A110) to schedule. Lab will issue instructions to patient.

ALPHABETICAL LISTING OF TESTS

Specimen: Seminal Fluid collected in sterile container issued by lab.
Minimum volume: complete collection

Serotonin, Serum

Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Special instructions: Patient should avoid food high in indoles: Avocado, banana, tomato, plum, walnut, pineapple, and eggplant. Patient should also avoid tobacco, tea and coffee three days prior to specimen collection.
Specimen: small clot tube (gold/marbled SST top) Minimum volume: 1 ml serum

Sertraline

Synonyms: Zoloft
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: small clot tube (plain red top) **DO NOT USE GEL BARRIER TUBES**
Minimum volume: 3 ml serum

Shigatoxin Panel

Synonyms: E. coli, O157:H7
Lab section: Microbiology
Availability: Routine
Specimen: Fresh stool
Note: Shigatoxin Panel tests for E.coli enterohemorrhagic toxins 1 and 2. If not ordered, it will be added to all stool cultures.

Sickle Cell Screen

Synonyms: Sick cell prep
Lab section: Hematology
Availability: Daily, routine only
Specimen: small EDTA tube (lavender top)
Minimum volume: 1 ml whole blood

Silver Stain

Synonyms: Fungal smear or stain, GMS
Lab Section: Histology
Availability: Routine only, Monday through Friday
Special Instructions: Specimen must be accompanied by a Tissue Exam order. Refer questions to Histology or Cytology Section
Specimen: Body fluid, tissue, respiratory specimen (sputum, bronch wash or brushing)

Sodium

Synonyms: Na, Na⁺
Lab section: Chemistry
Availability: Daily; routine, ASAP, and STAT.
Specimen: Small PST (light green top) or SST (gold top)
Minimum volume: 0.5 ml serum

Sodium Excretion Factor, urine

Synonyms: Excretion Fraction of Filtered Sodium
Lab section: Chemistry
Availability: Daily; routine only
Special remarks: a Basic Metabolic Panel (BMP) must be ordered in along with this test
Specimen: random urine collection
Minimum volume: 20 ml

Sodium, urine

Synonyms: Urine Na, Urine sodium
Lab section: Chemistry

ALPHABETICAL LISTING OF TESTS

Availability: Daily; routine and ASAP
Specimen: 24 hour timed urine
Minimum volume: Entire collection timed urine

Specific Gravity (Fluid)

Lab section: Hematology
Availability: Daily; routine only
Special instructions: This does not refer to specific gravity of urine; urine specific gravity is included in a Routine Urinalysis.
Specimen: Body Fluid, in plastic container, tube or syringe.
Minimum volume: 2 ml fluid

Tacrolimus, Trough

Synonyms: Prograf, FK Level, FK506
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: EDTA (Royal Blue top lavender label)
Minimum volume: 2 ml whole blood

T-Cell Subsets

Synonyms: Lymphocyte T4/T8 ratio, T4/T8 Ratio, T4/T8, CD4/CD8
Lab Section: Flow Cytometry
Availability: Routine, Monday-Thursday 8-4:30, Friday 8-12 Noon.
Specimen: 1 EDTA lavender top AND 1 ACD-A yellow top
Minimum volume: 2.5 ml lavender top AND 8 ml yellow top

T3, Free

Synonyms: Free T3
Lab Section: Sent to Reference Laboratory
Availability: Daily; routine
Specimen: small clot tube (gold/marbled SST top)
Minimum volume: 1 ml serum

Testosterone, Total

Lab section: Chemistry
Availability: Daily, routine only
Specimen: small clot tube (gold/marbled SST top) or PST (light green top)
Minimum volume: 1 ml serum

Theophylline

Synonyms: Aminophylline, Elixophylline, Theodur
Lab section: Chemistry
Availability: Daily; routine and ASAP
Special instructions: Draw 2 hours post dose, for time release draw 4 hours post dose.
Specimen: Small PST (light green top) or SST (gold top)
Minimum volume: 0.5 ml serum

Thrombin Time

Synonym: TT
Lab section: Hematology
Availability: Daily; routine, ASAP, STAT
Specimen: 1 sodium citrate blue top
Minimum volume: Full tube

Thyroid Profile

Test Includes: Free T4 (thyroxine), TSH
Lab section: Chemistry
Availability: Daily, routine only

ALPHABETICAL LISTING OF TESTS

Specimen: small clot tube (gold/marbled SST top) or PST (light green top)

Minimum volume: 1 ml serum

Thyroglobulin

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: small clot tube (gold/marbled SST top)

Minimum volume: 1 ml serum

Tobramycin, Peak (Post Dose)

Synonyms: Nebcin

Lab section: Chemistry

Availability: Daily; routine and ASAP

Special instructions: Trough levels are drawn just prior to next dose. Peak levels are drawn 30 minutes post I.V. dose, 60 minutes post I.M. dose.

Specimen: Small PST (light green top) or SST (gold top)

Minimum volume: 0.5 ml serum

Tobramycin, Trough (Pre Dose)

Synonyms: Nebcin

Lab Section: Chemistry

Availability: Daily, Routine and ASAP

Special Instructions: Draw trough levels just prior to next dose

Specimen: Small PST (light green top) or SST (gold top)

Minimum volume: 0.5 ml serum

Toxoplasma (by IFA - CSF)

Lab Section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Special Instructions: Toxoplasma (by IFA -- Serum) must be ordered in conjunction with this test.

Specimen: Cerebral Spinal Fluid

Minimum volume: 1 ml

Toxoplasma (by IFA -- Serum)

Test includes: IgG and IgM

Lab Section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: large clot (marbled SST top) tube (10 ml)

Minimum volume: 1 ml serum

Transferrin

Lab section: Chemistry

Availability: Routine, performed Monday through Friday

Specimen: Small PST (light green top) or SST (gold top)

Minimum volume: 0.5 ml serum

Transfusion Reaction Workup

Synonyms: Transfusion Reaction, Suspected Transfusion Reaction

Lab section: Blood Bank

Availability: Daily, performed STAT

Special instructions: Follow procedure as stated on the requisition for suspected Transfusion Reaction, which is kept at each nursing station.

Specimen one Large K2 EDTA tube (pink top) – no gel (avoid mechanical hemolysis).

Minimum volume: Tubes must be full

Trazadone

Synonyms: Desyrel

Lab section: Sent to reference laboratory

ALPHABETICAL LISTING OF TESTS

Availability: Routine, sent out Monday through Friday
Specimen: small clot tube (plain red top) **DO NOT USE GEL BARRIER TUBES**
Minimum volume: 3 ml serum

Trichinella Antibody

Synonyms: Trichinella agglutination
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: large clot (marbled SST top) tube (10 ml)
Minimum volume: 1 ml serum

Triglyceride

Synonyms: trigs
Lab section: Chemistry
Availability: Daily, routine and ASAP
Special Instructions: Should be ≥ 12 hour fasting specimen.
Specimen: Small PST (light green top) or SST (gold top)
Minimum volume: 0.5 ml serum

Troponin I

Lab section: Chemistry
Availability: Daily, routine STAT and ASAP
Specimen: Small PST (light green top) or SST (gold top)
Minimum volume: 0.5 ml serum

Trypsin

Synonyms: Trypsinogen, Trypsin Like Immunoreactivity
Lab section: Sent to reference laboratory
Availability: Routine, sent out Monday through Friday
Specimen: small clot tube (red no-gel)
Minimum volume: 1 ml serum

TSH

Synonyms: Thyroid Stimulating Hormone
Lab section: Chemistry
Availability: Daily, routine only
Specimen: Small PST (light green top) or SST (gold top)
Minimum volume: 0.5 ml serum

Type and Crossmatch

Synonyms: X- Match, Crossmatch
Lab section: Blood Bank
Availability: Daily; routine, ASAP, and emergency
Special instructions: See Blood Bank Section Policies.
Specimen: Large K2 EDTA tube (pink top) – no gel
Minimum Volume: Full pink top tube
Special Instructions: Full legible phlebotomist signature must be on collection tube and SF518. One SF518 must be submitted with the sample.

Type and Screen

Synonyms: Type and Hold
Lab section: Blood Bank
Availability: Daily; routine, ASAP, and emergency
Special instructions: Only ABO, Rh, and Antibody Screen performed. No units are crossmatched; If a crossmatch is desired, phone the Blood Bank (X3355). Crossmatching will require 30 mins. for completion.
Specimen: Large K2 EDTA tube (pink top) – no gel
Minimum volume: Full pink top tube

ALPHABETICAL LISTING OF TESTS

Special Instructions: Full legible phlebotomist signature must be on collection tube and SF518. SF518 must be submitted with the sample.

Urea Nitrogen

Synonyms: BUN, Blood Urea Nitrogen

Lab section: Chemistry

Availability: Daily; routine, ASAP, and STAT

Specimen: Small PST (light green top) or SST (gold top)

Minimum volume: 0.5 ml serum

Urea Nitrogen, urine

Synonyms: urine BUN, BUN, urine Urea Nitrogen

Lab section: Chemistry

Availability: Daily; routine and ASAP

Specimen: 24 hour timed urine or random urine

Minimum volume: 20 ml random urine or entire collection timed urine

Uric Acid

Lab section: Chemistry

Availability: Daily; routine and ASAP

Specimen: Small PST (light green top) or SST (gold top)

Minimum volume: 0.5 ml serum

Uric Acid, urine

Synonyms: urine uric acid

Lab section: Chemistry

Availability: Daily; routine only

Specimen: 24 hour urine collection with 10 ml 12.5 N NaOH as preservative. Call laboratory at ext. 6305 to obtain preservative prior to collection.

Minimum volume: entire collection

Urinalysis, Routine

Synonyms: UA, routine UA, urine pH, urine specific gravity

Test includes: Color, clarity, bilirubin, occult blood, glucose, ketone, leukocyte esterase, nitrite, pH, protein, specific gravity, urobilinogen. **If urine is hazy, cloudy or turbid, or has non-negative values for nitrite, leukocyte esterase, blood or protein, a microscopic examination of sediment will be performed.**

Lab section: Urinalysis

Availability: Daily; routine, ASAP, and STAT

Special instructions: **First morning specimen is preferred.** If any component part of the routine UA is ordered, a routine UA will be performed on the urine.

Specimen: random clean catch urine

Minimum volume: 12 ml urine

Vaginosis/Vaginitis Panel (Affirm®)

Synonyms: Affirm, Acute Vaginitis Panel

Test includes: Nucleic acid probe testing for G. vaginalis, Candida spp. and Trichomonas vaginalis.

Lab section: Serology

Availability: Routine Monday through Friday

Specimen: Vaginal swab processed and delivered in Ambient Temperature Transport System (ATTS). ATTS are available from PAD or Micro. Deliver to Micro immediately as specimens are stable for only 72 hours once collected and in kit.

Valproic Acid

Synonyms: Depaken, Depakene, Depakote, Epilim

Lab section: Chemistry

Availability: Daily; routine and ASAP

Special instructions: Draw just prior to next dose.

Specimen: Small PST (light green top) or SST (gold top)

ALPHABETICAL LISTING OF TESTS

Minimum volume: 0.5 ml serum

Vancomycin, Peak (post dose)

Synonyms: Vancocin, Vancomycin Post dose

Lab section: Chemistry

Availability: Daily; routine and ASAP

Special instructions: Draw peak one hour after a one hour infusion.

Specimen: Small PST (light green top) or SST (gold top)

Minimum volume: 0.5 ml serum

Vancomycin, Trough (pre dose)

Synonyms: Vancocin; Vancomycin (Pre Dose)

Lab section: Chemistry

Availability: Daily; routine and ASAP

Special instructions: Draw trough just prior to next dose.

Specimen: Small PST (light green top) or SST (gold top)

Minimum volume: 0.5 ml serum

Varicella Zoster Antibody (Immune Status)

Synonyms: VZ Ab

Lab section: Serology

Availability: Routine, batch testing

Specimen: large clot (marbled SST top) tube (10 ml)

Minimum volume: 1 ml serum

VDRL (CSF)

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: CSF

Minimum volume: 1 ml CSF

Viral Culture, Comprehensive

Lab Section: Microbiology

Referral to: Sent to Reference Laboratory

Availability: Routine, Monday through Friday

Specimen: **See Appendix I for specimen information.** Transport media and/or containers can be obtained from the Microbiology section.

Note: Swabs received for comprehensive virus cultures will be canceled and changed to Viral Culture, Herpes/VZV Rapid (see below)

Viral Culture, Herpes/VZV Rapid

Lab Section: Microbiology

Referral to: Sent to Reference Laboratory

Availability: Routine, Monday through Friday

Specimen: Transport media and/or containers can be obtained from the Microbiology section.

Vitamin B-1

Synonyms: Thiamine

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: EDTA tube (Lavender top)

Minimum volume: 5 ml whole blood

Vitamin B2

Synonyms: Riboflavin, Vit B2, Plasma

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: EDTA (lavender top) Protect from light

ALPHABETICAL LISTING OF TESTS

Minimum volume: 2 ml plasma

Vitamin B-6

Synonyms: Pyridoxine, B-6

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Special instructions: Overnight fasting. Patient must be restricted from alcohol and vitamins for at least 24 hours before a sample collection.

Specimen: EDTA (lavender top) Protect from light

Minimum volume: 2 ml plasma

Vitamin B-12

Synonyms: B12, cobalamine

Lab Section: Sent to Reference Lab

Availability: Routine only; sent out Monday through Friday

Specimen: small clot tube (red top)

Minimum volume: 0.5 ml serum

Vitamin D 1,25 Dihydroxy

Synonyms: 1,25 Dihydroxy Vitamin D

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Special Instructions: This test is used to measure the bio-active form of Vitamin D. This test is also used in the differential diagnosis of hypocalcemia and to monitor patients with renal osteodystrophy or chronic renal failure.

Specimen: small clot tube (gold/marbled SST top)

Minimum volume: 1 ml serum

Vitamin D 25 Hydroxy

Synonyms: 25 hydroxy Vitamin D, 25 OH Vitamin D

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Special Instructions: Measurement of serum 25-OH vitamin D concentrations provide a good index of circulating vitamin D activity in patients not suffering from renal disease

Specimen: small clot tube (gold/marbled SST top)

Minimum volume: 1 ml serum

Vitamin E

Synonyms: Tocopherol

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Special instructions: Overnight fasting is preferred.

Specimen: small clot tube (gold/marbled SST top)

Minimum volume: 1 ml serum

Wet Mount for Trichomonas

Synonyms: Wet Prep

Lab section: Microbiology

Availability: Routine or ASAP, Monday - Friday (8:00 am -3:30 pm)

Special Instructions: Specimen must be submitted to laboratory immediately after collection. DO NOT REFRIGERATE SPECIMEN.

Specimen: vaginal or urethral discharge in sterile saline. Contact Microbiology (5342) for collection tube.

Minimum volume: 1 ml

Zinc, Plasma

Synonyms: Zn

Lab section: Sent to reference laboratory

Availability: Routine, sent out Monday through Friday

Specimen: EDTA (Royal blue top tube, lavender label)

ALPHABETICAL LISTING OF TESTS

Minimum volume: 2 ml plasma

Appendix I VIRAL CULTURE INFORMATION

VIRAL CULTURE INFORMATION

<u>Disease</u>	<u>Specimens</u>	<u>Associated Virus</u>
A. Respiratory Tract		
1. Influenza	Nasal wash or nasopharyngeal swab	Influenza A,B
2. Acute rhinitis pharyngitis, laryngitis, croup, pneumonia	Nasal wash or nasopharyngeal swab Stool	Influenza A,B Adenovirus, RSV, echovirus, Coxsackie, herpes, etc.
B. Dermatologic Disease		
1. Chickenpox	Vesicle fluid	Varicella-Zoster (VZV)
2. Shingles	Vesicle fluid	VZV
3. Oral herpes	Throat/mouth wash or swab	Herpes simplex (HSV)
4. Genital herpes	Vesicle fluid, vaginal or Cervical swab	HSV
5. Measles	Blood, urine, throat swab/wash, conjunctival fluid	Measles virus
6. Vaccinia	Blood, vesicles, throat swab/wash	Vaccinia virus
7. (Miscellaneous)	Throat swab/washings, stool, vesicle	Echoviruses, Coxsackie, Herpes viruses
**NOTE: Direct immunofluorescent stain for VZV is preferred.		
C. Central Nervous System Disease		
1. Encephalitis	CSF, acute phase blood, urine, brain biopsy (HSV), pharyngeal swab/wash	Mumps virus, HSV measles virus, rabies virus, vaccinia virus, CMV, EBV, rubella virus
2. Aseptic meningitis	CSF, stool/rectal swab, urine, pharyngeal	Mumps, arbovirus, Coxsackie, LCM, EBV, echo virus
3. Paralysis	CSF, stool/rectal swab	Poliovirus, Coxsackie, echoviruses

Appendix I VIRAL CULTURE INFORMATION

<u>Disease</u>	<u>Specimens</u>	<u>Associated Virus</u>
D. Viral Ocular Disease		
1. Primary or recurrent HSV	Conjunctival swab, corneal scraping	Herpes simplex virus (HSV)
2. Zoster ophthalmicus	Conjunctival swab, corneal scraping	Varicella-zoster virus (VZV)
3. Pharyngeal	Conjunctival swab, corneal scraping, pharyngeal swab/wash, stool	Adenovirus, enterovirus

E. Viral Gastrointestinal Disease

1. Acute gastroenteritis	Stool, rectal swab	Coxsackie virus, echovirus, Norwalk agent, adenovirus
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** NOTE: Some agents in this group cannot be cultured.

F. Systemic, Miscellaneous Viral Diseases

1. Mumps	Saliva, throat swab, urine	Mumps virus
2. Hepatitis	- none -	Hepatitis A, B, C, D viruses
3. Myocarditis	pharyngeal swab/wash, stool, blood	Coxsackievirus, echovirus
4. Pericarditis	pharyngeal swab/wash, stool, blood, pericardial fluid	Coxsackievirus, echovirus
5. Pleurodynia	pharyngeal swab/wash, stool, blood	Coxsackievirus, echovirus

** NOTE: No culture systems available for hepatitis viruses; see serologic tests.

SPECIMEN COLLECTION FOR VIRAL CULTURE

A. Throat Swab:

Vigorously swab pharynx, tonsils and faucial pillars with DACRON-tipped swabs; for Mumps, include area around Stensen duct openings. Elute specimen into viral transport medium, leaving swabs in tube of medium. Cap tightly, place immediately into refrigerator until delivery to laboratory.

Appendix I VIRAL CULTURE INFORMATION

B. Nasopharyngeal Swab:

Collect using Viral Transport Media collection kit. Insert swab through nostril to posterior nasopharynx (same distance as from nostrils to external opening of ear). Rotate swab a few times to obtain infected cells. Elute the specimen into viral transport medium, leaving swabs in tube of medium.

C. Nasopharyngeal Wash:

Instill 5 ml of sterile, non-bacteriostatic saline into each nostril (patient sits with head tipped back). Tip patient's head forward, collecting wash fluid in a sterile sputum collection cup. Transfer wash fluid to a tube of viral transport medium.

D. Throat Wash:

Patient should 'gargle' with 10 ml sterile, non-bacteriostatic saline and then expectorate this into a sterile sputum collection cup. Transfer wash fluid to a tube of viral transport medium.

E. Conjunctival Swab:

Swab lower conjunctival sac of the eye five times with a pre-moistened DACRON-tipped swab. Place swab in tube of viral transport medium.

F. Corneal Scrapings:

Use a flattened sterile aluminum spatula to remove suspect corneal epithelial cells. Place material removed into a tube of viral transport medium.

G. Urine:

Collect a clean voided, midstream urine (10 - 20 ml) in a sterile container. Refrigerate until delivery to Laboratory.

H. Rectal Swab:

Insert a pre-moistened DACRON-tipped swab into the rectum and gently rotate. Place the swab in a tube of viral transport medium.

I. Cerebrospinal Fluid:

Collect CSF aseptically and deliver promptly to the Laboratory.

J. Biopsy or Autopsy Tissue Specimen:

Collect fresh tissue specimen under sterile conditions and place into viral transport medium. For each specimen, use separate sterile instruments. For larger specimens, place in sterile sputum cup and deliver immediately to the Laboratory.

K. Cell Scraping for VZV or HSV Direct Immunofluorescence:

Clean outer surface of vesicle with an alcohol sponge. Allow to dry completely. Unroof vesicle with a sterile needle. (Fluid can be collected for culture, as described below.) Collect cells from base of lesion by rubbing with a sterile swab or by scraping with a scalpel edge. Rub swab or blade evenly over 3 areas on a clean microscope slide (each approximately 1 cm in diameter). Allow slide to dry. DO NOT FIX with cyto fixative!

L. Vesicle Fluid:

After unroofing vesicle with a sterile needle, aspirate vesicle fluid with a 26/27 gauge tuberculin syringe, or with a sterile scalpel. Place aspirated fluid into viral transport medium.

Appendix I VIRAL CULTURE INFORMATION

M. Stool:

Place 5-10 grams of fecal material into a sterile screw cap plastic (sputum) cu. Place container inside a transport (lockable) bag. Refrigerate, and/or promptly deliver to Lab.

N. Peripheral Blood:

Collect 5-10 ml blood in a yellow-top vacuum blood collection tube (available in Microbiology Lab). Label specimen and place inside a lockable transport bag. DO NOT REFRIGERATE !!

Appendix II TOLERANCE / CHALLENGE TEST INFORMATION

Appendix II - TOLERANCE / CHALLENGE TEST INFORMATION – With the exception of Glucose Tolerance testing, **ALL tests in this appendix are to be ordered only by the provider(s) in the Endocrine Medicine specialty clinic.** For all tests, interpretation of test results should be made in light of the patient's clinical state as well as any drug therapy the patient is undergoing.

A. Glucose Tolerance testing: administration of glucose beverage with timed collections of glucose levels. Order in VistA as **3, 4, or 5 Hour Glucose Tolerance Test**; Synonym: GTT

Patient Preparation

- 8 hour fast immediately prior to test as well as during test period, minimal water may be taken.
- No I.V. glucose may be given during fasting interval or during test.
- Tolerance/challenge tests must be performed on separate days, no tolerance/challenge testing may be performed concurrently.
- Diet should include 150 gm carbohydrate/day for three days prior to test.
- Patient activity should be normal, excessive exercise should be avoided during test.
- Smoking should be avoided during test.

Test Instructions

Test of desired time length (3, 4, or 5 hours) should be ordered one day in advance. **The glucose tolerance test is only ordered one time and will then include all the glucose requests for the entire test.** Patient must be fasting for ≥ 8 hours before this time. Fasting blood and urine specimens are collected by nursing personnel and transported to lab. Follow the screening procedure in the Point of Care Testing Manual using our current glucometer. Call lab ext. 6305 to obtain the glucose tolerance beverage. Glucose beverage is administered (consumption time is NOT to exceed 20 minutes), blood glucose levels and urine samples will be collected by nursing personnel at 1/2 hour post glucose and at each hour post glucose for requested time period. **Nursing personnel collecting specimens should be sure to note on each specimen the time of collection AND the collection interval i.e. fasting, 1/2 hour, 1 hour, etc. Transport specimens to lab promptly, do not wait for entire tolerance to be completed.**

B. Growth Hormone Stimulation-Clonidine: Administration of Clonidine with timed collection of growth hormone levels. Order in VistA as **Growth Hormone Stimulation-Clonidine**; Synonym: Clonidine Stimulation Test

Patient Preparation

- 8 hour fast immediately prior to test as well as during test period.
- Tolerance tests must be performed on separate days, no tolerance testing may be performed concurrently.
- Patient to be placed in non-stressful environment and remain inactive during test.
- Indwelling catheter for easy blood collection must be placed at least 30 minutes prior to test.
- Physician ordering test is responsible for the concurrent order of medication from pharmacy.

Test Instructions

Test and medication should be ordered one day in advance. **The Growth Hormone Stimulation test is only ordered one time and will then include all the growth hormone requests for the entire test.** Initial specimen is collected just prior to medication. Patient is administered the Clonidine as per physician instruction. Additional specimens are collected at 30 minutes, 60 minutes, 90 minutes and 120 minutes post medication. **Nursing personnel collecting specimens should be sure to note on each specimen the time of collection AND the collection interval i.e. 0 minute, 30 minute etc. Transport specimens to lab as a group – do not split delivery of specimens.**

C. Growth Hormone Stimulation-Arginine: Administration of Arginine with timed collection of growth hormone levels. Order in VistA as **Growth Hormone Stimulation-Arginine**; Synonym: Arginine Stimulation Test

Patient Preparation

- 8 hour fast immediately prior to test as well as during test period.
- Tolerance/challenge tests must be performed on separate days, no tolerance/challenge testing may be performed concurrently.
- Patient to be placed in non-stressful environment and remain inactive during test.
- **Indwelling catheter for easy blood collection must be placed at least 30 minutes prior to test.**

Appendix II TOLERANCE / CHALLENGE TEST INFORMATION

- Physician ordering test is responsible for the concurrent order of medication from pharmacy.

Test Instructions

Test and medication should be ordered one day in advance. **The Growth Hormone Stimulation test is only ordered one time and will then include all the growth hormone requests for the entire test.** Initial specimen is collected just prior to medication. Patient is administered the Arginine as per physician instruction. Additional specimens are collected at 30 minutes, 60 minutes, 90 minutes and 120 minutes post medication. **Nursing personnel collecting specimens should be sure to note on each specimen the time of collection AND the collection interval i.e. 0 minute, 30 minute etc. Transport specimens to lab as a group – do not split delivery of specimens.**

D. Cortisol Response, Serum: stimulation with ACTH, with timed collection of Cortisol levels. Order in VistA as **Cortisol Response, Serum;**

Synonym: Corticotropin Panel, ACTH (Cortrosyn) Stimulation, ACTS

Patient Preparation

- 4 hour fast immediately prior to test as well as during test period.
- Tolerance/challenge tests must be performed on separate days, no tolerance/challenge testing may be performed concurrently.
- Patient to be placed in non-stressful environment and remain inactive during test.
- **Indwelling catheter for easy blood collection must be placed at least 30 minutes prior to test.**
- Physician ordering test is responsible for the concurrent order of medication from pharmacy.

Test Instructions

Test and medication should be ordered one day in advance. **The Cortisol Response/Corticotropin Stimulation test is only ordered one time and will then include all the cortisol requests for the entire test.** Initial specimen is collected just prior to medication. Patient is administered the corticotropin as per physician instruction. Additional specimens are collected at 30 minutes, 60 minutes post medication. **Nursing personnel collecting specimens should be sure to note on each specimen the time of collection AND the collection interval i.e. 0 minute, 30 minute etc. Transport specimens to lab as a group – do not split delivery of specimens.**

E Dexamethasone Suppression Testing – administration of dexamethasone with timed collection of serum and or urine free Cortisol levels. Order in VistA as component test to be measured – **Cortisol, Serum and 24 Hour Urine Free Cortisol**

Patient Preparation

- Tolerance/challenge tests must be performed on separate days, no tolerance/challenge testing may be performed concurrently.
- Physician ordering test is responsible for the concurrent order of medication from pharmacy.

Test Instructions

The individual test desired by the provider (24 hour urine Free Cortisol, Cortisol, Serum) is ordered in VistA. Patient is given medication and instructions to take the prescribed dose at 11pm or as specified by the provider. Patient then reports for Serum Cortisol blood collection at 8am the following morning or as specified by provider. Specific doses of dexamethasone and timing of 24 hour urine collection is determined by the ordering provider.

F. Thyroid Stimulation Testing: Administration of TRH (Protirelin) with timed collection of TSH levels. Order in VistA as **Thyroid Stimulation Test;** Synonym: Thy. Stimulating Test, TRH Stimulation

Patient Preparation

- Tolerance tests must be performed on separate days, no tolerance testing may be performed concurrently.
- Physician ordering test is responsible for the concurrent order of medication from pharmacy.

Test Instructions

Test and medication should be ordered one day in advance. **The Thyroid Stimulation test is only ordered one time and will then include all the TSH requests for the entire test.** Initial (0 minute) specimen is collected just prior to medication. Patient is administered the TRH (protirelin) as per physician instruction. Additional specimens are collected at 10 minutes, 20 minutes, and 30 minutes post medication. **Nursing personnel collecting specimens should be sure to note on each specimen the time of collection AND the collection interval i.e. 0 minute, 30 minute etc. Transport specimens to lab as a group – do not split delivery of specimens.**

Appendix II TOLERANCE / CHALLENGE TEST INFORMATION

- G. Clonidine Suppression Test:** Administration of Clonidine with timed collection of Plasma Catecholamine levels. Order in VistA as Clonidine Suppression;

Patient Preparation

- 8 hour fast immediately prior to test as well as during test period.
- Tolerance tests must be performed on separate days, no tolerance testing may be performed concurrently.
- Patient to be placed in non-stressful environment and remain recumbent and inactive during test.
- Indwelling catheter for easy blood collection must be placed at least 30 minutes prior to test.
- Physician ordering test is responsible for the concurrent order of medication from pharmacy.

Test Instructions

Test and medication should be ordered one day in advance. **The Clonidine Suppression test is only ordered one time and will then include all the Plasma Catecholamine requests for the entire test.** Each specimen will need to be collected into a pre-chilled sodium heparin tube (dark green top tub) keep specimens on ice until delivery to lab. Initial specimen is collected just prior to medication. Patient is administered the Clonidine as per physician instruction. Additional specimens are collected at 60 minutes, 120 minutes, and 180 minutes post medication. **Nursing personnel collecting specimens should be sure to note on each specimen the time of collection AND the collection interval i.e. 0 minute, 60 minute etc. Transport specimens to lab as a group – do not split delivery of specimens.**

- H. Thyrotropin (Thyrogen) Injection** – administration of injected Thyrotropin as determined by clinician, with timed collection of thyroid tests as specified by provider post injection. Order in VistA as component test to be measured – **Free T4**

Patient Preparation

- Tolerance/challenge tests must be performed on separate days, no tolerance/challenge testing may be performed concurrently.
- Physician ordering test is responsible for the concurrent order of medication from pharmacy.

Test Instructions

The individual test desired by the provider (Free T4 or other specified thyroid test) is ordered in VistA. Patient is injected with Thyrogen as specified by the provider (2-3 injections over 2-6 days). Patient then reports for blood collection for Thyroid testing as specified by provider. Specific doses and timing of Thyrogen as well as specific test and timing of blood collection are determined by the ordering provider.

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