Blood Specimen Collection Guidelines

Serum, Plasma, or Whole Blood

Venipuncture with a vacutainer system

The vacutainer system is designed to be simple to operate, especially in the collection of multiple samples. If the patient has good prominent veins, it is almost always the preferred method of collecting blood specimens. Some of the advantages of the vacutainer system are:

1. It is easier to collect multiple samples with one venipuncture.
2. It is generally less expensive.
3. It saves time.
4. Since blood is drawn directly from the vein into the tube, no transfer of blood is necessary.
5. It provides the greatest protection from needlesticks for the phlebotomist.

The Eclipse system (used by AnMed Health) utilizes a one piece system with the needle attached to the vacutainer adapter.

1. Before using, tap all tubes that contain additives to ensure that the entire additive is dislodged from the stopper and the wall of the tube. Use a sterile blood collection tube. When drawing blood for cultures, wipe the stopper with a suitable antiseptic solution. Check the stopper to make certain it is dry before performing the venipuncture.
2. Insert the blood collection tube into the holder and onto the needle up to the recessed guideline on the needle holder. Avoid pushing the tube beyond the guideline, because a premature loss of vacuum may result. The tube will retract slightly. Leave it in this position.
3. Make sure the patient’s arm or other venipuncture site is in a downward position to prevent reflux.
4. Grasp the patient’s arm firmly. The phlebotomist’s thumb should be used to draw the skin taut. This anchors the vein. The thumb should be one or two inches (2.5 cm or 5.0 cm) below the venipuncture site.
5. With the bevel up, line up needle with the vein and puncture the vein at a 15 degree angle to the skin. Grasp the flange of the needle holder and push the tube forward until the butt end of the needle punctures the stopper. Maintain the tube below the site when needle is in the vein.
6. When collecting 1-2 vacutainer tubes, remove the tourniquet as soon as blood flow is established. When collecting more than 2 tubes, remove tourniquet within one minute after tourniquet has been applied to patient’s arm. Leaving the tourniquet on more than one minute can produce significant error from hemoconcentration. Once the draw has started, do not change the position of the tube until it is withdrawn from the needle. During the procedure, do not allow the contents of the tube to contact the stopper. Movement of the fluid back and forth in the tube can cause backflow of blood into the venous system and possible adverse patient reaction.
7. Keep constant, slight forward pressure (in the direction of the needle) on the end of the tube. This prevents release of the shut-off valve and stopping of blood flow. Do not vary pressure or reintroduce pressure after completing the draw.
8. Fill the tube until the vacuum is exhausted and blood flow ceases. This will ensure that there is a correct ratio of anticoagulant to blood. It is normal for the tube not to be completely filled.
9. When the blood flow ceases, remove the tube from the holder. The shutoff valve re-covers the point, stopping blood flow until the next tube is inserted.
10. Mix immediately after drawing each tube that contains an additive by gently inverting the tube 5 to 10 times (per manufacturer guidelines). To avoid hemolysis, do not mix vigorously.
11. To obtain additional specimens, insert next tube into holder and repeat procedure from step 6.
12. After all tubes have been collected, engage safety device on Eclipse Safety needle.
13. Remove the needle and immediately hold a clean cotton ball against the puncture site. Apply pressure until the bleeding stops. Re-check the venipuncture site prior to applying a bandage, if appropriate. Do not allow the patient to bend his/her elbow.

**Multiple Specimen Collections**
Blood collection tubes must be drawn in a specific order to avoid cross-contamination of additives between tubes.

**Vacutainer or Syringe- Order of Draw** (Refer to BD Vacutainer® Order of Draw for Multiple Tube Collections chart VS5729-4)

1. Blood Cultures
2. Citrated tubes for coagulation tube (light blue stopper)
3. Non-additive red stopper tube
4. Serum Separator (SST or Gel)
5. Heparin containing tube (green stopper)
6. EDTA –K2 or EDTA-K3 – containing tube (lavender stopper)
7. Oxalate fluoride containing tube (gray stopper)

**Coagulation testing**
If a coagulation assay is the only test ordered, draw a white stopper waste tube just as a discard tube prior to collection of blue stopper tube when collecting with a butterfly. The discard tube must be used to fill the blood collection set tubing’s “dead space” with blood but the discard tube does not need to be completely filled. This important step will ensure maintenance of the proper blood-to-additive ratio of the blood specimen. The discard tube should be a white stopper waste tube or coagulation tube.

**SERUM**
Draw (1) Red top vacutainer tube or (1) SST tube for every 2 mL of serum required. See the individual test for collection tube requirements. Allow the blood to clot at room temperature then centrifuge for 10 minutes at approximately 3000 rpm or the equivalent based on sample type and centrifuge. SST tubes must be centrifuged well to ensure separation of serum from cells. Serum from plain red tubes should be removed from cells and placed in a properly labeled plastic aliquot transport tube.

**PLASMA**
Follow the directions for whole blood. Draw 4 ml anticoagulated whole blood for each 2 mL of plasma required. Please see the individual test for requirements. Centrifuge the blood sample and remove the plasma to a transport tube that is properly labeled unless PST (plasma separator) tubes are utilized.

**WHOLE BLOOD**
For whole blood analysis, draw in a tube containing appropriate anticoagulant. Upon completion of collection, gently mix the sample. It is important to draw the required blood volume for the size vacutainer tube for test accuracy. For example, the 3.5 mL blue top sodium citrate should draw 3.5 mL blood.

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**Pediatric Specimen Collection Guidelines**

- **HEMATOLOGY**
  CBC.................................2 purple microtainers - 1/3 full (approximately 250 microL each)
Retic………………………………1 lavender microtainer (200 microL).
    If CBC is collected specimen will be sufficient for Retic.
HCT…………………………………1 purple microtainer (200 microL)
Sed Rate (Wintrobe) ………………..1.5 ml in a 2 mL purple top

● CHEMISTRY
Lyte (Chem 4).……………………..1 full green or yellow microtainer (700 microL)
N Bili………………………………….1 full green or yellow microtainer (700 microL)
Glucose, BUN, Ca……………………1 full green or yellow microtainer (700 microL)
ABGs………………………………….500 microL heparinized blood, airtight,
    Transported within 10 minutes or on ice
Therapeutic Drugs……………………1 full green or yellow microtainer
TSH……………………………………..200 microL serum (2 yellow microtainers)
Urine Toxicology……………………3 mL of urine for screening For Medical Testing Only

Green microtainers preferred for STAT testing.

● PERIPHERAL LAB
Mono………………………………..100 microL serum (1 full yellow microtainer)
NY Latex……………………………..100 microL serum (1 full yellow microtainer)
Immunoglobulins………………….500 microL serum (3 ml red top tube)
IG Subclasses…………………….100 microL serum (1 full yellow microtainer)
IG Battery………………………….500 microL serum (3 ml yellow top tube)
Mycoplasma………………………250 microL serum (2 full yellow microtainers)

● MICROBIOLOGY
Blood Cultures ………..0.5-4.0 ml per PEDS bottle, (See chart “Culture, Blood”)

Infant Heel Puncture
An infant heel warmer should be used to warm the heel for a few minutes prior to puncture.

1. Perform punctures on the medial or most lateral portion of the plantar surface (in the shaded area of the diagram below). Lancets designed for heel stick should be used. Devices especially for preemies should be utilized when indicated. Do not perform puncture on the posterior curvature of the heel. Do not puncture through previous sites which may be infected.
2. After collecting blood from a baby’s heel, the foot should be raised above its body and a sterile gauze pad should be pressed against the puncture site until the bleeding stops. When collecting a specimen from a newborn infant for screening tests, the directions of the agency that supplies the filter paper for the specimen should be followed. Do not apply an adhesive bandage.
Collection of Micro-samples
1. Wipe the finger well with an alcohol pad. Allow to air dry.
2. Stick the finger quickly and deeply with a sterile lancet.
3. Wipe off the first drop of blood.
4. Squeeze the finger, but not excessively, until another drop appears. This drop and drops that follow may be collected in microtainers depending upon the test for which you are collecting the sample.
5. Thumbs are not typically used. Use of the big toe is acceptable in small children.

Urine Collection Guidelines

Random urines should be collected using clean catch technique and placed in a chemically clean collection container. Sterile cups must be used for culture collected by clean catch or catherization.

24-hour urines (or other timed collection) should be collected over the designated time into collection jugs available from AnMed Health Laboratory Services. Urine collections requiring preservatives will have a preservative added to the container before collection. These preservatives must be treated with caution. Hazard information is printed on the jug. Store the container upright. The patient should never void directly into container. A collection cup will be provided. Refrigerate urine or keep on ice during collection unless otherwise specified.

24-hour urine collections should be started at 7 am if possible. The patient should empty the bladder and discard the specimen. All specimens are then saved until the following morning. The 7 am specimen of the second day is added to the collection.

See “URINE TEST 24 HOUR COLLECTION” patient instruction sheet (REV 1/07 LC)

** When a specimen container has a preservative added, instruct patient never to void directly into the container.

URINE PRESERVATIVES

<table>
<thead>
<tr>
<th>Test</th>
<th>Collection Time</th>
<th>Preservative</th>
<th>Storage</th>
<th>Alternate Preservative</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aldosterone</td>
<td>24 hours</td>
<td>Boric Acid</td>
<td>Refrigerate</td>
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<td>Amino Acids, quantitative</td>
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<td>None</td>
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<td>Aminolevulinic Acid (ALA)</td>
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<td>Freeze</td>
<td></td>
<td>Protect from light. Final pH less than 6</td>
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<td>Amylase</td>
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<td>None</td>
<td>Refrigerate</td>
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<td>Arsenic</td>
<td>Random or 24 hours</td>
<td>None</td>
<td>Room Temperature</td>
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<td>B2-microglobulin</td>
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<td>None</td>
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<td>Benzene metabolite</td>
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<td>None</td>
<td>Room Temperature</td>
<td>Sampling time is end-of-shift for industrial exposure monitoring</td>
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</tr>
<tr>
<td>Test</td>
<td>Collection Time</td>
<td>Preservative</td>
<td>Storage</td>
<td>Alternate Preservative</td>
<td>Comments</td>
</tr>
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<td>------------------</td>
<td>------------------------</td>
<td>-----------------------------------------------</td>
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<td>Cadmium</td>
<td>Random or 24 hours</td>
<td>None</td>
<td>Room Temperature</td>
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<td></td>
</tr>
<tr>
<td>Calcium</td>
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<td>6 N HCl</td>
<td>Refrigerate</td>
<td></td>
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<tr>
<td>Catecholamines, fractionated</td>
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<td>6 N HCl</td>
<td>Refrigerate</td>
<td>DO NOT use Boric Acid</td>
<td>Final pH 1-3</td>
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<tr>
<td>Citric Acid</td>
<td>24 hours</td>
<td>6 N HCl</td>
<td>Refrigerate</td>
<td>DO NOT use Boric Acid or Acetic Acid</td>
<td>PH must be 1-3</td>
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<td>DO NOT use any additive</td>
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<td>Freeze</td>
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<td>Final pH 1-3</td>
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<td>6N HCl</td>
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<td>Boric Acid</td>
<td>Refrigerate</td>
<td>6N HCl</td>
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<tr>
<td>Test</td>
<td>Collection Time</td>
<td>Preservative</td>
<td>Storage</td>
<td>Alternate Preservative</td>
<td>Comments</td>
</tr>
<tr>
<td>-------------------------------------------</td>
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<td>----------------------------------------------------</td>
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<tr>
<td>Lead</td>
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<td>None</td>
<td>Room Temperature</td>
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<td>Lysozyme</td>
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<td>Freeze</td>
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<td>Magnesium</td>
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<td>PH not less than 4</td>
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<td>Mercury</td>
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<td>Metanephrines</td>
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<td>Refrigerate</td>
<td>DO NOT use boric or acetic acid</td>
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<td>Microalbumin</td>
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<td>Nickel</td>
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<td>Oxalate</td>
<td>24 hours</td>
<td>6N HCl</td>
<td>Room temperature or refrigerate</td>
<td>DO NOT use boric acid</td>
<td>PH must be less than or equal to 2</td>
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<td>Phenol</td>
<td>Random</td>
<td>None</td>
<td>Room Temperature</td>
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<td></td>
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<td>Phosphorus</td>
<td>Random or 24 hours</td>
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<td>Refrigerate</td>
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<td></td>
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<tr>
<td>Porphobilinogen (PBG)</td>
<td>Random or 24 hours</td>
<td>Acetic Acid</td>
<td>Freeze</td>
<td>Sodium carbonate; refrigerate</td>
<td>Protect from light</td>
</tr>
<tr>
<td>Porphyrins</td>
<td>24 hours</td>
<td>Sodium carbonate</td>
<td>Refrigerate</td>
<td>None</td>
<td>Protect from light</td>
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<td>Potassium</td>
<td>24 hours</td>
<td>None</td>
<td>Refrigerate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protein</td>
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<td>Refrigerate</td>
<td></td>
<td></td>
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<tr>
<td>Selenium</td>
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<td>None</td>
<td>Room Temperature</td>
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<td></td>
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<tr>
<td>Sodium</td>
<td>Timed or 24 hours</td>
<td>None</td>
<td>Refrigerate</td>
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<td></td>
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<td>Urea Nitrogen</td>
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<td>None</td>
<td>Refrigerate</td>
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<td></td>
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<tr>
<td>Uric Acid</td>
<td>24 hours</td>
<td>None</td>
<td>Refrigerate</td>
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<td></td>
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<tr>
<td>Vanillylmandelic acid (VMA)</td>
<td>24 hours</td>
<td>6N HCl</td>
<td>Refrigerate</td>
<td>DO NOT use Boric Acid</td>
<td>PH must be 1-3</td>
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<tr>
<td>Zinc</td>
<td>Random or 24 hours</td>
<td>None</td>
<td>Room Temperature</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Patient Instructions for Random Urine Specimen Collection

Mid-stream clean, voided urine specimen

FEMALE

1. Thoroughly wash hands with soap and water, rinse well, and shake dry.
2. Insert a fresh tampon or use cotton to stop flow, if menstruating.
3. Wash from front to back, one time only, with the antiseptic pad provided.
4. Begin to void into the toilet bowel.
5. After passing a small amount of urine into the toilet, catch some urine in the sterile container provided without stopping urination process.
6. Do not touch the inside of the sterile container with your fingers, or touch your body to the container during the collection process.
7. Cap the sterile container with the cap provided, again not touching the inside of the cap with your fingers.
8. Please return the specimen to the Laboratory.

MALE

1. Thoroughly wash hands with soap and water, rinse well, and shake dry.
2. Wash the end of the penis with the antiseptic pad provided. Retract the foreskin around the penis with one hand prior to cleansing, if necessary.
3. Begin urinating into the toilet. When the stream is well established, move the container into the path of the stream. Do not touch the inside of the sterile urine container or its cap with your fingers. Do not touch the sterile urine container to your body during the collection process.
4. Cap the sterile container after the collection process is completed.
5. Return the specimen to the Laboratory.

INFECTION DISEASE COLLECTION GUIDELINES

Quality results in Microbiology begin with proper specimen collection and transport. Please always indicate the specific anatomical site of the specimen submitted and suspected diagnosis. Proper selection of plating media is dependent on the specimen origin. Gram stains are routinely performed on specimens from normally sterile body sites, wounds, abscesses, sputum and tissue specimens. They are performed by special request on urine and genital specimens. Please indicate on request form if gram stains are needed on urine or genital specimens. Please note that antimicrobial susceptibility testing is performed routinely on appropriate isolates from selected body sites.

BLOOD CULTURES

Blood cultures are often collected on patients who have fever of unknown origin (FUO). Microorganisms present in the circulating blood whether continuously or transiently, are a threat to every organ of the body. The detection and identification of blood-borne pathogens is one of the most important functions of the Microbiology Lab. The prevention of contamination in the blood culture by skin organisms is the primary concern of the phlebotomist when obtaining blood for this test. Another important concern is collecting an adequate volume of blood for the recovery of the pathogen involved.
**Specimen:**
Whole blood is inoculated into blood culture bottles. Under routine conditions, inoculate one anaerobic bottle (Bactec Lytic/10 Anaerobic/F) and one aerobic bottle (Bactec Plus Aerobic/F). When collecting samples from children or from patients who are difficult to stick (i.e. cannot obtain recommended blood volume for the set of bottles), use a Pediatric bottle (Bactec Peds Plus/F). Blood cultures are not to be collected by heel stick or finger stick methods at AnMed Health due to potential contamination.

Blood culture bottles used at AnMed Health along with recommended blood volumes for inoculation include the following:

<table>
<thead>
<tr>
<th>Bottle Type</th>
<th>Cap Color</th>
<th>Maximum Fill</th>
<th>Minimum Fill</th>
<th>Optimal Fill</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anaerobic Bottle</td>
<td>Purple flip cap</td>
<td>10 mL</td>
<td>3 mL</td>
<td>8 to 10 mL</td>
</tr>
<tr>
<td>Bactec Lytic/10</td>
<td>magenta band</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anaerobic/F</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Aerobic Bottle</td>
<td>Gray flip cap</td>
<td>10 mL</td>
<td>3 mL</td>
<td>8 to 10 mL</td>
</tr>
<tr>
<td>Bactec Plus Aerobic/F</td>
<td>blue band</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Pediatric Bottle</td>
<td>Pink flip cap</td>
<td>5 mL</td>
<td>0.5 mL</td>
<td>1 to 3 mL</td>
</tr>
<tr>
<td>Bactec Peds Plus/F</td>
<td>silver band</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

**Handling Conditions:**
Blood culture bottles should arrive in the laboratory as soon as possible after collection. Maintain specimens at room temperature.

**Procedural Steps:**

1. Apply the tourniquet and locate a venipuncture site.
2. Remove the tourniquet.
3. Prepare the venipuncture site in the following manner:
   a. While holding the Chlora Prep (Frepp) device in a horizontal position, pinch the wings of the device once. Do not touch the sponge or lay the sponge down once you have opened the package.
   b. Press the sponge against the patient’s skin at the venipuncture site so that the chlorhexidine flows evenly into the sponge.
   c. Using a scrubbing motion, cleanse the venipuncture site with Chlora Prep Frepp device for 30 seconds. **Use a timer**.
   d. Do not scrub more than a 2½" X 2½" area (approximately the length of the scrub).
      i. Allow the venipuncture site to dry for approximately 30 seconds. **Use a timer**. If venipuncture site is moist prior to scrubbing with Frepp device, allow the site to dry for 2 minutes.
      ii. If venipuncture site is hairy, allow the site to dry for 3 minutes.
   e. Do not touch the disinfected site of venipuncture unless the finger used for palpation is similarly disinfected or unless sterile gloves are worn.
4. Prepare the blood culture bottles in the following manner:
   a. Remove flip-caps from the blood culture bottles.
   b. Clean the rubber septa of the blood culture bottles with alcohol and allow to dry.
c. Using a sharpie, mark starting volume of broth on each bottle’s graduated scale.

d. Using a sharpie, mark desired fill volume on each bottle’s graduated scale.

5. Reapply the tourniquet.

6. Blood can be collected with Butterfly Device with Pre-Attached Vacutainer Holder or with syringe and butterfly. Whenever possible, use the Butterfly device with Pre-Attached Vacutainer Holder method.

   a. Butterfly device using pre-attached Vacutainer holder (PREFERRED METHOD)
      i. Perform venipuncture.
         1. Remove sheath covering needle at wings.
         2. Insert needle in vein by holding wings.
         3. Observe for presence of blood in the chamber.
      ii. Inoculate blood culture bottles with blood specimen.
         1. Select aerobic bottle first.
         2. Keep the bottle upright during inoculation.
         3. Push and hold the Vacutainer holder over top of vial to puncture septum.
         4. Collect blood to desired fill level on vial. Monitor to ensure proper blood flow and fill level.
         5. Remove holder from aerobic vial.
         6. Immediately push and hold the vacutainer holder onto the anaerobic vial keeping the bottle upright during inoculation.
         7. Collect blood to desired fill level on the anaerobic vial.
         8. Remove holder from the anaerobic vial.
      iii. Remove butterfly needle from patient’s arm.
         1. Retract the needle by depressing the button. Needle will slide out of venipuncture site and lock into place.
         2. Cover the venipuncture site with sterile gauze pad and apply pressure.
         3. Check to ensure that bleeding has eased and apply an adhesive or gauze bandage over the site.

   b. Instructions for butterfly and syringe.
      i. Remove Vacuum Tube Holder from butterfly device.
      ii. Tightly connect 10 cc or 20 cc syringe to luer connector of butterfly device.
      iii. Perform venipuncture with butterfly.
      iv. Collect 2, 10 cc syringes of blood or 1, 20 cc syringe of blood.
      v. Using blood transfer device, carefully inoculate blood culture bottles.
      vi. Inoculate the anaerobic bottle first and then the aerobic bottle.
      vii. Use volume markings on syringe as a guide to amount of blood inoculated into the bottle.

7. For adults, whenever feasible, inoculate aerobic bottle with 8-10 mL of blood and anaerobic bottle with 8-10 mL blood. These larger volumes are recommended by the manufacturer of our blood culture bottles and increase the likelihood of pathogen recovery.

8. Use the chart below as a guide for how much blood should be placed into bottles when total collection volume is less than 16-20 mL of blood.
Volume Collected | Aerobic | Anaerobic | Peds
---|---|---|---
16-20 mL | Split equally between aerobic and anaerobic bottles | | |
13-16 mL | 8 mL | 5-8 mL | Not applicable |
10-12 mL | 5-7 mL | 5 mL | Not applicable |
5-9 mL | Entire volume | 0 | Not applicable |
Less than 5 mL | Not applicable | Not applicable | Entire volume |

**Procedure Notes:**
1. Affix specimen barcode label with the accession number **vertically** on the blood culture bottle.
   a. Place the label over the area with clock and patient # icon.
   b. Do **not** place label over top of tab with bottle number.
   c. Do **not** totally cover the bottle barcode.
   d. Do **not** cover bottom of bottle with label.
   e. Do **not** obscure the volume scale.
2. On the label, write “line” if blood was drawn from a line or “vein” if blood was drawn from a venipuncture.
3. Write your collector identification as well as collection time on the label.
   a. Special concerns about the blood culture bottles when drawing blood cultures include the following;
   b. Never use a bottle past the expiration date.
   c. Do not use culture vials that exhibit any cracks or defects.
   d. Do not use a bottle if the sensor on the bottom of the bottle is not intact.
   e. With respect to anaerobic bottle, do not use if the broth appears cloudy.
   f. Exercise care when removing flip-cap from pediatric bottle because it is made of glass and the neck of the bottle is fragile. To send Pediatric bottle through the tube system, place it in a special plastic transport container available from laboratory. Also, pad the carrier with foam insert on both sides.

**Limitations of the Procedure:**
The number of blood cultures is determined by the clinical urgency of the situation. However, an effective protocol for AnMed Health Laboratory has proven to be 2 sets collected from separate venipuncture collections.

If it is not feasible to collect 2 sets from separate venipuncture collections, an interval of 30 minutes between Collections is acceptable.

**When blood is being drawn from a line, two blood culture sets cannot be drawn from the line at the same time. An interval of 30 minutes between collections is desirable.**

Vials should be delivered to the laboratory as soon as possible.

Except for pediatric bottles, the optimal sample volume per bottle is 8-10 mL. Although smaller amounts can be used, volumes less than 8-10 mL lessen the probability of recovery when there is a small population of an organism. Volumes greater than 10 mL per bottle do not maintain the optimal blood to medium broth.
FECES
Fecal Specimens should be collected early in the course of the enteric disease and before antimicrobial therapy. Specimen of choice is freshly passed stool. Feces for Ova and Parasite, Occult Blood, pH, WBC, Reducing Substances and Qualitative Fat must not be contaminated with barium or other foreign substances such as bismuth, antacids, anti-diarrhea medications, oil laxatives, and or antibiotic. Such contamination may require 10 days off medication before a satisfactory sample can be obtained for testing. Stool for ova and parasite testing should reach the Laboratory within two hours of collection. PVA and Formalin Packs will be provided for preserving delayed specimens. Culture and sensitivity (C&S) Para-Paks are also available for preserving delayed specimens for stool cultures. Please refer to Stool Collection Instruction Sheet for transport requirements.

GC/CHLAMYDIA DNA PROBE COLLECTION

- Specimen Collection and Storage
  1. The APTIMA Combo 2 specimen collection kits are available from Anmed Health Laboratory Services.
  2. The collection kits are sealed to guarantee sterility. Do not use if package has been opened or damaged.
  3. The collection kits should be stored at room temperature until the expiration date on the kit.
  4. A single swab is sufficient when collecting endocervical or urethral samples for both GC and chlamydiae. A separate swab for each is unnecessary.
  5. Please indicate specimen source such as endocervical or urethral.
     NOTE: Throat swabs, vaginal swabs, and rectal swabs should be rejected. Eye swabs for Chlamydia testing should be collected with male PACE collection kit and sent to Reference Laboratory for PACE DNA Probe testing.

    a. FEMALE: Endocervical swab specimens
       i. Remove excess mucus from the cervical os and surrounding mucosa using the cleaning swab (white shaft swab in the package with red printing). Discard this swab.
       ii. Note: To remove excess mucus from the cervical os, a large-tipped cleaning swab (not provided) may be used. Discard swab after use.
       iii. Insert the specimen collection swab (blue shaft swab in the package with green printing) into the endocervical canal.
       iv. Gently rotate the swab clockwise for 10 to 30 seconds in the endocervical canal to ensure adequate sampling.
       v. Withdraw the swab carefully; avoid any contact with the vaginal mucosa.
       vi. Remove the cap from the swab specimen transport tube and immediately place the specimen collection swab into the transport tube. NOTE: Liquid already present in the transport tube should remain in transport tube. Do not pour it out or remove it from the tube.
       vii. Carefully break the swab shaft at the scoreline; use care to avoid splashing of the contents.
       viii. Recap the swab specimen transport tube tightly.

    b. MALE: Urethral swab specimens
       i. The patient should not have urinated for at least one hour prior to specimen collection.
       ii. Insert the specimen collection swab (blue shaft swab in the package with the green printing) 2 to 4 cm into the urethra.
       iii. Gently rotate the swab clockwise for 2 to 3 seconds in the urethra to ensure adequate sampling.
iv. Withdraw the swab carefully.

v. Remove the cap from the swab specimen transport tube and immediately place the specimen collection swab into the specimen transport tube. NOTE: Liquid already present in the transport tube should remain in transport tube. Do not pour it out or remove it from the tube.

vi. Carefully break the swab shaft at the scoreline; use care to avoid splashing of the contents.

vii. Recap the swab specimen transport tube tightly.

Note: Swab specimens: After collection, transport and store the swab in the swab specimen transport tube at 2°C to 30°C until tested. Specimens must be assayed with the APTIMA Combo 2 Assay within 60 days of collection. If longer storage is needed, freeze at -20°C to -70°C for up to 90 days after collection.

c. Urine specimens

i. The patient should not have urinated for at least one hour prior to specimen collection. Direct patient to provide a first-catch urine (approximately 20 to 30 mL of the initial urine stream) into a urine collection cup free of any preservatives. Collection of larger volumes of urine may result in specimen dilution that may reduce test sensitivity. Female patients should not cleanse the labial area prior to providing the specimen.

iii. Remove the cap and transfer 2 mL of urine into the urine specimen transport tube using the disposable pipette provided. The correct volume of urine has been added when the fluid level is between the black fill lines on the urine transport tube label. NOTE: Liquid already present in the transport tube should remain in transport tube. Do not pour it out or remove it from the tube before adding the urine.

iv. Re-cap the urine specimen transport tube tightly. This is now known as the processed urine specimen.

Note: After collection, transport the processed urine specimens in the GEN-PROBE APTIMA urine specimen transport tube at 2°C to 30°C and store at 2°C to 30°C until tested. Processed urine specimens should be assayed with the APTIMA Combo 2 Assay within 30 days of collection. If longer storage is needed, freeze at -20°C to -70°C for up to 90 days after collection.

Urine samples that are still in the primary collection container must be transported to the lab at 2°C to 30°C. Transfer the urine sample into the APTIMA urine specimen transport tube within 24 hours of collection. Store at 2°C to 30°C and test within 30 days of collection.

**FLU TESTING**

1. Acceptable specimens for this test kit include: nasal swab, nasopharyngeal swab, and nasal wash/aspirate.
2. The swab used for collection can be composed of cotton, rayon, foam, or polyester. Calcium alginate swabs are unacceptable.
3. Acceptable transport media for swab include: Stuart’s, Binax Elution Solution, saline, Amies, M4, M4-RT, M5, and Hanks Balanced Salt Solution. Other transport media are unacceptable.
4. Specimens should be transported in a leak-proof container.
5. AnMed Health routinely processes nasal swabs collected with CultureSwab device containing Stuart’s medium or nasal washings.
6. Process samples as soon as possible after collection. It is desirable to elute swab samples within 1 hour of collection. Eluted swab samples may be stored refrigerated up to 24 hours. Nasal wash/aspirate may be stored refrigerated up to 24 hours.

NOTE: Supplies for inpatients are available from Specimen Procurement at extension 1377. All outpatient supplies may be obtained from AnMed Health Laboratory Services utilizing the Client Supply form.

HERPES SIMPLEX CULTURE COLLECTION DIRECTIONS

- **GENITAL LESIONS, ORAL LESIONS, SKIN LESIONS AND VESICLE FLUIDS**
  Carefully open the vesicular lesions and gently blot the vesicular fluid with a dry, sterile, **PLASTIC (not wooden)** swab. The fluid can be collected with a small syringe and needle or capillary pipettes. Cellular material can be collected by scraping the base of the vesicular/pustular herpes-like lesion with a sterile scalpel blade without producing bleeding. (Only a trained physician should scrape corneal ulcers.) The swab, fluid, or scrapings are placed in viral transport medium. This media is available from the laboratory at extension 1377 for inpatients or by utilizing the Client Supply form for outpatients.

- **THROAT SWABS**
  Rub the posterior nasal passages with a dry sterile cotton swab. Place swab in a sterile transport media.

- **THROAT WASHINGS**
  Have patient gargle about 10 mL of sterile saline and expectorate into a clean paper cup. Transfer fluid to a sterile transport container.

- **CEREBROSPINAL FLUIDS (CSF)**
  Collect 1 mL of spinal fluid and place in sterile transport container.

- **EYE EXUDATES**
  Rub the palpebral conjunctiva including the lining of the eyelid with a sterile moistened swab. Place the swab in a sterile transport media.

- **BLOOD SPECIMENS**
  Blood specimens are used for serologic testing and not for HSV isolation.

- **AUTOPSY OR BIOPSY SPECIMENS**
  The tissue to be collected and submitted for examination depends on the nature of the disease. For example brain tissue is often collected for herpes virus isolation when encephalitis is suspected. Tissue must be ground with a sterile mortar and pestle. Tissues for virus isolation should never be placed in formalin or other preservatives. Place the tissue in appropriate media for transport.

The inoculated transport medium, CSF, or throat washings should be stored at 4°C for up to 5 days. If longer storage is required, the specimen should be frozen at −70°C. HSV transport medium is available upon request by contacting Client Services at extension 1816 or (864)512-1816.

**RSV COLLECTION PROCEDURE**

General Comments:
- Obtain specimen during acute phase of illness when the greatest amount of viral shedding occurs.
Nasal washes, nasal aspirates and nasal swabs are considered acceptable specimens. Avoid using collection containers with preservatives, metal ions, and detergents that can interfere with assay. Avoid using transport media that may contain interfering substances such as RSV antibodies. Store specimens for up to 72 hours at 2-8°C and protect from evaporation and contamination. For longer storage, freeze at –20°C up to 1 week. Excessively mucoid specimens may yield uninterpretable results.

1. Nasopharyngeal washes and aspirates have been shown to be superior to nasopharyngeal swabs and are the specimens of choice.

2. Collection Notes for Nasopharyngeal Wash
   - Optimal specimen volume is 2-3 mL.
   - Excessive washing volume (greater than 3 mL) may cause a false negative result.

3. Collection Notes for Nasopharyngeal Swabs
   - For nasopharyngeal swabs, Dacron™ polyester or rayon-tipped swabs with an aluminum wire are recommended.
   - **Cultureswab** with nasopharyngeal swab and Stuart’s transport medium (green top) would be acceptable for this procedure.
   - Other swab types including calcium alginate swabs have not been evaluated with the Directigen EZ RSV test and should not be used.

4. Collection Notes for Nasal Aspiration
   - Recommended volume is 0.5 mL

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**Special Collection Procedures For Mycology**

- **HAIR**
  1. Identify the patient per hospital policy.
  2. Don non-latex gloves.
  3. No cleaning of the scalp is needed.
  4. Locate infected hairs. Infected hairs often look broken and scaly.
  5. With hemostats, remove approximately 5-10 hairs by plucking them from the scalp. It is important to remove the hair so that the base of the shaft or follicle remains intact.
  6. Place hairs in sterile specimen container.
  7. Label the outside of the specimen container per hospital policy.
  8. Place the labeled specimen container in specimen biohazard bag for transport.
  9. Place used hemostats in specimen biohazard bag for return to central supply. (North Campus may send back through Outreach Processing).
  10. Discard used non-latex gloves into biohazard container.

- **SKIN SCRAPINGS**
  1. Identify the patient per hospital policy.
  2. Don non-latex gloves.
  3. Locate skin lesion to be sampled by referring to the requisition and asking for patient’s assistance. Assess these lesions before collecting the specimen. If the involved lesions are open and/or draining sores, consult pathologist for assistance. Do not attempt to collect from lesions that are open sores, bleeding or draining. Dermatophytes typically produce a lesion in the shape of a red ring.
  4. Cleanse the area of skin to be sampled with a 70% alcohol wipe.
5. If the lesion is in the shape of a red ring, gently scrape, with the edge of a sterile microscope slide, the surface of the skin at the outer edge (active margin) of the ring. If obvious ring lesions are not visible, sample areas that appear most infected (raised, red, scaly, etc.). Do not draw blood while collecting skin scrapings.

6. Collect enough scrapings into the sterile container to cover the head of a thumbtack.

7. Label the specimen container with patient information per hospital identification policy.

8. Place the labeled specimen container in a specimen biohazard bag for transport.

9. Discard the sterile slide into a sharp keeper.

10. Discard used non-latex gloves into biohazard bag.

- NAILS

1. Identify the patient per hospital policy.

2. Don non-latex gloves.

3. Locate the infected nail by referring to requisition and asking for patient’s assistance. Infected nails typically appear thickened and yellowish in color.

4. Assess the nail. If the nail material is easy to obtain, then perform procedure. If it looks like bleeding may result (due to the nail being very short and close to the nail bed), do not perform the procedure. The nail material may best be obtained in this situation by a podiatrist or the clinician who ordered it.

5. Clean the nail to be sampled with alcohol prep and allow drying to occur.

6. Using large sterile nail clippers, scrape away the outer surface of the nail and discard into biological hazard container.

7. Use the clippers to scrape the deeper portion of the nail and place this material into sterile specimen container. Use the clippers to sample material or debris from under the infected nail and place this into the sterile specimen container as well. Portions of the nail are sampled with clippers as well. Ask patient for assistance in obtaining these clippings if needed.

8. Label the outside of the specimen container per hospital policy.

9. Place specimen container into specimen biohazard bag for transport.

10. Place used nail clippers in specimen biohazard bag and return to the sterilization room (via Records and Reports Specialist).

11. Discard used non-latex gloves into biohazard container.

Cytology/Histology

Cytology sample collection and handling

Each specimen must be accompanied by a requisition which has all patient clinical information, as these forms are true cytopathology consultations. The requisition must have the patient’s name, sex, age, date of birth, LMP (if pertinent to gyn source), specimen source, collection date, pertinent clinical information and the name of ordering physician and /or clinic from which the specimen was obtained.

Specimen: All non-gyn body fluid specimens, most common being body cavity fluid.

Submitting Specimens:

1. Unfixed material (fluids, urines, etc.) should be submitted to the laboratory minutes after collection to prevent degeneration of cellular material. The importance of rapid processing cannot be over emphasized. If a specimen **5 milliliters or greater** is collected after hours or from an outside facility
refrigerate until it can be transported to the laboratory. If specimen is 5 milliliters or less add to a container of 30 mL Cytolyt preservative (furnished to facilities by the Cytology Department upon request). Specimens left unixed or unrefrigerated at room temperature for several hours are grossly inferior, and will possibly need repeating, resulting in unnecessary discomfort and expense to the patient, along with a loss of valuable time before therapy can begin.

2. A request for a “RUSH” report may be ordered on the cytology requisition or hand written across the front of an ancillary order. Requests for “RUSH” handling should be kept at a minimum and used only when indicated as all specimens are delayed in order to process “RUSH” specimens. Continued misuse of “RUSH” requests will be brought to the attention of the Cytology Department Director.

### Histology sample collection and handling

Tissue specimens must be submitted in an appropriate container. Each specimen, except those submitted for frozen section or culture, and/or special studies should have 10% formalin added. Large body parts, e.g. legs, should be contained in a plastic, leak-proof wrap.

Each specimen must be properly labeled and submitted with a completed requisition. In addition to proper patient identification, histology requisitions should include date of specimen collection, specific source, number of specimens submitted, physician name, pertinent clinical information, pre- and/or postoperative diagnosis.

Fresh tissue sent for cultures, Lymphoma Studies and Genetic Studies should be placed in a sterile container with no fixative added.

### Criteria for Rejections of Specimens:

1. Improper labeling of slide or containers that cannot be resolved.
2. Specimens which have not been labeled with source, patient’s name and date of birth. (Identification on sticker labels on outside of cardboard slide folders is acceptable, but not preferred, when there is not more than one name.)
3. Discrepancy between names on slide(s) or specimen’s containers with the information on requisition form that cannot be resolved.
4. Incomplete or lack of requisition form that cannot be resolved.
5. Unfixed smears, which result in cellular distortion, will be processed and a diagnosis of “Unsatisfactory” will be rendered. A repeat specimen will be requested.
7. Specimen submitted from persons or institutions other than physicians or persons authorized under law.
8. Broken slides or compromised specimens which cannot be reconciled.

### PreTransfusion Specimen Collection

To ensure positive identification of the transfusion recipient, the Blood Bank Identification bracelet uses a red armband and a unique blood bank identification number. This system links the patient with his/her blood specimen used for pre-transfusion testing and the intended blood product. The red armband is placed on the patient’s arm by the phlebotomist at the time the blood specimen is collected. The patient’s blood sample and the red armband are labeled with a unique blood bank identification number. The blood bank identification number is then used to positively identify the patient at the time of transfusion.
In addition to our blood bank identification bracelet placed on patient at time of collection implemented to reduce the risk of mistransfusion for red cell transfusions; a confirmation of the patient’s ABO group is performed by a second sample collected at a separate phlebotomy or comparison with historical record of the patient's blood type.

**NOTE:** Patient identification, specimen collection and specimen labeling must be performed concurrently without leaving the patient.

**Procedural Steps:**

1. The intended recipient and the blood sample shall be identified positively at the time of collection. Correct identification will be accomplished by comparing the request form (collection label or Registration/Requisition form) to the patient’s hospital identification armband for the following unique identifiers:
   - Patient’s first and last name
   - Date of Birth
   - Medical Record Number

   ****Whenever possible, ask the patient to verbally verify his/her identity by stating their full name and date of birth.

2. **The patient must have a patient hospital identification armband on before a blood bank identification bracelet can be put on the patient.** If there is a question or discrepancy in identification, do not collect the specimen until the error is resolved. Collect the specimen (1-6ml lavender top tube) according to departmental procedure.

3. Label the specimen in the presence of the patient. Use a computer generated LIS or EMSTAT label whenever possible. Make sure the sample label includes patient's first and last name, date of birth, medical record number, date and time of collection, and collector ID (employee number). When the LIS or EMSTAT label is not available, the completed blood bank identification bracelet label is acceptable.

   **NOTE:** All required information must be present on the label with no discrepancy between any label affixed to the specimen. No patient information on any label should be obstructed from view.

4. Record the patients' first and last name, date of birth, medical record number, date of collection, and employee ID number in the spaces provided on the Blood Bank Identification bracelet. The blood bank number is preprinted on the armband.

5. Remove the self-adhesive label from the Blood Bank Identification bracelet. Place it on the lavender top tube, being careful to leave the patient name, date of birth and MR # on the specimen label visible.

6. Secure the Blood Bank Identification bracelet on the patient’s wrist. To separate the numbered labels from the bracelet, hold the clip firmly. Tear the numbered portion of the band to one side without raising the band above the level of the clip. Discard the extra numbers.
   - Place the Blood Bank Identification bracelet on the same arm as the hospital armband whenever possible.
   - Place the bracelet on an ankle if the patients' wrist cannot be used.
   - Do not fasten the bracelet to the bed.
Prior to leaving the patient, the collector must verify that the patient’s first and last name, date of birth and medical record number on the labeled specimen matches the same information on the patient hospital identification armband located on the patient.

Transport immediately to the Blood Bank via pneumatic tube or hand deliver.

**Inpatient**: Inspect the patient for presence of a green Autologous Donor bracelet. If present, remove one of the green numbers from the autologous bracelet and place on the Blood Bank specimen tube.

**Outpatient**: Autologous donors who arrive for pre-admit blood work will present an Autologous Donation Packet which was issued to them when they donated their autologous blood unit. Collect an autologous crossmatch following procedures listed above. Take a green peel-off number from the green autologous bracelet and place on the blood bank specimen. If the patient does not have the autologous packet with them, a green peel-off number can be obtained from the Autologous Donor File located in the Blood Center. If patient presents to a site other than the main campus, call blood bank for further instructions. The green bracelet is to be placed on the patient’s arm on the day of admission.

**T Conf**: Test used to request a second sample to confirm the patient’s blood type. This sample is collected preferable by a different phlebotomist and performed by a separate phlebotomy from the initial sample request for pre-transfusion testing. This second collection will be performed by a laboratory phlebotomist except for patient’s that are located in the operating room.

**Semen Collection**

AnMed Health Laboratory Services has developed a collection instruction sheet, which also contains patient demographic information. Specimens should be delivered **ONLY** to AnMed Health Laboratory Fant Street located at 600 North Fant Street. Patients do not have to register prior to delivering specimen. Specimens should be tested within one-hour of collection to obtain optimum results. Patient collection instructions are available from AnMed Health Laboratory Services or in the form section of our on-line Directory of Laboratory Services (Collection Information for Semen Analysis: AIF.HEM.0003).

**Specimen Labeling Requirements**

- Specimens collected by AnMed Health personnel should be labeled as outlined in AnMed Health’s policy on specimen identification and labeling. Specimens not properly labeled will be rejected per specifics in policy.
- Outpatient human specimens collected by other personnel and forwarded to AnMed Health Laboratory Services for testing should be labeled with accurate patient identification which matches patient identification documented on the order requisition. This identification should include the **two identifiers** of patient’s first and last name (nicknames should not be used) and date of birth. Animal specimens should also have two identifiers of owner’s last name with animal’s name **and** species.
- In addition, non-blood specimens should be labeled with source and body site information.

**NOTE**: If anonymity is necessary in patient identification (i.e. certain Employee Health protocols), the specimen may be labeled with the supplied EHS case number.
Some specimens received by the laboratory may be unacceptable for testing. Problems such as hemolysis, lipemia, short sampling, or clotting may prohibit the lab from performing an accurate test and thus could invalidate any results produced. If the lab rejects a sample due to integrity issues, clients will be notified of the cancellation and no charge will be generated for the test. Please read the directory carefully to determine appropriate handling instructions for specimens. This will enable the lab to insure the most rapid turn-around-time of results back to the client. If you have any questions relating to specimen handling, contact Client Services at (800)868-5877 or (864)512-1816.