Clinical Labs Blood Collection Instructions

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Clinical Blood Collection Instructions

Please note: You must be a trained Phlebotomist to perform a blood collection. Wash and dry your hands. Positively identify the patient before beginning.

1. Check the blood collection tube(s) and needles to ensure the expiration date has not been exceeded.
2. Put on a new pair of medical gloves.
3. Ask the following three questions before touching the patient:
   - 3.1. Does the patient have a sensitivity and/or allergy to latex?
     a. Use latex-free gloves and tourniquet if answer is yes.
   - 3.2. Does the patient have a history of fainting during blood collection?
     a. If the patient does have a history of fainting, then the patient should be asked to lie down for the blood to be drawn.
   - 3.3. Ask the patient if they have a preference of site based on previous phlebotomy experience. Has the patient had an arm shunt, mastectomy or lymphedema?
     a. If the patient has had an arm shunt, mastectomy or lymphedema then blood should be drawn from the other arm.
4. Assemble the appropriate needle for collection.
5. Ask patient to sit in a comfortable position with their arm extended.
6. Explain each procedure so the patient is informed and understands what is about to take place.
7. Select the vein for venipuncture:
   - 7.1. First inspect the area you plan to use. Avoid areas with scar tissue, burns, or visible trauma.
   - 7.2. Apply the tourniquet about midway between elbow and shoulder (4-5 finger widths above the site) and have the patient clench his or her hand. The tourniquet must be applied with enough tension to compress the vein, but not the artery.
   - 7.3. It may be necessary to release the tourniquet for a few seconds and reapply; prolonged obstruction of blood flow by the tourniquet may affect test results.
   - 7.4. Tourniquet application should not be placed for an extended period of time (no longer than 1-2 minutes); if mottling occurs release the tourniquet, cease blood collection and allow blood flow to return.
   - 7.5. Always palpate or feel for the vein even when the vein can be seen. This gives you practice in finding deeper, unseen veins. The vein will feel like an elastic tube that gives under pressure. Arteries pulsate, so make certain the structure you feel is not pulsating. If a vein is difficult to find, ask the patient to extend their arm downward for a few minutes and if appropriate, offer them water to drink (not allowed if there is an NPO comment).
   - 7.6. Attempt to locate the median cubital or cephalic veins on either arm before considering alternative veins. Due to the proximity of the basilic vein to the brachial artery and the median nerve, the basilic vein should only be considered if no other vein is more prominent.
8. Scrub the venipuncture site with an alcohol pad in a circular motion moving outward from the center.
9. Hold vein “fixed” or taut during the puncture.
10. Insert the needle with the bevel up at about a 25-degree angle with the skin.
11. Attach the appropriate blood collection tube to the housing, ensuring that tube has completed filling before removing. (Once tube has been removed from hub, Gently invert prior to placing next tube.)
    - 11.1. Red-Top serum tubes; Gold-Top tubes – Fill the tubes to capacity (1/2 to 3/4 full) since partial filling will result in higher serum concentration of tube additives, which are known to alter the results of some tests
      a. Two Gold-Top SST tubes are needed in order to complete the required tests.
    - 11.2. Green-Top whole blood tubes – Fill tubes to capacity (minimum 6mL). Under-filled blood collection tubes will not be accepted for testing.
      a. Only one Green-Top whole blood tube is needed in order the complete the required tests.

11.3. Lavender-Top whole blood tubes – Fill the tubes to capacity (1/2 to 3/4 full) since partial filling will result in distortions caused by the osmolality of the anticoagulant. Under-filled blood collection tubes will not be accepted for testing.
   a. Only one Lavender-Top whole blood tube is needed in order the complete the required tests.
12. Release the tourniquet before removing the needle.
13. Remove needle from the vein. Handle needle with extreme care to avoid accidental exposure to bloodborne pathogens through needle stick.
14. Apply pressure with a dry gauze pad or a Band-Aid®.
15. Observe the site for hemostasis (complete clotting) before the site is bandaged in any way.
16. Discard tourniquet after each patient.
17. Invert the tube(s) back and forth according to the table in Appendix I.
   17.1. Gold-Top SST tubes; Red-Top serum tubes – Failure to invert the tube the appropriate amount of times will result in incomplete clotting and incomplete separation of red cells from serum. Hemolysis of even a small number of red cells remaining above the gel in contact with serum will spuriously elevate results of tests, such as serum potassium, ALT, AST, and others.
   17.2. Whole blood lavender top tubes and green top tubes – Incomplete mixing or delay in mixing after phlebotomy will result in sample clotting of the sample, which can result in inaccurate, unreliable results and/or sample cancellation.
18. Sample Centrifugation – Gold-Top tubes and Red-Top serum tubes ONLY:
   18.1. Serum samples must be centrifuged following collection.
   18.2. Do not remove the stopper at any time during centrifugation.
   18.3. Do not centrifuge immediately after drawing blood.
   18.4. Allow the blood to clot in an upright position for at least 30 minutes, but not longer than 1 hour before centrifugation.
   18.5. Centrifuge for at least 10 minutes (horizontal) or 15 minutes (fixed-angle) at 1250 to 1600 RCF (relative centrifuge force) within 1 hour of collection.
      a. Centrifuges supplied by Aegis produce between 1450 (fixed-angle rotor) and 1600 RCF (horizontal rotor) when operating within the instrument manufacturer's specifications. This equates to 3450 and 3380 +/- 50 RPM (revolutions per minute), respectively.
      b. Always make certain the centrifuge is properly balanced. If you notice any unusual noises or shaking, stop the centrifuge immediately and confirm rotor is balanced.
      c. Sample tubes must remain securely capped/closed while in the centrifuge. Sealed rotor heads and/or centrifuge safety cups can be used.
      d. Ensure that the centrifuge comes to a complete stop before opening cover. Check for leaks/spills. If leak/spill is noticed, keep centrifuge cover closed for at least 30 minutes to reduce aerosolization of biological material. Follow spill, exposure, and incident reporting instructions.
19. Sample Transfer – Red-Top serum tubes ONLY
   19.1. Transfer the clear Red-Top serum to a properly labeled transport vial and cap tightly.
      a. Do NOT submit Red-Top serum tube to the laboratory; serum from the Red-Top tube must be transferred to a transport vial.
      b. Only serum should be transferred; do not transfer cellular material.
   19.2. Utilize safe work practices to prevent the production of aerosols such as:
      a. If using a transfer pipette, drain pipette with tip against the inner wall of the tube. Never forcibly expel any serum from the pipette.
      b. Utilize a Biological Safety Cabinet, if available.
   19.3. Attach completed label with patient demographics to each tube.
20. Dispose of needle(s) directly into a puncture-resistant sharps container.
21. If applicable, properly clean up any blood spill/droplets with bleach or equivalent disinfectant (not to be used on patient).
22. Remove disposable gloves and discard according to your facility's waste protocol.
23. Wash hands with soap and water.

24. Make certain each specimen is clearly labeled and the top(s) are securely closed.
25. Clinical Labs specimens should be stored refrigerated until time of packaging and/or shipment
    25.1. Specimens should be packaged for shipment as close to pickup as possible.
    25.2. **DO NOT FREEZE Clinical Labs specimens.**
26. Specimen Shipment (non-TB patients)
    26.1. Place the closed collection tubes into the specimen bag.
        a. Use 1 specimen bag per patient – all labeled tubes (lavender, gold, and red (serum transfer tube only), for the same patient should be placed in one specimen bag.
    26.2. Place ELR label on the outside of specimen bag.
    26.3. Clinical Labs specimens must be shipped with a small ice pack in an insultote.
        a. Ice packs should be frozen flat for at least 24 hours prior to shipping.
        b. To ensure freezing, do not store ice packs stacked in the freezer.
    26.4. Ship to the laboratory using the pre-printed FedEx/UPS label provided by Aegis.
        a. Specimens should be shipped the **same day** as collection to be received by the laboratory within 24 hours of collection.
        b. Keep samples refrigerated until transport time; **DO NOT FREEZE.**
27. Specimen Shipment (TB patients)
    27.1. Place the closed collection tubes into the specimen bag.
        a. Use 1 specimen bag per patient – all labeled tubes (lavender, gold, red (serum transfer tube only), and green) for the same patient should be placed in one specimen bag.
    27.2. Place ELR label on the outside of specimen bag.
    27.3. Remove air from the specimen bag by rolling it up and then seal the ziplock closed.
    27.4. TB Patients Clinical Labs specimens must be shipped with a large ice pack in a kangaroo mailer.
        a. Large ice packs should be frozen flat for at least 24 hours prior to shipping.
        b. To ensure freezing, do not store ice packs stacked in the freezer.
    27.5. Place the frozen ice pack vertically inside of the kangaroo mailer.
    27.6. Immediately place the sealed specimen bag into the kangaroo mailer. TB samples that have been refrigerated should not be allowed to come back to room temperature during the packaging process.
        a. Make sure that the specimen bag is touching the ice pack.
    27.7. Peel adhesive strip of the kangaroo mailer and seal the specimen bag closed.
    27.8. Puncture the kangaroo mailer.
        a. There are 4 puncture points (2 on each side).
        b. A fine point pen works best to get through the plastic layer.
        c. The kangaroo mailer should start expanding immediately. It should be fully expanded within 2-3 minutes.
    27.9. Once the kangaroo mailer is fully expanded, it is ready to place inside FedEx/UPS box.
        a. One small mailer + 3-4 insultotes should fit in one FedEx/UPS box.
        b. One larger mailer + 1-2 insultotes should fit in one FedEx/UPS box.
        c. There should also be room for urine samples.
    27.10. Ship to the laboratory using the pre-printed FedEx/UPS label provided by Aegis.
        a. Specimens should be shipped the **same day** as collection to be received by the laboratory within 24 hours of collection. **TB samples not shipped same day will be cancelled without testing.**
        b. Keep samples refrigerated until transport time; **DO NOT FREEZE.**

References

None

Phlebotomy Best Practices

1. Gather all equipment before calling your patient back and set up your draw space.
2. Maintain sterility of equipment and supplies.
3. Provide proper patient placement.
   3.1. If known, consider patient anxiety/fears.
   3.2 Consider previous reactions to venipuncture.
4. Wear well-fitting gloves.
   4.1. There should not be “overhang” at the ends of your fingers.
5. Have patient make a fist and squeeze intermittently. (Can use a stress ball if you have one.)
6. Choose appropriate vein – antecubital space is preferred.
   6.1 Alternate sites
      a. Cephalic (lateral)
      b. Basilic (medial)
      c. Dorsal hand veins
7. For confirmation of an antecubital vein – utilize the “bent elbow” technique to ensure not a ligament or tendon.
8. Apply tourniquet 4-5 finger-widths above the antecubital space.
   8.1 Apply to assist in finding the vein if needed, but release as you finalize prepping materials.
   8.2 Re-apply when ready to begin phlebotomy procedure.
   8.3 Tourniquet should not be on arm longer than 1 minute at a time. This is important to not cause hemoconcentration.
9. Clean in a circular motion moving away from draw site and let air dry.
   9.1 Do not wave over the area or wipe with a dry cotton ball, etc.
   9.2 Do not touch the area with your glove once it’s been cleaned.
   9.3 If touched, restart cleaning process.
10. Follow proper order of draw.
   10.1 Red
   10.2 Gold or Tiger Top
   10.3 Green (for those doing QuantiFERON-TB Gold Plus)
   10.4 Lavender
11. Maintain a 3-stick daily maximum.
   11.1 If unable to complete a successful draw after 3 attempts, discontinue procedure and reschedule patient with instructions for return.
      a. Drink water prior to appointment.
      b. Avoid or limit caffeine within 24 hours of appointment.
      c. Schedule afternoon appointment if possible.
12. Have patient sit 1-2 minutes following draw to avoid passing out.
13. If patient continues to feel nauseated or seems pale, continue to monitor for 10 minutes to avoid patient collapse. If needed and able, place patient into a lying position to allow return to homeostasis.

Clinical Labs Tests Offered at Aegis Sciences Corporation by Test Tube Type

***Clinical Labs Tests Turn-Around-Time (TAT) is 24 hours**

TESTING TUBE:

Red Top with Transfer Tube

ADDITIVES: None

Must be shipped same day as collection

TESTING AVAILABLE:

Therapeutic Drug Monitoring
- Carbamazepine
- Lithium
- Valproic Acid, total

Post Collection Procedure
- Invert tube 5 times
- Allow blood to clot in an upright position for 30 – 60 min (Do not exceed 1 hour)
- Centrifuge for at least 10 minutes (horizontal) or 15 minutes (fixed-angle) at 3600 RPM (revolutions per minute) within 1 hour of collection
- Transfer the clear Red-Top serum using a disposable pipette to a properly labeled transport vial and cap tightly
  a. Do **NOT** submit Red-Top serum tube to the laboratory; serum from the Red-Top tube must be transferred to a transport vial
  b. Only serum should be transferred; do not transfer cellular material
- All samples should be stored refrigerated immediately after processing and until they are shipped
- Do not freeze Clinical Labs specimens

TESTING TUBE:

Gold Top (2 Required)

ADDITIVES: Contains Separating Gel and Clot Activator

Must be shipped same day as collection

TESTING AVAILABLE:

Acute Hepatitis Panel
- Hepatitis A IgM AB
- Hepatitis B Core IgM, AB
- Hepatitis B Surface (HBs) AG w/ Reflex to HBs AG Confirm
- Hepatitis C Antibody w/ Reflex to Hep C RNA Qual PCR

Basic Metabolic Profile (BMP)
- Glucose
- Calcium
- Sodium
- Potassium
- Carbon Dioxide
- Chloride
- Blood Urea Nitrogen
- Creatinine

Comprehensive Metabolic Profile (CMP)
BMP + the following:
- Albumin
- Total Protein
- Alkaline Phosphatase (ALP)
- Aspartate Aminotransferase (AST)
- Alanine Aminotransferase (ALT)
- Bilirubin, Total

Renal Function Panel
BMP + the following:
- Albumin
- Phosphorus

Hepatic Function Panel
- Albumin
- Total Protein
- Alkaline Phosphatase (ALP)
- Alanine Aminotransferase (ALT)
- Aspartate Aminotransferase (AST)
- Bilirubin, Direct
- Bilirubin, Total

Lipid Panel (Standard)
- HDL Cholesterol
- LDL Cholesterol – Calculated
- Cholesterol
- Triglycerides

Other Add-on Tests Available
- General Chemistry:
  - Alanine Aminotransferase (ALT)
  - Albumin
  - Alkaline Phosphatase (ALP)
  - Aspartate Aminotransferase (AST)
  - Bilirubin, Direct
  - Bilirubin, Total
  - Blood Urea Nitrogen
  - Calcium
  - Chloride
  - Creatinine
  - Folate (Folic Acid)
  - Glucose
  - Human Chorionic Gonadotropin (HCG)
  - Magnesium
  - Phosphorus
  - Potassium
  - Prolactin
  - Prostate-Specific Antigen (PSA), Total

Other Add-on Tests Available (Cont.)
  - Prostate-Specific Antigen (PSA), Total w/ Reflex to PSA, Free
  - Sodium
  - Total Protein
  - Vitamin B12
  - Vitamin D, 25-Hydroxy
- Lipids:
  - Cholesterol
  - HDL Cholesterol
  - Triglycerides
- Infectious Disease:
  - Hepatitis A IgM AB Hepatitis B Core IgM, AB
  - Hepatitis B Core Antigen (HBC) Total AB (Anti-HBC)
  - Hepatitis B Surface (HBS) AB (Anti-HBS)
  - Hepatitis B Surface (HBs) AG w/ Reflex to HBs AG Confirm
  - Hepatitis C Antibody w/ Reflex to Hep C RNA Qual PCR
  - Hepatitis C RNA Qual PCR
  - HIV 1/2 AG-AB, 4th w/ Reflex
  - HIV-1 RNA Qual PCR
  - HIV-1 and HIV-2 AB Confirm/ Differentiation HSV Antibody Type 1/2 IgG
  - Syphilis Antibody (IgG/IgM) w/ Reflex
- Opioid Induced Endocrinopathy:
  - Testosterone, Total
- Thyroid:
  - Triiodothyronine (T3), Free
  - Thyroxine (T4), Free

Post Collection Procedure
- Invert tube 5 times
- Allow blood to clot in an upright position for 30 – 60 min (Do not exceed 1 hour)
- Centrifuge for at least 10 minutes (horizontal) or 15 minutes (fixed-angle) at 3600 RPM (revolutions per minute) within 1 hour of collection
- All samples should be stored refrigerated immediately after processing and until they are shipped
- Do not freeze Clinical Labs specimens

TESTING TUBE:

Green Top (No Gel Tubes)

ADDITIVES: Lithium Heparin

Must be shipped same day as collection

TESTING AVAILABLE:

QuantiFERON-TB Gold Plus

Post Collection Procedure

- Verify green-top tube has 6 mL collected
  a. Note: samples received with less than 6 mL will be cancelled
- Invert tube 8-10 times to dissolve heparin (do not shake)
- All samples should be stored refrigerated immediately after processing and until they are shipped
- Green-top tubes require special packaging and shipping – see shipping instructions for additional details
- Do not freeze Clinical Labs specimens

TESTING TUBE:

Lavender Top

ADDITIVES:
EDTA (Anti-Coagulant)

Must be shipped same day as collection

TESTING AVAILABLE:

Hematology:

- Complete Blood Count (CBC)
- Hemoglobin A1C

Post Collection Procedure

- Invert tube 8-10 times
- All samples should be stored refrigerated immediately after processing and until they are shipped
- Do not freeze Clinical Labs specimens