



LABORATORY POLICIES AND PROCEDURES

PURPOSE: A test result is only as good as the specimen upon which the test is run. Therefore it is imperative that personnel collecting the sample do so in a correct manner.

POLICY: All blood obtained by venipuncture for laboratory analysis shall be done by the following procedure. Universal precautions will be followed when collecting samples.

Principle:

This procedure describes the recommended equipment for venipuncture, the proper order of procedures for performing the venipuncture, the handling and processing of venous blood specimens, and possible sources of error.

Equipment:

Blood Collection Needles:
Multi-sample or butterfly needles

Evacuated tube holders

Evacuated tubes, color codes tube stopper and or labels signify the different Additives:

<u>Color</u>	<u>Use</u>	<u>Additive</u>
Green	Plasma/Whole blood	Sodium Heparin
Blue	Plasma/Whole blood	Citrate
Purple	Plasma/Whole Blood	EDTA
Pink	Plasma/Whole Blood	EDTA
Red	Serum	None
Gold	Serum	Gel Separator

Note: Do not use vacutainer tubes beyond their expiration date. All expired vacutainer tubes should be disposed of in the proper receptacle.

Note: The BD brand of vacutainer is currently used and has been evaluated for analytical interference by review of manufactures information.

Tourniquets

Pre-cut soft, pliable rubber strips, 1" x 15".

Note: Tourniquets are potential carriers of infectious agents and should be wiped with alcohol prep pads and replaced frequently.

Antiseptics

70% isopropyl alcohol prep pads
ChlorPrep swab preps (for blood cultures only)

2x2 Gauze Squares

Puncture-proof containers for disposal of needles

Adhesive bandages or tape

Procedure

Before starting the procedure introduce yourself and explain what you are about to do.

Adult venipuncture

1. Identify the patient:

A. Patient who is conscious:

- Ask the patient to give full name and date of birth.

Note: If the patient is unable to speak, identification must be verified by family member or guardian.

- Use both the patient's name and their date of birth for proper patient identification.
- Compare this information with the information on the requisition
- Report any discrepancy, however minor, to the caregiver and have the caregiver identify the patient by name and social security number before drawing any specimen.
- Notify nursing staff of any discrepancy so that corrective action can be initiated.

2. Select tubes and needles

- a. The following order of draw is recommended when drawing several specimens during a given vacuum tube system puncture.

- First: Coagulation tube (e.g. blue top)
- Second: Non-additive tube (e.g. red or gold top tube)
- Third: Additive tube (e.g. purple then green)

- b. Before using tubes that contain powdered additives, gently tap the bottom to ensure that all the additive is dislodged from the wall of the tube.

Note: Cross contamination between different additives tubes can occur, making test results erroneous.

The order changes when tubes are being filled from a syringe because the portion of blood possibly contaminated by tissue thromboplastin is the first portion to enter the syringe and therefore, is the last to be expelled. The order of tube fill from a syringe is;

- First: Sterile specimens
- Second: Coagulation tubes
- Third: Additives tube
- Fourth: Non-additive tubes

3. Select the blood collection system

- a. Evacuated system consisting of:
 - Sterile collection needle
 - Evacuated tube holder
 - Evacuated tube
- b. Syringe system
 - Syringe needle
 - syringe
- c. Winged infusion set which can be used with either the evacuated or syringe system. If using the winged infusion system and the evacuated system always draw a red top tube or two blue top tubes and discard the first blue top tube to account for the dead space in the tubing of the butterfly.
- d. Reassure the patient

Note: Never tell the patient that the procedure will not hurt.

4. Position the patient

- a. If the patient is seated, position the arm firmly on the arm-rest to form a straight line from the shoulder to the wrist. Do not allow a bend at the elbow.

- c. If the patient is lying down, place a pillow under the arm to form a straight line from the shoulder to the wrist.

Note: For safety purposes, do not allow the patient to eat, chew gum, or have a thermometer in his mouth at the time of the venipuncture. If the patient is talking on a cell phone, please ask them to hang up so that there are no distractions.

5. Ask the patient to make a fist

- Veins become more prominent and easier to enter when the patient makes a fist.

Note: Avoid vigorous hand exercise (pumping) by the patient as this will cause test results to be inaccurate.

6. Apply the tourniquet

- Wrap around the arm 3-4 inches above the venipuncture site. Pull the end under the last round to force more blood into the vein and making entering the vein easier.
- The tourniquet should not stop the flow in the veins for more than a minute before blood is drawn.

7. Select the venipuncture site

- Factors to be considered
 - a. Avoid extensive scarring and healed burn areas
 - b. Specimens taken from the site that a mastectomy was performed may not be truly representative because of decreased blood flow and perfusion.
 - c. Avoid areas of hematoma as they may cause erroneous test results. If another vein site is not available, collect the specimen away from the hematoma.
 - d. Collect specimens from the arm opposite any intravenous lines.

Note: A patient's life may depend on the vein patency. Select the vein site carefully because the veins provide an avenue of entry for transfusion, infusion and therapeutic agents.

- Vein Selection

- a. Palpate and trace the path of the vein several times with the index finger. Thrombosed veins lack resilience, feel core-like and roll easily. Arteries pulsate, are more elastic and have a thick wall.
- b. Close the patient's hand to make the veins more prominent and easier to enter.

- c. If superficial veins are not easily visible, force blood into the vein by massaging the arm from the wrist to the elbow. Dilate the vein by tapping sharply a few times at the vein site with the index and second finger.
- d. Do not draw above an IV or through any ports.

9. Perform the venipuncture

- a. Attach the selected needle to either a syringe or the evacuated needle holder.
- b. Grasp the patient's arm near the venipuncture site using the thumb to draw the skin tightly.
- c. With the needle bevel facing up, line up the needle with the vein. penetrate the skin and enter the vein at approximately a with a 15-30 degree angle.
- d. If using a syringe, draw back required amount of blood, being careful not use excessive pulling force.

NEVER PUSH THE BLOOD BACK INTO THE VEIN AS THIS CAN CAUSE AN EMBOLI OR CLOT TO FORM!!

- f. If using the evacuated system, mix each tube after removing from the vacutainer holder before placing the next tube on.

10. Release the tourniquet

11. Remove the needle from the patient arm. Immediately apply a clean cotton ball to the site and keep pressure on the site for at least two minutes.

12. If the blood was drawn into a syringe then use a Blood Transfer Device and transfer the blood to vacutainer tubes, using the correct order of draw and mixing each tube after filling.

13. Dispose of the puncturing unit in a puncture –proof sharps container.

DO NOT RECAP NEEDLES!

Chill the specimen if required.

14. Label the tube (s).

- a. Label with the printed label with the name closes to the top. Place the label over the manufactures label.
- b. If there is no preprinted label, hand write the following information onto the manufactures label.

- Patient Name
- Patient account number (if applicable)
- Patient's date of birth
- Time and date of collection
- Initials of collector

- c. Record on the matching requisition:
 - Time and date of collection
 - Initials of collector

14. Transport the specimen in a biohazard bag to the laboratory for testing.

Capillary Collection

1. Identify the patient according to step one above.
2. The puncture site, either the fingertip or heel, should be cleansed with 70% isopropyl alcohol or warm soap and water and allowed to air dry thoroughly.
3. Perform the puncture.
4. Wipe away the first drop of blood. This removes any residual alcohol or any tissue fluid contamination.
5. Proceed with collection of blood sample.
6. If an insufficient sample has been obtained because the blood flow stopped, repeat the puncture at a different site with all new equipment.
7. Warming the puncture site will increase the blood flow up to 7 times. Use a commercial heel warmer or warm wash cloth (40° - 42° C for 2 - 5 minutes)

CONSIDERATIONS IN SPECIMEN COLLECTION

A. HEMATOMA PREVENTION:

1. Puncture only the uppermost wall of the vein.
2. Remove the tourniquet before removing the needle.
3. Use the major superficial veins.
4. Make sure the needle fully penetrates the uppermost wall of the vein. Partial penetration may allow blood to leak into soft tissue surrounding the vein by way of the needle bevel.
5. Apply a small amount of pressure to the area with the gauze pad when bandaging the arm.

B. HEMOLYSIS PREVENTION:

1. Mix anticoagulated specimens gently but thoroughly by inverting tube gently 4 to 5 Times.
2. Avoid drawing blood from a hematoma.
3. Avoid drawing the plunger back too forcefully when using a needle and syringe.
4. Avoid using a needle that is too small.
5. Make sure the needle is fitted securely on a syringe to avoid frothing.

6. Without touching, ascertain that the venipuncture site is dry.

C. PATIENT INQUIREY:

1. If possible, do not inform the patient of the tests being done. The physician can better inform the patient.
2. Do not argue with the patient if they object to tests. Record the patient's objections to a supervisor. The Dr.'s office should be contacted and notified. They can explain better to the patient why the tests are needed.

D. PATIENT PROBLEMS:

- Syncope (fainting). If the patient is sitting, lower his/her head and arms. Loosen tight clothing. Apply cold compresses to the forehead and the back of the head if necessary.
- Nausea. Make the patient as comfortable as possible. Instruct the patient to breath deeply and slowly. Apply cold compresses to the patient's forehead.
- Vomiting. Give the patient an emesis basin or carton, and have tissues ready. Give the patient water to rinse out his/her mouth. Report the incident to a supervisor.
- Convulsions. Prevent the patient from injuring himself/herself. Do not restrain the movements of the patient's extremities completely, but try to prevent them from being injured.

Call a supervisor or the physician.

References:

NCCLS Document H3-A3, Vol. 11, No. 10, July 1991.

NCCLS Document H4-A4, September 1999.