

Blood Collection Procedure

Venipuncture

The venipuncture system used in your institution should be used. These are guidelines to use when collecting samples.

Vacutainer Blood Collection System

The Vacutainer system consists of a double-pointed needle, a plastic holder or adapter, and a series of vacuum tubes with rubber stoppers of various colors. The stopper colors indicate the type of additive present. The blood goes from the patient directly into the appropriate test tube.

1. Principle:

The patient's vein is punctured with a sterile needle attached to an aspirating device. This allows the drawing of venous blood with the least amount of patient discomfort and trauma.

2. Alternative Names: Blood-drawing; Phlebotomy

3. Safety and Infection Control:

It is important to follow safety and infection control procedures.

PROTECT YOURSELF.

- a. Practice universal precautions:
 - Wear gloves when handling blood/body fluids.
 - Change gloves after each patient or when contaminated.
 - Wash hands frequently.
 - Dispose of items in appropriate containers.
 - Dispose of needles immediately upon removal from the patient's.
 - Clean up any blood spills with a freshly made 10% bleach disinfectant.
- b. Protect the patient
 - Place blood collection equipment away from patients, especially children.

4. Equipment

THE FOLLOWING ARE NEEDED FOR ROUTINE VENIPUNCTURE

- Evacuated collection tubes – the tubes are designed to fill a predetermined volume of blood by vacuum. The rubber stoppers are color coded according to the additive the tube contains. Blood should **NEVER** be poured from one tube to another since the tube can have different additives or coatings.
- Needles – The gauge number indicates the bore size: the larger the gauge number, the smaller the needle bore.
- Holder – use with the evacuated system.
- Tourniquet – wipe off with alcohol and replace frequently.
- Alcohol wipes – 70% isopropyl alcohol.
- Adhesive bandages / tape – protects the venipuncture site after collection.
- Needle disposal unit – needles should **NEVER** be broken, bent, or recapped. Needles should be placed in disposal unit IMMEDIATELY after their use.
- Gloves – can be made of latex, rubber, or vinyl, and are worn to protect the patient and the phlebotomist.
- Syringes – may be used in place of the evacuated collection tube for special circumstances.

5. Procedure for Vein Selection:

- The median cubital and cephalic veins of the arm are used most frequently. See diagram below:



- Palpate and trace the path of veins with the index finger. Arteries pulsate, are most elastic, and have a thick wall. Thrombosed veins lack resilience, feel cord like, and roll easily.
- If superficial veins are not readily apparent, you can force blood into the vein by massaging the arm from wrist to elbow, tap the site with the index and second finger, apply warm, damp washcloths to the site for 5 minutes, or lower the extremity to allow the veins to fill.

6. Procedure:

- Position the patient so he or she is comfortable and safe in case the patient becomes faint and falls.
- Recommended needle size: 20G, 21G or 22G.
- Closed vacutainer system is recommended.
- Select tube or tubes appropriate for type of samples desired.
- Select site for venipuncture.
- Put on gloves.
- Prepare venipuncture site with alcohol prep. Cleanse in a circular fashion, beginning at the site and working outward.
See diagram on next page.



- DO NOT PALPATE VENIPUNCTURE AREA AFTER CLEANSING. Allow site to dry.
- Apply the tourniquet 3-4 inches above the selected puncture site. Do not place too tightly or leave on more than 2 minutes.
- Remove needle shield. Perform venipuncture WITH PATIENT'S ARM IN A DOWNWARD POSITION AND TUBE STOPPER UPPERMOST.
This reduces the risk of backflow of any anticoagulant into the patient's circulation.



- k. Push the tube onto the needle, puncturing the stopper.
- l. REMOVE TOURNIQUET AS SOON AS BLOOD APPEARS IN TUBE, within 2 minutes of venipuncture. DO NOT ALLOW CONTENTS OF TUBE TO CONTACT THE STOPPER DURING THE PROCEDURE.
- m. When first tube has filled to its stated volume, remove it from the holder.
- n. Place succeeding tube in holder puncturing stopper to initiate flow.
- o. While each successive tube is filling invert previous tube GENTLY 5 times. DO NOT SHAKE. Vigorous mixing can cause hemolysis.
- p. When all tubes of blood have been collected, remove the last tube from the vacutainer holder, place a cotton ball or gauze over the site and withdraw the needle in a smooth and cautious manner so as not to bruise the vein.
- q. After withdrawing the needle fully, apply pressure to the cotton ball over the puncture site and hold pressure. If patient is able ask them to apply pressure for 3 to 5 minutes until the bleeding stops.
- r. Discard the needle of the vacutainer into the biohazard container WITHOUT RECAPPING the needle.
- s. Immediately invert the last tube GENTLY 5 times.

7. Labeling Tubes

- a. County Health Department Submission:
 1. Place the unique laboratory bar code on the tube. Make sure the barcode matches the form

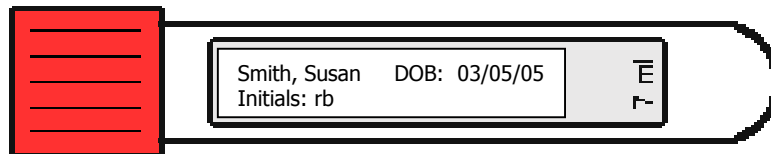


Note: Other information may be required on the tube by laboratory protocol (see individual test requirements).

2. **If the label is covered or the barcode comes off, the specimen will be UNSATISFACTORY for testing**

- b. Other than County Health Department Submission:
 1. Record the patient's full name or patient identifier, and the date of birth on the tube.

Remember: **This information must match the requisition.**



Note: Other information may be required on the tube by laboratory protocol (see individual test requirements).

2. Apply the computer-generated label if available.
3. Do not cover the name with the bar code label.

8. Sources of Error:

- a. Failure to insert the needle completely into the vein. The phlebotomist should feel resistance initially following insertion of the needle. The resistance is almost immediately followed by a sensation of free or easier movement as the needle enters the vein. When the phlebotomist no longer senses that the needle has been inserted into the vein, the evacuated tube should be pushed onto the needle - NOT before.
- b. Puncturing the stopper before entering the vein. If the phlebotomist partially pushes the evacuated tube onto

- the needle before inserting the needle into the vein, he/she risks puncturing the stopper and releasing the vacuum.
- c. Retouching the site just before inserting the needle. If you are going to re-palpate, you must either cleanse your index finger before re-palpating (this technique is debatable) or, preferably, re-cleans the site before puncture.
 - d. Not anchoring the vein before inserting the needle. The vein must be held in place for successful needle penetration.
 - e. "Bouncing" the needle on the skin before guiding it into the vein. During venipuncture, the patient should only be stuck once with the needle.
 - f. Not keeping the holder stationary, causing the needle to dislodge from the vein.

9. Causes for Rejection of Sample

The quality of laboratory results are directly affected by the quality of the blood sample obtained from the patient.

Samples may need to be rejected as unacceptable for the following reasons:

- a. Hemolysis - this is usually caused by a procedural error such as using too small of a needle, or pulling back too hard on the plunger of a syringe used for collecting the sample.
- b. Clotted - failure to mix or inadequate mixing of samples collected into an additive tube.
- c. Insufficient sample (QNS) - certain additive tubes must be filled completely. When many tests are ordered on the same tube be sure to know the amount of sample needed for each test.
- d. Wrong tube collected for test ordered.
- e. Tubes not processed before shipping to lab.
- f. Tubes held too long in facility before shipping.
- g. Submitting specimens in expired collection tubes. It is the responsibility of the submitter to ensure that specimens are collected in tubes that have not expired.

Note: The collection devices must be in date through the whole testing process.