



Collection of Diagnostic Blood Specimens by Venipuncture

Purpose: The purpose of this procedure is to provide detailed instructions for performing venipuncture.

Scope. This procedure applies to all healthcare providers performing venipuncture.

Principle. The delivery of quality patient care and valid laboratory results begins with proper and timely collection and processing of specimens. Venipuncture is an invasive procedure which carries a small risk to the patient as well as to the phlebotomist. The following procedure and techniques are used to minimize these risks.

Materials and Equipment:

In-house Phlebotomy Cart or off-site phlebotomy station:

Supplies include:

- Evacuated blood collection tubes
- Evacuated tube holders
- Blood culture bottles
- Blood culture adapters
- Tourniquet (latex free)
- Sharps disposal container (on wall at off-sites & patient's room)
- Multiple sample/safety sheathing needles
- Personal protective equipment
- Adhesive bandages or tape (hypoallergenic adhesive)
- Liquid hand disinfectant
- 2 x 2 gauze squares
- 70% Isopropyl alcohol preps
- Chlorhexidine preps for blood culture collection
- Povidone-Iodine SwabStick for blood alcohol collection
- Winged blood collection sets (butterfly)/safety

SAFETY REQUIREMENTS:

- Follow Standard Precautions.
- Practice all safety requirements as outlined in the Laboratory Management Safety Manual
- Personal Protective Equipment:
 - Powder free or latex free gloves
 - Face protection when splash potential exists.

- Specific PPE necessary for procedure.

Procedure.

1. HANDS MUST BE WASHED OR SANTIZER USED BEFORE AND AFTER SPECIMEN COLLECTION AND BETWEEN PATIENTS

2. Greet patient with a smile.

Address patient using the following or similar statement **“Hello, My name is (name), I am here from the laboratory to draw some blood. I hope this is a convenient time for you.”** Make eye contact.

3. Follow the Three Step process to identify and verify patient identification

- 1) Ask the patient to tell you their name and date of birth: e.g., “Please tell me your name and date of birth.” If the patient is unable to participate, verify the patient identification with the patient’s identification band.
- 2) Confirm/verify what the patient is telling you (name and date of birth) with the information appearing on the patient’s identification band: use the patient’s medical record number (MR#) as a third patient identifier when needed.
- 3) Compare the name and date of birth against any corresponding requisition, specimen labels, orders, consent, etc.: prior to any test, treatment, procedure or collection or processing of a specimen, the staff is to confirm that all source documents match with the patient identifiers listed on the patient identification band.

NOTES:

- Specimens must be labeled at the bedside, after identifying and verifying the patient’s identification. Do not pre-label the tubes.
- The wristband must be placed on patient’s arm before drawing.
- Unlabeled specimens should not be removed from the patient’s room/location.
- **Confirm patient and specimen identification again after labeling tube.**

4. Question patient regarding diet restrictions, if indicated.

5. Properly position the patient

- Patient must be in a phlebotomy blood drawing chair (outpatient) with side arms plus front protection). **NEVER** attempt to perform phlebotomy on a standing patient.
- Arm should be fully extended, not bent at the elbow. Use pillow as support if necessary.

6. Select the appropriate vein for venipuncture. (See Figure 1)

- **At no time may phlebotomists perform venipuncture on an artery.**
 - **At no time will blood be drawn from the foot without a written order.**
 - **Veins on the underside of the wrist MUST NOT BE USED.**
- Factors to consider in site selection:
- Extensive scarring or healed burn areas should be avoided.
 - Specimen should not be obtained from the arm on the same side as a mastectomy.
 - Avoid areas of hematoma.
 - If an IV is in place, the phlebotomist should have the nurse shut off the IV for at least three minutes.
 - Do not obtain specimens from an arm having a cannula, fistula or vascular graft.

7. Apply the tourniquet 3-4 inches above the collection site.

- Never leave the tourniquet on the patient's arm for more than one minute.

8. Prepare equipment.

- Determine the type of needle and collection system to be used.
 - Use of a safety needle/ holder/vacuum tube system or safety winged set is determined by the site and vein quality.
- Assemble collection system until secure, have alcohol preps, gauze, adhesive bandage/tape, appropriate tubes and needle disposal box close at hand.

9. Clean the puncture site

- Making a smooth circular pass over the site with 70% alcohol pad moving in an outward spiral from the zone of penetration.
- Allow the skin to dry before penetration.

*For **blood alcohol testing**, do not use alcohol swab, use an antibacterial swab which does not contain alcohol.*

10. Perform the venipuncture:

- a. Attach the appropriate needle to the hub by removing the plastic cap over the small end of the needle and inserting into the hub, twisting it tightly.
- b. Remove plastic cap over needle and hold bevel up.
- c. Pull the skin tightly with your thumb or index finger just below the puncture site.
- d. Holding the needle in line with the vein; insert the needle using a 30° angle (or less) from the patient's arm and in direct line with the vein path. Use a quick small thrust to penetrate the skin and enter the vein in one smooth motion.

- e. Holding the hub securely, insert the first vacutainer tube following proper order of draw into the large end of the hub penetrating the stopper. Blood should flow into the evacuated tube.
- f. After blood starts to flow, release the tourniquet, and ask patient to release his or her hand.
- g. When blood flow stops, remove the tube by holding the hub securely and pulling the tube off the needle. If multiple tubes are needed, be sure to collect in the proper order of draw to avoid cross contamination and erroneous results. (See Figure 2)

NOTE: When using a winged blood collection set (Butterfly) for venipuncture and a coagulation tube (blue) is the first or only tube to be drawn, a DISCARD TUBE MUST BE DRAWN FIRST. The discard tube must be used to fill the blood collection tubing “dead space” with blood but the discard tube does not need to be completely filled. This important step will ensure proper blood-to-additive ratio of the blood specimen. The discard tube should be a non-additive 10 ml red top tube or another blue top tube.

- h. Each tube containing an additive must be gently inverted 5-8 times after being removed from the hub. Do not shake or mix vigorously.
- i. Place a gauze pad over the puncture site and remove the needle.
- j. Engage safety device:
- k. When bleeding stops, apply a fresh bandage, or tape.

*To activate the winged safety shield: Grasp either wing with one hand and grip the area of the yellow safety shield with the other hand. Slide the wings back into the rear slot of the safety shield until a click is heard to ensure that the needle is completely retracted and locked in place immediately apply slight pressure to the gauze.



11. Properly dispose of hub with needle attached into a sharp’s container.

12. Label all tubes with patient labels, phlebotomist initials, and time of draw while at patient’s side (date is already on label).

13. Thank the patient

ADDITIONAL NOTES:

- A patient should not be drawn more than twice by a phlebotomist. If a phlebotomist feels that he or she will not be able to obtain blood a second time, please ask another phlebotomist to try. In some cases, the Hospitalist on call may need to obtain the blood specimen.
- When a patient is pink banded, a physician's note must be placed in patient's chart giving permission to draw and as to where the blood can be obtained.

DRAWING FROM THE FOOT

- A written form is required from the Physician to be placed in patient's chart stating that the phlebotomist can draw from the foot.

TRANSPORTATION OF SPECIMENS

- All specimens are transported according to the specimen requirements stated on the label. Patient's blood specimen will be placed in a plastic zip lock bag and is delivered to the laboratory in a timely manner.

REFERENCES:

1. Clinical and Laboratory Standards Institute: Procedure for the Collection of Diagnostic Blood Specimens by Venipuncture; Approved Standard—Sixth Edition. Vol.27 No. 26
2. CAP Checklist, All common checklist, Specimen Collection and Handling, September 2021.

Figure 1:

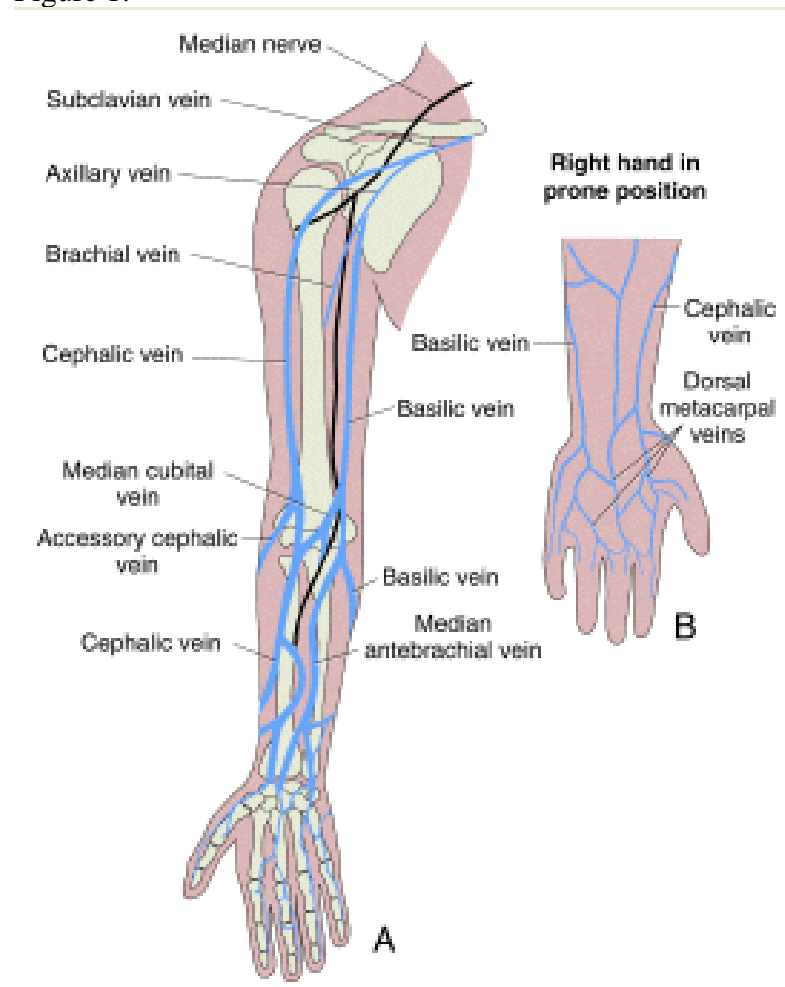


Figure 2 : Order of Draw and Tube Guide

Blood Collection Tube	Additive	Mix by Inversion	Laboratory Use	Tube Fill Volume
	BacT/ALERT SA Aerobic Blood Culture Bottle: 40 mL supplemented tryptic soy broth (TSB)	8	For use in a qualitative procedure for the aerobic and anaerobic culture and recovery of microorganisms (bacteria & yeast) from blood.	8-10 mL
	BacT/ALERT SN Anaerobic Blood Culture Bottle: 40 mL supplemented tryptic soy broth (TSB)	8	For use in a qualitative procedure for the aerobic and anaerobic culture and recovery of microorganisms (bacteria & yeast) from blood.	8-10 mL
	BacT/ALERT PF Pediatric Blood Culture Bottle: 20 mL peptone-enriched TSB, supplemented with BHI solids and activated charcoal	8	For use in a qualitative procedure for the aerobic and anaerobic culture and recovery of microorganisms (bacteria & yeast) from blood.	1-3 mL
	Red Label - No Additive (plastic serum) Purple Label - EDTA (Na ₂) 10.5 mg (plastic)	10	For trace element determinations. Special stopper formulation provides low levels of trace elements	6 mL
	Buffered Sodium Citrate 0.109M (3.2%)	5	For coagulation determination and selected platelet function assays. Tube inversions ensure mixing of anticoagulant (citrate) to prevent clotting.	2.7 mL

Blood Collection Tube	Additive	Mix by Inversion	Laboratory Use	Tube Fill Volume
	9NC Coagulation Sodium Citrate <u>3.2%</u>	5	For coagulation determination and selected platelet function assays. Tube inversions ensure mixing of anticoagulant (citrate) to prevent clotting	2 mL
	Clot activator and gel for serum separation	5	For serum determinations in chemistry. May be used for diagnostic testing of serum for infectious diseases. Tube inversions ensure mixing of clot activator with blood. Blood clotting time: 30 min.	3.5 mL
	Clot activator and gel for serum separation	5	For serum determinations in chemistry. May be used for diagnostic testing of serum for infectious diseases. Tube inversions ensure mixing of clot activator with blood. Blood clotting time: 30 min.	8.5 mL
	Clot activator, Silicone coated (plastic)	5	For serum determinations in chemistry. May be used for diagnostic testing of serum for infectious diseases. Tube inversions ensure mixing of clot activator with blood. Blood clotting time: 60 min.	10 mL
	Lithium heparin, SST 65 USP units	8	For plasma determinations in chemistry. Tube inversions ensure mixing of anticoagulant (heparin) with blood to prevent clotting.	3.5 mL
	Lithium heparin 75 USP Units	8	For plasma determinations in chemistry. Tube inversions ensure mixing of anticoagulant (heparin) with blood to prevent clotting.	4 mL

Blood Collection Tube	Additive	Mix by Inversion	Laboratory Use	Tube Fill Volume
	Sodium heparin 75 USP units	8	For plasma determinations in chemistry and chromosome studies. Tube inversions ensure mixing of anticoagulant (heparin) with blood to prevent clotting. Deliver to the department within 30 minutes of collection.	4 mL
	Spray coated K2 EDTA 5.4 mg (plastic)	8	K2 EDTA for whole blood hematology determinations. K2 EDTA may be used for immunohematology testing and blood donor screening. Tube inversions ensure mixing of anticoagulant (EDTA) with blood to prevent clotting.	3 mL
	Spray coated K2 EDTA 10.8 mg (Plastic)	8	Designed with special crossmatch label for patient information required for the AABB. Tube inversions prevent clotting.	6 mL
	Sodium fluoride 15mg or Potassium oxalate 12mg	8	For glucose determinations. Oxalate and EDTA anticoagulants will give plasma samples. Sodium fluoride is the antiglycolytic agent. Inversions ensure proper mixing of additive and blood.	6 mL
	Solution A - 22.0 g/L trisodium octate, 8.0 g/L citric acid, 24.5 g/L dextrose. Solution B - 13.2 g/L trisodium citrate, 4.8 g/L citric acid, 14.7 g/L dextrose	8	<ul style="list-style-type: none"> • ACD for use in HLA phenotyping and DNA testing. • Tube inversions ensure mixing of anticoagulant with blood to prevent clotting. 	6 mL