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|---|---|
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| **Index:** | SA 1 |
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## Introduction and Scope

Venipuncture procedure

# Blood Collection by Venipuncture



**I. Purpose:**

To obtain an adequate blood for laboratory tests by drawing blood from a vein.

**II. Materials and Equipment:**

A. Disposable latex gloves (use non-latex, e.g. nitrile or vinyl, if employee and/or patient has a latex allergy).
B. Isopropyl alcohol
C. Gauze or lint free tissues (no cotton balls)
D. Needle with safety feature
E. Venous blood collection system (e.g. Vacutainer™ ) with safety needle
F. Syringe (if vacuum blood collection system unavailable)
G. Safety transfer device (if using syringe)
H. Tourniquet (preferably latex free) or blood pressure cuff (inflated to 40 mmHg)
I. Puncture proof sharps containers
J. Band Aids (optional)
K. Blood specimen collection tubes appropriate for tests ordered
    a. Serum tube: Red Top
    b. EDTA: Lavender top
    c. Heparin: Green top
    d. Coagulation tube: Blue top
    e. Glycolytic inhibitor: Gray top
    f. ACD: Yellow top
L. Disinfectant (10% household bleach) for bench tops
M. Other personal protective equipment, e.g., lab coat or face shield, if appropriate

**III. Safety:**

A. Use standard precautions as outlined in the Bloodborne Pathogen Plan.
B. Place sharps container close to the collection site.
C. Wear disposable gloves at all times during the procedure, and other appropriate personal protective equipment as indicated.
D. Wash your hands before you put on your gloves and again after you remove and discard your gloves. Hand disinfectant gels are acceptable unless your department directives state otherwise or your hands are visibly soiled.
E. Change gloves between patients.
F. Some workers may develop dermatitis from wearing gloves for long periods of time. These workers should experiment with nitrile, polyethylene or other gloves of various composition or gloves with powdered lubricant, or they may wear cotton gloves under latex or plastic gloves.
G. Severe latex hypersensitivity has been reported and cases of anaphylactic shock have occurred. Latex gloves and latex tourniquets must be avoided if either the lab worker or the client has a latex allergy.
H. In order to prevent potential worker exposure, the needle safety feature should be activated immediately after specimen collection and discarded without disassembly into a sharps container.

**IV. Patient Preparation**:

A. Correctly identify and reassure the patient. Inquire if the patient has a latex allergy.
B. Determine test(s) ordered and the specimen requirements. Select the appropriate blood collection tubes.
C. Choose the appropriate needle for blood collection. This decision is based upon the physical characteristics of the vein, location of the vein, and the volume of blood to be drawn. The size of the needle is based upon its length and gauge.
    1. Type of blood collection system: vacutainer vs. syringe

a. Vacutainer systems are the preferred method for venipuncture.
b. Venipuncture using a needle and syringe should be performed when it is necessary to reduce the stress exerted on a vein and prevent vascular collapse. Syringes may be used when difficult blood draws are anticipates (e.g., hand veins, small veins, fragile veins, etc.).

2. Length: Needle lengths range from 1 to 1 ½ inches. One inch needles are used for routine venipuncture, 1 ½ inch needles are used for patients with very deep veins.
3. Gauge: The gauge of a needle is a number that indicates the diameter of its *lumen*; the lumen, also called the bore, is the circular hollow space inside the needle. A very well known phrase among phlebotomy students is "The bigger the gauge, the smaller the needle," which means the higher the gauge number of the needle, the smaller is the needle's lumen. The most frequently used gauges for phlebotomy are 20, 21 and 22.

D. Tests requiring serum are always drawn before drawing blood which requires anticoagulants. (There are rare exceptions when blood is drawn for coagulation studies and plastic tubes are being used. Consult the Laboratory Director).

E. Assemble all of the proper tubes and blood drawing supplies required to obtain the blood specimen within easy reach. Do not pre-label tubes.

## V. Procedure

A. Preparation

1. Apply tourniquet or blood pressure cuff three to four inches above the venipuncture site. If a blood pressure cuff is to be used as a tourniquet, inflate it to 40 mmHg. Check both arms for “good veins.”
2. The antecubital fossa area is the usual site of choice. This is the inside elbow at the bend of the arm and is approximately the size of a quarter.
3. Palpitate vein to determine (figure 1):
   A. Size of vein
   B. Depth of the vein
   C. Direction of the vein
4. When the best venipuncture site is determined, release the tourniquet or blood pressure cuff.
   **NOTE: REMEMBER TO PRACTICE STANDARD PRECAUTIONS AND WEAR APPROPRIATE SAFTEY EQUIPMENT.**
5. Put on gloves and re-apply tourniquet after two minutes.
6. Re-palpate vein
7. Ask patient to close their fist but d*o not have the patient pump or clench their fist – tell them to relax.*
8. Clean venipuncture site by using alcohol prep or cotton soaked in alcohol. Cleanse in a circular motion, moving clockwise away from site. Allow to air-dry. Do not re-palpate the venipuncture site once it has been prepped with alcohol.
9. Make sure patient’s arm is in a downward position to prevent backflow or reflux.

B. Venipuncture: (Vacutainer ™ System) –

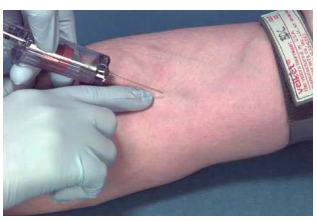

Figure 1

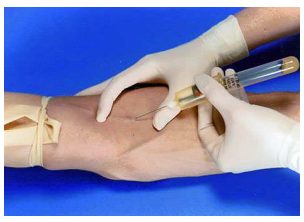

Figure 2

1. Use a new needle holder for each patient.

2. With clockwise motion, thread needle into holder. The needle should be snug but not over tightened.
3. Insert correct tube into the tube holder until it makes contact with the needle, but do not push the tube onto the needle.
4. Remove needle cover, and inspect the needle. With bevel up, perform venipuncture (figure 2). The ***bevel*** is the slanted opening at the end of the needle
   a. The phlebotomists' thumb should be used to draw the skin taut. This anchors the vein. The thumb should be one to two inches below the venipuncture site.
   b. To prepare the client, inform him or her that the venipuncture is about to occur. NOTE: From this point on, be prepared to react to a sudden and unexpected loss of consciousness.
5. With the bevel up, puncture the vein with the needle at an angle of insertion of 30 degrees or less. (Figure 3). There will be a sense of resistance as the needle enters the skin. There will then be a loss of resistance as the needle enters the lumen of the vein.

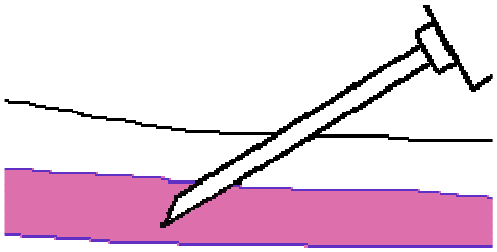

Figure 3

6. Keep the needle as stable as possible and push the tube to the end of the holder, puncturing the diaphragm of the stopper. At this point, blood should be visible in tube. If blood does not appear, pull the tube back off the holder needle. The needle in the can moved in or out slightly to locate the vein but excessive movement (probing or "fishing") should be avoided. DO NOT move the needle sideways in the arm. Push the tube to the end of the holder to check for blood in the tube.
7. Release tourniquet or blood pressure cuff.
8. Remove tube from the needle only after the vacuum is exhausted and blood flow has stopped. Fill the tubes using the proper order (see section VI). All tubes with additive must be completely filled and immediately mixed by **gently** inverting five or six times. If mixing is not thorough, a partial clot may form and could render the specimen unacceptable for use. **DO NOT SHAKE THE TUBE.**
9. Do not change the position of the tube until it is removed from the needle. Do not allow the contents to contact the tube stopper. Movement of blood back and forth in the tube can cause reflux and possible adverse patient reaction.
10. When the last tube has been removed from the needle, place clean gauze or lint-free tissue gently over puncture site and then remove needle from arm. *Do not lift or change the angle of the needle while withdrawing*.
11. Have the patient apply pressure over venipuncture site after the needle is out of the arm.
12. *Do not recap needle!* Follow the safety device instructions, and dispose of needle and holder in a sharps container.
13. Immediately following blood collection, properly label the blood tubes with patient's name, date and time.
14. Check venipuncture site to assure cessation of bleeding. Apply bandage.


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C. **Venipuncture (Syringe and needle**)

1. Syringes should be avoided for safety reasons. If it is necessary to use a syringe, a safety device for transferring blood to the tubes must be used.
2. Check syringe and needle for sterility seal.
3. Secure needle to syringe (bevel up).
4. Remove needle cover.
5. Holding syringe at approximately a 30 degree angle, with steady smooth, deliberate motion, perform venipuncture. Successful venipunctures are usually visible by blood flow back into the hub of the needle. If blood does not appear in the hub, the needle in the arm can be moved in or out slightly to locate the vein but excessive movement (probing or "fishing") should be avoided. DO NOT move the needle sideways in the arm.
6. Release tourniquet or blood pressure cuff.
7. Draw back syringe plunger gently and slowly (allowing blood to flow 1~2 mm behind plunger). Continue until the required amount of blood is obtained. Excessive drawing pressure will cause hemolysis and result in an unacceptable specimen.
8. Place clean gauze or lint-free tissue gently over puncture site and then remove needle from arm. *Do not lift the syringe or change the angle of the needle while withdrawing*.
9. Have the patient apply pressure over venipuncture site.
10. Dispose of the needle safely and apply a safety transfer device to fill tubes. *Needles MUST NOT be manipulated by hand; recapped, bent or clipped prior to disposal but must be discarded directly into an approved puncture resistant container*, (i.e., a Sharps Container).
11. Pierce the stopper with the needle of the safety transfer device and fill the tubes in the proper order.(see section VI) Do not remove the rubber stopper while filling the tubes. All tubes with additive must be completely filled. Immediately mix tubes by **gently** inverting five or six times. If mixing is not thorough, a partial clot may form and could render the specimen unacceptable for use. **DO NOT SHAKE THE TUBE.**
12. Immediately following blood collection, properly label the blood tubes with patient's name, date and time.
13. Check the venipuncture site for cessation of active bleeding. Apply bandage.

## VI. Order of Draw

When drawing multiple Vacutainer™ tubes during a single venipuncture the order of draw is important. Draw tubes in the following order when either using the Vacutainer™ system or transferring blood following collection with a syringe. Its purpose is to avoid possible test result error due to cross contamination from tube additives.

A. Blood culture tube
B. Coagulation tube (e.g., blue top)
C. Serum tube with or without clot activator, with or without gel (e.g., red top)
D. Heparin tube with or without gel plasma separator ((e.g., green top)
E. EDTA (e.g., lavender top)
F. Glycolytic inhibitor (gray top)

## VII. Blood specimen that cannot be obtained

A. When a blood specimen cannot be obtained, it may be necessary to:
   1. Change the position of the needle. If the needle has penetrated too far into the vein, pull it back a bit. If it has not penetrated far enough, advance it farther into the vein. Rotate the needle half a turn.
   2. Try another tube to ensure the tube selected is not defective.
   3. Manipulation other than that recommended above is considered probing. Probing is not recommended. Probing is painful to the client. In most cases another puncture in a site below the first site, or use of another vein on the other arm, is advisable.

4. It is not advisable to attempt a venipuncture more than twice. If possible, have another person attempt to draw the specimen or notify the individual in charge of the clinic.

**VIII. Procedural Notes**

A. To prevent a hematoma when performing a venipuncture, the phlebotomist should:
   1. Make sure the needle fully penetrates the uppermost wall of the vein (partial penetration may allow blood to leak into the soft tissue surrounding the vein by way of the needle bevel.
   2. Remove the tourniquet before removing the needle.
   3. Use the major superficial veins.
   4. Hold the venous blood collection assembly still while collecting the specimen.
   5. Before bandaging, ensure that the puncture to the vein has sealed by observing for hematoma formation after pressure is released.
   6. Apply a small amount of pressure to the area with the gauze pad when bandaging the arm.

B. To prevent hemolysis when performing a venipuncture, the phlebotomist should:
   1. After cleansing, allow the venipuncture site to air dry.
   2. Never draw blood through a hematoma.
   3. If using a syringe, make sure the needle is fitted securely on a syringe to avoid frothing.
   4. When using a syringe and needle, avoid drawing the plunger back too forcibly.
   5. Gently invert the blood collection tube to mix additive specimens as recommended by the manufacturer.

C. The phlebotomist should watch for excessive bleeding. If a hematoma develops or bleeding persists longer than five minutes, a nurse should be alerted. Pressure, applied with a gauze pad, must continue at the site as long as necessary to stop the bleeding. Wrap a gauze bandage tightly around the arm to keep the pad in place and tell the client to leave the bandage on the site for at least 15 minutes. Instruct the client not to check or brush at the site as this will dislodge the platelet plug.

D. Cotton balls are not recommended to cover the puncture site due to the possibility of dislodging the platelet plug when it is removed.

E. Do not have the client pump their fist. Vigorous hand pumping may cause changes in the concentration of certain analytes in the blood.

**VII. Reference:**

NCCLS. *Procedures for the Collection of Diagnostic Blood Specimens by Venipuncture; Approved Standard—Fifth Edition.* NCCLS document H3-A5 [ISBN 1-56238-515-1]. NCCLS, 940 West Valley Road, Suite 1400, Wayne, Pennsylvania 19087-1898 USA, 2003.)

## Links

Please note: links are only correct at time of printing

**Controlled Document links:**

## Document Revision History

**Superseded on 07-Oct-2025 16:54 by Marty Soehnlen**

Version 1.4 superseded by version 1.5

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