I. PURPOSE

To establish guidelines for the proper collection of blood specimens by venipuncture using the evacuated tube system and/or needle and syringe. This procedure applies to all personnel authorized to collect blood specimens.

This is to be performed by all personnel who are authorized and trained to perform phlebotomy.

1. Venipuncture: the collection of blood from a vein. As a general rule, veins should be used to obtain blood.
2. Hematoma: A bruise caused by blood leaking from the vessel into the tissue. It is usually caused by improper venipuncture technique.
3. Hemoconcentration: The concentration of blood due to prolonged application of the tourniquet.
4. Vacuum Tube: The evacuated tube system used for venipuncture (e.g. vacutainer).
5. Thrombosed Veins: Clots have formed and blood no longer flows in the veins. The veins are usually firm, discolored, and tender. Repeat use of veins for venipuncture and as IV sites can cause veins to become thrombosed.

II. MATERIALS

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<tr>
<th>Reagents</th>
<th>Supplies</th>
<th>Equipment</th>
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<tbody>
<tr>
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<td>Blood collection tubes</td>
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<tr>
<td></td>
<td>Disposable holder for evacuated tube system</td>
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<td></td>
<td>Needles</td>
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<td></td>
<td>Tourniquet</td>
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<td></td>
<td>Alcohol prep pads</td>
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<td>2x2 non sterile gauze pads</td>
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<td>Sharps container</td>
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<td>Bandages or tape</td>
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III. PROCEDURE

Patient Preparation
1. Review orders to determine what is to be collected and if special collection or handling is required.
2. Introduce yourself to the patient and explain that you will be collecting a blood specimen for test ordered by their physician. Do not perform blood collection against the patient’s or guardian’s consent. Report objections to the physician or nurse.
3. Identify the patient per Patient Identification Policy.
4. Verify patients dietary restrictions (if applicable) and if patient has a latex allergy.
5. Assemble all necessary supplies.
6. Reassure the patient and explain the procedure to the patient or responsible party.
7. Position the patient so that the vein is readily accessible.
   a. If the patient is in a chair, the chair must have armrest in order to support the patients arm during the procedure. Do not use chairs without arms as these do not provide adequate support in case of fainting
   b. If the patient is in bed, have the patient lie flat on their back if possible. If additional support is needed, place a pillow under their arm.
   c. Blood should never be drawn from a patient who is in a standing position. Patients are more likely to faint while standing.
   d. The patient should not have any foreign objects in their mouth (food, liquid, chewing gum, thermometer, etc) during this procedure.
8. Verify orders and the selection of tubes.
9. Apply gloves and other appropriate personal protective equipment (PPE). Federal Government regulations require that gloves be worn when performing any venipuncture procedure.
Venipuncture Blood Specimen Collection

- Cephalic vein
- Lateral antibrachial cutaneous nerve
- Accessory cephalic vein
- Basilic vein
- Medial antibrachial cutaneous nerve
- Median antibrachial vein
- Vena mediana cubiti
Performing the Venipuncture:

10. Apply the tourniquet:
   a. Use of the tourniquet causes the veins to be more easily located and provides a larger amount of blood for collection. However, use of a tourniquet can alter some test results by increasing the ratio of cellular elements to plasma (hemoconcentration) and by causing hemolysis.
   b. The tourniquet should be applied 3 to 4 inches above the site where the venipuncture will be made.
   c. The maximum amount of time the tourniquet should remain in place before beginning venipuncture is 1 minute. If the tourniquet has been in place for longer than 1 minute, remove the tourniquet and wait 1-2 minutes before reapplying.

11. Ask patient to make a fist in order to make the veins more prominent. Instruct patient not to pump their fist as this could falsely some test results.

12. Select venipuncture site (see site selection below)

13. Remove tourniquet.

14. Cleanse venipuncture site with alcohol prep or other appropriate antiseptic.
   a. When collecting blood cultures refer to the blood culture collection procedure for appropriate antiseptic techniques.
   b. Cleanse using a circular motion starting at the inside of the venipuncture site and working out.
   c. Allow site to air dry. Performing a venipuncture before the alcohol has dried will cause a stinging sensation for the patient and may produce hemolysis in the specimen.
   d. Reapply the tourniquet.

15. Attach the needle to the evacuated tube holder

16. After removing the protective cap, look at the needle to ensure it is free of burrs, and nicks. Properly discard any suspicious needle and blood tube holder into an approved puncture – resistant sharps container.

17. The vein should be “fixed” or held taut during the puncture. To do this place your thumb about an inch below where the needle is to enter and press down on the arm; at the same time, pull the skin toward the hand. The fingers of your hand should be around and underneath the patient’s arm, grasping the patient’s arm as your thumb stretches and holds the vein taut.

18. When the vein is securely anchored, insert the needle bevel up and at an angle of 15 to 30 degrees depending on the depth of the vein.
   - This should be done in a smooth and rapid movement so the patient only feels the stick briefly.
   - You will feel a sensation of resistance followed by an easy penetration as the vein is entered
19. Once the needle has been inserted, decrease the angle of the needle and slide the needle further into the vein.

20. While the needle is in the vein gently push the collection tube all the way down into the needle holder carefully keeping the needle as stable as possible. Make sure you have a firm grasp on the needle holder so that you do not push the needle through the vein causing a hematoma.

21. Once the blood begins to fill the tubes, release the tourniquet and have the patient release their fist.

22. If multiple tubes are required, follow the recommended order of draw and slide the next tube in and press the tube firmly so the stopper is fully penetrated by the needle. Allow the tubes to fill completely before removing.

23. Immediately mix the tube by gently inversion after it is removed. Failure to do so may result in an unacceptable specimen and require recollection.

24. Once the last tube is filled, remove it from the needle holder. Failure to remove the vacuum tube prior to removing the needle results in blood dripping from the end of the needle so there is unnecessary contamination and possible damage to the patients clothing.

Removing the needle:

25. Cover the site with clean gauze and withdraw the needle. Immediately activate the safety feature on the needle.

26. Apply mild pressure to the site after the needle has been removed. DO NOT apply pressure until the needle is fully removed from the patients arm.

27. Mild pressure should be applied until all bleeding has stopped. The arm should be held raised in an outstretched position. Bending the elbow to apply pressure allows blood to leak into the surrounding tissue creating bruising.

28. A patient who is capable can be asked to apply pressure to the site thereby freeing you to dispose of the needle and label the blood tube. If this is not possible you must apply the pressure and perform the other task only after the bleeding has stopped.

29. Before you bandage the patient visually inspect the puncture site to ensure all bleeding has stopped. Instruct the patient to leave the bandage in place for 10-15 minutes and to not lift anything heavy with the bandaged arm.

30. Label the blood tube in the presence of the patient. Information that is placed on the tube includes the patients full name, date of birth, and unique identifier.

31. Dispose of the needle into an approved sharps container.

32. Remove gloves and was hands.
Venipuncture Blood Specimen Collection

Venipuncture Complications

a. In the event of phlebotomy related serious adverse reaction (i.e. fainting, seizures) refer to the Fainting and Unresponsive policy.

b. If applicable, notify the patient’s physician if there is a problem with prolonged bleeding or if a hematoma develops. Stay with the patient until the situation has been resolved.

c. If a hematoma develops, continue to apply pressure until bleeding has stopped. If needed a cold compress can be applied to the area. To prevent the formation of hematoma’s:
   • Puncture the uppermost wall of the vein.
   • Remove the tourniquet prior to removing the needle.
   • Use the major superficial veins for collection.
   • Hold the needle holder still during collection.

d. Hemolyzed specimens
   • Hemolysis is detected by the presence of pink or red plasma or serum.
   • Rupture of the red blood cell membrane releases cellular contents into the serum or plasma and produces interference with many test results so that the specimen may need to be recollected.

e. Errors performing the venipuncture account for the majority of hemolyzed specimens and may include:
   • Not allowing the venipuncture site to fully dry prior to the stick.
   • Using a small needle such as a butterfly and a large vacuum tube.
   • When using a syringe, pulling back the plunger to hard.
   • Vigorously mixing tubes.
   • Tourniquet left on the arm to long.

f. Nausea and Vomiting
   • Make the patient feel comfortable and instruct patient to breathe deeply and slowly.
   • If necessary, apply a cold compress to the patient’s forehead.
   • If the patient vomits, provide them with a basin, tissue, and water to rinse their mouth.

Patient Refusal

a. Do not attempt to stick a patient if they refuse the collection of a blood specimen.

b. Talk to the patient and explain the importance of the collection of the blood specimen.

c. If gentle persuasion does not work, do not attempt the collection.
d. Notify the patients physician and your supervisor of the situation.
e. Document to whom the refusal information was communicated to.

Site Selection
1. The preferred site for venipuncture is the anterior surface of the upper extremity (anticubital fossa). Three major veins (median cubital, cephalic and basilica) are located in this area of the arm and in most patients one of these veins can be easily located with the median cubital the preferred vein of choice.
2. To aid in locating a suitable vein, apply the tourniquet about midway between the elbow and shoulder and ask the patient to make a fist.
3. Listen to the patient as they usually know which veins are the best and where they are blood is usually obtained.
4. Look at both arms before making a selection on which vein to choose.
5. Veins are located by sight and touch (palpation). The ability to feel a vein is much more important than the ability to see a vein. Palpation is performed by using the index finger to probe the anticubital area with a pushing rather than a stroking motion. The pressure applied by palpating helps to locate deep veins and helps to distinguish veins from arteries (which produce a pulse). The thumb should not be used to palpate because it has a pulse beat. Once an applicable vein is located, palpation is used to determine the direction and depth of the vein.
6. Discourage the patient from continuous fist pumping as this will result in hemoconcentration and alter some test results.
7. It may be necessary to use hand veins when the arms have punctured repeatedly or a suitable vein cannot be located.
   - Veins on the back of the hand are acceptable for venipuncture, but are usually more delicate and smaller in diameter than the veins of the anticubital area.
   - The use of a 23 gauge needle collection set is recommended because the vacuum within the collection tubes can collapse the veins.

Restricted Venipuncture Sites
1. Feet and Leg veins
2. Areas with extensive scaring
3. Burn areas
4. Arms on the same side of mastectomy or stroke
5. Hematomas or extensively bruised areas
6. Cannula, fistula, or vascular grafts
7. Veins on the underside of the wrist
8. Thrombosed veins
9. Sites above IV’s
10. Central lines
11. Arteries
Notes:
1. GPA Phlebotomist can only attempt 2 venipunctures on any patient. If you cannot get blood after the second attempt notify the patient’s physician or nurse.
2. If you have an adverse patient reactions please notify your supervisor immediately.

IV. QUALITY CONTROL
N/A

V. CALCULATIONS/CALIBRATION
N/A

VI. INTERPRETATIONS
N/A

VII. METHOD PERFORMANCE SPECIFICATIONS
N/A

VIII. REFERENCES

IX. RELATED DOCUMENTS
N/A
### X. DOCUMENT HISTORY

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<tr>
<td>2/10/14 New Document Control Format</td>
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<tr>
<td>6/23/14 Moved procedure to Specimen Collection Manual</td>
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<tr>
<td>Natalie Depcik-Smith, M.D.</td>
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