Clinical Laboratory: Laboratory Administration

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Venipuncture Procedure

I. POLICY

A. Licensed Phlebotomists, Medical Assistants and Registered Nurses will inform, instruct, and be supportive of the patient when performing blood collection procedures for diagnostic testing. Staff will provide an environment conducive to the safety and overall care of the patient. Staff will employ safe, aseptic and professional technique, while administrating as little discomfort as possible to the patient.

B. Laboratory staff will inspect specimens for proper collection (including quantity and quality) and patient identification.

C. Laboratory staff will also ensure that specimens will be properly received, treated accordingly to specified testing, and preserved as necessary.

D. Staff will handle laboratory specimens with complete confidentiality.

II. PURPOSE

The collection of blood for diagnostic analysis is an essential and indispensable indicator in diagnosis of disease, monitoring the effectiveness of therapy, and in screening for asymptomatic conditions. Procedural guidelines for the collection and handling of blood are imperative to the safety and well-being of the patient as well as maintaining the quality and reliability of diagnostic performance.

III. RESPONSIBILITY

Thisprocedure applies all personnel performing blood collection at ZSFG Clinical Laboratory, Hospital and clinics.

IV. PROCEDURE:

A. Equipment:

Inspect all supplies for possible defect and applicable expiration date. The following supplies should be available at any location where venipuncture is routinely performed.

1. Disposable nitrile, vinyl, or polyethylene gloves to provide barrier protection
2. Non Latex Tourniquets: pre-cut or velcro type

3. Warming device (optional)
4. Antiseptics for skin preparation: 70% isopropyl alcohol pad. (For specific collections such as blood culture collection, use Chloraprep.)
5. Sterile gauze pads or cotton balls
6. Ice should be available when appropriate
7. Ammonia inhalants should be available for the occasional patient who will faint.
8. Syringes: 3, 5, 10, or 20 mL with 21-25 gauge needles and safety transfer device
9. A butterfly set-up or winged infusion set with 21-25 gauge needles and attached tubing
10. Evacuated tubes are manufactured to withdraw a predetermined volume of blood. The vacutainer system is most often used for obtaining venous blood specimens. Refer to the online Lab Manual to determine test collection requirements.
11. A puncture resistant disposable container to discard used supplies
12. Adhesive bandage and/or gauze should be available

NOTE: ALL BLOOD AND BODY FLUID SPECIMENS SHOULD BE CONSIDERED POTENTIALLY INFECTIOUS AND SHOULD BE HANDLED WITH STANDARD PRECAUTIONS.

B. Documentation:

Review the electronic or manual order for completeness. The electronic or manual requisition must capture the following information;

1. Patient Name (last, first)
2. Patient's Date of Birth
3. Patient's Medical Record Number or other unique identifier
4. Ordering Provider's name
5. Location/Address of where results should be sent
6. Provider's phone and/or pager number
7. ICD-10 code(s) that apply to the test(s) being ordered
8. Tests ordered

C. Location of Veins:

1. To locate vein, it may be necessary to palpate and trace the path of the vein a few times with the index finger. The veins at the antecubital fossa bend of the elbow are the most accessible for the staff collecting the specimen and least painful for the patient. The veins of choice that are acceptable for use are as follows;
   - median cubital veins (most commonly used)
   - cephalic veins
   - basilic veins

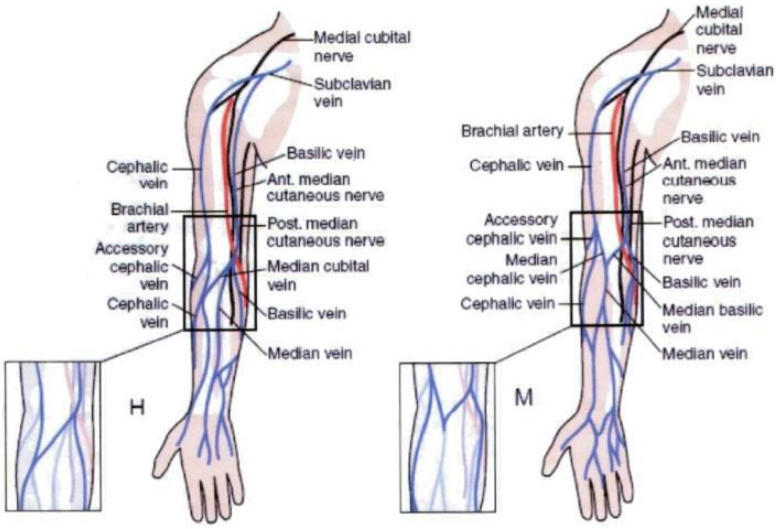


Figure 1. Superficial Veins of the Anterior Surface of the Right Upper Extremity. (From: McCall RE, Tankersley CM. *Phlebotomy Essentials.* 4th ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2008. Adapted with permission from Lippincott Williams & Wilkins. http://lww.com.)

2. When veins in the arm are inaccessible, or the condition of the veins is poor, use wrist or hand veins as the alternate choice for collection.
3. Patients with IV: If it is not possible to draw the opposite arm, then blood should be drawn from BELOW (distal to) the IV. The tourniquet should be applied between the IV site and the venipuncture site. If drawing above the IV site is the only option, then the IV infusion must be turned off for at least 2 minutes before performing the venipuncture. As there is still a risk that the sample could be contaminated, you must document that the specimen was drawn above (proximal to) an IV site in the electronic medical record or manual requisition. The lab may reject the specimen as contaminated based on the test results.

D. Venipuncture procedure:

1. Prepare the patient. For inpatients, the recommended procedure is to have the patient in a lying down position. For outpatients, a blood drawing chair or a sturdy, comfortable chair with access to a table nearby to rest the arm is appropriate. Patient's mouth should be free of food, chewing gum, or thermometers. (Ammonia inhalants must also be available for the occasional patient who will faint.) Re-assure the patient that although the venipuncture will be slightly painful, it will be of short duration. This communication is essential when dealing with children and/or family members.
    a. Verify the patient's fasting status or diet restrictions, as appropriate
    b. Identify the patient using two approved patient identifiers.
2. Sanitize hands and put on gloves.
3. Select the proper size needle and attach it to the syringe or Vacutainer hub. Gather the vacutainer tube/s. Refer to the online Lab Manual to determine test collection requirements.
    a. If using a syringe, before proceeding, inspect the needle, and move the plunger up and down in the barrel once or twice to expel all the

air, making sure the barrel does not stick. If the plunger is pulled back too hard, hemolysis can occur. The force may pull the wall of the vein down on top of the bevel of the needle causing the blood flow to stop, or the needle may be inadvertently pulled out of the vein.

b. If using a vacutainer set-up, inspect the needle and vacutainer tubes for defects, making sure you have all the necessary equipment.

4. Position the draw site for best visualization and/or palpation. Position the patient and apply the tourniquet several inches (approximately 3-4 inches) above the puncture site.

NOTE: The tourniquet should be tight enough to make the veins easier to palpate, and loose enough so it's only slightly uncomfortable for the patient. Tourniquets should not be left in place longer than two minutes. Localized stasis can cause hemoconcentration and the possible formation of a hematoma.

5. Ask the patient to form a fist so veins are more prominent.

6. Select the vein site, cleanse with 70% isopropyl alcohol pad using circular motion and allow the area to dry.

7. Use thumb to draw skin tight about 1-2 inches below the venipuncture site.

8. With the bevel of the needle up, the needle should point in the same direction as the vein. The vein should be entered slightly below the area where it can be seen.

9. Perform the venipuncture.
    a. If using a vacutainer set up, fill the vacutainer tube/tubes until the vacuum is exhausted and blood flow ceases.
    b. If using a syringe, draw the appropriate amount of blood needed for diagnostic testing.
    c. For multiple specimens, follow the order of draw in **Appendix A**
10. Release the tourniquet.

11. Have the patient open his/her fist, and place cotton or gauze over the venipuncture site. While the needle is still in the vein, activate the safety button with the tip of the index finger; the needle will automatically retract from the vein and the safety device will cover the needle.

12. Apply bandage and apply adequate pressure to the puncture site to stop the bleeding and avoid formation of a hematoma. Try not to have the patient bend his/her arm; this may cause the arm to start bleeding when the arm is straightened out.

    a. When using a syringe, transfer blood directly into the vacutainer tube/microtainer by use of the needle.
    b. The vacutainer stopper is pierced with the needle and the tube is allowed to fill (without applying any pressure to the plunger) until the flow ceases.

c. Vacutainer /microtainer tubes containing additives should be filled to capacity and mixed by gentle inversion 5-10 times to prevent clotting and provide adequate dilution of the anticoagulant.

13. After making sure bleeding has stopped at the venipuncture site, apply adhesive and/or gauze as needed.

14. Label the tube with at least two patient identifiers or use a pre-printed specimen collection label. Write collection date and time (if the Patient Positive Identification or PPID process in not utilized).

15. Properly dispose of all needles and disposable attachments in the appropriate hard-sided biohazard receptacle. Needles should not be recapped, re-sheathed, bent, broken, cut, or removed from disposable syringes.
16. Review documentation:
    a. Confirmation of collection task should be documented in the patient's electric medical record. If a manual lab requisition is used, collector initials, collection date and time must be written on the manual requisition.
    b. It is the responsibility of the collector to confirm accuracy and completeness in specimen labeling before the collector leaves the patient's bedside or before the patient leaves the draw station.
    c. Place the specimen/s in a biohazard bag and transport the specimen/s to the Clinical Laboratory in Bldg 5 2M.
17. Procedure Notes:
    a. If the blood does not begin to flow, reposition the needle by gently moving the needle either backwards or forwards in the arm. If the blood is flowing slowly, gently adjust the angle to see if the needle is sitting up against the wall of the vein. Loosen the tourniquet, as it may be obstructing blood flow. If you are using a vacutainer, try another tube – there may be no vacuum in the tube.
    b. After you have attempted to reposition the needle and are still not successful, remove the tourniquet, remove the needle and begin the process with a new site. In the case of a difficult venipuncture, an individual may make a maximum of two attempts before having

someone else try. A third stick is allowable if a partial sample has been obtained and you as the drawer feel reasonably confident that you can obtain the specimen on the next try.

c. Preventing a Hematoma: puncture only the uppermost wall of the vein. Remove the tourniquet before removing the needle. Make sure the needle fully penetrates the upper-most wall of the vein; partial penetration may allow blood to leak into the tissue surrounding the vein. Adequate pressure should be applied to stop the bleeding once the phlebotomy is complete. A hematoma can cause a post-phlebotomy compression injury to a nerve.
d. Preventing Hemolysis: Mix tubes gently, by inversion, 5-10 times – do not shake them. Avoid drawing blood from an area with hematoma. If using a needle and syringe, avoid drawing the plunger back too forcefully. Make sure the venipuncture site is dry. Avoid probing for the vein. If using a blood transfer device to fill vacutainer tubes, allow the vacuum to pull the blood into the tubes; do not use the plunger on the syringe to force the blood into the tubes more quickly.
e. Preventing Hemoconcentration: An increased concentration of larger molecules and formed elements in the blood may be due to several factors including prolonged tourniquet application (greater than 1 minute), massaging, flicking, squeezing or probing the site, long-term IV therapy, and sclerosed or occluded veins.
f. Continued or Excessive Bleeding:
    i. It is the responsibility of the collector to verify that after performing venipuncture that bleeding as ceased prior to leaving the patient.
    ii. If CONTINUED bleeding persists, pressure should be applied to the site until the bleeding ceases. If necessary, wrap a gauze bandage tightly around the arm over a pad. Leave the bandage on for at least 15 minutes. If bleeding is EXCESSIVE and persists longer than 5 minutes, pressure must be exerted on the puncture site and laboratory supervisor or a physician should be notified.
g. Accidental Artery Puncture: If an arterial puncture is suspected, as indicated by a bright red, quick, pulsing flow, with or without rapid development of a hematoma, the needle should be removed immediately. Forceful, direct pressure should be applied to the site for a minimum of five minutes or until the bleeding has stopped. The nursing staff should be notified, and they in turn must notify the physician. A Supervisor or Manager should also be notified and the incident should be documented.
h. Leakage of Blood into the Tissues: If the area surrounding the puncture site begins to swell up while blood is being drawn, this indicates that the needle is out of the vein and there is leakage of blood into the tissues. The tourniquet should be released and the needle withdrawn immediately, and pressure applied to the site.

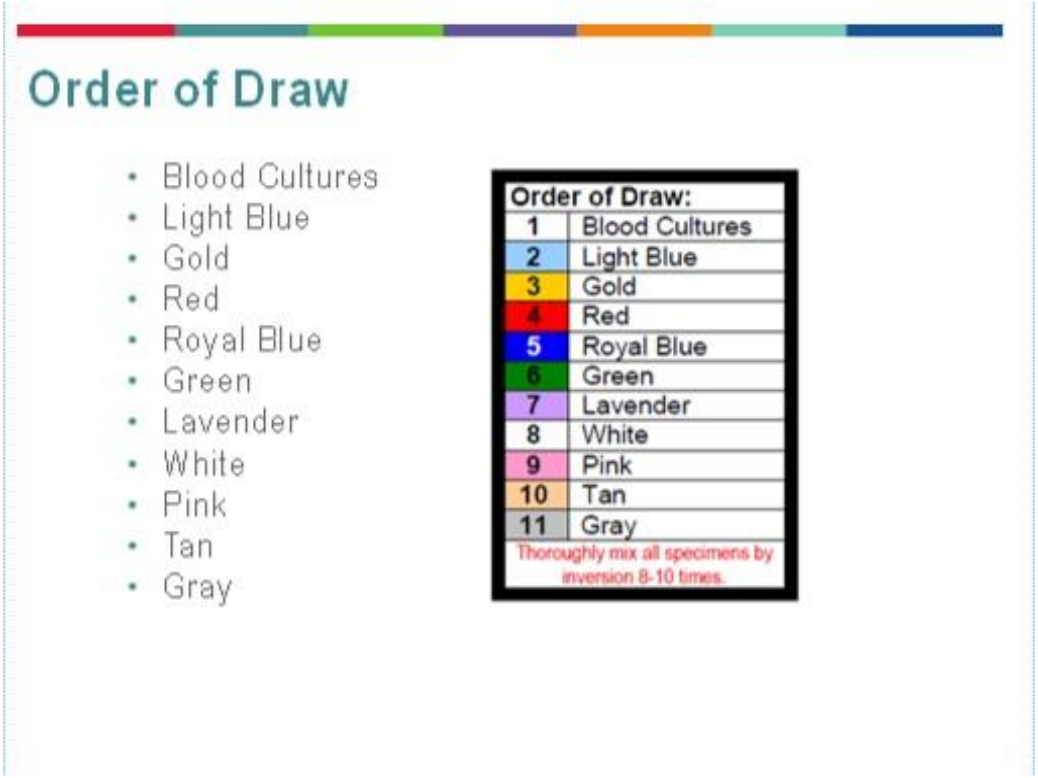
i. Combative or Patients Objecting to Tests: The designated staff should not argue with the patient, but instead report the patient's objections to the ordering provider.
j. Ice Requirements: Certain blood determinations require the specimen be kept on ice to slow down metabolic processes which may alter some chemical values until assayed. Some examples are: Ammonia, Lactic Acid, and Blood Gas. Refer to the online Lab Manual for details.

I. REFERENCES:

A. National Committee Clinical Laboratory Standards (CLSI): Procedure for the Collection of Diagnostic Blood Specimens by Venipuncture; Approved Standard, Sixth Edition, Vol 27, No 26 (H3-A6), 2007

B. Phlebotomy Essentials, Ruth E. McCall, Cathee M Tankevsley, Lippincott Williams and Wilkins, 4th Edition.

APPENDIX A:


Order of Draw
Blood Cultures
Light Blue
Gold
Red
Royal Blue
Green
Lavender
White
Pink
Tan
Gray
Order of Draw:
1 Blood Cultures
2 Light Blue
3 Gold
4 Red
5 Royal Blue
6 Green
7 Lavender
8 White
9 Pink
10 Tan
11 Gray
Thoroughly mix all specimens by inversion 8-10 times.