CARL VINSON VA MEDICAL CENTER
DUBLIN, GEORGIA
PATHOLOGY & LABORATORY MEDICINE SERVICE

PHLEB 1 Blood Collection by Venipuncture

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CARL VINSON VA MEDICAL CENTER
Dublin, Georgia
Pathology and Laboratory Medicine Service

BLOOD COLLECTION BY VENIPUNCTURE

1.0 PURPOSE

1.1 Highly sophisticated and well-controlled laboratory technology is useless if the specimens presented for analysis are already riddled with error due to faulty identification or poor collection techniques.

1.2 Proper specimen collection and handling are of utmost importance. Errors are more likely to occur in these processes than during the laboratory procedure itself.

1.3 Collection errors encompass incorrect identification of the patient specimen, hemolyzed blood samples, and use of incorrect anticoagulant during collection. Despite extensive manual checking procedures, studies show that 8% of errors in patient name, age, sex, and identification probably go undetected.

1.4 Any sample accepted for testing must be collected by competencied employees of the Carl Vinson VA Medical Center

2.0 SUPPLIES AND MATERIALS

2.1 Butterfly collection sets
2.2 Blood Collection trays
2.3 Phlebotomy Chairs
2.4 Beds
2.5 Safety needles
2.6 Blood Transfer Device
2.7 Sterile syringes
2.8 Vacutainer tubes and hubs
2.9 Band-Aids/tape/coflex
2.10 Latex-free tourniquets
2.11 Antiseptics
2.12 Gauze pads
2.13 Hand sanitizer
2.14 Gloves
2.15 Sharps Container
2.16 Ice

3.0 PATIENT IDENTIFICATION

3.1 Identification of the patient is crucial ask for picture identification preferably a VA identification card with picture and scannable barcode or military identification card with picture and scannable barcode. The phlebotomist must ensure the blood specimen is being drawn from the individual on the order request.

3.2 The collection of specimens from outpatients provides an opportunity to involve the patient in verification of their identity. Once the specimen has been labeled, show the label to the patient, and ask them to verify the specimen has been correctly identified.

3.3 **Identification of a conscious patient**

3.3.1 Ask the patient to give full name (first and last name), and full social security number.

3.3.2 Compare this information with the information on the order/labels and on the identification bracelet of in-patients.

3.3.3 Report any discrepancy, however minor, to the appropriate person.

3.3.3.1 Have them identify the person and correct the discrepancy

3.4 **Identification of patient who is unconscious, mentally incapacitated, or does not speak the language of the phlebotomist**

3.4.1 Ask the nurse, relative, or friend to identify the patient by name and full social security number.

3.4.2 Compare the information with the order/labels

3.5 **Identification of unidentified emergency patients**

3.5.1 The patient must be positively identified when the specimen is collected in some form (i.e., John Doe, patient #1, etc.) as a temporary means of clearly designating the patient until positive identification can be made

3.6 **Identification for collection of a Blood Bank specimen**

3.6.1 Select one of the above identification methods (3.3, 3.4 or 3.5)

3.6.1.1 Note: if positive identification CANNOT be made or information on the patient requisition does not match with the patient's identification, the Blood Bank specimen should NOT be collected

3.6.2 Type and screen and/or crossmatch requests MUST have the comparison made between the computer-generated order, patient's armband, and the information from the patient. This verification must be done prior to collection

3.6.3 Inpatients without hospital armbands will not be drawn. The ward will tag the patient with the hospital armband before the collection will take place.

4.0 ASSEMBLE SUPPLIES

4.1 Assemble necessary supplies to include tubes, tourniquets, alcohol pads, gauze, and ensuring all supplies are within expiration date

4.2 Select the appropriate type of needle based on the assessment of the collection site of the patient and the amount of blood to be drawn. Any manipulation or bending of the needle is prohibited

4.3 Select the system for the collection of the blood sample

4.3.1 The evacuated system is the most commonly used method of collecting blood specimens. It is generally preferable to the needle and syringe because it allows blood to pass directly from the vein into the evacuated tube. The system is composed of 3 basic elements: a sterile blood collection safety needle, a holder or hub which is used to secure both the needle and evacuated tube, and the evacuated tube containing pre-measured vacuum and additive

4.3.2 In general, a syringe should be used when drawing a specimen from individuals with fragile, thready, or "rolly" veins

4.4 Use hand sanitizer on your hands, allow it to dry, and put on gloves

5.0 REASSURE THE PATIENT

5.1 The phlebotomist must gain the patient's confidence and assure the patient that although the venipuncture will be slightly painful, it will be of short duration

5.2 It is good practice to tell the patient when the needle enters the skin so the patient is not frightened.

5.3 Never tell the patient, "*This won't hurt"*

6.0 POSITION THE PATIENT

6.1 **Ambulatory Patient**

6.1.1 Ask the patient to be seated comfortably in the phlebotomy chair
6.1.2 Lower the armrest across the front of the patient (this will assist you should the patient lose consciousness)
6.1.3 Have the patient position their arm at a slant on the armrest, extending the arm to form a straight line from the shoulder to the wrist. The arm should be supported by the armrest and should not be bent at the elbow
6.1.4 If patient is wheelchair bound, the patient may remain in his/her wheelchair

6.2 **Non-ambulatory patient**
6.2.1 If not already in bed, ask the patient to be on his/her back in a comfortable position
6.2.2 If additional support is required, place the pillow under arm from which the specimen is to be drawn, or ask a nurse for assistance
6.2.3 Have the patient extend his/her arm to form a straight line from the shoulder to the wrist

7.0 VERIFY PAPERWORK AND TUBES

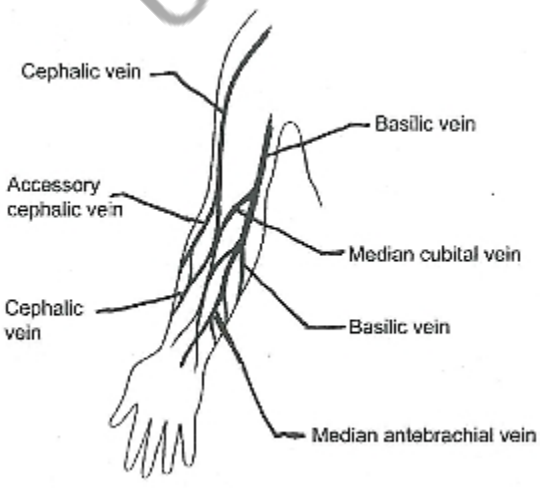
7.1 This verification must be done to ensure no mistakes were made during the preparation of the requests and selection of tubes.
7.2 Compare the request with labels and patient information including wristband
7.3 Have any discrepancies corrected
7.4 Check the tubes you have selected to ensure the appropriate kinds and sizes were selected

8.0 CLOSE THE PATIENT'S HAND

8.1 Veins become more prominent and easier to enter when the patient forms a fist
8.2 Avoid vigorous hand exercise or "pumping"

9.0 SELECT THE VEIN SITE

9.1 **Preferred Veins**
9.1.1 Perform a thorough survey of both arms for the presence of a median or cephalic vein before selecting the higher risk basilic vein.



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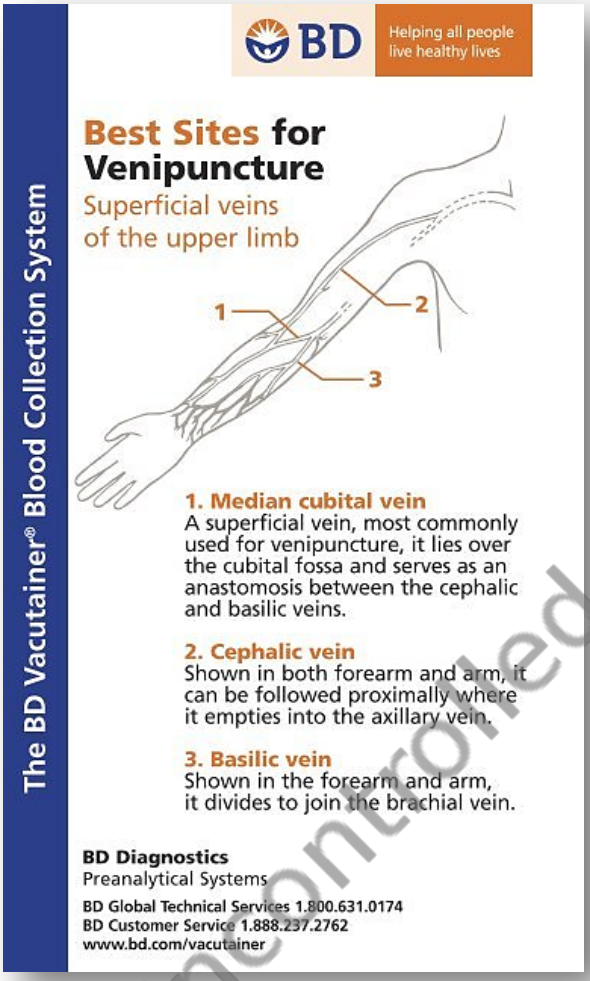

9.1.2 Although the larger and fuller median cubital and cephalic veins are used most frequently, wrist and hand veins are acceptable for venipuncture. Avoid the use of the underside of the wrist

9.1.3 ***Alternative sites, such as ankles or lower extremities, will not be used because of the potential for significant medical complications.***

9.2 **Factors to consider**

9.2.1 Extensive scarring

9.2.1.1 Avoid healed burn areas

9.2.2 Hematoma

9.2.2.1 Specimens collected from a hematoma area may cause erroneous results. If another vein site is not available, collect the specimen distal to the hematoma

9.2.3 Mastectomy

9.2.3.1 Due to lymphostatis, specimens taken from the side on which the mastectomy was performed may not be truly representative specimens

9.2.4 Intravenous therapy
9.2.4.1 Optimally specimens should be collected from the opposite arm. If this should prove impossible, always draw well beneath the IV entry site and/or from a different vein
9.2.5 Cannula/Fistula/Vascular Graft
9.2.5.1 Laboratory personnel are not allowed access to blood via any of these ports.
9.2.5.2 Nursing staff will procure the sample for the phlebotomist.

9.3 **Procedure for Vein Selection**
9.3.1 Palpate and trace the path of veins several times with your index finger
9.3.1.1 Unlike veins, arteries pulsate, are more elastic, and have a thick wall
9.3.1.2 Thrombosed veins lack resilience, feel cord like, and easily
9.3.2 If superficial veins are not readily apparent, you can force blood into the vein by massaging the arm from wrist to elbow. Tapping sharply at the vein site with index and second finger a few times will cause the vein to dilate. Applying a warm, damp washcloth (about 40 °C) to the proposed site for 5 minutes may have the same results. Lowering the extremity over the bedside or side of the chair will allow the veins to fill to capacity
9.3.3 Check the veins in the other arm will prove suitable for venipuncture

10.0 CLEANSE THE VENIPUNCTURE SITE

10.1 Cleanse the vein site to prevent chemical or microbiological contamination to the patient or specimen
10.2 Remove a commercially prepared alcohol pad from its sterile package. Refer to special instructions for cleansing when drawing blood cultures.
10.3 Cleanse the venipuncture site with a circular motion from the center to the periphery
10.4 Allow the area to air dry to prevent hemolysis of the specimen and to prevent the patient from having a burning sensation when the venipuncture is performed
10.5 ***If the venipuncture proves difficult and you must touch the vein again to draw blood, cleanse the site again.***

11.0 APPLY THE TOURNIQUET

11.1 The use of a tourniquet increases the venous filling, which makes the veins more prominent and easier to enter.
11.2 ***Never leave the tourniquet on for longer than 1 minute***.
11.2.1 Localized stasis may occur with a tourniquet, together with the formation of a partial filtrate of blood and hemo-concentration.
11.2.2 This may result in erroneously high protein-based analytes, packed cell volumes, and other cellular elements.
11.2.3 If you must apply a tourniquet for preliminary vein selection, release it and reapply after waiting 2 minutes.
11.3 Place the tourniquet over the patient's sleeve of their shirt or gown. This will avoid pinching the skin, as well as leaving the tourniquet visible to avoid leaving the tourniquet behind.
11.4 Wrap the tourniquet around the arm 3 to 4 inches (7.5 to 10.0cm) above the venipuncture site. Tuck under the last round.

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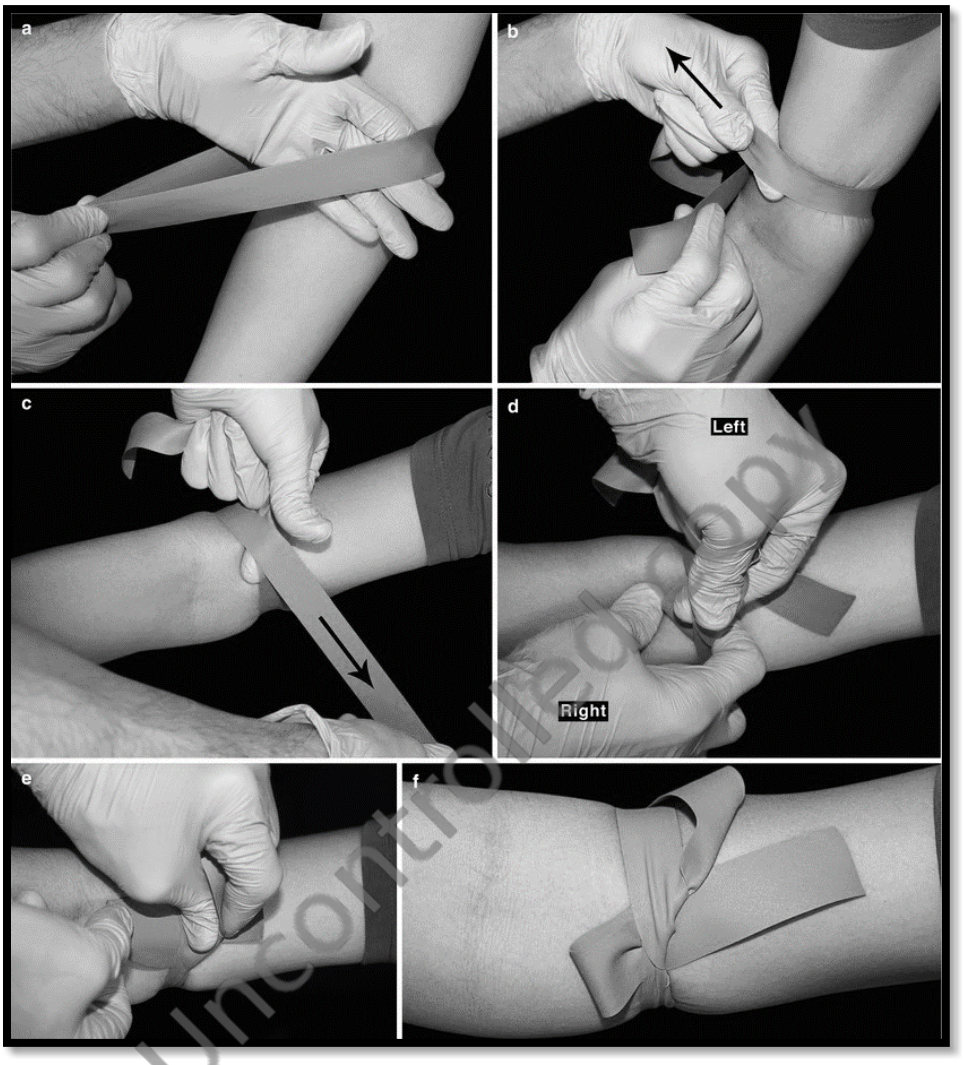


12.0 INSPECT THE NEEDLE AND SYRINGE

12.1 **Needles:** Inspect the tip of the needle visually to verify that it is free of “burrs” or hooks on the end and that its opening is clear of any small debris that would obstruct the flow of blood.

12.2 **Syringe:** When using a syringe, you should move the plunger within the barrel of the syringe to show needle and syringe patency and freedom of plunger movement.

13.0 HOLD THE PATIENT’S ARM TO FACILITATE THE VENIPUNCTURE PROCEDURE

13.1 Grasp the patient’s arm firmly using your thumb to draw the skin taut. This anchors the vein. Your thumb should be 1 or 2 inches (2.5 or 5.0cm) below the venipuncture site.

13.2 Securing the vein above the selected draw site is **not** recommended, due to risk of an accidental needlestick

14.0 PERFORM THE VENIPUNCTURE

14.1 ***Ensure that the site has been cleansed according to Step 10.0***

14.2 **Procedure using evacuated tubes**

14.2.1 Thread the appropriate needle into the holder until it is secured, using the needle sheath as a wrench.

14.2.2 Before using, tap all tubes that contain additives to ensure all additive is dislodged from the stopper and the wall of the tube. Use a sterile collection tube.

14.2.3 Insert the blood collection tube into the holder and onto the needle up to the recessed guideline on the needle holder

14.2.3.1 ***Do not push the push the tube beyond the guideline. A premature loss of vacuum may result.***

14.2.4 The tube will retract slightly. Leave it in this position.

14.2.5 Make sure the patient's arm or other venipuncture site is in a downward position to prevent reflux.

14.2.6 With the bevel up, line up the needle with the vein.

14.2.7 Enter the vein by piercing through the skin with a smooth, constant motion. You will feel a sensation of resistance, followed by easy penetration as the vein is entered.

14.2.8 Grasp the flange of the needle holder and push the tube forward until the butt end of the needle punctures the stopper.

14.2.9 Keep the tube below the site while the needle is in the vein.

14.2.10 Remove the tourniquet (when possible) as soon as the blood flow is established.

14.2.11 Once the draw has started, do not change the position of the tube until it is withdrawn from the needle.

14.2.12 It is recommended that during the procedure, you should not allow the contents of the tube to contact the stopper. Movement of the fluid back and forth in the tube can cause backflow into the venous system and possible adverse reaction.

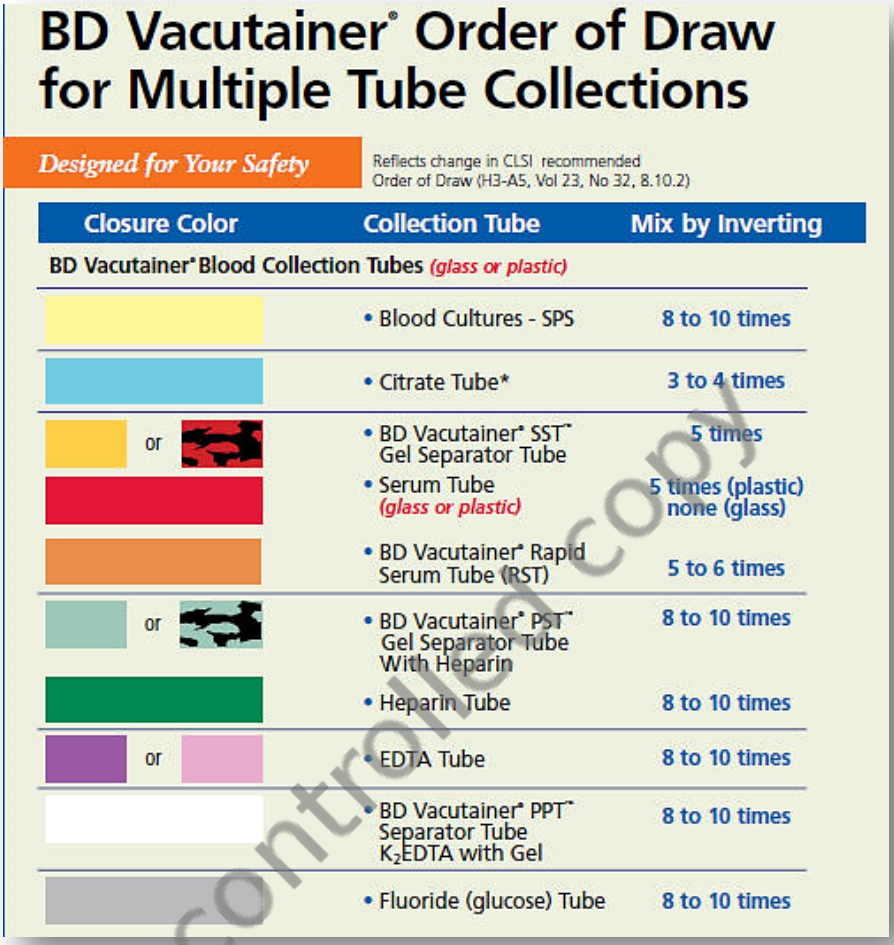
14.2.13 Fill the tube until the vacuum is exhausted, and the blood flow ceases. This will ensure there is a correct ratio of anticoagulant to blood. It is normal for the tube not to be completely filled.

14.2.14 When the blood flow ceases, remove the tube from the holder. The shut off valve re-covers the point stopping blood flow until the next tube is inserted.

14.2.15 Mix immediately after drawing each tube that contains an additive by gently inverting the tube 5 to 10 times. To avoid hemolysis, do not mix vigorously.

14.2.16 To obtain additional specimens, insert next tube into holder and repeat steps 14.2.8 to 14.1.15

14.2.17 Withdraw the desired tubes of blood following the protocol for the "**order of draw"**



BD Vacutainer® Order of Draw for Multiple Tube Collections

Designed for Your Safety

Reflects change in CLSI recommended Order of Draw (H3-A5, Vol 23, No 32, 8.10.2)

Closure Color	Collection Tube	Mix by Inverting
BD Vacutainer® Blood Collection Tubes *(glass or plastic)*		
	• Blood Cultures - SPS	8 to 10 times
	• Citrate Tube*	3 to 4 times
or	• BD Vacutainer® SST™ Gel Separator Tube	5 times
	• Serum Tube *(glass or plastic)*	5 times (plastic) none (glass)
	• BD Vacutainer® Rapid Serum Tube (RST)	5 to 6 times
or	• BD Vacutainer® PST™ Gel Separator Tube With Heparin	8 to 10 times
	• Heparin Tube	8 to 10 times
or	• EDTA Tube	8 to 10 times
	• BD Vacutainer® PPT™ Separator Tube K_2EDTA with Gel	8 to 10 times
	• Fluoride (glucose) Tube	8 to 10 times

14.2.18 Open the patient's hand to reduce the amount of venous pressure as the muscles relax.
14.2.19 Place the gauze, lightly, over the venipuncture site.
14.2.20 Remove the needle in one constant motion while keeping the bevel up.
14.2.21 Upon removal of the needle apply direct pressure to the site.
14.2.22 Immediately engage the safety sheath for the needle.
14.2.23 Place needle and holder into the sharp's container.

14.3 **Venipuncture procedure using butterfly and evacuated tubes/syringe**

14.3.1 Venipuncture with a "butterfly" is primarily like a phlebotomy with a syringe.
14.3.2 The "butterfly" collection sets are equipped with a multiple sample luer adapter. By threading a vacutainer holder onto this adapter, you may introduce multiple tubes.
14.3.3 Place the patient's arm in a downward position if possible.
14.3.4 Line up the needle and syringe with the vein from which the blood will be drawn.
14.3.5 Turn the needle so that the bevel side is in an upward position.

14.3.6 Enter the vein by piercing through the skin with the needle in a smooth, constant motion. You will feel a sensation of resistance, followed by easy penetration as the vein is entered.
14.3.7 You will notice a “flash” of blood in the tubing.
14.3.8 Remove the tourniquet as soon as the blood flow is established.
14.3.9 Once the draw has started, you may secure the butterfly in place with tape.
14.3.10 Introduce the vacutainer tube into the holder.
14.3.11 Fill the tube until the vacuum is exhausted, and the blood flow ceases. This will ensure there is a correct ratio of anticoagulant to blood. It is normal for the tube not to be completely filled.
14.3.12 When the blood flow ceases, remove the tube from the holder. The shut off valve re-covers the point stopping blood flow until the next tube is inserted.
14.3.13 Mix immediately after drawing each tube that contains an additive by gently inverting the tube 5 to 10 times dependent on the additive.
14.3.14 Remove the tape.
14.3.15 Withdraw the needle from the patient’s arm.
14.3.16 Remove the butterfly by grasping the translucent-yellow safety shield-grip area with your thumb and index finger.
14.3.17 With the opposite hand, grasp tubing between thumb and index finger.
14.3.18 Push the yellow shield forward until the safety shield is locked in place. Place the butterfly into a sharps container.
14.3.19 If there is a concern the vacuum in the tubes may collapse the vein and a syringe is preferred, remove the multi sample luer adapter and engage a syringe onto the butterfly tubing.
14.3.20 Withdraw the desired amount of blood by gently pulling back on the plunger.
14.3.21 Engage a blood transfer device with the syringe, and fill the required tubes. Discard the syringe and blood transfer device into a sharps container
14.3.22 ***You must draw a discard tube through a winged blood collection set when the first or only tube drawn is a citrate tube to prevent under-filling.***

14.4 **Venipuncture procedures using needle and syringe**

14.4.1 Insert the appropriate needle onto the syringe.
14.4.2 Place the patient’s arm in a downward position if possible.
14.4.3 Line up the needle and syringe with the vein from which the blood will be drawn.
14.4.4 Turn the needle so that the bevel side is in an upward position.
14.4.5 Enter the vein by piercing through the skin with the needle in a smooth constant motion. You will feel a sensation of resistance, followed by easy penetration as the vein is entered.
14.4.6 Withdraw the desired amount of blood by gently pulling back on the plunger.
14.4.7 Open the patient’s hand to reduce the amount of venous pressure as muscles relax.
14.4.8 Place the gauze or cotton ball, lightly, over the venipuncture site.
14.4.9 Remove the needle in one constant motion while keeping the bevel up. Immediately engage the safety sheath for the needle.
14.4.10 Apply direct pressure to the site.

14.4.11 Remove the needle from the syringe and place the needle into a sharps container.
14.4.12 Place a Blood Transfer Device onto the syringe. Select the appropriate collection tubes and introduce them into the holder following the previous instructions for evacuated tubes, in step 14.2.17
14.4.13 Discard the syringe and blood transfer device into a sharps container.
14.4.14 When the amount of blood required for testing exceeds the volume of the syringe, use of a “butterfly” may be the best choice.

15.0 BANDAGING THE COLLECTION SITE

15.1 Under normal circumstances

15.1.1 Apply a Band-Aid or tape with a clean gauze folded over the venipuncture site after making sure stasis is complete and verify there is not a hematoma.
15.1.2 Instruct the patient to leave the bandage on for at least 15 minutes.

15.2 When the patient continues to bleed

15.2.1 Apply pressure to the site with a gauze pad until the bleeding stops.
15.2.2 Use tape and gauze pads to form a pressure bandage and instruct the patient to leave the bandage on for at least 15 minutes.

15.3 When skin condition is a factor

15.3.1 Certain skin conditions (breakdown, allergies, etc.) require means other than tape or Band-Aid for securing the gauze to the collection site.
15.3.2 Co-Flex will be used in these cases. It is a stretchable and self-adhering gauze-like wrap, which allows the skin to breathe.

16.0 WHEN A BLOOD SAMPLE CANNOT BE OBTAINED

16.1 Change the position of the needle

16.1.1 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. Relocation of the needle that misses a basilic vein is prohibited, due to the close proximity of the brachial artery.
16.1.2 ***Probing is not recommended***. Probing is painful to the patient. In most cases, it is advisable to use another puncture site below the first site, or use another vein on the other arm. If the patient complains of shooting pain, withdraw the needle immediately.

16.2 Try another tube

16.2.1 When using the evacuated tube system, the tube being used may have insufficient vacuum. It is recommended to try another tube before re-sticking the patient.

16.3 Loosen the tourniquet

16.3.1 The tourniquet may have been applied too tightly, thereby stopping the blood flow. Reapply the tourniquet somewhat loosely.

16.4 Multiple sticks

16.4.1 ***IT IS NOT ACCEPTABLE TO ATTEMPT A VENIPUNCTURE MORE THAN TWICE.*** Have another person attempt to collect the specimen (if available) or notify the ordering provider.

16.5 Notifying the physician

16.5.1 When a sample cannot be procured as requested, it is necessary to notify the physician and hospital staff providing care for the patient.
16.5.2 A verbal notification will be made to the administrative assistant and/or nurse prior to leaving the ward.
16.5.3 The appropriate tubes for collection and any special handling instructions may be left with these individuals.
16.5.4 Offer to answer questions they may have regarding the collection, or to return to provide assistance when possible.

16.6 Arterial punctures are not considered to be a substitute for venipunctures in patients with difficult veins.

17.0 PROTECTING THE SAMPLE INTEGRITY

17.1 All special instructions should be strictly administered.
17.2 Special instructions may include chilling, warming, and/or protection from light.

18.0 LABELING

18.1 Labeling must be completed before leaving the patient's bedside, or before the ambulatory patient is released. This will help eliminate errors of identification.
18.2 Labels are generated prior to collection of a sample from CPRS may be affixed directly to the tube without the requirement of handwritten patient information
18.3 All other specimens collected will be hand labeled at the bedside and the computer-generated label affixed after you return to the lab and accession the specimen. The collector will initial all labels. Handwritten information will include full name, social security number, date, location, and in specific instances additional information such as time, designation of pre or post therapy, etc.

19.0 BEFORE LEAVING THE PATIENT'S ROOM

19.1 Verify the tourniquet has been removed from the patient's arm and discard it.
19.2 A new tourniquet will be used for each patient.
19.3 Verify all used supplies have been discarded appropriately.
19.4 Remove your gloves and use hand sanitizer on your hands before you leave the room.
19.5 Wash your hands with soap and water upon returning to the laboratory.

20.0 PROCEDURE NOTES

20.1 **Patient inquiries**
20.1.1 Do not volunteer information to the patient regarding tests requested.
20.1.2 The physician can better inform the patient as to why the tests have been ordered.
20.1.3 Patients do have a right to know and should not be refused information.
20.1.4 If the patient requests information, tell them which tests are being done and refer them to their physician for the explanation.

20.2 **Patient who objects to the phlebotomy**
20.2.1 Do not argue with the patient.
20.2.2 Report the patient's objection to the ward and/or physician. The physician can explain to the patient why the tests are required.
20.2.3 If the patient still refuses to have the specimen collected, document the information

20.3 **Minimize volumes collected**

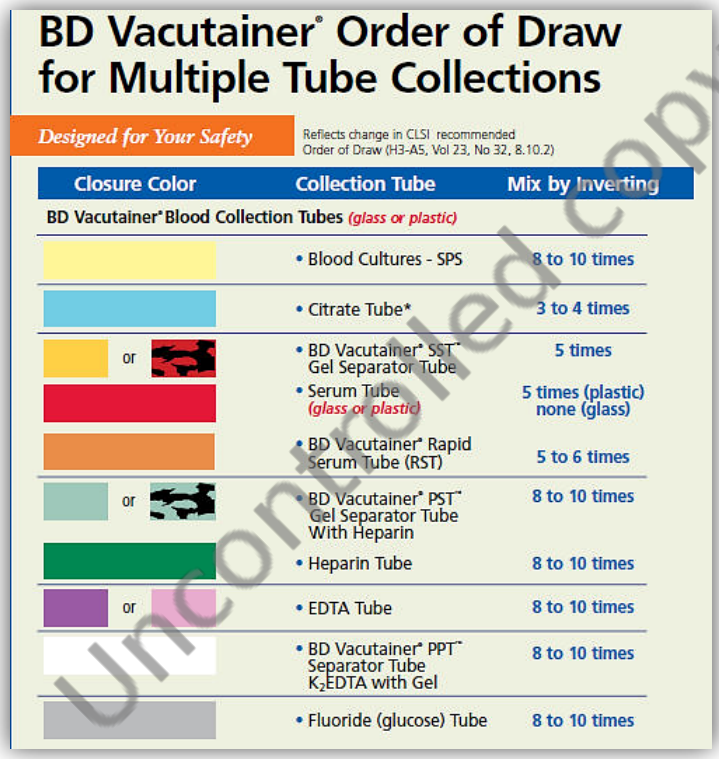
20.3.1 Departments within the lab will share specimens when possible, to avoid any unnecessary phlebotomies to the patient.

20.3.2 Requests for collection of specimens are reviewed to eliminate duplicate orders.

20.3.3 When utilizing a previously collected specimen, contact the ward for permission to do so

20.4 **Order of draw**

20.4.1 The following “order of draw” is recommended for preventing additive carryover whether the tube is glass or plastic



20.5 Never overfill additive tubes. This will interrupt the blood to anticoagulant ratio

21.0 REFERENCES AND ADDITIONAL RESOURCES

21.1 BD Product Literature

21.2 BD Education Products

21.3 CLSI Guideline: Procedures for the Collection of Diagnostic Blood Specimens by Venipuncture

21.4 Todd-Sanford Clinical Diagnosis by Laboratory Methods