



St. Thomas Elgin
General Hospital

PHLEBOTOMY

Self-Directed Learning Package

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INTRODUCTION

- Learning to perform Venipuncture for the purposes of obtaining a blood sample involves acquiring knowledge, skill and judgement. Confidence and proficiency come with performing real procedures on real patients with different and varied types and qualities of veins.
- Knowledge from this Self Directed Learning Package will help build the proper foundation for the development of clinical expertise.

LEARNING OBJECTIVES:

At the end of this module, you will be able to:

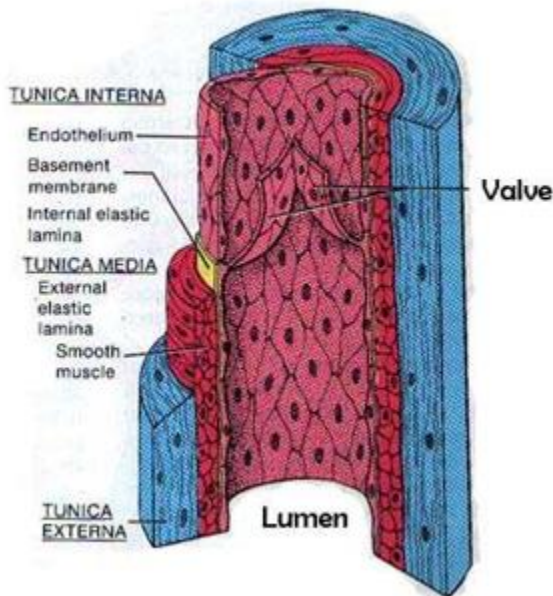
- ❖ Understand the difference between veins and arteries
- ❖ Locate and complete an assessment of the veins of the upper extremities commonly used for venipuncture
- ❖ Describe the techniques for vein stabilization, distention, and site preparation
- ❖ Describe the sequential steps in the procedure for venipuncture
- ❖ Describe the order of draw, and the process for patient identification and sample labeling to ensure patient's safety
- ❖ Discuss the patient's education needs
- ❖ Gain confidence through application of knowledge and skills.

KNOWLEDGE DEVELOPMENT

- ✓ Complete the Phlebotomy for Nurses Self Directed Learning package
- ✓ Write the Basic Knowledge Test
- ✓ Seek out opportunities to advance and perfect your skills
- ✓ Complete 3 successful draws and complete the competency checklist with the unit CRN, Unit Champion or Clinical Educator to be able to perform the skill on your own.
- ✓ Evaluate your own need for further supervision, guidance and assistance
- ✓ **You are responsible for ensuring your checklist is up to date**

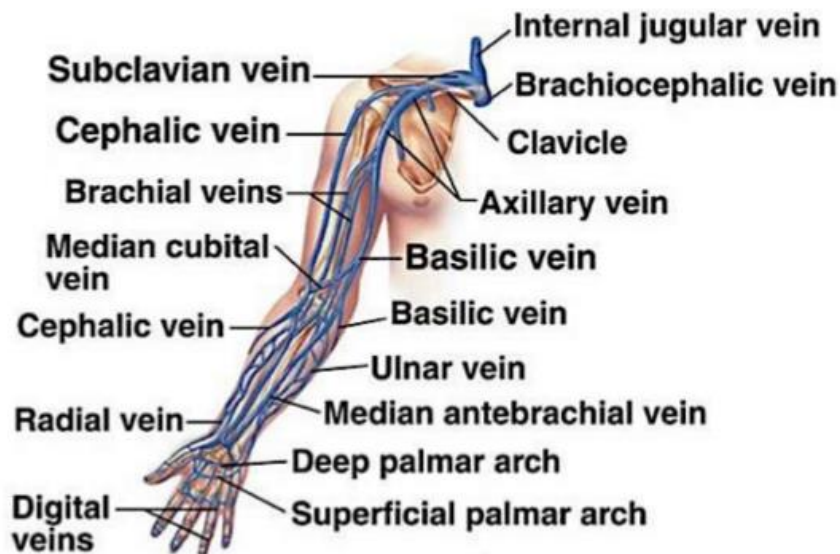
ANATOMY AND PHYSIOLOGY:

Superficial veins of **the upper extremities** are routinely used for intravenous cannulation. Although arteries rarely appear superficially, aberrant arteries can pop up in unusual places. It is necessary to differentiate between veins and arteries. The risk of arterial cannulation also increases in the antecubital fossa where arteries and veins lie closer together.



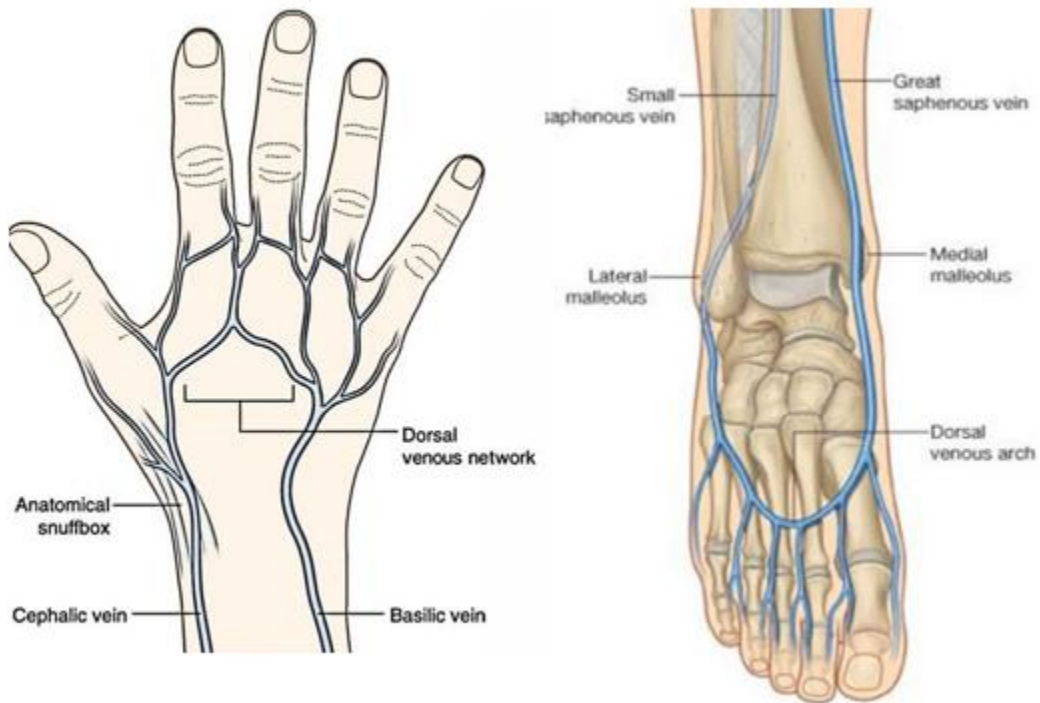
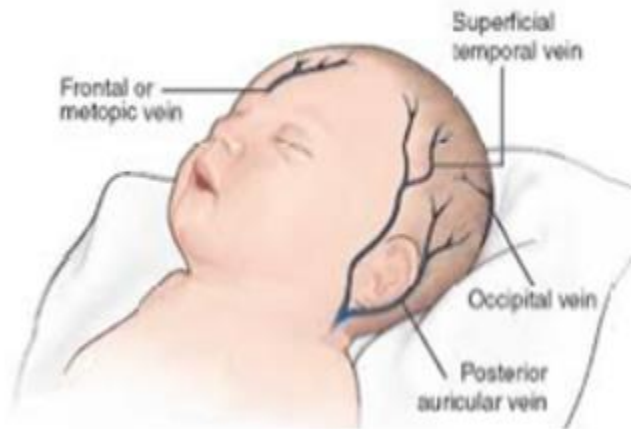
VEINS return deoxygenated blood from the body to the heart under minimal pressure. Veins do not pulsate. Veins contain valves to aid in the prevention of backflow due to their low pressure. Veins will distend and collapse

ARTERIES transport oxygenated blood from the heart to the body under pressure. Arteries pulsate, and will not collapse.



PAEDIATRIC VENIPUNCTURE SITES

SCALP-before 18 months



VENIPUNCTURE SITES

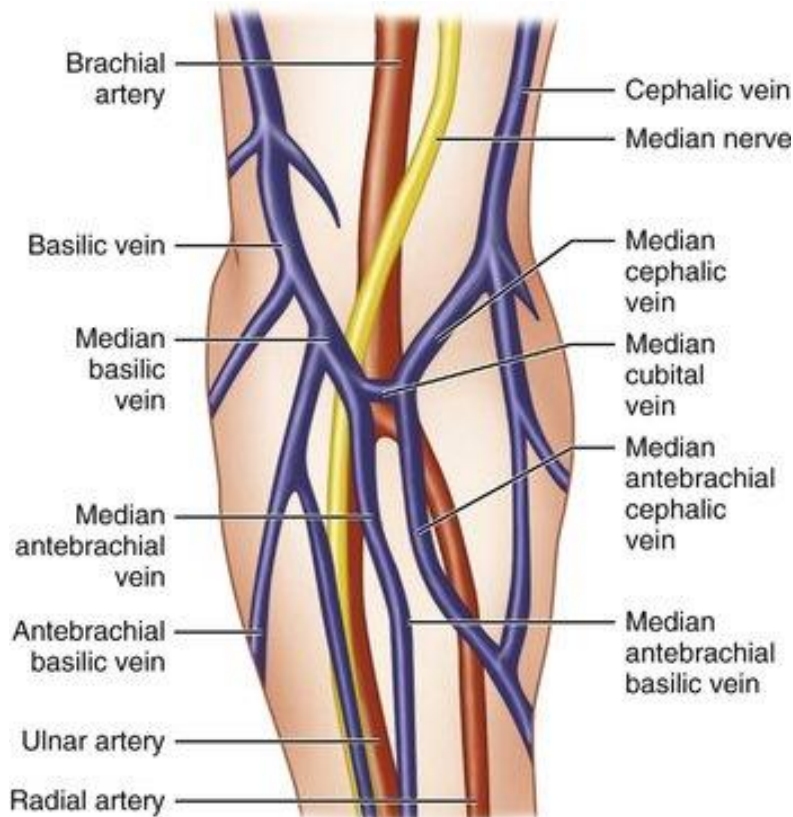
The three most common adult sites are:

1. Median vein
2. Cephalic vein
3. Basilic vein

Note: Even though the basilica is often the most visible, it is **third choice** as it is more painful for the patient and bruise more readily.

Metacarpal veins located on dorsum of the hand are used as a **last resort**, except for small infants.

Always palpate for arterial pulsation prior to venipuncture



VEIN ASSESSMENT

❖ Careful vein assessment is essential

- for successful attempt
- to ensure viability of venipuncture site
- to help reduce mechanical phlebitis

❖ Factors to consider when choosing a vein

- patient's medical history
- patient's age, size and general condition
- condition of the patient's veins
- veins commonly used for venipuncture
- your skill at venipuncture
- **Patient input** as to quality and accessibility of veins from the perspective of past experience with venipuncture

❖ Always palpate the potential vein.

To acquire a highly developed sense of touch, palpate prior to each attempt. Through this practice you will gain valuable experience, as well as increased confidence in both assessment and success of more difficult veins.

NOTE: Veins, which may appear suitable on inspection, can prove otherwise upon palpation.

A suitable vein should:

- feel round, firm, full - not hard, bumpy or flat
- have bounce or elasticity
- be wide enough to accommodate the diameter of the cannula/needle

❖ **Veins and sites which are to be excluded** include:

- **Sites below or immediately above a phlebotic or previous infiltration area** until complete resolution has occurred to avoid further damage to vessel or tissue
- **Sclerosed or thrombosed veins** that feels hard and cordlike, as they have lost their resiliency.
- **Patient's arm with an arterio-venous access graft/fistula.** A tourniquet could cause the graft to clot. Venipuncture attempts for reasons other than its intended purpose would damage the graft and render it ineffective.
- **Patient's arm with diminished sensation or edema** such as the arm on the affected side of a stroke or radical mastectomy patient. Circulation is impaired.
- **Weaker, thin-walled arm veins** branching off the tough-walled cephalic and basilica veins since infiltration irritations occur more frequently here.
- **If no palpable veins in arms,** a foot vein may be used. Due to complications from usage in lower extremities a doctor must order this method of blood taking.
- **Mastectomy side** – it is not the best practice to use the mastectomy side for venipuncture. In case of bilateral mastectomy, physician order must be obtained prior to venipuncture. Do not use the arm if there are signs and symptoms of lymphedema.

NOTE: Avoid taking blood from an existing peripheral venous access site because this may give false results. Hemolysis, contamination and presence of intravenous fluid and medication can all alter the values.

- Never draw blood from an arm with an IV running. If the IV arm must be used, the IV must be turned off
- Specimens can be obtained after **3-5 minutes**. If possible draw blood sample below the IV site, if not possible, ensure to draw 5ml waste blood prior to drawing sample

- If sample drawn from IV arm, write on label "Drawn from left or right IV arm, IV off 5 minutes".

*Nursing staff and physicians may obtain blood specimens from a central venous access device (CVAD), if competent in this practice. STEGH Clinical Practice Guideline must be followed.

Remember, specimens from a CVAD carry a risk of infection, contamination or erroneous laboratory test results. **If the patient has good peripheral access sites, obtaining the blood specimen via venipuncture is indicated and preferred.**

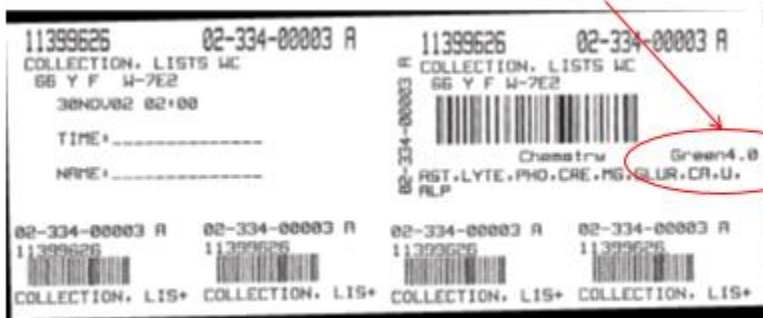
Aseptic technique must be used for all entries into the CVAD.

EQUIPMENT LIST

- ✓ Patient's labels/requisitions
- ✓ Tourniquet
- ✓ Antiseptic skin cleanser
(alcohol swab and chlorhexidine swab)
- ✓ Non-sterile gloves
- ✓ Safety needle/Winged blood collection set (butterfly)
- ✓ Vacutainer
- ✓ Vacutubes, waste tube if using winged blood collection set.
- ✓ Cotton ball or gauze
- ✓ Biohazard bag
- ✓ Tape



Requisition sticker shows correct colour of tube and amount to draw for required test(s)



IDENTIFY AND PREPARE THE PATIENT



- Introduce yourself to the patient
- Confirm patient's identity: use 3 patient identifier – Name, Birthday, Hospital ID
- Ask whether the patient has any allergies (tape, chlorhexidine)
- Explain the procedure to the patient and obtain verbal consent. The patient has a right to refuse a test at any time before the blood sampling, so it is important to ensure that the patient has understood the procedure
- The patient should be comfortably positioned with arm extended and supported on the stretcher or on a pillow
- Paediatrics: Two people are required – one to hold and one to draw the blood sample (parents are not expected to properly hold their child during this procedure). Assisting and holding the child appropriately during the procedure is of significant importance. Avoid using full body physical restraint as it can be traumatizing. For best results, position child lying with head slightly elevated.

Best Practice: Gloves MUST be worn for ALL venipuncture attempts, since there is a risk of blood exposure – accurate sizing is important for palpation of veins.

Appropriate PPE MUST be worn for patients under isolation precautions.

APPLICATION OF TOURNIQUET

Apply tourniquet above antecubital fossa to enable visualization of whole arm. This area best tolerates tourniquet application. Otherwise, apply tourniquet 2-4 inches above insertion site.

Placing tourniquet over a sleeve or wash cloth reduces pinching and discomfort.



Do not leave the tourniquet in place longer than 1-2 minutes to avoid hemolysis of the sample

Due to infection control, tourniquets are ONE patient use only

TIPS to promote vein distension:

- Arm dangling over the side
- Gentle tapping
- Relaxation
- Heat (remove tourniquet and apply warm compresses for 5-10 minutes)

Tips:

- Have patient open and close fist a few times, then make a fist
- After needle is in the vein, have the patient release their fist and relax
- Sometimes, changing the wrist position while keeping the arm straight will help you feel the vein and help determine vein direction

PREPARATION OF THE SITE

Cleanse the insertion site with chlorhexidine swab using an outward concentric circles over the area where puncture to be done

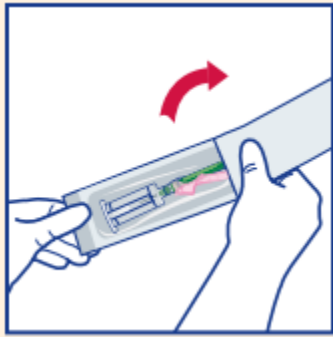
Use an organization-approved antiseptic for routine venipuncture. These include 70% alcohol, greater than 0.5% chlorhexidine in alcohol solution. Use chlorhexidine cautiously because it may cause skin irritation and chemical burns in infants less than 2 months old or infants with compromised skin integrity (premature infants).

Allow antiseptic to dry on the skin for minimum one minute. **ONE MINUTE drying is essential to provide disinfection.**

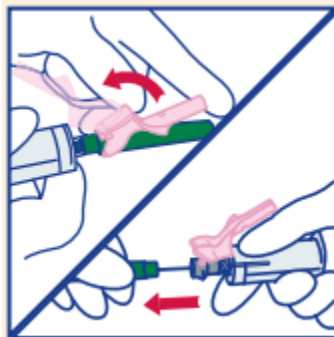
If the intended insertion site becomes contaminated prior to commencement of the venipuncture procedure, the site must be cleansed again



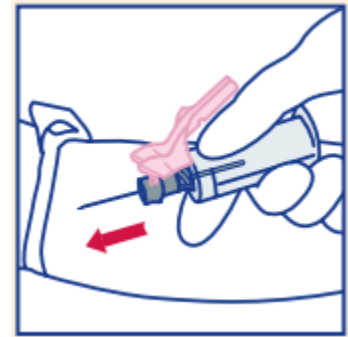
REVIEW OF USING VACUTAINER NEEDLE AND NEEDLE HOLDER



1. Assemble the needle and the vacutainer



2. Gently position pink safety shield straight back toward the holder

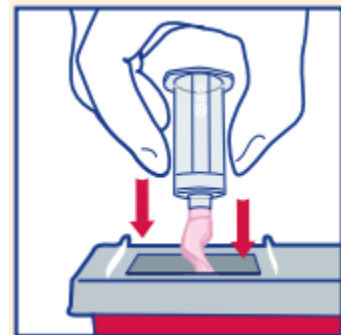


4. Perform venipuncture according to your facility's established procedures.



3. Twist and pull colored needle cap straight off

Note: Always position bevel up



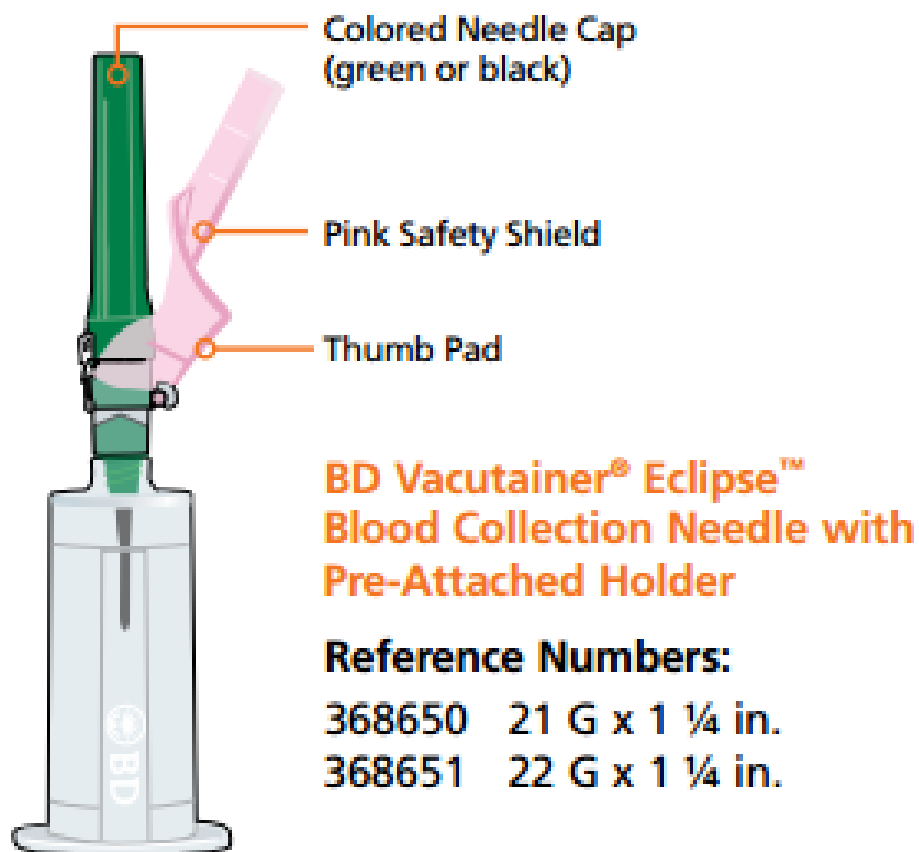
5. Immediately after removing needle from vein, position thumb squarely on pink safety shield thumb pad and push pink safety shield forward to cover needle. and audible click may be heard. Lock shield into place and inspect. DO NOT attempt to engage safety shield by pressing against a hard surface

6. Discard immediately into an approved sharps disposal container. DO NOT remove needle from holder. Dispose of the needle and holder as one unit into nearest sharps container DO NOT REUSE

VENIPUNCTURE PROCEDURE – BD Eclipse

1. Perform hand hygiene
2. Apply appropriate PPE
3. Identify the patient by asking and checking the armband (patient's name, DOB and hospital ID to match computer labels) and explain the procedure
 - This information must be compared to the requisition and specimen labels before specimen is drawn
 - If the patient is unable to participate or there is a discrepancy, this situation must be resolved before specimen is drawn
4. Ensure equipment is positioned within reach once procedure has begun
5. Position both self and patient for comfort and visibility making sure arm and/or hand are in good alignment
6. Place the needle on the vacutainer holder
7. Assess and select vein of choice as per previous criteria
8. Apply tourniquet as necessary
9. Palpate vein even when visible to ensure it is non-pulsatile (artery). This also gives you practice in detecting deeper unseen veins
10. Having checked for allergies to chlorhexidine, cleanse chosen site with chlorhexidine swab and allow to dry for 1 minute
11. Immobilize the vein and hold taut during the procedure. Never support the vein with your finger above the puncture site as it puts you at risk of a needlestick injury
12. Align needle with vein holding the bevel upward

13. Depending on the depth of the vein, pierce the skin at 15 to 45 degree angle. The deeper vein – the steeper the angle must be
 14. Puncture the skin and vessel quickly and smoothly. Obtain samples while following the order of draw. When collection is completed, release the tourniquet; apply light pressure to site with gauze or cotton ball.
 15. Activate Eclipse needle safety device – dispose in sharps container
 16. Initial and write time on the label, document the procedure
- TIP: Keep extra tubes in your pocket in case you lose the vacuum or get a “bad” tube.



FOR SINGLE USE ONLY

VENIPUNCTURE PROCEDURE – BD WINGED SET

Winged sets are an alternate method of blood taking from small, superficial, fragile, more difficult visible veins.

1. Perform hand hygiene
2. Apply appropriate PPE
3. Identify the patient by asking and checking the armband (patient's name, DOB and hospital ID to match computer labels) and explain the procedure
 - This information must be compared to the requisition and specimen labels before specimen is drawn
 - If the patient is unable to participate or there is a discrepancy, this situation must be resolved before specimen is drawn
4. Ensure equipment is positioned within reach once procedure has begun
5. Position both self and patient for comfort and visibility making sure arm and/or hand are in good alignment
6. Attach vacutainer holder to blood collection set
7. Assess and select vein of choice as per previous criteria
8. Apply tourniquet as necessary
9. Palpate vein even when visible to ensure against puncturing an artery. This also gives you practice in detecting deeper unseen veins
10. Having checked for allergies, cleanse chosen site with chlorhexidine swab and allow to dry 1 minute



11. Hold the collection set by squeezing the “wings” between your finger and thumb or hold the body of the device. Align needle with vein holding the bevel upward
12. Remove the protective sheath. Stabilize the chosen vein.
13. Enter directly over the vein at a 5-15 degree downward angle. Do not dig or fish as this can be painful and may increase the risk of complications
14. Observe for blood return, “flash”
15. Obtain required blood samples by using non-dominant hand to stabilize vacutainer and insert vacutubes. Follow the order of draw.
16. If blood does not flow freely, you may need to slightly alter the angle of the needle (it moves the bevel away from the vein wall)
17. Remove the tourniquet when collection is completed
18. Place gauze pad over insertion site and remove the needle.
19. Apply pressure to site, instruct the patient not to bend at the elbow until bleeding stopped.
20. Activate the sheath after blood draw and dispose in proper sharps container.
21. Label all blood tubes correctly
22. Document the procedure



ORDER OF BLOOD DRAW












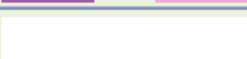
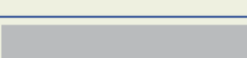
All tubes must be filled accordingly and mixed to allow accurate Lab testing

BD Vacutainer® Order of Draw for Multiple Tube Collections

Designed for Your Safety

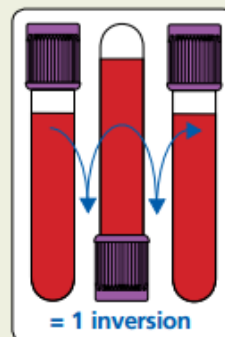
Reflects change in CLSI recommended Order of Draw (H3-A5, Vol 23, No 32, 8.10.2)

* When using a winged blood collection set for venipuncture and a coagulation (citrate) tube is the first specimen tube to be drawn, a discard tube should be drawn first. The discard tube must be used to fill the blood collection set tubing's "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. The discard tube should be a nonadditive or coagulation tube.

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 ₂ EDTA with Gel	8 to 10 times
	• Fluoride (glucose) Tube	8 to 10 times

Note: Always follow your facility's protocol for order of draw

Handle all biologic samples and blood collection "sharps" (lancets, needles, luer adapters and blood collection sets) according to the policies and procedures of your facility. Obtain appropriate medical attention in the event of any exposure to biologic samples (for example, through a puncture injury) since they may transmit viral hepatitis, HIV (AIDS), or other infectious diseases. Utilize any built-in used needle protector if the blood collection device provides one. BD does not recommend resheathing used needles, but the policies and procedures of your facility may differ and must always be followed. Discard any blood collection "sharps" in biohazard containers approved for their disposal.



BD Technical Services
1.800.631.0174
BD Customer Service
1.888.237.2762
www.bd.com/vacutainer

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DISCARD TUBES

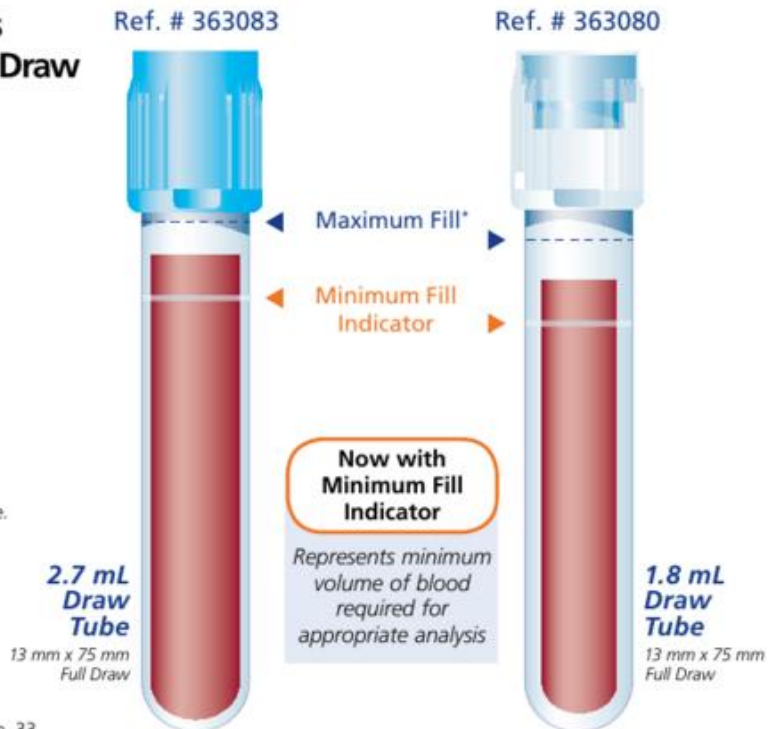


NOTE: If you are drawing samples using a winged blood collection set with vacutainer, BLUE top for **coagulation sample**, a discard tube **must be used** before attaching the sample tube. This tube will allow any air in the infusion set to be removed, preventing inaccurate lab results or cancellation of test by lab

BD Vacutainer® Plus Plastic Citrate Tube Draw Volume Guide

Sufficient volume achieved if blood drawn falls above minimum fill indicator. For blood transfer, **do not** fill above illustrated dashed maximum line.

Note: The quantity of blood drawn into evacuated tubes varies with altitude, ambient temperature, barometric pressure, tube age, venous pressure and filling technique.



*According to CLSI guideline, Dec. 2003, Doc. H1-A5, Vol. 23, No. 33.

BLOOD CULTURE COLLECTION

Materials required for each set of blood cultures

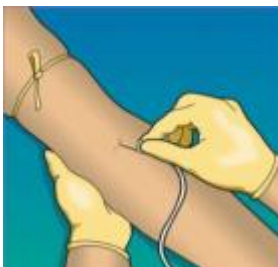
- Alcohol and Chlorhexidine swabs for cleaning of venipuncture site and alcohol swab for blood culture bottle tops
- Vacutainer butterfly collection set with adaptor (21g green wings, 23g blue wings)
- Aerobic and anaerobic blood culture vials.
- Gloves, gauze and tape

1. Prepare blood culture vials.



Remove flip-off caps, wipe tops of vials with an alcohol swab and allow to dry for 1 minute

2. Prepare the venipuncture site.



Perform hand hygiene and apply gloves, apply a tourniquet and palpate to identify vein. Clean the venipuncture site with alcohol then chlorhexidine swab and allow to dry 1 minute

3. Proceed with blood collection.



Perform venipuncture using the winged set technique.

- **Select aerobic bottle first.** Hold the bottle upright.
- Push and hold Vacutainer holder over top of vial to puncture the seal.
- Collect blood to desired fill level on vial. Monitor to ensure proper blood flow and fill level (10ml)
- Remove holder from vial and immediately push and hold onto second vial
- Collect blood to desired fill level on second vial (10ml)
- Remove holder from vial

NOTE: If more samples are required, additional tubes may be drawn at this time using the Vacutainer holder

4. Remove the needle and engage the safety mechanism over the needle. Discard the blood collection set into a sharps container. Apply gauze over the puncture site and secure it with tape.
5. Label all vials **at the bedside.**

DO NOT write on or place any labels over the vial barcode, as this is used by the lab to process the specimen.

Write on the bottle if: Blood Culture was drawn from arterial or central line, or if testing is being performed for fungal microorganisms.

A different venipuncture site should be used for each culture set collected.

SPECIMEN LABELING

- All patients must have an armband on their person before a blood sample is drawn
- The entire sample collection must take place at the bedside
- Attach barcode, with list of tests, to the tube
- Date and time required
- PowerChart user name required
- Both requisition and label must have SE number and patient name.

Special Labeling Blood Bank (PINK TUBE ONLY)

- You must initial/sign and date the tube label with the patient name/SE number:



- **YOU MUST HAND WRITE** the name of the patient, SE Number, the date, time and your signature at the bedside.
- Do not affix the PowerChart label on a blood bank tube!
- Send the signed PowerChart labels to the Blood Bank with the specimen.

1187 09 27	BB-14-0000120A	1187 09 27	BB-14-0000120A
D, SRM		D, SRM	
1964/07/15 49 Y	U-091 09-129-R	1964/07/15 49 Y	U-091 09
28MAR14 14:21			
SIGNATURE: _____		03-02-2010 Bid Bank Pink 5.0	
USERNAME: _____		-BTCLR, HC, BENCH, GRxGeIF, RBSCP	
DATE/TIME: _____		-XME	
BB-14-0000120 A	BB-14-0000120 A	BB-14-0000120 A	BB-14-0000120 A
1187 09 27	1187 09 27	1187 09 27	1187 09 27
D, SRM	D, SRM	D, SRM	D, SRM

DOCUMENTATION

Documentation of all patients' insertions, infusion therapy and vascular access, care and maintenance is part of the permanent legal medical record

Documentation Records may vary in specific departments.

I.V. INSERTION / DISCONTINUATION					
I.V. INSERTED @ HRS.		SOLUTION			
SITE		JELCO NO.		BY	
I.V. DISCONTINUED @ HRS.					
REASON					
I.V. INSERTED @ HRS.		SOLUTION			
SITE		JELCO NO.		BY	
I.V. DISCONTINUED @ HRS.					
REASON					
I.V. INSERTED @ HRS.		SOLUTION			
SITE		JELCO NO.		BY	
I.V. DISCONTINUED @ HRS.					
REASON					
I.V. INSERTED @ HRS.		SOLUTION			
SITE		JELCO NO.		BY	
I.V. DISCONTINUED @ HRS.					
REASON					
I.V. INSERTED @ HRS.		SOLUTION			
SITE		JELCO NO.		BY	
I.V. DISCONTINUED @ HRS.					
REASON					
I.V. INSERTED @ HRS.		SOLUTION			
SITE		JELCO NO.		BY	
I.V. DISCONTINUED @ HRS.					
REASON					
SITE CHECK					
SHIFT	TIME	SITE	REDNESS	SWELLING	SIGNATURE
0700-1900					
1900-0700					

HEMOLYSIS

Factors that increase the risk of hemolysis include:

- Use of a needle of too small a gauge (23 or under), can damage blood cells
- Use of a needle too large a gauge for the vein (will tear vein wall and cause hematoma)
- Drawing blood specimens from an intravenous or central line
- Under filling a tube so that the ratio of anticoagulant to blood is greater than 1:9
- Mixing a tube too vigorously
- Failing to let alcohol or disinfectant dry
- Using inappropriate gauge needle for size of vein

Please proceed to the LMS to complete the Phlebotomy Quiz. Once the Quiz is successfully completed, initiate 3 successful venipunctures with a CRN, Unit Champion, or Clinical Educator. Document your attempts using Skill Assessment Form.

POLICIES AND PROCEDURES

For more information please refer to the following policies and procedures found on STEGHnet:

- Patient Identification
- Obtaining Patient Consent
- Collection of Blood Bank Specimens
- Blood Collection – Venipuncture

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Venipuncture. *Self Directed Learning Package, London Health Sciences Centre*.
2017.

Venipuncture Skills Assessment

Self directed learning package and LMS Quiz must be completed prior to hands on experience

Learner: _____ 1st Observed by: _____ Date: _____
 2nd Observed by: _____ Date: _____
 3rd Observed by: _____ Date: _____

Observation	1 st	2 nd	3 rd
Hand hygiene and application of PPE if required			
Select appropriate blood collection tubes and device for tests ordered			
Identify patient by using 2 patient identifiers (name, DOB, Hospital ID)			
Provide patient education			
Position patient and apply tourniquet correctly			
Complete the vein assessment and select the site			
Prepare/cleanse venipuncture site			
Perform venipuncture			
Fill vacutubes using the correct order of draw			
Mix vacutubes properly			
Remove venipuncture device and activate the safety			
Apply pressure to venipuncture site until bleeding has stopped			
Dispose needle device properly and carefully			
At bedside: label vacutubes matching labels to requisitions			
Document accordingly			
Send samples to the Lab			

	Pass	Fail	Comments
1 st venipuncture			
2 nd venipuncture			
3 rd venipuncture			