LEARNING MODULE

VENIPUNCTURE for BLOOD SPECIMEN COLLECTION

CC 85-079

Post-Entry Level Competency
For
Healthcare Professionals Performing Venipuncture

Developed by: Professional Practice
Department of Pathology and Laboratory Medicine

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LEARNING OBJECTIVES & METHOD

At the completion of this learning module, the health care provider performing venipuncture (Phlebotomist) will be able to:

1. Identify the purposes for which blood specimens are collected by venipuncture.
2. Explain the process for selecting a vein and possible contraindications to venipuncture site selection.
3. Describe the procedure for blood specimen collection including blood culture and blood transfusion specimen collection.
4. Discuss the equipment required for collecting blood specimens.
5. Identify possible complications of venipuncture and factors that may contribute to preanalytical error.
6. Discuss the significance of the Blood Collection Order of Draw and the sequence for blood collection.
7. Describe the requirements for positive patient identification and labelling of blood specimens.

To be competent, the Phlebotomist will:

1. Review the Policy and Procedure Venipuncture for Blood Specimen Collection.
2. Review the Learning Module for Venipuncture for Blood Specimen Collection.
3. Successfully complete the Learning Module Test.
4. Practice the procedures and successfully demonstrate each skill to a clinical preceptor.
5. Maintain a record of assessment of competency and, working with management, address all identified deficiencies.

THEORY

Venipuncture is a procedure in which a vein is punctured by inserting a hollow-bore needle through the skin. It is done to obtain a blood specimen for the purposes of diagnostic evaluation, analysis of patient responses to treatment, for type and antibody screen or cross-matching, and blood culture to assist in the confirmation and identification of causative organisms in bacteremia and septicemia.

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Blood tests are one of the most commonly used diagnostic aids in the care and management of patients and can yield valuable information about nutritional, hematologic, metabolic, immune and biochemical status.

**Initial Factors for Consideration**

When a blood test is ordered by an authorized prescriber it is important to identify if any special condition or patient preparation is required to ensure the quality of the test results.

Examples of this include requiring the patient to fast for a period of time prior to obtaining the blood specimen, coordinating the collection of the blood specimen with the administration of a medication, or identifying that a specimen will require specific temperature controls once collected. Reference to the Capital Health Laboratory Test Catalogue will provide this information and this should be consulted prior to the specimen collection process.

Since veins are the major sources of blood for laboratory testing, as well as routes for intravenous fluids and blood replacement, maintaining their integrity is essential. In the case of patients with limited available venipuncture sites the phlebotomist must be skilled in venipuncture to avoid unnecessary injury to veins and surrounding structures.

A final factor for consideration by the prescriber is to assess whether the blood test may be processed from a specimen drawn previously that same day. The laboratory may be contacted to determine if an additional order may be placed on an existing specimen. This step helps eliminate the need to perform unnecessary venipuncture reducing the volume of blood taken from an individual patient, and preventing waste of the resources associated with obtaining and processing additional specimens.

**Hand Hygiene**

Hand hygiene is one of the most effective measures to reduce the occurrence of hospital associated infections (HAI). All phlebotomists are responsible to complete the Infection Prevention and Control hand hygiene training. The 4 Moments of Hand Hygiene must be observed during the collection process.

**Patient Identification**

Confirming the patient's identity is the most crucial step in collection of laboratory specimens. Many patients have similar names and the same date of birth. Unique identification is required to ensure results are reported on the correct patient. Collection should only occur after the patient is correctly identified and when all steps of the collection and labeling process will occur in the presence of the patient.

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The patient’s identity must be confirmed by comparing two (2) identifiers from the patient with the order:

- Inpatient or outpatient with a patient identification band: Check the patient’s identification band for the full name and Capital Health Medical Record number. Verify the information against the appropriate documentation (e.g., health record, requisitions, labels etc.)

- Outpatients without an identification band: Initial patient identification is verified at point of registration. Prior to collection the phlebotomist must confirm the patient’s identification by asking the patient to state their full name and date of birth and verify against the registration label and requisition.

- **When collecting specimens for blood transfusion the phlebotomist and a witness must confirm identification of the patient. Both must sign full signatures on the requisition and initial the specimen label in the presence of the patient. In an outpatient setting the patient may act as their own witness.**

Refer to Capital Health’s policy *CH 70-040 Patient Identification and Same Name Alert and CH 30-041 Unidentified Patient Policy* for additional information related to patient identification policy and procedure.

**The Final Check**

Studies have shown introducing a final patient identification step significantly increases the odds that a patient identification error will be caught at the bedside. This is known as **The Final Check**.

To provide safe patient care a final identification procedure must be performed on all patients wearing a patient identification armband. **The Final Check** requires the phlebotomist to read aloud the last three numbers of the medical record number on each specimen label, on the laboratory requisition (if applicable) and on the patient’s identification armband verifying that the numbers match.

By reading these numbers aloud the phlebotomist will hear when the numbers do not match and will be alerted that a labeling error has occurred. Hospitals that have introduced **The Final Check** have demonstrated a 90% reduction in mislabeled specimens.

**Venipuncture Site Selection**

Consideration for appropriate venipuncture sites must include a review of the patient’s health history and patient admission assessment.

Venipuncture is **not to be performed**:  
- on an extremity with an active shunt or fistula, or central vascular access device*  
- on the same side as axillary lymph node surgery*
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- from an area where a hematoma is present
- from an artery
- above an active intravenous (IV) site.

*To clearly identify these restrictions a Practice Alert Poster is placed above the patient bed to alert all phlebotomists.*

Venipuncture sites **to be avoided** include:
- lower extremities of the diabetic patient
- extremity with edema, hematoma or injury to skin integrity such as skin tears or burns
- extremity with an intravenous cannula

A completed *Physician’s Authority to Draw Blood Under Special Circumstances (CD2154MR)* form is required for laboratory staff to draw blood from:
- the arm of an inactive fistula,
- same side as a mastectomy,
- or the foot

Venipuncture from the foot of a diabetic patient should be avoided if at all possible. If the foot must be used and there is concern about the status of the circulation in the foot, a physician should be consulted. Laboratory staff are not permitted to collect from the foot of a diabetic.

**Antecubital Site**

Veins under the anterior surface of the arm in the antecubital area are most commonly used to obtain blood specimens. This site contains several large veins that are often close to the surface of the skin and can be easily accessed and supported during the procedure.

The most common veins in the antecubital area for venipuncture are the:

- Median cubital
- Cephalic
- Basilic

*Figure A: Source – Brown, Darwin, Essential Clinical Procedures, Chapter 06, 48-53
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Of the three acceptable veins in this area, the median cubital is the vein of choice for the following reasons:

- typically closest to the surface of the skin
- most stationary of the three and makes successful puncture more probable
- poses the least risk of injury to underlying structures
- least discomfort to the patient when punctured.

When presented with two veins that appear equally accessible, select the median cubital first, then the cephalic vein.

Consider the basilic vein only when punctures to either the median cubital or cephalic veins on either arm are less likely to be successful. Obtaining a blood specimen from the basilic vein brings the greatest risk to the patient because of the underlying structures. Branches of the median cubital antebrachial cutaneous nerve can lie against this vein. If pierced, these nerves send shooting pain down the length of the limb to the fingers and up to the shoulder and chest. **If the injury is severe enough the nerve damage can be permanent.**

In addition to nerves, the basilic vein’s close proximity to the brachial artery may subject the patient to the risk of an arterial nick with consequences ranging from bruising to severe haemorrhage. If left undetected the bleeding may result in compression of the nerve from the interstitial fluid. Whenever considering venipuncture to the inside aspect of the antecubital area, the phlebotomist should **palpate for the brachial artery to avoid risk of puncture.**

**Venipuncture and IV Therapy**

Selecting a vein for blood specimen collection below an active IV is to be avoided and should only be performed as a last resort. In the absence of other acceptable sites venipuncture below an active IV must be performed following strict adherence to these steps to minimize specimen contamination:

1) Ensure the IV infusion is shut off for 2 minutes prior to the puncture,
2) apply the tourniquet below the IV site,
3) and document that the specimen was obtained below an active IV site and the type of the IV infusion on the laboratory requisition/test order.

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Blood sampling from **above an active IV should not be performed**, even when the flow of IV fluids is momentarily interrupted. Fluids infusing in the hand, wrist or forearm can contaminate any blood specimen taken from the antecubital area of that arm.

Blood sampling **above an inactive IV site** (saline lock without IV attached) is **permissible**. The tourniquet should be placed 8cm to 10cm above the antecubital fossa. As saline locks may be used for intermittent medication administration which could interfere with the integrity of the sample, this site should be avoided if possible. If this is the optimal collection site then **ensure that at least three minutes has passed since the last administration of medication**.

Obtaining a blood specimen from an existing peripheral IV intracath is also contraindicated even when not receiving IV fluids (e.g., saline lock). Doing so may increase the risk of intracath occlusion and failure, along with increasing the incidence of specimen hemolysis and test result error.

**Alternative Sites for Venipuncture: Hands and Feet**

If the antecubital site is not appropriate, there are a limited number of secondary sites in the hands and feet that may be acceptable for venipuncture. The back or posterior side of the hand often offers a network of veins that can be quite prominent and acceptable.
Veins in the hand are more delicate and smaller in diameter (especially in the geriatric population), making the equipment chosen to obtain the specimen more important. The vacuum within blood collection tubes is often too great and will collapse the veins of the hand if a vacuum assisted draw is attempted, therefore a butterfly/winged needle coupled with a syringe may be selected. Note: Competency performing syringe draws must be demonstrated prior to attempting this technique.

The vein on the lateral aspect (thumb-side) of the wrist is also an acceptable site and can be quite prominent. If this vein is selected it will need to be firmly anchored by pulling down on the skin below the puncture site.

Veins of the anterior aspect (palm-side) of the wrist and forearm should never be used for venipuncture. The network of tendons and nerves that serve the hand lie too close to the surface and puncture in this area would put the patient at risk of injury.

Foot and ankle veins may be acceptable sites for venipuncture on some patients but only if all other acceptable sites have been eliminated. Attention to antiseptic preparation of the skin is even more critical for this site as it can bring increased risk for contamination. Laboratory phlebotomists require a completed Physician’s Authority to Draw Blood under Special Circumstances (CD2154MR) form in this instance.

Patients with a history of, or who are at risk for the development of, thrombosis or tissue necrosis, e.g., those with diabetes, should be cautiously considered for venipuncture in the foot and ankle and require careful assessment of the peripheral veins. Venipuncture from the foot of a diabetic patient should be avoided if at all possible. If the foot must be used and there is concern about the status of the circulation in the foot, a physician should be consulted. Laboratory staff are not permitted to draw blood from the foot of a diabetic patient.

For a patient with limited venipuncture sites, who has a history that contradicts the use of the lower extremities and who will require frequent blood sampling to evaluate treatment, placement of a central vascular access device/line for the purposes of blood sampling may be considered.

Site Preparation

Once the venipuncture site is selected it is important to prepare the site using proper antiseptic technique. For routine venipuncture specimens this is done by cleansing the intended site in a circular motion (middle to outward) to a 5cm area using a 70% alcohol prep swab. Mild pressure should be used during the cleansing to ensure adequate

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antibacterial preparation. The alcohol is then permitted to dry for at least 30 seconds. This allows for full antibacterial affect and prevents pre analytical error associated with either the cleansing solution or other surface contaminants.

Povidone iodine 10% should be used when:
- a patient is sensitive to topical alcohol,
- or when a serum alcohol level is the test being obtained.

The appropriate alternative for an allergy to 70% alcohol will be determined by a descending progression through antimicrobial skin solutions to find the strongest antimicrobial solution that the patient can tolerate. Infection Control may be consulted to assist with this determination.

In the case of blood culture specimen collection, attention to equipment and venipuncture asepsis is critical in the prevention of inaccurate results. 2% Chlorohexidine with 70% alcohol is used in swabstick form (Swabstik) cleansing as per the instructions below:

1. Using first side of a Swabstik, apply friction and cleanse in a vertical plane (top to bottom) extending 5cm from the intended venipuncture site.
2. Flip the Swabstik over and apply friction to the skin and cleanse in a horizontal plane (side to side), extending 5cm from the intended venipuncture site. Discard.
3. Using a second Swabstik cleanse the skin using friction beginning at the intended venipuncture site and moving in a circular pattern extending again to 5cm.
4. Again flip the Swabstik over and apply friction to the skin and repeat cleansing in a pattern extending again 5cm from the intended venipuncture site. Discard.

Allow antiseptic to dry completely (a minimum of 30seconds) prior to venipuncture.

**Equipment and Supplies for Venipuncture**

In preparing for venipuncture it is important to review the requisition or specimen test labels to determine the required materials and supplies. Ensure all required equipment is within easy reach during the procedure. The most common assembly for blood collection consists of a double pointed needle, plastic tube holder or adaptor, and a series of vacuum tubes with rubber stoppers of various colours to indicate the type of additive present.
General supplies include the following:

- 10% povidone iodine (for serum alcohol collection)
- 70% alcohol swabs
- Adhesive bandage or tape
- Blood tubes, as required
- Discard tubes (sodium citrate)
- Gauze
- Gloves (non-latex disposable)
- Needle as determined by venipuncture site:
  - Vacutainer® needles- 21g, 22g
  - butterfly, winged needle 21g, 23g
- Sharps container
- Specimen bags (plastic)
- Specimen labels
- Tourniquet (non-latex, disposable)
- Transfer device used with butterfly/winged needle and syringe
- Vacutainer® holder (single use)

In addition to general supplies the following is a list of key supplies required for Blood Culture collection:

- 2% Chlorohexidine with 70% alcohol “Swabstiks”
- Blood Culture bottle (aerobic/anaerobic) with discard tube (sodium citrate)
- Gloves (sterile)
- Needle: butterfly, winged needle 21g, 23g
- Dressing tray (optional)

A well-stocked blood collection tray or collection cart should be maintained with all of the necessary supplies and equipment. Inspect all supplies for possible defects and applicable expiration dates.

Placing the blood collection tray anywhere within the inpatient’s bed space creates a risk for transmission of pathogenic micro-organisms. This space includes any dedicated patient specific equipment such as the patient’s bed, over-bed and bedside table, chair, etc. Always place the tray on top of a clean single-use barrier that may be discarded at the completion of the collection (e.g., an incontinence pad or paper towel). The blood collection tray should never be placed on a floor. Collection carts with wheels are optimal.
The necessary equipment to perform the procedure along with the appropriate laboratory requisition and labels to complete the process are all that should be brought to the bedside.

Collection carts and trays must be left outside rooms which have been identified under infection control “contact precautions.”

**Gloves**

As per routine precautions, latex-free gloves are to be worn for all venipuncture procedures. Non-sterile gloves may be used for routine venipuncture sampling but sterile gloves are to be worn when obtaining blood culture specimens. Although gloves offer protection, they do not provide complete protection against hand contamination; therefore, hand hygiene ([4 Moments of Hand Hygiene](#)) must always be performed before and after glove removal.

**Needles**

The venipuncture site selected for the blood specimen will determine the needle and accompanying equipment to be used. Needles for venipuncture all have a safety mechanism that must be prepared prior to collection, then activated immediately after collection, prior to sharps disposal. They are either a Vacutainer® needle or a winged/butterfly needle with/without a Vacutainer® adaptor.

Needles must always be sterile and are manufactured with a paper seal holding the cap in place or in a sealed peel-apart package. If this seal has been broken in any way, discard the needle and obtain a new one. The tip of a venipuncture needle is bevelled or slanted at the end. It must be inspected for any burrs or defects at the tip that could cause undue trauma at the site or difficulty in removal of the needle. If there is a visual defect the needle must be discarded. Vacutainer® needles and winged/butterfly blood collection sets come in varying lengths and gauges and are individually colour coded according to their respective sizes. The Vacutainer® needle has a sharp point at both ends with one end being shorter than the other. The long end covered by a cap is used for insertion into the vein and the shorter end covered by a rubber sheath is secured into the tube holder.

The gauge number indicates the diameter or bore of the needle lumen. A large gauge number indicates a small bore needle while a small number indicates a large bore needle. The sizes can range from 19g-23g, with 21g-23g being the most commonly used for an adult.
Needle length can also vary with the 1¼-inch needle being most commonly used for routine venipuncture. The 21g needle is ideal for most punctures because it provides a good blood flow with little or no discomfort to the patient upon insertion when the proper technique is used. The 22g needle is an excellent choice when an unsuccessful venipuncture is anticipated such as

- Fragile veins
- Elderly patients

A 23g in a winged/butterfly needle is also an option as the small bore of the needle is less likely to collapse or traumatize small delicate veins.

Vacuum blood collection tubes are placed into the holder and pierced by the sheath covered needle, allowing several tubes to be collected without leakage of blood as the tubes are changed (a multi-draw needle).

The winged/butterfly needle blood collection sets have wings or tabs on either side of the needle allowing the collector to draw the specimen at a lower angle with greater control of insertion. Types of winged/butterfly blood collection sets are those with:

- a syringe adaptor on the end to allow for careful control of the vacuum being applied on the syringe plunger during the draw as in the case of small fragile veins. This requires use of a Vacutainer® transfer device to transfer the specimen from the syringe to the vacuum blood collection tubes.
- a Vacutainer® needle adaptor and tube holder allowing for multiple specimens to be drawn directly into the appropriate blood collection tubes.

Although winged/butterfly needle blood collection sets offer benefits to obtaining a specimen from veins outside of the antecubital area and can be coupled with a syringe to control the amount of vacuum being applied phlebotomists must be aware of the following drawbacks and not consider them as a routine device for blood collection:

- The tip of a winged/butterfly needle is much more blunt resulting in a more painful puncture for the patient.
- These needles are too short to access deep veins.
- These collection sets are considerably more expensive.
- **Very importantly**, these sets are associated with a high risk of accidental needle stick injuries. The extension tubing attached to the needle causes it to become
more cumbersome to control and place safely into the sharps disposal container, making activation of the safety mechanism crucial prior to sharps disposal.

Needles must always be discarded in a sharps container immediately following use.

**Blood Collection Tubes**

Venous blood collection tubes are sterile and may be plastic or glass. Each comes with a colour-coded rubber stopper to identify the additive compound inside, which ensures that the correct tube is used for a specified test. Different blood tests require different types of blood specimens and collection of the blood into the wrong type of tube will result in the venipuncture having to be repeated.

Blood collection tubes are also manufactured to withdraw a pre-determined volume of blood by vacuum to ensure the correct ratio of specimen to additive is maintained. It is important to completely fill each tube so that this ratio is correct. Inadequately filled tubes may result in the following:

- inaccurate results
- rejection of specimens
- recollection of specimens

When obtaining a specimen, if the blood collection tube does not transfer the specimen into the tube by vacuum, consider the tube faulty and obtain a new one. **Never** inject blood specimens into a tube as this may cause the tube to break or the stopper to pop off exposing the health care provider to risk. The rubber stopper is never to be removed.

Because blood collection tubes contain a chemical additive, it is also important that the specimen be properly mixed with the additive to ensure the specimen can be processed by the lab. Holding the tube upright, gently invert the tube 180° and back. Repeat the movement as prescribed for each tube type according to instructions on the **Blood Collection Order of Draw**

*Figure C: ©BD Diagnostics*
Blood Culture Bottles

Blood culture bottles contain a solution that provides a rich, nutrient growth medium in which all microorganisms known to cause sepsis can multiply to detectable levels. The majority of infections result from aerobic bacteria and anaerobic specimens therefore are not routinely ordered.

Blood specimens are transferred into the blood culture bottles with the assistance of a vacuum similar to the blood collection tubes; however, blood culture bottles will not stop filling at a preset volume. This becomes significant when choosing a blood collection system that allows the drawing of the specimen directly from the patient into the culture bottle. In this case the outside of the bottle must be marked before starting to ensure the appropriate fill volume. This must then be monitored during the draw, to ensure that the culture medium in the bottle remains upright.

If the liquid blood culture medium were to come into contact with the sampling needle inside the rubber top of the bottle, there is a risk of it inadvertently being drawn up into the needle and therefore into the patient.
To ensure the quality of the specimen obtained and decrease the risk of false test results, always wear sterile gloves when collecting blood culture specimens. The ratio of specimen to culture medium for both aerobic and anaerobic cultures is a **minimum of 5 mls and maximum of 10 mls**, in each bottle.

When phlebotomy is performed, a small plug of skin is present in the first milliliter of the draw. This skin plug has the potential to contaminate the blood culture. **When peripheral blood cultures are collected, one milliliter of blood must be collected in a sodium citrate (blue top) tube. This tube is then discarded.**

Specimens for anaerobic culture must not have any air enter the blood culture bottle during the transfer of the specimen, as minute amounts can compromise the anaerobic environment. As a discard tube is always collected prior to collection of the blood culture bottle this ensures the integrity of the sample if the anaerobic bottle is collected first.

If drawing both aerobic and anaerobic cultures and the specimen obtained is less than the minimum recommended for both (i.e. less than 10ml total), place the specimen into the aerobic bottle rather than dividing inadequate amounts between two vials.

**Tube Holder**

The tube holder is a plastic sleeve into which the double-ended Vacutainer® needle or winged/butterfly with Vacutainer® adaptor can be attached. Studies have shown that tube holders become contaminated with trace amounts of blood even after one use therefore **single use only** is recommended.

**Tourniquet**

The preferred tourniquet is a disposable flat latex-free strap. Each inpatient must have a tourniquet in a labelled plastic bag at their bedside. This is dedicated to be used on that patient during their hospital stay unless deemed inappropriate for a particular patient population (e.g. Mental Health). Always confirm the identification on the tourniquet bag with the patient armband. The tourniquet is to be discarded at time of discharge. In outpatient settings, the tourniquet may be used on multiple patients, but should be discarded at end of day. Any tourniquet must be discarded at the point it becomes visibly soiled.

The tourniquet is placed on the patient flat and applied at a minimum of 8-10 cm above the intended venipuncture site and with only enough tension to restrict venous blood.

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flow, not arterial. A blood pressure cuff may also be used to distend the veins during venipuncture by inflating it to a level of 40 mm Hg.

Figure E: Source: ©Pathology and Laboratory Medicine, Capital District Health Authority, 2013

If the skin appears blanched above and below the tourniquet it is too tight. A loop of the tourniquet should be tucked between the tourniquet and the arm as in Figure E to allow for an easy one-handed release.

Tourniquet time should not exceed 1 minute as this may result in hemoconcentration and infiltration of blood into tissue, resulting in erroneous test results.
Blood Collection Order of Draw

The Blood Collection Order of Draw provides direction on the order in which blood specimens are collected into blood tubes. The prescribed order avoids cross-contamination of anticoagulants and bacterial contamination of blood cultures. Minute amounts of blood or chemical additives can be transferred from a Vacutainer® needle or top of the tube, leading to inaccurate test results. The Blood Collection Order of Draw must be followed for both glass and plastic venous blood collection tubes and is the same for vacuum-assisted draws as it is for specimens obtained first into a syringe.

The Blood Collection Order of Draw also provides direction on the mixing requirements for each tube listing the number of inversions required. It is important to avoid over-mixing and under-mixing. Gentle inversion is required to avoid haemolysis.

If a blood tube colour requested is not listed on the Blood Collection Order of Draw, consult Blood Collection Services or the laboratory prior to collection to avoid any risk of pre-analytical error.

Pre-Analytical Errors

Pre-analytical errors result from factors that adversely impact the quality of specimen collection, handling, and transportation. Up to 70% of laboratory errors are pre-analytical.

Pre-analytical errors may result in:
- misdiagnoses
- over or under-medication
- or otherwise mismanagement of the patient and resources.

The following chart summarizes the most frequent types of errors that occur before, during and after venipuncture.

<table>
<thead>
<tr>
<th>Before Collection</th>
<th>During Collection</th>
<th>After Collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inadequate/prolonged fast</td>
<td>Prolonged tourniquet time</td>
<td>Failure to invert tubes gently and the appropriate times</td>
</tr>
<tr>
<td>Not coordinated with other treatments /medication</td>
<td>Incorrect order of draw</td>
<td>Failure to label at the bedside</td>
</tr>
<tr>
<td>Poor aseptic site preparation</td>
<td>Faulty collection technique resulting in clots or haemolysis</td>
<td>Mislabelling</td>
</tr>
<tr>
<td>Failure to perform positive patient identification</td>
<td>Under/over filling tubes</td>
<td>Improper placement of labels</td>
</tr>
<tr>
<td></td>
<td>Wrong tube</td>
<td>Failure to provide collection information</td>
</tr>
<tr>
<td></td>
<td>Improper time of collection</td>
<td>Transportation delay</td>
</tr>
</tbody>
</table>

Adherence to Capital Health Venipuncture for Blood Specimen Collection Policy and Procedure will greatly reduce pre-analytical errors. The Venipuncture Job Aid is available as an additional resource.

Refer to the Department of Pathology and Laboratory Medicine for established guidelines associated with the acceptance or rejection of laboratory specimens.
REFERENCES:


Capital Health, Department of Pathology and Laboratory Medicine Laboratory Test Catalogue http://www.cdha.nshealth.ca/pathology-laboratory-medicine

Capital Health, Venipuncture for Blood Specimen Collection Policy and Procedure, CC 85-079 May 2013

Capital Health, Contact Precautions, CDHA IC 04-008, Oct 2012


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SELF- TEST

1. If at all possible, one should avoid venipuncture in:
   a. the lower extremities
   b. an extremity with impaired circulation
   c. an extremity where infection is present
   d. all of the above

2. Which of the following veins are **not** commonly used in venipuncture?
   a. basilic
   b. cephalic
   c. saphenous
   d. median

3. A well-distended vein should be:
   a. spongy and elastic
   b. hard and swollen
   c. warm to touch
   d. moveable when touched

4. Which measure will prevent hematoma formation following venipuncture?
   a. have patient flex arm for 1-2 minutes
   b. immediately apply bandaid
   c. hold gauze firmly in place for 1-2 minutes
   d. have patient open and close fist several times.

5. At what angle should the venipuncture needle be inserted?
   a. 15°- 30°
   b. 80°-90°
   c. 35°-45°
   d. none of the above

6. When performing venipuncture for the purpose of blood sampling for more than one specimen, in which order should the specimens be collected?
   a. most important test first
   b. order on the requisition
   c. following the prescribed order of draw
   d. smallest tube first
7. When performing venipuncture, do not keep tourniquet on longer than:
   a. 30 seconds
   b. 1 minute
   c. 2 minutes
   d. 30 seconds - 2 minutes

8. Which site must be avoided on mastectomy patients and patients with a central vascular access device when performing venipuncture?
   a. the unaffected arm.
   b. the affected arm.
   c. only the antecubital fossa of the affected arm.
   d. none of the above

9. Selecting a vein for blood specimen collection below an active IV should only be performed:
   a. as a last resort
   b. by following a very specific procedure
   c. in the absence of other acceptable sites
   d. all of the above

10. Initial factors for consideration when blood tests are ordered include all of the following except:
    a. a review of the patients history
    b. check whether the ordered test may be processed from a previously obtained blood specimen which may still in the lab
    c. check for special preparation of the patient in advance of the test being obtained,
    d. removing the tourniquet within 2 minutes

11. The following is not considered a unique identifiers when identifying a patient:
    a. date of Birth
    b. patient name
    c. Medical Record Number
    d. Health Card Number

12. Phlebotomists can cause pre analytical error in blood specimens by which of the following actions:
    a. mixing specimens thoroughly by shaking vigorously
    b. forcing blood into a test tube from a syringe
    c. failing to label specimens at the bedside
    d. all of the above
13. The Blood Collection Order of Draw:
   a. provides direction on when you can collect blood specimens.
   b. provides direction on the mixing requirements.
   c. provides the order in which the blood tubes are collected.
   d. B&C

14. How many attempts at venipuncture on an individual patient is appropriate when you experience difficulty?
   a. one
   b. three
   c. as many as required
   d. two
**ANSWER GUIDE**

1. (d)  
2. (c)  
3. (a)  
4. (c)  
5. (a)  
6. (c)  
7. (b)  
8. (b)  
9. (d)  
10. (d)  
11. (a)  
12. (d)  
13. (d)  
14. (d)