7. General Considerations in Blood Collection

A. Performing the Phlebotomy

1. Phlebotomist responsibilities
   a. Clean, neat, professional appearance.
   b. Have all equipment and supplies ready, restock and check supplies for expiration dates prior to leaving the lab.
   c. If you do not know what type of specimen to draw refer to SOP or ASK FOR HELP.
   d. Treat all specimens as potentially hazardous.
   e. Wash or sanitize hands before and after, put gloves on in presence of the patient.
   f. If lab coat gets blood on it, disinfect or, if disposable, dispose in appropriate waste container before going on to obtain clean lab coat.
   g. Follow all infection control policies.

2. Approaching the patient
   a. Approach in courteous, professional manner to help put the patient at ease.
   b. Politely knock on the door prior to entering the room.
   c. Warn the patient before turning on the lights.
   d. Introduce yourself and explain your mission. Come up with a greeting other than “how are you?”
   e. Refer patient to their physician for answers to specific questions about the lab tests.
   f. Explain the procedure while readying your supplies.
   g. Ask patient if they have had blood drawn before to get fainting history or to aid in determining arm for selection. Ask when patient has eaten last if fasting specimen is needed.
   h. Do not set phlebotomy tray on patient’s bed or eating tray.

3. Positioning the patient and the venipuncture site.
   a. Very important for successful collection.
   b. Patient should not stand or sit on a high stool.
c. Reclining position is preferred.

d. Blood drawing chair is used for drawing outpatient in the laboratory.
   1) Designed for maximum safety and comfort of the patient and easy accessibility to either arm of the patient.
   2) Should have an arm rest.
   3) Should lock into place so patient cannot fall from the chair if fainting occurs.
   4) Arm rest should adjust up and down to position patient’s arm.

e. Use a pillow to support arm.

f. Have all supplies within reach.

g. Raise bed rails prior to leaving, regardless of position found in.

4. Equipment Selection and Preparation

a. Specimen Collection Trays
   1) Usually plastic and sterilizable.
   2) Used to take on phlebotomy rounds.
   3) Should include all necessary collection equipment and will differ from site to site depending on patient population.
   4) Always restock your tray during the day as needed and at the end of your shift.

b. Selection of equipment will be determined after evaluation of the patient:
   1) Venipuncture: Vacuum system, syringe needle, or syringe butterfly?
   2) Skin puncture equipment for: heel or finger?

B. Patient Identification Process

1. General
   a. Most critical step in the blood collection process.
   b. The use of two patient identifiers is required and improves the reliability of the patient identification process.
   c. Examples of acceptable patient identifiers include: Name, identification number, date of birth, address.
d. Match information provided by patient with requisition, must match exactly.

2. Inpatient Identification
   a. Hospitalized patients must have ID bracelet with full name and designated hospital number.
   b. Two step identification process.
      1) Ask patient to state their name, match to requisition.
      2) Compare information on requisition with information on bracelet, especially the identification number.
   c. DO NOT rely on bracelets taped to the wall, bed or night stand; it must be physically attached to the patient. If not on wrist, check ankle.
   d. If the patient does not have a bracelet have nurse ID patient and immediately band or sign requisition.
   e. The patient’s room number should never be used as a patient identifier; room numbers are not person-specific identifiers, since patients can be moved from room to room.

3. Emergency room
   a. Be very careful, patient’s may be unconscious and unidentified.
   b. Patient may be assigned an ID number only or temporary name (Jane Doe).

4. Ambulatory (outpatient) Identification
   a. Outpatients must be asked how to spell their name and state additional identification information (date of birth, address) to aid in proper ID.
   b. If patient is a child ask the parent.

C. Test Requisitions
   1. Laboratory tests must be ordered by a physician.
   2. Whether computer generated or manual should have the following:
      a. Patient’s name and identification number
      b. Types of tests to be performed.
      c. Date to be drawn.
      d. Test status (fasting, specific time, priority).
      e. Physician’s name
3. Double check requisition to make sure all appropriate tubes are drawn.

D. General Procedure in Blood collection

1. It is critical to establish a routine for blood collection using the appropriate methods which will decrease blood collection errors and increase self confidence.

2. Sequential steps to follow in the blood collection process are as follows:
   a. Properly **approach** the patient, greet, **identify yourself**, wash or sanitize your hands.
   b. **Identify the patient** using the correct protocol for the situation.
   c. Assess the patients physical and emotional disposition, this will aid in the selection of equipment and bedside manner to use.
   d. Select a **suitable puncture site** to specimen requirements.
   e. **Select and prepare** appropriate equipment and supplies in a **confident** manner.
   f. **Prepare the puncture site** in an appropriate manner for tests requested.
   g. **Perform venipuncture/capillary puncture** using aseptic technique and collect samples in appropriate tubes.
   h. Upon completion of venipuncture collection immediately activate the needle safety device using ONE hand according to manufacturer’s instructions.
   i. **Dispose** of used and contaminated equipment into appropriate containers. Do NOT attempt to shove a vacuum collection device into a full sharps container. Several injuries have occurred as a result of this as the student’s finger slips into the needle hub and is stuck by the back end of the needle.
   j. Recognize and assess complications and specimen considerations associated with phlebotomy.
   k. Check the puncture site before you leave the patient; do not leave until bleeding has stopped.
   l. Apply adhesive bandage only if necessary.
   m. Assess criteria for sample recollection or rejection.

3. The sequence of collection of evacuated tubes in a multi-draw should be in this order:
   a. Sodium polyanetholesulfonate (SPS) – yellow top or blood culture bottles
   b. Sodium citrate – Light Blue coagulation tube, Black
   c. No anti-coagulant or gel – Red, Royal Blue with red label
   d. No anti-coagulant *with* gel – serum separator tube (SST) – black/red mottled, gold
e. Heparin – Green or Royal blue with green label, tan
f. Heparin – with gel mottled Plasma Separator Tube (PST) – Green/Gray mottled
g. EDTA – Lavender, pink, white, tan, Royal Blue with lavender label
h. Sodium fluoride/potassium oxalate OR sodium EDTA OR sodium fluoride – Gray
i. Acid citrate dextrose (ACD) – yellow

4. Specimen identification and labeling must be done at the bedside immediately after collection.
   a. The minimum required is: full name, some type of identification number, date and time of collection, phlebotomists’ initials.
   b. Additional information such as room number, doctor, or additional ID numbers are acceptable but must be correct.

5. Other Considerations
   a. Number of times a phlebotomist may draw a patient.
   b. Number of blood collections in one day.
   c. Volume of blood to be drawn.
   d. Type of information phlebotomist may give patient.
   e. Steps to take when patient refuses to have blood drawn.

6. Blood Specimen Rejection
   a. Each clinical laboratory department should establish specific guidelines for specimen rejection.
   b. A log should be kept of rejected samples and should include: patient name, ID number, patient location, reason for rejection, person who was notified of sample rejection, phlebotomist, and date and time notification was given.
      1) If samples are rejected frequently for the same reason and were drawn by the same phlebotomist, this may indicate the need for remediation.
      2) If samples are consistently rejected from a certain floor or department, then consider defective equipment or problems with training by the floor as potential problems.
   c. Each lab department will establish their own guidelines for rejection criteria, taking into consideration the following factors:
      1) Discrepancy between specimen(s) and lab requisition(s).
2) Name misspelled or wrong name.

3) Identification number does not match identification number on requisition.

4) Date of collection, time of collection and/or phlebotomist’s initials are missing.

5) Unlabeled tubes.

6) Wrong tube collected.

7) Fasting sample not collected on fasting patient.

8) Timed sample not collected at correct time.

9) “Quantity not sufficient” (QNS) – inadequate volume.

10) Sample hemolyzed

11) Anticoagulated sample clotted or has clots in it.

12) Improper transport (time, temperature, light exposure).

13) Outdated (expired) supplies.

14) Contaminated specimens.

7. Supervisor should discuss continued rejection problems with phlebotomist to resolve the problem, if the problem continues phlebotomist may be terminated from position.

E. The Safety Needle Act requires that devices used in blood collection and processing prevent accidental needle stick injuries and blood exposure during specimen processing.

1. The Law was passed in 2000 and it amended the OSHA blood borne pathogens standard to include strong requirements to provide safety needles, more accurate recording of needle stick injuries, and the involvement of workers in the selection of equipment and work practices to prevent needle sticks and other exposures to blood.

BD Eclipse

Portex Needle-Pro
2. **Equipment with needles must have a single handed method of permanently resheathing the needle.**

3. Used needles, lancets, and other sharp objects must be disposed of immediately in special containers usually referred to as *sharps* containers. Do NOT attempt to shove a used vacuum collection device into a full sharps container. Obtain a new one.
   a. The symbol is usually red or bright orange for easy identification and are also marked *biohazard*.
   
   ![Biohazard Symbol]

   b. Containers must be rigid, puncture-resistant, leak-proof, disposable, and easily sealed when full.
c. Needles are *not* to be recapped, cut, bent, or broken prior to disposal.

d. The most commonly used device is a rigid plastic container which has an opening for vacuum collection needles and one for syringe needles, the needle is inserted into the appropriate hole and the needle is removed by turning the holder or syringe until the needle is removed, the needle then falls into the container.

e. Devices are available for disposal of the entire syringe/needle assembly. These are placed on the wall of the patient’s room as well as the laboratory phlebotomy area. When the container is full, it is closed and the entire container is disposed of.

f. **IMPORTANT:** Seeing a rise in needle stick injuries due to students shoving used vacuum collection devices into full containers. The exposure occurs as a result of the finger slipping inside the hub and being stuck on the back end of the needle. *NEVER* attempt to discard a vacuum collection device into a full sharps container.

F. Gloves

1. Many health care professionals develop **allergic dermatitis.**
   
a. Most institutions have gone to latex free materials such as nitrile.
   
b. Allergies to latex becoming more common; may cause itchy red peeling skin.
   
c. If allergies develop:
      1) Try other brands of latex gloves.
      2) Wear cotton liners under gloves.
      3) Use nitrile gloves for blood draws.
      4) Use vinyl gloves for specimen processing.

2. Different types are available for use: sterile, latex with powder, powderless, nitrile and vinyl.

3. Guidelines for use:
   
a. Use non-latex gloves when not handling infectious materials.
   
b. Use powder-free gloves.
   
c. Do not use oil based hand creams or lotions.
   
d. Wash hands with mild soap.
   
e. Become educated about signs and symptoms of latex allergies.

4. Computer sticky labels are routinely used which cause problems by sticking to gloves and creating holes or tears. Labels are available that do not stick to gloves.
G. Antiseptics, Sterile Gauze Pads and Bandages

1. *The antiseptic of choice for routine cleansing of the site is 70% isopropyl alcohol. Two exceptions: blood cultures and blood alcohol levels.*

2. Sterile gauze pads may be applied to the site after blood collection and must be used for neonatal blood collections.

3. Bandages are used to cover the puncture site to prevent soiling of patient clothing if wound reopens and prevents infection.

H. Prioritizing Patients and Sample tubes

1. Must be set and adhered to *from which patient is drawn first to the order of tubes drawn.*

2. Prioritizing your work:
   a. **Routine** – can be saved and collected as a run, but should not delay collection if other requests do not come in within a certain time frame.
   
   b. **Timed specimen** refers to specimens to be drawn at a particular time such as:
      1) Post-prandial (PP) glucose, which is drawn 2 hours after a meal.
      2) Peak and trough levels of drugs used to monitor and change patient medication levels based on results, timing is critical.
      3) Hormones fluctuate throughout the day: cortisol is highest at 0800, if phlebotomist misses, get someone else to draw ASAP
      4) Aldosterone requires that the patient lay down for 30” prior to blood drawing.
   
   c. **Fasting specimens** – no food or drink except water for specified time period.
      1) Arrange order of morning run so fasting patients are drawn first.
      2) If unsure which are fasting look at lab test, glucose, triglycerides and cholesterol are routinely drawn fasting.
      3) If patient has eaten notify nursing staff to see if physician wants it drawn any way. If draw requested note “not fasting” on requisition.
   
   d. **ASAP** – as soon as possible, patient is stable but lab results needed to monitor or treat patient.
   
   e. **STAT** – patient’s life is in danger or patient is in need of immediate treatment based on results. Immediate collection, delivery, processing testing is required.
      1) Patient is critical, drop everything and draw immediately.
      2) Once drawn deliver, process and test immediately.
f. **Preoperative (Pre-Op)** are of two types:

1) Patient has come in prior to the day of surgery for routine testing.

2) Patient is going to surgery right now, should be handled as a STAT.

g. To decrease “STAT abuse” some hospitals have changed to the following system:

1) *Medical Emergency* – drop everything and collect.

2) *Priority 1* – collect immediately if possible.

3) *Priority 2* – ASAP

4) Pre-op and routine as above.

h. Prioritization for specimen collection requires the phlebotomist to use *common sense*.

1) Usually everything from the ER is ordered STAT, and when possible, should be collected and processed STAT.

2) A STAT Strep screen from the emergency room and a STAT request from the cardiac floor are ordered at the same time. Which specimen should be collected first? Why?

3) Any specimens ordered on babies, patients in surgery or patients in the ER should have first priority.

4) When several STAT requests come in at the same time phone the floor to determine which patients are truly critical.

I. The Metric System

1. In the medical field all measurements made are reported out using units of the metric system, so it is very important that you have basic knowledge of these units.

2. The metric system is a group of units used to make measurements, such as length, volume, temperature, weight and time.

3. Most metric units have a prefix that tells the relationship of that unit to the basic unit and are the same throughout the metric system to help simplify it.

   a. “centi” means one-hundredth

   b. “milli” means one-thousandth

   c. “hector” means 100 times

   d. “kilo” means 1,000 times

   e. “mega” means 1,000,000 times
4. The meter (m) is the basic unit for measuring length.
   a. A meter is slightly longer than a yard.
   b. Short lengths are measured as centimeters (cm) or millimeters (mm).

5. The volume of a liquid is measured in terms of liters (L).
   a. One tenth of a liter is a deciliter (dL).
   b. One thousandth of a liter is a milliliter (mL).
   c. *One milliliter of liquid occupies the same volume as one cubic centimeter (cc)*.
      1) A 10 milliliter (10mL) is the same size as a 10 cubic centimeter (10 cc) syringe.
      2) In conversation the terms cubic centimeter and milliliter are used interchangeably.

6. The metric system measures temperature in degrees Celsius (C).
   a. Water freezes at 0° Celsius and boils at 100° Celsius.
   b. The normal human body temperature 37° Celsius.

7. A kilogram is the basic unit of weight in the metric system.
   a. One kilogram equals about 2.2 pounds.
   b. A gram is for smaller weight and equals one thousandth of a kilogram.

8. Time in the metric system, like all other systems, uses hours, minutes, and seconds.
   a. Most health care systems use 24 hour clock time also known as **military time**.
   b. Rather than a.m. and p.m., the clock goes a full 24 hours, for example, 12 noon is 1200, 4 p.m. is 1600, 6 p.m. is 1800 and midnight is 2400.
   c. After 2400 the time is reported as 0001, which would be one minute after midnight.