Specimen Collection – Patient Assessment, Infection Control, Applying the Tourniquet, and Artificial Arms

I. Collecting and Processing of Specimens
   A. Blood
      1. Patient Assessment, Patient’s Bill of Rights, Interactions

Patient Assessment -

More than 2/3 of laboratory errors are **pre-analytical errors**; they occur before testing. Most of those are related to specimen collection and handling. So, respond positively to proper instruction and training, and be alert to potential mistakes or sources of error. The role of the phlebotomist is very important.

Delivery of healthcare involves a partnership between patients, physicians, and healthcare professionals.

Patient’s Bill of Rights -

Patients have the right to....

1. ... considerate and respectful care.

2. ... obtain from the healthcare provider complete current information about their diagnosis, treatment and prognosis in terms that patients can be reasonably expected to understand.

3. ... receive from a healthcare provider the information necessary to give informed consent before a procedure. The information should include knowledge of the proposed procedure, with risks and probable duration of incapacitation. In addition, the patient has a right to information about medically significant alternatives.

4. ... refuse treatment to the extent permitted by law and to be informed of the medical consequences of their action.

5. ... privacy in their medical care. Case discussion, consultation, examination, and treatment should be conducted discreetly. Those not directly involved with a patient’s care must have the patient’s permission to be present.

6. ... expect that all communication and records pertaining to their care be treated as confidential.
7.... expect the hospital to make a reasonable response to their request for services and to provide evaluation, service, and referral as indicated.

8. ... obtain information as to any relationship of their hospital with other healthcare and educational institutions, insofar as their care is concerned, and to the professional relationship among individuals who are treating them.

9. ... be advised if the hospital proposes to engage in or perform human experimentation affecting their care of treatment. Patients have the right to refuse to participate in research projects.

10. ... expect continuity of care, including future appointments and instructions on continuing healthcare requirements after discharge.

11. ... examine and receive an explanation of their bill, regardless of the source of payment.

12. ... know what hospital rules and regulations apply to their conduct as a patient.

Phlebotomists’ involvement:

*1. Patients may be difficult to deal with because of fear, anger, or pain.

*2. Note: The healthcare provider, not the phlebotomists, must provide information concerning the purpose of the test procedure.
   
a. So, when questioned by the patient, just refer the patient to his/her physician.

   b. Also, do not give out test results directly to the patient or their family members.

*3. The patient has the right to refuse to have blood drawn. Explain the procedure, and the importance to the physician for treatment. If patient continues to refuse, notify the nursing staff or physician. Indicate such in the report/computer.

*4. The patient’s condition, laboratory tests results (and the fact that he/she is in the hospital or even having tests performed) are confidential and must not be discussed with anyone who is not directly involved. This means to watch your casual conversations in the hallway, on the elevators, or in the cafeteria!
Interactions with patients –

Pediatric - be gentle and compassionate; both child and parent may be anxious about procedure and settings.

Adolescent - be relaxed and alert to anxiety; establish eye contact, be relaxed.

Adult - inform briefly what test involves, be honest, friendly, tactful, but not overly familiar, pleasant conversation if wanted, try to boost morale; if patient is disagreeable, remain pleasant and cheerful.

Geriatric - treat with dignity and respect, do not demean the patient. Do not get impatient, be flexible, and be aware if patient cannot hear well.

Always check to be sure area is clean before leaving and to make sure that no supplies are left behind.

2. Applying the Tourniquet

A tourniquet is applied to the arm to slow blood flow and make the veins more prominent.

Disposable tourniquets are preferred.

The tourniquet is placed on the upper arm, above the antecubital area.

The tourniquet is placed above the elbow, and the two ends are stretched and crossed over the top of the arm. While tension is maintain on the ends, one side is looped and pulled halfway through in a slipknot (Figure 1).
If the tourniquet is tied in this manner, it will release easily with a gentle pull on one end (Figure 2).

The tourniquet should be applied while the puncture site is being selected. It should then be released while the site is cleansed, and retied before the puncture is performed. A tourniquet should never be tied tight enough to restrict blood flow in the artery.

The tourniquet should be left in place for no more than one minute, to avoid hemoconcentration, which affects, bilirubin, lipids, proteins, enzymes, calcium iron, RBCs.

Once the vein is entered and blood flow is obtained, the tourniquet may be released while the blood is collected.

After the venipuncture has been completed, the tourniquet is always released before the needle is withdrawn from the vein, to prevent hematomas from occurring at the venipuncture site.

3. Artificial Injectable Training Arms

Structure

Internal Structure - Internally the vascular structure (rubber tubing) begins at the underarm, crosses the antecubital fossa going to the outer aspect of the lower forearm, and making a loop in the back of the hand, and the returning to the underarm. This venous system is constructed of special self-sealing plastic tubing with the lumen being the approximate size of a human vein. This vascular structure has an inlet tubing and an outlet tubing at the shoulder, and it is via these tubes that synthetic blood is injected and removed. Thus, the techniques of blood drawing and starting intravenous infusions may be practiced on the Injectable Training Arm.
Instructions (refer to diagram)

1. Make sure that the metal pinch clamp is used to close off the blood outlet tubing. The venous system should be full of "blood" and pressurized.
2. Leave the screw clamp on the IV tubing opened.
3. Use small gauge needles - 20-25 g.
4. Draw "blood" anywhere along the pathway of the vein.
5. Use deionized water to prepare the sites. DO NOT use alcohol.
6. Withdraw the "blood" (synthetic blood will actually be aspirated once the vein is properly punctured).

Causes for Failure in Function

1. Forgotten closed clamp.
2. Kinks in tubing of IV sets.
3. Tubing pinched shut by constant pressure of screw clamps. Lumen remains pinched occasionally even if screw clamp is loosened. Slide screw clamp to new position, and with the fingers manipulate tubing at pinched site to restore lumen. In heavy use, slide screw clamp to new position on tubing from time to time to prevent the "permanent pinch" caused by constant clamp pressure.
4. If these measures do not unclog the venous system, try using a large (50 cc) syringe to force fluid through the tubing.
5. If none of these measures work, peel back the skin (soap up arm and skin generously with Ivory liquid detergent) of the arm to the knuckles (do not remove from fingers), and examine all tubing for possible kinks. Soap up the arm and skin generously with Ivory liquid detergent and return skin over arm.

**Care of the Simulator**

After each class use, disconnect “blood” and flush the venous system. Remove pinch clamps and IV sets from arm. Use tap water to flush venous system and wash outside of arm with Ivory liquid detergent and water. Excess water may be removed from the arm by raising the hand, lowering the shoulder, and draining it into a sink or basin.

Always remove the metal pinch clamps from shoulder tubing and drain excess water from veins before storing.

Ordinary stains can be removed by washing with soap and warm water. Newsprint, similar printed paper, or plastic will permanently stain the simulator if prolonged contact occurs. Stubborn stains may be removed with REN Cleaner, simply by dispensing it on the area and wiping with a soft cloth or paper towel.

**Caution**

1. This Synthetic Blood is specially formulated to be compatible with the self-sealing veins and plastics used in manufacturing the arm.
2. NEVER use Synthetic Blood for intramuscular injection.
3. DO NOT allow “blood” to dry on simulator - it may stain arm.
4. DO NOT use dull or burred needles as these will cause leaks in the system.
5. Use ONLY 500 mLs of Infusion Fluid as a larger amount will also increase the pressure of the venous system, resulting in leaks.
6. DO NOT clean the simulator with solvents or corrosive material as they will damage it.