

EXERCISE 6: VENIPUNCTURE - WINGED INFUSION SET (BUTTERFLY)

Skills: 40 Points

Objectives:

1. List four types of patients which would be considered candidates for blood collection using the butterfly/syringe equipment.
2. Describe in detail the butterfly winged infusion set needle assembly.
3. Describe the proper method of inserting a butterfly needle into a vein.
4. Describe the importance of Abreathing@ a syringe prior to use.
5. Describe the proper use and precautions for using a syringe for blood collection.
6. Explain why pediatric tubes are the tubes of choice for use with winged infusion sets compared to standard size vacuum tubes.
7. List three alternative sites that may be used when veins cannot be located in the antecubital fossa area
8. Describe the action which should be taken prior to deciding on whether or not to use the veins in a patient's feet or ankles.
9. State the special precautions which should be taken when performing venipuncture on veins of the hands, wrists, ankles or feet
10. Describe the proper use of the safety transfer device.
11. Properly perform a venipuncture using the butterfly/syringe and butterfly/vacuum collection equipment in accordance with the objectives listed in Exercise 2.
12. Demonstrate the proper technique to safely transfer blood from a syringe to a vacuum collection tube.

Discussion

The butterfly winged infusion set is an intravenous device that phlebotomists sometimes use for collection blood from pediatric patients and patients with tiny, fragile veins. Patient groups who may be candidates for blood collection by this method include pediatric patients, geriatric patients, oncology patients and burn victims.

Winged infusion needles are preferable to standard venipuncture needles when drawing from tiny veins because they are commercially available in very small gauges (23 and 25 gauge). Small needles are easier to insert into tiny veins.

Butterfly winged infusion needles can adapt to either a syringe or a pediatric or adult vacuum collection tube holder.



The butterfly infusion set consists of a needle with plastic wings for gripping and plastic tubing. The length of the needle is 2 inch, which limits its use to surface veins. A special adapter is necessary to attach the tubing to the holder of the Vacuum collection system. The use of pediatric sized tubes is less likely to cause small veins to collapse because the exertion of vacuum pressure is significantly lessened as compared to the vacuum in a standard-size evacuated tube. No adapter is necessary for using the butterfly-winged infusion set with the syringe method. Proper use of the equipment involves bending the wings together over the needle with the bevel up. The needle is inserted into the vein using a very low angle.

Butterflies are best used with syringes. ***It is important to Abreathe® the syringe prior to use.*** This is accomplished by moving the plunger back and forth in the barrel before using. This breaks the seal on the syringe.

Once the needle is inserted into the vein the plunger should be pulled back gently, yet firmly. *Pulling back on the plunger with excessive force to speed blood coming into the syringe may cause the vein to collapse or, if extreme pressure is applied, may cause hemolysis of the blood sample.*

Transferring Blood into Vacuum Collection Tubes from Syringe

Great care must be taken when transferring blood from the syringe into the appropriate tubes. Safety devices must be used which allow blood to safely be transferred from the syringe into the appropriate tubes. After activation of the safety needle the needle is removed and the transfer device is attached to the syringe. The old method of directly piercing the stopper with the needle to transfer the blood is no longer recommended. This method required that the tube be placed in a rack and then, using one hand, carefully seat the needle into the stopper, the other hand can then safely hold the tube while the stopper is punctured, the blood would then be pulled into the tube by the vacuum. This is a dangerous method as many phlebotomists are tempted to either hold the tubes in the hand while piercing the stopper or, if the tube is in a rack, holding the tube with their free hand while piercing the stopper. If the phlebotomist missed the stopper a needle stick exposure will likely occur.

Venipuncture Butterfly Using Vacuum Collection Tubes

The butterfly comes with an adapter to be used for vacuum tube collection. This should RARELY be used. ***If a vein is large enough to be used for a butterfly/vacuum collection then a regular vacuum collection holder/needle assembly should be used.*** An exception for this would be a large hand vein. Drawing blood from a hand vein using a holder/needle assembly is very awkward. Also the smaller needle is less painful in the hand veins. Be aware that if the butterfly is used with vacuum collection tubes the vacuum in the tubes will cause small veins to collapse. The butterfly's primary use is for a syringe draw where the amount of vacuum can be controlled by gentle pulling on the plunger of the syringe.

Alternative Venipuncture Sites

Sometime it is very difficult to locate a vein suitable for venipuncture in the antecubital fossa of a patient's arm. The appropriate course of action is to inspect the patient's other arm for a suitable vein. *In the event that neither arm provides a vein suitable for venipuncture, the phlebotomist may then consider using a vein in the patient's top of the hand, top of the wrist, ankle or top of the foot.*

Hand veins are more difficult to access than veins in the antecubital fossa because they are generally smaller. In addition, hand veins are not as well anchored by surrounding tissue as those in the antecubital fossa area. Consequently, they have a tendency to more or "roll" when the needle is inserted. The phlebotomist should exercise extra care when anchoring a vein located in the hand or wrist to prevent it from moving during insertion

of the needle.

If a patient's hands and wrists are evaluated as potential venipuncture sites, and no suitable veins are found some facilities will authorize phlebotomists to use veins in the patient's ankles or feet. ***Always check the policy at your facility BEFORE performing venipuncture on a foot or ankle veins. Many facilities require a doctor's written authorization for these sites to be used.*** The concerns related to venipuncture of veins in a patient's hands or wrists also have application for veins in the patient's ankles or feet. Both the hands and the feet have increased amounts of bacteria on their surface, as compared to the antecubital fossa. The phlebotomist should **thoroughly** cleanse the puncture site prior to venipuncture. If a vein in a patient's hand, wrist, foot or ankle is chosen, a winged infusion needle or a syringe should be used because they often will accommodate smaller veins better than a standard evacuated tube assembly.

Precautions:

1. If the hands, wrist or feet are used cleanse the area extremely well as these areas have increased bacterial contamination.
2. NEVER depress the plunger when filling evacuated tubes, this could cause the stopper to come out resulting in blood splattering in your face and mouth.
3. Use EXTREME caution when handling the butterfly infusion set after use. This equipment has been implicated in many accidental needle sticks. Immediately activate the safety device after removing needle from vein.
4. Use safety transfer device to fill vacuum tubes with blood. If none are available place the tubes in a test tube rack to fill, NEVER hold tubes in hand when piercing the stopper of the tube with the needle.

Procedure 1: Venipuncture-Winged Infusion Set - SYRINGE

Materials:

1. butterfly winged infusion set with syringe adapter
2. needle
3. alcohol swabs
4. tourniquet
5. biowipe
6. evacuated tubes
7. Syringe
8. Safety transfer device

Procedure:

1. Select and organize equipment.
2. Approach, greet and properly identify the patient.
3. Select and prepare venipuncture site.
4. Prepare equipment. Remove the winged infusion needle from its packaging.
5. Remove the syringe from its packaging. Move the plunger back and forth in the barrel of the syringe several times to loosen. Attach the end of the winged infusion set to the end of the syringe using a firm, twisting motion.
6. Apply the tourniquet and select the venipuncture site.
7. Release the tourniquet.
8. Prepare the site, allow site to dry and reapply the tourniquet.
9. Uncap the needle and inspect for manufacturing defects.
10. Anchor the vein and position the needle appropriately.
11. Bend the wings together over the needle and insert the needle, with the bevel up, into the vein. If the needle has entered the vein a "flash" of blood will appear in the tubing directly above the needle.
12. Allow the wings of the needle to unbend and rest on the patient's arm. Place a piece of tape over the wings of the needle to secure it. The second piece of tape is a spare in the event of a misstep with the first piece.
13. Pull back on the plunger (blood should enter the tubing and syringe) until 3 mLs of blood has been collected. Use firm gentle pressure. If excessive force is used it will cause hemolysis of the blood specimen.
14. After collection release the pressure on the plunger and untie the tourniquet.
15. Remove the tape from the wings of the needle.
16. Bend the wings of the needle together and withdraw the needle from the patient's arm, placing biowipe over the puncture site - **IMMEDIATELY ACTIVATE NEEDLE SAFETY DEVICE**
17. Remove needle and attach safety transfer device, insert stopper of evacuated tube. Fill the tubes in the proper order.
18. Allow the vacuum in the tube to pull the blood in. **DO NOT APPLY PRESSURE ON THE PLUNGER.** When the vacuum has been exhausted (the tube is full) withdraw the needle from the tube (If the tube has an additive gently invert it). Repeat the procedure with the next tube.
19. Dispose of the needles in the appropriate needle disposal container being **very careful**. This equipment is notorious for its involvement in accidental needle sticks.
20. Label the filled tubes with the patient's name, number, date and time of collection, and your initials.

Procedure 2: Venipuncture/Winged Infusion Needle – EVACUATED TUBE HOLDER

Materials:

1. butterfly winged infusion set with vacuum collection adapter
2. vacuum collection holder
3. alcohol swabs
4. tourniquet
5. biowipe
6. evacuated tubes

Procedure:

1. Select and organize equipment.
2. Approach, greet and properly identify the patient.
3. Select and prepare venipuncture site.
4. Prepare equipment. Remove the winged infusion needle from its packaging.
5. Attach the evacuated tube holder onto the adapter at the end of the tubing.
6. Apply the tourniquet and select the venipuncture site.
7. Release the tourniquet.
8. Prepare the site, allow site to dry and reapply the tourniquet.
9. Be sure the plunger of the syringe is entirely depressed into the barrel.
10. Uncap the needle and inspect for manufacturing defects.
11. Anchor the vein and position the needle appropriately.
12. Bend the wings together over the needle and insert, with the bevel up, into the vein.
13. Allow the wings of the needle to unbend and rest on the patient's arm. **OPTIONAL:** Place a piece of tape over the wings of the needle to secure it. The second piece of tape is a spare in the event of a misstep with the first piece.
14. Push the evacuated tube onto the needle secured by the holder and allow it to fill.
15. Remove the evacuated tube and replace it with another evacuated tube and allow it to fill completely.
16. Remove the tube from the needle.
17. Untie the tourniquet, remove the tape from the winged infusion needle, bend the wings together and withdraw the needle, covering the puncture site with a biowipe.
18. **IMMEDIATELY ACTIVATE NEEDLE SAFETY DEVICE WITH ONE HAND.**
19. Dispose of the needles in the appropriate needle disposal container.
20. Label the filled tubes with the patient's name, number, date and time of collection, and your initials.

**EXERCISE 6: VENIPUNCTURE - BUTTERFLY (WINGED INFUSION SET)
STUDY QUESTIONS**

Name _____ Date _____

Points: 15

1. State four patient groups who may be candidates for blood collection using the winged infusion set (2 points).
 - A.
 - B.
 - C.
 - D.
2. State the gauge of needle present on the winged infusion set (1 point).
3. Describe the appearance of the winged infusion set (2 point).
4. Explain why pediatric tubes are the tubes of choice for use with winged infusion sets compared to standard size vacuum tubes. (1 point).
5. List four alternative sites that may be used when veins **cannot** be located in the antecubital fossa area (2 points).
 - A.
 - B.
 - C.
 - D.
6. Describe why veins in the hands and feet are more difficult to access than veins in the antecubital fossa area (1 point).
7. Describe the action which should be taken prior to deciding on whether or not to use the veins in a patient's feet or ankles (1 point).

8. State the special precautions which should be taken when performing venipuncture on veins of the hands, wrists, ankles or feet (1 point).
9. Describe the needle insertion procedure when using the winged infusion set (1 point).
10. Describe what should be done with the syringe after removing it from the package and prior to use (1 point).
11. Explain what might happen if the plunger is *pulled back* with excessive force when drawing blood with a syringe (1 point).
12. State why pressure must never be applied to the syringe plunger, ie, pushing blood into the tube using the plunger, when filling vacuum tubes (1 point).