

## Selecting The Venipuncture Site

When a phlebotomist chooses to ignore the rules of site selection for venipuncture, he/she runs the risk of causing harm to their patients.

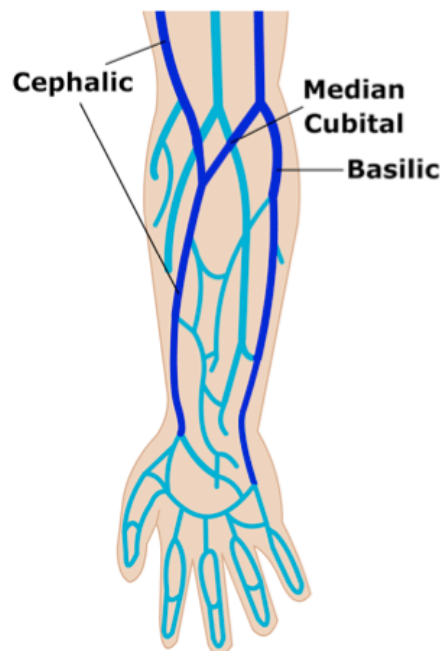
If a phlebotomist has chosen to use the basilic vein when there is a usable median antecubital vein or cephalic vein, and the patient suffers an arterial nick or nerve damage -- with the possibility of loss of arm movement or bleeding into the arm -- legal action may be taken by the patient or the doctor.

If no written order from the doctor exists and the phlebotomist performs a foot draw and complications arise there will be no possible defense in the courtroom should the patient or the doctor take legal action.

If a phlebotomist uses the underside of the wrist, which is a no-draw area, there is the possibility of hitting the radial or ulnar nerve or artery. Hitting the nerve in the underside of the wrist can cause temporary or permanent nerve damage and the patient may lose the ability to open and close their hand.

The basilic vein should be considered only as a final alternative. It is more difficult to access than the other veins of the antecubital area and its proximity to artery, nerves and tendons increases the possibility of injury to the patient.

The median cubital and cephalic veins are better choices. These veins are usually very stabilized (less change of rolling when the needle is inserted), and there are fewer nerves and tendons in the area where they are located.



## Site Acceptability

A good venipuncture site is one that is relatively close to the surface, not over a nerve or artery, and is "strong."

"Strong" in this instance is defined as a vein that is healthy enough to push back when it is palpated.

The bend of the arm is an ideal choice.

The back of the hand is a secondary choice.

The wrist is too close to arteries and veins to be a primary site.

It can be used, but only with experienced supervision, usually a doctor.

### Choosing the Site:

A key element for successful venipuncture is choosing the best vein. To determine the best vein, use both sight and touch. Remember -- the first vein found is not always the best vein. Take enough time to assess the vein before beginning the venipuncture procedure.

**Choosing an appropriate site for venipuncture is crucial for a successful venipuncture. The location, size, and feel of the vein are important in selecting which vein to use. The widest, deepest part of the vein is usually the easiest from which to draw. However, do not draw at the point where two veins join as there is a valve at these junctures.**

**The veins most often used for venipuncture are located in the antecubital area. Typically the order of choice in vein selection is as follows:**

- 1. cubital vein: This vein is usually the largest and fullest vein and is best anchored by the surrounding musculature of the arm.**
- 2. cephalic vein: This vein is next largest and next better anchored by the surrounding musculature of the arm.**
- 3. basilic vein: This vein is typically smaller than the two above and is not anchored as well by the surrounding musculature. Therefore if this vein is used, the phlebotomist must ensure he anchors the vein well by holding the vein and the skin taut just below the needle insertion point. The basilic vein is close to the brachial artery so there is more risk of hitting an artery. Exercise caution when drawing from this area. Additionally, this area is often more sensitive, thus a stick is slightly more painful for the patient.**

- 1. Note: If you do enter an artery, complete the draw and hold the site for a minimum of 5 minutes. Ensure all bleeding has stopped before allowing the patient to leave.**
  
- 2. The actual feel of the vein is key in selecting the vein which will most likely result in a successful venipuncture. With the tourniquet appropriately tied, a good vein should feel resilient or slightly bouncy when palpated slowly. If the vein rolls away when you palpate it, be sure to anchor it well if you choose to draw from that vein. A vein that feels hard is often sclerosed and should not be used. Also do not attempt to perform a venipuncture in an area that has a hematoma.**

# Sites For Capillary Skin Puncture

When a phlebotomist makes the error of ignoring the appropriate site for capillary skin puncture, he/she may harm the patient.

The thumb develops callous from using it daily with the index finger as opposing digits. It may be impossible to retrieve an adequate blood sample from the thumb. Certain occupations lead to major callous growth; for example, sailors and cowboys who work with rope or seamstresses who work with rough fabrics such as burlap.

Puncturing the index finger may result in pain due to the many nerve endings in this finger, and this soreness may intensify and be prolonged due to the use of this opposing finger with the thumb.

When performing finger sticks puncturing the little finger may result in hitting the bone.

Phlebotomists who choose to ignore the appropriate sites on a neonatal heel and use the toes or the center back of the heel run the risk of hitting bone.

Punctures in these areas may result in osteomyelitis and/or osteochondritis. Should these compromised areas of the baby foot come into contact with feces from a soiled diaper infection might occur, which in turn may lead to septicemia.

## **Venipuncture Site Selection**

The preferred site for venipuncture is the antecubital fossa of the upper extremities. The vein should be large enough to receive the shaft of the needle, and it should be visible or palpable after tourniquet placement.

Three major veins are located in the antecubital fossa

A. **Median cubital vein** – the vein of choice because it is large and does not tend to move when the needle is inserted.

B. **Cephalic vein** - the second choice. It is usually more difficult to locate and has a tendency to move, however, it is often the only vein that can be palpated in the obese patient.

C. **Basilic vein** - the third choice. It is the least firmly anchored and located near the **brachial artery**. If the needle is inserted too deep, this artery may be punctured.

## **Unsuitable veins for venipuncture**

A. **Sclerosed veins** - These veins feel hard or cordlike. Can be caused by disease, inflammation, chemotherapy or repeated venipunctures.

B. **Thrombotic veins**

C. **Tortuous veins** – These are winding or crooked veins. These veins are susceptible to infection, and since blood flow is impaired, the specimen collected may produce erroneous test results.

**Note:** Do not draw blood from an arm with IV fluids running into it. The fluid will alter the test results. Select another site. Do not draw blood from an artificial a-v fistula site, such as those surgically implanted in dialysis patients.

## **VENIPUNCTURE SITE SELECTION:**

Although the larger and fuller median cubital and cephalic veins of the arm are used most frequently, the basilic vein on the dorsum of the arm or dorsal hand veins are also acceptable for venipuncture. Foot veins are a last resort because of the higher probability of complications.

### **Certain areas are to be avoided when choosing a site:**

- Extensive scars from burns and surgery - it is difficult to puncture the scar tissue and obtain a specimen.
- The upper extremity on the side of a previous mastectomy - test results may be affected because of lymphedema.
- Hematoma - may cause erroneous test results. If another site is not available, collect the specimen distal to the hematoma.
- Cannula/fistula/heparin lock - hospitals have special policies regarding these devices. In general, blood should not be drawn from an arm with a fistula or cannula without consulting the attending physician.
- Edematous extremities - tissue fluid accumulation alters test results.
- Intravenous therapy (IV) / blood transfusions - fluid may dilute the specimen, so collect from the opposite arm if possible. Otherwise, satisfactory samples may be drawn below the IV by following these procedures:
  1. Turn off the IV for at least 2 minutes before venipuncture.
  2. Apply the tourniquet below the IV site. Select a vein other than the one with the IV.
  3. Perform the venipuncture. Draw 5 ml of blood and discard before drawing the specimen tubes for testing.

## **PROCEDURE FOR VEIN SELECTION:**

**Palpate and trace the path of veins with the index finger. Arteries pulsate, are most elastic, and have a thick wall. Thrombosed veins lack resilience, feel cord-like, and roll easily.**

**If superficial veins are not readily apparent, you can force blood into the vein by massaging the arm from wrist to elbow, tap the site with index and second finger, apply a warm, damp washcloth to the site for 5 minutes, or lower the extremity over the bedside to allow the veins to fill.**