



PREANALYTIC PULSE

Good Phlebotomy Technique

It is no secret that good phlebotomy technique contributes to a good quality sample for laboratory testing. But what does good phlebotomy technique entail? It is sometimes difficult, when faced with an upset or frightened patient who is not thrilled by the idea of having their blood drawn, to recall all of the factors involved in a venipuncture procedure that can potentially impact sample analysis. It may be that time has caused technique to lapse or, in the interest of meeting turn-around times, corners are cut and procedural steps skipped. Whatever the reason, not following procedure and lack of good technique when collecting blood specimens can have a significant impact on test results and, ultimately, patient care.

The following points should be kept in mind when performing any routine phlebotomy procedure.

- **Identify the Patient:** The patient should verbally state his or her name, with spelling, and one other identifier such as hospital ID number or birth date. A minimum of two identifiers must be used. This information must be compared to the wristband and test requisition and any discrepancies resolved prior to blood collection. If the wrong patient is drawn and the results assigned inappropriately, the consequences could be fatal.
- **Assess the Venipuncture Site:** The antecubital area of the arm is typically used for venipuncture with the median cubital or cephalic vein being the preferable choices. The basal vein may also be used but only if the other two options, after checking both arms, are not viable alternatives. The basal vein lies in close proximity to both arteries and nerves that could result in injury to the patient if accidentally punctured or nicked. There are circumstances that involve additional considerations. For example, venipuncture should not be performed on the same side as a mastectomy or above an IV site.
- **Tourniquet Placement:** The tourniquet should never be left in place longer than one minute. If the actual venipuncture does not take place within the one minute time frame, the tourniquet should be loosened for a minimum of two minutes and then reapplied before initiating skin puncture. The tourniquet should be loosened upon successful vein access to avoid the effects of hemoconcentration. If blood pressure is low, it may be necessary to leave the tourniquet in place to fill the required tubes. However, the tourniquet must be removed prior to removing the needle from the vein to avoid hematoma formation.
- **Equipment:** The proper equipment should be selected for collection based on patient age and vein condition. Inappropriate selection could cause injury to the patient, sample hemolysis or failed venipuncture.
- **Cleansing:** The collection site should be cleansed with an appropriate antiseptic using a circular motion working from the inside out to prevent contamination of the sample and introduction of skin flora into circulatory system of the patient. The area should not be repalpated once cleansed. The area should be allowed to dry prior to skin puncture to avoid pain to the patient and hemolysis of the sample.
- **Anchoring the Vein:** The vein should only be anchored below the puncture site so the fingers are never in front of the needle putting the healthcare worker at risk for needlestick injury.
- **Angle of Insertion:** The needle insertion angle should never exceed 30° to avoid going through the vein and causing pain or injury to the patient.
- **Failed Venipuncture:** Probing for the vein is never acceptable. If the skin has been punctured but blood does not flow into the collection device, the needle can be adjusted by moving forward or pulling back slightly if not within the lumen of the vein or by rotating a quarter of a turn in the event that the bevel is occluded against the side wall of the vein.
- **Positioning:** The arm should be positioned in a downward direction so that when the needle assembly is in place, the blood flows down the sidewall toward the bottom of the tube. This prevents backflow of fluid into the patient vein and aids in the mixing of blood with the tube additive.

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- **Order of Draw:** Tubes should be collected in the correct order of draw as documented by the Clinical and Laboratory Standards Institute (GP41; Procedures for the Collection of Diagnostic Blood Specimens by Venipuncture; Approved Standard, 6th Ed.). This prevents cross contamination that can adversely impact analytical results.
- **Tube Volume:** Tubes should be filled to the appropriate level as per manufacturer instructions to ensure the blood to additive ratio is optimal for sample quality. Under filling tubes can impact analysis, affect sample integrity or result in hemolysis depending on the additive. The last tube should be removed from the holder prior to removing the needle from the vein if using an evacuated tube system for collection.
- **Site Care:** Gentle pressure should be applied to the venipuncture site until bleeding ceases. A bandage should then be applied (for those over 2 years of age) and remain in place for at least 15 minutes.
- **Safety:** The needle safety feature should be activated immediately following completion of the venipuncture procedure as per manufacturer instructions and the assembly disposed of to avoid risk of needlestick injury.
- **Mixing Tubes:** Specimens collected in evacuated tubes with additives should be mixed by gentle inversion according to manufacturer specifications immediately following collection. Failure to do so can result in improperly clotted samples in the case of serum samples or microclots and fibrin with plasma samples, which can affect analysis in a variety of ways.
- **Blood Transfer:** If blood is collected in a syringe, an appropriate transfer device should be used to move the blood into evacuated tubes for testing to minimize needlestick risk.
- **Labeling:** Tubes should be labeled in the presence of the patient at which time identification should be re-verified. Tubes must never be pre-labeled or set aside for labeling later.
- **Transport:** Transport to the laboratory should occur in a timely fashion so samples can be centrifuged within two hours of collection. If this is not possible, samples should be centrifuged prior to transport. Tubes should be kept at the proper temperature for the tests ordered during transport and processing and maintained in an upright position when possible.

There may be additional considerations depending on the patient condition and the tests ordered. For example, blood cultures require additional cleansing and special handling to avoid contamination and optimize pathogen detection. It is apparent, however, that good phlebotomy technique involves more than just successful vein access and collecting blood in a tube. Good technique is based on an understanding of how each step in the collection process can influence the analytical results used for patient diagnosis and treatment.

