Penn Medicine
Lancaster General Health

Venipuncture

Proper venous blood collection is essential to preserve sample integrity and ensure accurate test results. Standard precautions for the safe handling of blood and body fluids must be consistently followed in the laboratory to protect both the patient and the phlebotomist from potential exposure to infectious materials.

To support high-quality sample collection, Penn Medicine Lancaster General Health requires all staff performing phlebotomy services to attend a six-hour training class provided by the laboratory. This training reinforces best practices and helps ensure that specimens submitted for testing meet quality standards.

Equipment for Venipuncture:

- Alcohol Prep Pads
- Blood Collection Tubes (as required per test)
- Gauze Pads
- Safety Needle Device
- Needles:
    - Multisample Needles:
        - 21G x 1" (Green)
        - 22G x 1" (Black)
    - Butterfly Needles (Safety-Lok):
        - 21G x 1" (Green)
        - 23G x 1" (Blue)
- Tourniquet – Single-use, latex-free
- Gloves – Latex-free (preferred)
- Sharps Containers
- Adhesive Bandages
- Patient Specimen Labels

Venipuncture Procedure:

1. Confirm the following information is complete and accurate on the lab request:
    - Patient's full name, address, date of birth, and medical record number (MRN), if available
    - Social Security Number (if provided)
    - Insurance information
    - Ordering physician's full name (or facility name, e.g., nursing home)
    - Tests ordered, including appropriate ICD-10 diagnosis codes
    - Date of request
    - Any notations for copies, faxed results, or priority status (e.g., STAT)
2. Verify Patient Identity:
    - Confirm patient ID using two identifiers (e.g., full name and DOB)

- Do not proceed with collection if there are discrepancies
- Ensure a Blood Bank armband is present, if required (for outpatient labs)
- Assess the patient's diet status (e.g., fasting, medication restrictions)

3. Prepare for Collection:
    - Gather all necessary supplies
    - Match the requested tests with the correct collection tubes
4. Collect the Specimen(s):
    - Follow proper venipuncture collection technique
5. Label the Specimen(s):
    - Label all tubes immediately after collection and in the presence of the patient
    - Verify all label information matches the requisition exactly (Patient name, DOB, MRN etc.)
    - Present the labeled specimens to the patient to confirm their information as a second form of identification
6. Process and Package the Specimen(s):
    - Centrifuge, refrigerate, or otherwise process samples as needed
    - Package according to lab transport requirements

Venipuncture Notes:

1. Following the correct order of draw is essential to prevent cross-contamination between additives and to ensure accurate test results. It also promotes prompt and proper mixing of each specimen.

****See Tube Designation Key on back of Clinical Laboratory Requestion for tube abbreviations. ****

- Blood Cultures (Blue, Purple)
- Light Blue (Sodium Citrate)
- PLDKBL (Trace element - Serum)
- Red (No additive or clot activator)
- Gold SST (Serum Separator Tube)
- Green Sodium or Green Lithium (GrnNa / GrnLit)
- EDKBL (Trace element K2 EDTA)
- Lavender / Pink (EDTA)
- Gray (Potassium Fluoride)

2. Invert all tubes, gently, 8 to 10 times, to mix thoroughly. DO NOT SHAKE.

3. Precautions
    - Faulty Tubes: Tubes with cracks or lacking a vacuum can occur. If a tube does not fill and the needle is properly positioned in the vein, replace it with a new tube.

- Needle Adjustment: If blood flow is slow, try slightly adjusting the needle — move it forward, backward, or rotate it slightly.
- No Probing: Do not probe with the needle to find the vein. This increases patient discomfort and risk of injury.
- Tourniquet Time Limit: Do not leave the tourniquet on for more than 1 minutes at a time to avoid hemoconcentration and patient discomfort
- Tourniquet Pressure: A tourniquet that is too tight can restrict blood flow. Loosening it may help increase flow.
- Persistent Bleeding: If bleeding continues after needle removal, elevate the arm and continue to hold pressure until bleeding has stopped.

Capillary Collection

Capillary collection should be used when it becomes difficult or impractical to obtain venous blood specimens. This technique involves acquiring blood from a finger (typically in older children and adults) or a heel (usually in infants).
Note: Venipuncture is not recommended for children under the age of one year due to their smaller veins and increased risk of complications.

Advantages	Disadvantages
• Safer for Infants: Venipuncture on infants can be extremely hazardous. Capillary collection is the safer alternative.	• Limited Sample Volume: QNS (Quantity not sufficient) specimens, Clotted samples, especially if not properly mixed with anticoagulant.
• Small Sample volumes: Ideal for newborns and child with low total blood volumes, as only minimal amount of blood is required.	• Physiological differences: Capillary blood may differ from venous blood in composition, potentially affecting test results.
• Useful for adults with limited venous access: Poor vein quality, No access do to IV's. Extreme obesity, sever burns or edema.	• Risk of Dilution in Edematous Patients: Increased tissue fluid can dilute the samples, leading to inaccurate results
• Convenient for bedside or home testing: Allows for quick, sample blood collection without the need for full phlebotomy setup. Commonly used in point-of care testing	• Specimen hemolysis: Excessive squeezing or "milking" the site can hemolyze (break part) the red cells or introduce tissue fluids

Penn Medicine
Lancaster General Health

- Contamination Risk: External substances (i.e. lotions, powders, environmental toxins) on the skin can lead to falsely elevated results, particularly in test like Pediatric Lead Levels.

For further detailed instructions: refer to the **Capillary Collection Procedure located on the **Starnet** under the department **Laboratory, Phlebotomy Policies and Procedures** **

Equipment:

- Alcohol Prep Pads
- Microtainer Tubes with extenders – Lavender, Green, Gold
- Gauze Pads
- Safety Needle Device
- Gloves – Latex-free (preferred)
- Sharps Containers
- Adhesive Bandages
- Patient Specimen Labels

Capillary Procedure:

1. Follow Venipuncture Procedure steps 1-3.
2. Select the site:
    - Adults/Children – Use the middle or ring finger and make the puncture on the fleshy portion for the fingertip (midway between the edge and the midpoint of the finger tip) Perpendicular to the direction of the fingerprint lines.

    - Infants – Perform the puncture on the most medial or lateral portion of the plantar surface of the heel, avoiding any previous puncture sites.

Penn Medicine
Lancaster General Health

3. Wipe the first drop of blood away, it is contaminated with tissue fluids and skin cells from the puncture and should be wiped away to ensure specimen accuracy.
4. Obtain the specimen(s) by gently squeezing around the puncture site. Do not scrap the skin excessively with microtainer.
5. Label the Specimen(s):
   - Label all tubes immediately after collection and in the presence of the patient
   - Verify all label information matches the requisition exactly (Patient name, DOB, MRN etc.)
   - Present the labeled specimens to the patient to confirm their information as a second form of identification
6. Process and Package the Specimen(s):
   - Centrifuge, refrigerate, or otherwise process samples as needed. Package according to lab transport requirements

Penn Medicine
Lancaster General Health

Refer to LIS generated collection labels for specific requirements. When in doubt, call the Laboratory for more instructions. The following table lists the Order of Draw and some Common Tests performed on the blood samples collected.

Color of Collection Tube Cap	Additive	Common Tests
Blood Culture Blue 	Enriched soybean-casein digest broth medium	Aerobic Blood Culture
Blood Culture Purple 	Preproduced enriched Soybean-Casein Digest broth with CO2	Anaerobic Blood Culture
Light Blue 	Sodium Citrate	Coagulation Studies – PT/INR, aPTT, Fibrinogen, D-Dimer, Thromboelastography (TEG)
Dark Blue (Red Label) 	Metal Free, Clot Activator	Reference Laboratory Testing
Red (Plastic or Glass Tube) 	Clot Activator	ABORH, Reference Laboratory Testing
Gold 	Serum Separator Gel and Clot Activator	BMP, CMP, some Therapeutic Drugs, Thyroid Testing
Orange 	Rapid Clot Activator Thrombin	BMP, CMP, Thyroid Testing
Green 	Sodium/Lithium Heparin (with or without Gel)	Ammonia, Methotrexate. Platelet Mapping
Dark Blue (Purple Label) 	Metal Free, EDTA	Reference Laboratory Testing
Lavender/Pink 	EDTA	CBCD, H&H, Sed Rate, HBA1C
Grey 	Potassium Oxalate or Sodium Fluoride	Lactate, Glucose Tolerance

Note: Sample Collection requirements, collection tubes, etc. are subject to change depending on test methodology and available supplies. Refer to the Laboratory Test Directory for the most up to date information.

Penn Medicine
Lancaster General Health

Capillary Tube Code	Color/Description	Specifications
Lavender Cap 	Lavender with frosted vial	Contains Disodium EDTA as anticoagulant; invert several times to mix.
Green Cap 	Green with brown vial	Contains Lithium Heparin as anticoagulant, with separator gel for plasma separation; do not overfill; invert several times to mix.
Gold Cap 	Brown vial *Serum Samples*	Contains separator gel for serum separation.