

UPDATED PHLEBOTOMY PROCEDURES

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*Procedures for the
Collection of Diagnostic
Blood Specimens by
Venipuncture; Approved
Standard—Sixth Edition
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CLSI 2011 STANDARDS

Clinical Laboratory Standards Institute

- Formally NCCLS
- International, interdisciplinary, non-profit, standards-developing, educational organization
- World-wide standards
- Way to improve patient testing and healthcare services

What is CLSI?



UNIVERSAL PRECAUTIONS

Apply to transmission of blood borne pathogens.



STANDARD PRECAUTIONS

Cover transmission of all known
infection agents; more comprehensive. **5**

Standard Precautions Combine

- Universal Precautions
- Body Substance Isolation Practices

- **Personal Protection in the Laboratory:**
 - Wear long-sleeved gowns with closed fronts or long-sleeved laboratory coats that are buttoned closed while in the laboratory.
 - Wear laboratory coats or gowns inside the laboratory only.
 - Reusable cloth or disposable gowns/coats may be used.

PROTECTIVE CLOTHING

- **Occlusive Dressing**

- Cover all non-intact skin located on parts of the body exposed to blood or body fluid with a water-impermeable occlusive bandage.

- **NOTE:**

REMOVE ALL PERSONAL PROTECTIVE EQUIPMENT BEFORE LEAVING THE LABORATORY OR WORK AREA.

PROTECTIVE CLOTHING

- **Gloves of proper size and material must be provided for your protection.**
 - Use aseptic techniques when both putting on and removing gloves.
 - Wear gloves at specimen receiving and set-up areas.
 - Do not contaminate clean areas by contact with contaminated gloves.
 - Change gloves after contact with each patient.
 - Remove gloves before handling telephones, uncontaminated laboratory equipment, doorknobs, etc.

HAND PROTECTION

- Decontaminate hands after touching all potentially infectious material, whether or not gloves are worn.
 - Use an alcohol-based hand rub or soap and water if hands are not visibly soiled.
- Removes gloves promptly after the completion of all tasks.

HAND HYGIENE

- Decontaminate hands immediately after gloves are removed and when otherwise indicated to avoid transfer of microorganisms to other surfaces and environments.
- Change gloves between patients when performing phlebotomy. Decontaminate the hands after glove removal and before donning new gloves.

HAND HYGIENE

- Decontaminate hands:
 - After the completion of work and before leaving the laboratory:
 - Before eating, drinking, smoking, applying make-up, changing contact lenses, and before and after using lavatory facilities; and
 - Before all other activities which entail hand contact with mucous membranes, eyes, or breaks in the skin

HAND HYGIENE

- Avoid soap products that may disrupt skin integrity. A moisturizing hand cream may reduce skin irritation caused by frequent hand washing; but some nonpetroleum-based hand creams may affect glove integrity.
- Avoid wearing artificial fingernails or extenders when in direct contact with patients at high risk for infections, such as those in intensive care units or operating rooms.

- Use facial barrier protection if there is a reasonably anticipated potential for spattering or splashing blood or body substances.
- Full-face shields made of lightweight transparent plastic are the preferred means of facial protection.
- Splashguards may serve as an acceptable alternative to plastic face shields.

FACIAL PROTECTION

- Use a fluid-resistant mask and eye protection if face shields are not available.
- Ordinary prescription glasses are not adequate eye protection. Use plastic, wraparound safety glasses that fit over regular glasses.

FACIAL PROTECTION

- All respirators used in healthcare settings in the United States must be certified and approved by NIOSH.
- In the United States, OSHA requires that respirators be used as part of a respiratory protection plan that includes medical evaluations, fit-testing, proper selection of respirators, annual training, and respirator maintenance.

RESPIRATORY PROTECTION



STEPS IN DOING A VENIPUNCTURE

Following the steps in doing a proper venipuncture is critical in healthcare.

WHAT IS THE MOST
IMPORTANT STEP IN
DRAWING BLOOD?

**STEPS IN DOING A
VENIPUNCTURE**

- **Identifying the In-Patient**

- Must be two (2) identifiers:
 - Ask the patient's FULL name
 - Ask the patient's date of birth

Patients that cannot communicate—caregiver will give the required communication.

STEPS IN DOING A VENIPUNCTURE

• Identifying the Out-Patient

- Must be at least two (2) identifiers:
 - Ask the patient's FULL name
 - Ask the patient's date of birth
 - Ask the patient's address

Patients that cannot communicate—
caregiver will give
the required
communication.

STEPS IN DOING A VENIPUNCTURE

- NEVER DRAW IF THERE IS A **DISCREPANCY!**

STEPS IN DOING A VENIPUNCTURE

- Identify yourself:
 - Who you are
 - Where you are from
 - What you are going to do

STEPS IN DOING A VENIPUNCTURE

- **VERIFY** fasting states:
 - Have you had anything to eat or drink?
 - When was the last time you had anything to eat or drink?

STEPS IN DOING A VENIPUNCTURE

- **Verify Diet Restrictions**

- Some tests require diet restrictions
 - Fasting
 - Eliminating certain foods

**Each facility should have a policy manual

STEPS IN DOING A VENIPUNCTURE

Outpatient:
Ask patient if
medication has
been taken.

- Check Latex Sensitivity:
 - Gloves
 - Tourniquets
 - Bandages
- Check for Allergies:
 - Seafood
 - Other

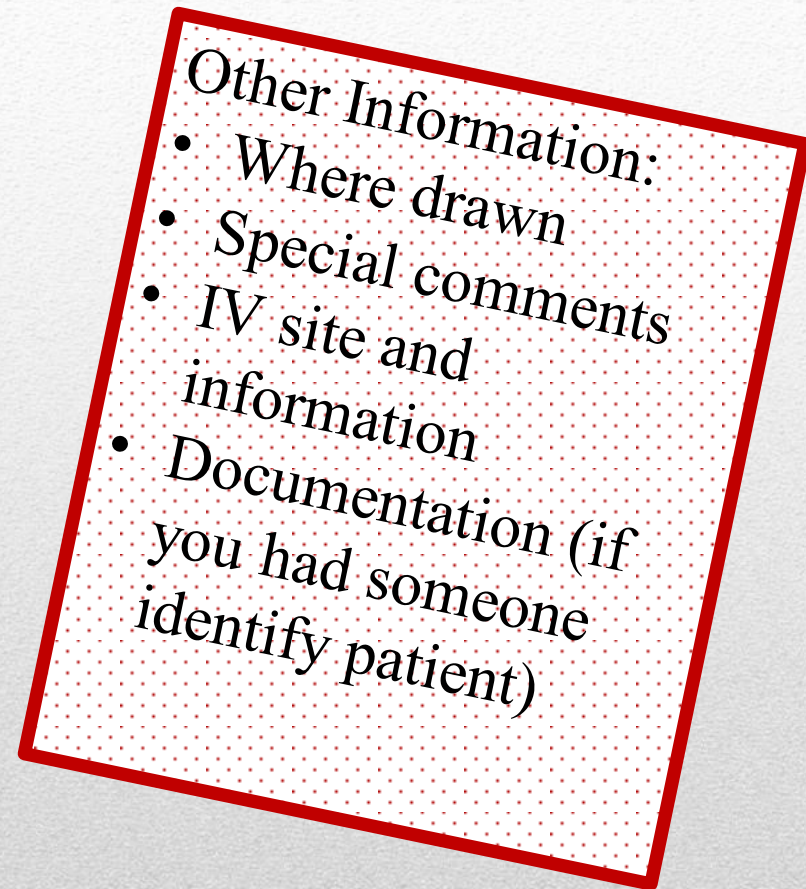
STEPS IN DOING A VENIPUNCTURE

- Sanitize hands
- Put gloves on
 - *Recommended:*
DO NOT touch patient without gloves on.

STEPS IN DOING A VENIPUNCTURE

- Check Request Form Should Include:

- Patient's:
 - Full name
 - Date of birth
 - Identification number
 - Date, time it is drawn
 - Name or initial of HCP
 - Department/tube color



STEPS IN DOING A VENIPUNCTURE

- **Position the Patient**
 - Make them comfortable
 - Foreign objects out of mouth
 - Gum
 - Mints
 - Food
 - Thermometer

STEPS IN DOING A VENIPUNCTURE

- **Assemble Supplies**
 - Inspect all supplies
 - Remember to use the same (manufacturer) needle, holder, and tube
 - Inspect all tubes

STEPS IN DOING A VENIPUNCTURE

- CLSI states—**NEVER** combine:
 - Tubes
 - Holders
 - Needles
 - From different manufactures

STEPS IN DOING A VENIPUNCTURE

- **Could cause:**
 - Hemolysis
 - Needle/holder disengagement
 - Inadequate filling of a tube

STEPS IN DOING A VENIPUNCTURE

- **TUBES:**
 - **Check** for expiration dates.
 - **Must** have a clear view of the contents *unless* test must be shielded from light.
 - No sharp edges
 - No surface roughness (capable of cutting skin)
 - Should be used to collect blood straight into the tube
 - **Must** retain vacuum

STEPS IN DOING A VENIPUNCTURE

- **Glass tubes** are strongly recommended for medication levels.
- **Plastic/glass serum** should never be used before a coagulation tube.

STEPS IN DOING A VENIPUNCTURE

- Tubes **MUST** be:
 - Durable over its shelf life and during centrifugation.
 - Plastic syringes should be avoided.

STEPS IN DOING A VENIPUNCTURE

- **Apply tourniquet**
 - Tourniquet is used to increase intravascular pressure
 - (*Tourniquet should be latex-free; single use only.)
 - Helps with the palpitation of vein
 - Helps with filling of the tube
 - Within 20 seconds, the analytes begin to change
 - Suggested time=1 minute
 - Retying a tourniquet: must wait two (2) minutes

STEPS IN DOING A VENIPUNCTURE

- Tourniquet Location
 - 2-4 inches above OR
 - 3 fingers

STEPS IN DOING A VENIPUNCTURE

**DO NOT HAVE
PATIENT PUMP HAND!**

**STEPS IN DOING A
VENIPUNCTURE**

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- **Blood Pressure Cuff:**
 - Inflate no more than 40 mmHg
 - Pump hand one to two times
 - **NO** vigorous hand pumping
(change certain analytes)

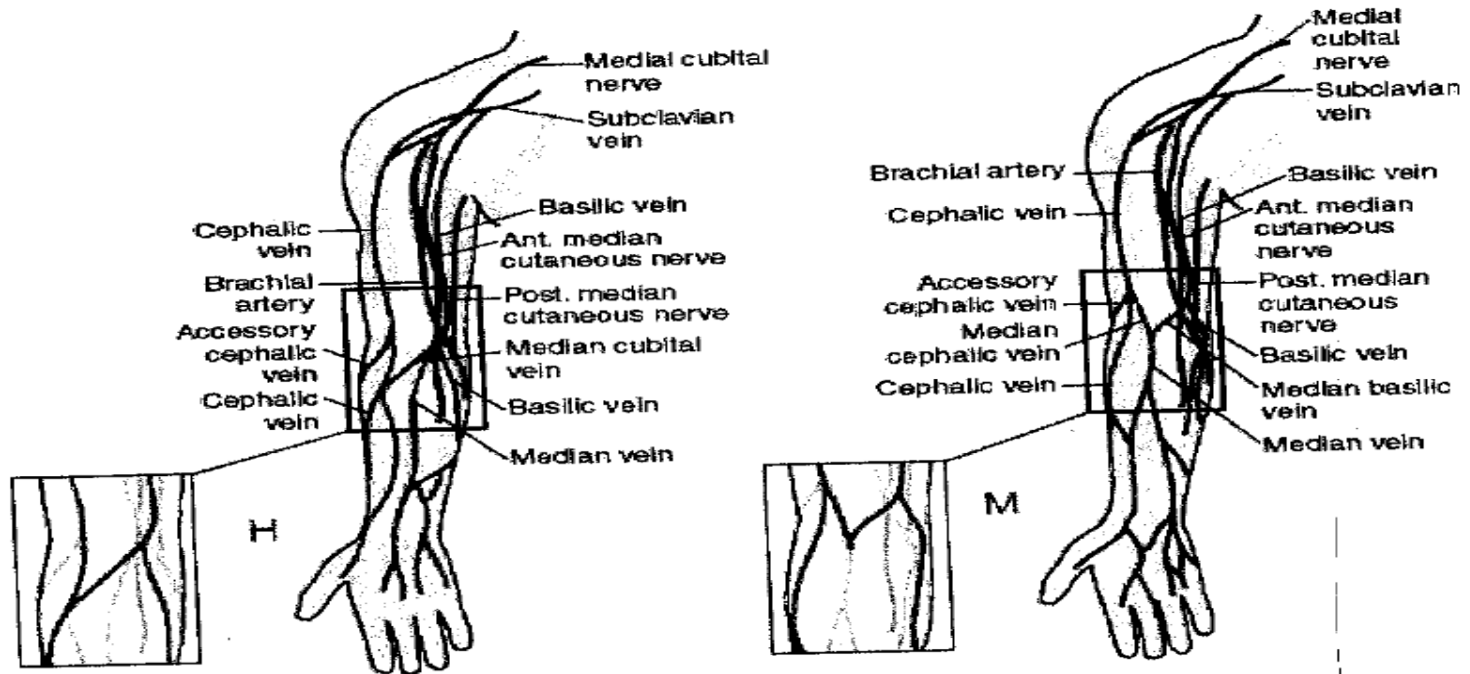
STEPS IN DOING A VENIPUNCTURE

- **DO NOT USE** the following veins!!!
 - Underside wrist
 - Lower extremities
 - Feet
 - Ankles
 - On the side of a mastectomy arm

STEPS IN DOING A VENIPUNCTURE

- **Problems that can occur:**
 - Phlebitis
 - Thrombophlebitis
 - Tissue Necrosis (death of tissue and cells)
 - Accidental Arterial Puncture
 - Nerve Damage

STEPS IN DOING A VENIPUNCTURE



Select Site

Diagram: *Clinical and Laboratory Standards Institute*

STEPS IN DOING A VENIPUNCTURE

- **Cleanse Venipuncture Site**
 - Concentric motion from center to peripheral
 - Allow area to **DRY** at least 30 seconds
 - Do not wipe dry
 - Prevents:
 - Hemolysis
 - Prevent burn in sensation on patient
 - Allow antiseptic to work

STEPS IN DOING A VENIPUNCTURE



- Difficult Veins

If you **MUST** re-touch, then you
MUST re-CLEAN!

STEPS IN DOING A VENIPUNCTURE

- **Perform the Venipuncture**

- Hold arm below the venipuncture site.

***NO “window” method!*

- Puncture at a 30 degree angle.

- Use correct order of draw.

- See the ORDER OF DRAW  **NEXT SLIDE**

STEPS IN DOING A VENIPUNCTURE

- **YELLOW** SPS (Blood Cultures)
- **LT. BLUE** Sodium Citrate
- **PLAIN RED** No Additive
- **PLASTIC RED** Clot Activator
- **GOLD, RED/GRAY** SST/Gel w/ Clot Activator
- **GREEN** Heparin-Lithium or Sodium
- **LAVENDER, TALL PINK** EDTA
- **PURPLE** EDTA
- **GRAY** Sodium Fluoride, Potassium Oxalate
- NOTE:

Other tubes will be added into the Order of Draw by their additives.

CLSI

ORDER OF DRAW

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- Invert tubes IMMEDIATELY:
 - CA → 5 times
 - Na Citrate → 3-4 times
 - Heparin → 8 times
 - EDTA → 8 times
 - Na Fluoride → 8 times

STEPS IN DOING A VENIPUNCTURE

• Perform the Venipuncture

- Release tourniquet.
- Place gauze over the site. (**NO** cotton balls!)
 - Gauze should be pre-packaged; 2X2.
- Remove needle and dispose **IMMEDIATELY**.

STEPS IN DOING A VENIPUNCTURE

- **NOTE:**
 - A clearing tube must be used if using a *butterfly* for coagulation studies
 - A non-additive tube may be drawn *before* coagulation studies when using a multi-draw needle
 - NO clot activator or additive tube should be drawn *before* coagulation studies

STEPS IN DOING A VENIPUNCTURE

- If patient has a problem, do not use ammonia inhalants.
 - Patients may have an adverse reaction.

STEPS IN DOING A VENIPUNCTURE

- Check the venipuncture site (after 3-5 minutes).
- Bandage for 15 minutes to one (1) hour.
- Patients should **NOT** bend the arm up.
- *Healthcare professional should notify nurse or supervisor if bleeding lasts more than five (5) minutes.*

STEPS IN DOING A VENIPUNCTURE

- **Labeling:**
 - Patient's last and first name.
 - ID #
 - Date, time, and initials of person collecting sample.
 - Time when TDMs are being collected.

STEPS IN DOING A VENIPUNCTURE

NEVER leave a patient before
labeling tubes!

NEVER walk into a lab without a
specimen being labeled!

STEPS IN DOING A VENIPUNCTURE

- Examples of tests requiring specimen chilling are:
 - Gastrin
 - Ammonia
 - Lactic acid
 - Catecholamines
 - Pyruvate
 - Parathyroid hormone (PTH)

SPECIAL HANDLING

- Examples of tests requiring specimen transportation at 37 °C include:
 - Cold agglutinin
 - Cryofibrinogen
 - Cryoglobulins

SPECIAL HANDLING

- Examples of tests requiring specimen protection from light:
 - Bilirubin
 - All Vitamin levels
 - Beta Carotene
 - Porphyrins

SPECIAL HANDLING

- **Send Blood Collection Tubes to the Proper Laboratories:**
 - Appropriately labeled blood collection tubes should be sent to laboratories designated to perform the required testing procedures. Maintain proper transport conditions to preserve specimen integrity.

STEPS IN DOING A VENIPUNCTURE

• Serum:

- Specimens should be clotted before centrifugation.
- Spontaneous and complete clotting normally occurs within 30 to 60 minutes at room temperature (20 to 25 °C).
 - **NOTE:** The use of a wooden applicator stick or similar device for the release of a clot attached to the tube closure or the sides of the tube (i.e., “rimming”) is not recommended because it is a potential source for the laboratory-induced hemolysis.
- The time to clot will be prolonged if the patient is on anticoagulant therapy or if the specimen is chilled.

SPECIMEN HANDLING

- **Plasma:**
 - Use a collection device containing an anticoagulant when plasma is required or acceptable.
 - Centrifuge anti-coagulated specimens immediately after collection.

SPECIMEN HANDLING

- **Chilled Specimens:**

- To chill a specimen, place it immediately in a mixture of ice and water. Good contact between the cooling medium and the specimen is essential.
- Adequate cooling is essential; however, avoid direct contact between the specimen and ice (or other cooling materials such as dry ice), because the temperature extreme may cause hemolysis.
 - **NOTE:** Chilling whole blood beyond two hours is contraindicated for a specimen intended for potassium.

SPECIMEN HANDLING

- **Preservatives:**

- Use sodium fluoride to stabilize glucose in the presence of blood cells for up to 24 hours at 25 °C or 48 hours at 4 to 8 °C.
- Use micro collection devices containing a suitable anti-glycolytic agent for pediatric blood glucose collection.

SPECIMEN HANDLING

- **Criteria for Rejection:**
 - Under the following conditions, blood specimens may not be acceptable for testing purposes:
 - Inappropriate specimen containers
 - Inadequate or incorrect specimen identification
 - Inappropriate volume of blood
 - Using the wrong collection tube
 - Hemolysis
 - Improper storage/transportation

SPECIMEN HANDLING

- **Time and Temperature:**
 - Transport specimens in the appropriate biohazard bags or containers to the laboratory in as short a time as possible.
 - Unless chilling of the specimen is required (i.e., lactic acid, ammonia), transport **all specimens** at room temperature.
 - Prompt removal of specimens from the collections area is especially important if the area temperature is above 22 °C, which may cause some measurands to deteriorate.

SPECIMEN TRANSPORT

- **Tube Orientation:**
 - Place tubes of blood in a vertical position.
 - Non-anti-coagulated tubes that contain gel should always be stored in an upright position as soon as the mixing is completed.
 - **NOTE:**
 - Evaluate automated transport systems, pneumatic or otherwise, for any effects on laboratory results.

SPECIMEN TRANSPORT

- **Tube Closure:**

- Keep tubes of blood closed at **all times**.

Keeping the tube in a closed position eliminated possible exogenous contamination of the specimen and prevents evaporation and the possibility of spills and aerosols.

SPECIMEN TRANSPORT

- **Agitation:**
 - Gentle handling of collected specimens helps to minimize erythrocyte damage leading to hemolysis of specimens.

SPECIMEN TRANSPORT

- **Exposure to Light:**

- Avoid exposing blood specimens for photosensitive measurands (i.e., bilirubin) to artificial light or sunlight (ultraviolet) for any length of time.
- Protect these specimens with an aluminum foil wrap, an amber specimen container, or the equivalent.

SPECIMEN TRANSPORT

Please feel free to contact ASPT with
any further questions.

Thank you for your time today!

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QUESTIONS
