

I. Purpose:

Knowledge of the proper techniques to be used when performing a skin puncture is necessary to assure collection of an adequate blood specimen that is suitable for testing with a minimum of trauma to the patient.

Finger puncture is performed on adults when there are no accessible veins, to save veins for other procedures such as chemotherapy, when the patient has thrombotic tendencies, and certain bedside and home testing procedures such as glucose monitoring.

Finger puncture is the preferred method of obtaining blood from children over 1 year of age. A heel stick is the preferred method for collecting blood from children under 1 year of age. Obtaining blood from young children by venipuncture may be difficult, may be potentially hazardous and obtaining large quantities of blood may result in anemia. Puncturing deep veins in children may cause cardiac arrest, hemorrhage, venous thrombosis, and reflex arteriospasm, damage to surrounding tissues or organs, infection and injury from restraining the infant or child during the collection procedure.

CAUTION: All specimen material should be considered potentially hazardous and thereby handled according to practices of Universal Precautions. Use of proper personal protective equipment (i.e. Lab coats, gloves) must be used for procedures in which exposure to blood or other potentially infectious material is reasonably anticipated to occur.

II. Responsibility:

Associates performing a capillary finger puncture (Fingerstick).

III. Materials:

- Gloves
- Alcohol Prep Pad (70% isopropyl)
- Gauze pads (2 x 2)
- Warmer device or warm clothe
- Sharps container to dispose of used lancet
- Micro collection tubes
- Slides (if applicable)
- Disposable gloves
- Sterile automated skin puncture device (BD Contact Activated Lancet)

IV. Procedure:**A. Prepare accession order.**

1. Retrieve the label and verify all supplies necessary for order collection.
2. As necessary, access and complete collection related paperwork.
 - a. Refer to your Facility's Blood Borne Pathogen Exposure Control Plan for exposure collection.
 - b. Refer to Health Alliance website <http://labreference.health-alliance.com/> to access specimen collection information if it is not available on the requisition or laboratory's label.
3. Determine minimum amount of blood required for testing.

RECOMMENDED MAXIMUM ALLOWABLE TOTAL BLOOD DRAW VOLUMES (CLINICAL + RESEARCH)			
Body Wt (Kg)	Body Wt (lbs)	Total blood volume (mL)	Maximum allowable volume (mL) in one blood draw (= 2.5% of total blood volume)
1	2.2	100	2.5
2	4.4	200	5
3	6.3	240	6
4	8.8	320	8
5	11	400	10
6	13.2	480	12
7	15.4	560	14
8	17.6	640	16
9	19.8	720	18
10	22	800	20
11-15	24-33	880-1200	22-30
16-20	35-44	1280-1600	32-40
21-25	46-55	1680-2000	42-50
26-30	57-66	2080-2400	52-60
31-35	68-77	2480-2800	62-70
36-40	79-88	2880-3200	72-80
41-45	90-99	3280-3600	82-90
46-50	101-110	3680-4000	92-100
51-55	112-121	4080-4400	102-110
56-60	123-132	4480-4800	112-120
61-65	134-143	4880-5200	122-130
68-70	145-154	5280-5600	132-140
71-75	156-185	5680-6000	142-150
76-80	167-176	6080-6400	152-160
81-85	178-187	6480-6800	162-170
86-90	189-198	6880-7200	172-180
91-95	200-209	7280-7600	182-190

96-100	211-220	7680-8000	192-200
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B. Approach and identify the patient.

1. Knock on the door before entering. If the patient is in isolation, the person drawing the blood should only take the supplies needed to draw the blood into the patient's room.
2. Introduce yourself
3. If a physician or nurse is present, ask permission to enter the room
4. Patient who is conscious:
 - a. Ask patient to give you their full name and date of birth.
 - b. Compare this information with the information on the request form (computer label) and the patient's identification armband. The armband must be attached to the patient.
 - c. Report any discrepancies to the patient's nurse. Do not draw the patient until the discrepancy has been corrected. The patient's armband and their verbal name and date of birth must match the requisition (label) prior to drawing the patient's blood.
 - d. Psych patients may be drawn without an identification armband if a nurse co-signs the specimen attesting to the identification of the patient. This exception does not apply to blood bank specimens. An armband must be attached to a patient before any blood bank specimens can be drawn.
5. Patient who is an adult and semiconscious, comatose, or sleeping.
 - a. Sleeping patients should be awakened before drawing blood. Take special care when drawing blood on this type of patient. Anticipate any unexpected movements or jerks either while introducing the needle, or while it is in place in the arm.
 - b. If unable to identify the patient, contact the patient's nurse.
6. Patient who is unconscious, mentally incompetent, or does not speak the language of the blood collector

- a. Inpatient: Reference the patient ID band. If unable to identify the patient, contact the nurse.
- b. In the outpatient setting, verify patient identification with nurse or immediate caregiver.
- c. Compare this information with the computer label or requisition and the patient's ID band, which must be attached to the patient.
- d. Report any discrepancies to the patient's nurse. Do not draw the patient until the discrepancy has been corrected. The patient's armband and their verbal name and date of birth must match the requisition (label) prior to drawing the patient's blood.
- e. Psych patients may be drawn without an identification armband if a nurse co-signs the specimen attesting to the identification of the patient. This exception does not apply to blood bank specimens. An armband must be attached to a patient before any blood bank specimens can be drawn.

7. Patient who is a child:

- a. Introduce yourself. Be warm and friendly, establish eye contact, and show concern about the child's health and comfort. You first should instill a trust and confidence in parent and child.
- b. Correctly identify the patient referencing two patient identifiers. These can include patient's name, date of birth and/or medical record number.
- c. A hospitalized infant has an ID band and usually is referred to by their last name.
- d. Find out about the child's past experience with blood drawing.
- e. Ask parent how cooperative the child might be.
- f. Explain and demonstrate the procedure in a language the child will understand. Proper preparation with help alleviate fear and diminish the "hurt". Be honest with the child who asks whether the puncture will hurt.
- g. Explain that if the child holds still, you will more likely be successful.
- h. Encourage parent involvement, which has been found to be beneficial in easing the child's anxiety. Parental behavior influences the child's behavior during the procedure.
- i. The best location for a painful procedure is a treatment room away from the child's bed or playroom. If the child cannot be removed, draw the curtain for privacy and to avoid upsetting the roommate as well.
- j. Seek assistance from another healthcare provider when patient is a combative child.

C. Explain the procedure and ask permission to draw the specimen.

1. If the patient refuses to have their blood drawn, notify the nurse assigned to the patient.

2. If the nurse is unable to persuade the patient to cooperate, complete a "Report of Unsuccessful Attempt to Draw blood" form (attachment A) and have the nurse sign the form. Leave a copy of the form on the unit with the lab request slips. If the nurse feels like the matter requires immediate attention, the patient's physician will be paged. The nurse will document this information in the patient care record.

D. Wash your hands

Wash your hands with soap and running water. In a setting where water is not available, alcohol based gels or liquids, hand wipes, and cleansing foams can be used. If patient has a latex allergy, hands must be washed using soap and water to ensure there is no residual latex on the collector's hands.

E. If applicable verify that the patient is fasting.

F. Apply clean pair of disposable latex free vinyl or nitrile gloves.

G. Position the patient

1. The patient should be sitting or lying down. Never attempt to draw blood on someone while they are standing.

H. Select a capillary puncture site

1. Select a finger that is not cold, cyanotic, bruised, cut, swollen, or has a rash.
2. Use the non-dominant hand.
3. Do not puncture the index finger which is more callused and used by the patient frequently and the fifth or little finger because the amount of tissue between skin surface and bone is the thinnest in these fingers.
4. Selected the central palmar surface of the distal phalanx (fingertip section) **fourth** ring) finger first, if possible, then the **third** (middle) finger of non-dominant and last. The puncture should be made at the thickest part of the finger (not the sides or extreme tip where the tissue is not as thick).
5. Place a chemical warmer or warm washcloth on the finger for approximately 3-5 minutes, to increase the blood flow to the area by seven fold.

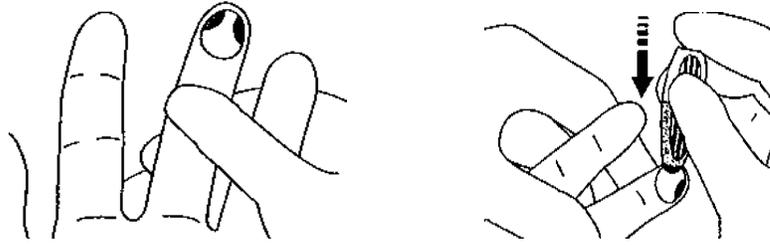
6. Gently massage the finger five or six times from the base to the tip of the finger. This will aid in the blood flow.
7. Cleanse the finger with an alcohol pad and allow to air dry. (Alcohol residue on the finger may cause a sting sensation and hemolysis of the red cells). Alcohol will also prevent formation of rounded drops of blood.
8. Betadine should not be used for skin puncture because if the sample is contaminated, falsely elevated levels of K⁺, Phosphorous and Uric Acid can occur.

I. Performing the Skin Puncture

1. Select appropriate lancet. (See selection guide below.) Remove the BD Contact Activated lancet from the protective package. Pull off protective tab of lancet and place in trash receptacle.

Reference Number	Description	Blade Width	Blade Depth	Color	Blood Volume
366592	Blade	30 G	1.0mm	 Purple	Low
366593	Blade	21 G	1.8mm	 Pink	Medium
366594	Blade	1.5mm	2.0mm	 Blue	Medium To High

2. Hold the patient's finger firmly with one hand and place the lancet on the finger perpendicular (across the fingerprint). This will allow the blood to form a bead or drop that is easily collected. If the puncture is made parallel to the fingerprint, the blood will run down the finger, making the collection a difficult procedure.



3. To activate the BD Contact-Activated lancet Press lancet firmly against the puncture site. Do not remove the device from the site until an audible click is heard. The BD Contact Activated lancet has a permanently retractable spring.
4. Wipe the first drop of blood with gauze. This will remove any fluids or tissue that may contaminate the sample.
5. Gently massage the finger from the base to tip. Do not squeeze or milk the finger, this may cause the sample to hemolyze creating erroneous test results.
6. Collect the desired amount for testing.
 - a. **CAPILLARY TUBES** - Touch the capillary tube to the drop of blood formed on the surface of the skin. Allow filling by capillary action. Seal an end of the capillary pipette with clay if it is not already sealed.
 - b. **MICRO COLLECTION TUBES**
 1. Touch the “scoop” of the micro collection tube to the drop of blood and let the drop of blood run down the walls of the tube.
 2. Occasionally, tap the tube gently to encourage the blood to settle to the bottom of the tube. Do not use a “scooping” motion against the surface of the skin. Scraping against the skin activates platelets and may also cause hemolysis.
 3. Fill tubes to the proper volume. For EDTA tubes, fill between 250-500 uL.
 4. Cap micro collection tubes with the caps provided and mix additive tubes by inversion 8-10 times.
 5. When finished, apply pressure to the site with gauze until bleeding has stopped. Keep the site elevated.
 6. Dispose of the contaminated lancet in the sharps container.
 7. Label all tubes with name, date of birth, date, time, ID number or medical record number, and phlebotomist’s initials.
 8. If insufficient sample was obtained because the blood stopped flowing, the puncture may be repeated at a different site, using a clean lancet.

J. Tests that cannot be performed by capillary puncture

Some tests cannot be performed on a capillary sample. Examples: ESR (Erythrocyte sedimentation rate), most coagulation tests, blood cultures and tests that require large volumes of serum or plasma.

K. Order of Draw for Capillary Specimens:

- a. Blood gases
- b. Slides/smears
- c. EDTA micro collection tubes
- d. Other additive micro collection tubes
- e. Serum micro collection tubes

V. References:

1. Procedures and Devices for the Collection of Diagnostic Blood Specimens By Skin Puncture; Approved Standard – Fifth Edition. NCCLS H4-A5 Vol. 24, No. 21.
2. BD Microtainer Lancet
3. Phlebotomy Handbook, Blood Collection Essentials, Garza & Becan-McBride 7th edition, 2005.