

Micropuncture – Central Zone

Applicability This document applies to all Central Zone personnel of AHS Laboratory Services and laboratories administered under the Covenant Health Group and the Lamont Health Centre collectively referred to here as Laboratory Services.

Purpose This procedure provides instructions to safely and reliably collect capillary blood from neonates, infants, children, and adults, where venipuncture is not recommended or is unobtainable.

Materials

<ul style="list-style-type: none"> • Laboratory Requisition/Sample Labels • 70% isopropyl alcohol swabs • Gauze Pads • Latex free gloves • Latex free bandage or tape • Other personal protective equipment as required 	<ul style="list-style-type: none"> • Skin incision device – single use • Commercial infant heel warmers or warm towel • Collection containers – microtainers/neonatal metabolic screening card • Sharps container
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Definitions

- Neonate up to 1 month age
- Infant up to 1 year of age
- Toddler 1 to 2 years of age
- Pediatric under the age of 14 years

Sample Requirements

- Refer to the appropriate Guide to Lab Services for the amount of blood, type of tube additive and any other special instructions required for the test(s) ordered.
- Collection sites for capillary blood include:
 - HEEL - Lateral or medial plantar surface on either side of a heel, so as not to puncture the calcaneus (heel bone) or the area of the arch. Avoid any edematous or bruised areas, or within 2.0 mm of a previous puncture site or the curvature of the heel. Never puncture deeper than 2.0 mm in babies. Heel pokes on infants are used up to the age of six months, and it can generally be performed on infants less than one year. See Procedural Notes.

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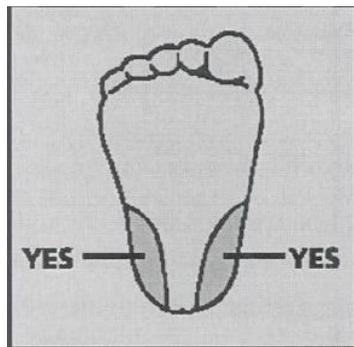
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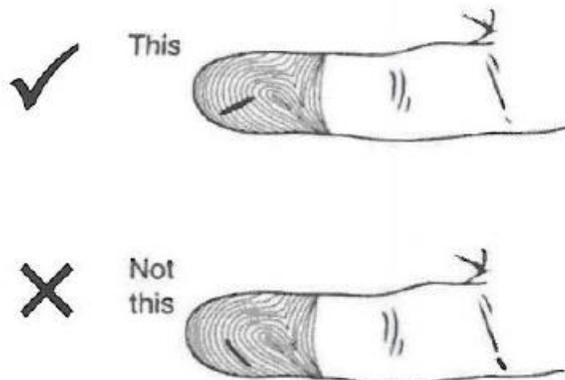
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Page 1 of 6



- FINGER - Palmar surface of the distal phalanx of the third to fourth fingers, for children greater than 1 year of age and adults. The other digits are not advised for use - the thumb has a pulse, the index finger tends to have thicker, callused skin and the fifth finger tends to have less soft tissues overlying the bone. Use the fleshy pad, and avoid the side or tip of finger. Puncture across the fingerprints, not parallel to them so that blood will well up in a bead, rather than stream down the finger. The use of device depths must follow manufacturer instructions.



Safety

- Employee Exposure – Immediately report an accidental needle stick or exposure to blood or body fluids to a supervisor. Use the information in the red folder labeled “Post-Exposure Management of Blood/Body Fluids” supplied by Workplace Health and Safety.
- Disposal of equipment:
 - Gauze pads, gloves: into normal waste containers.
 - Skin incision devices: into sharps containers.
 - Partially filled/broken collection tubes/vials – discard in biohazard container.
- Refer to appropriate Safety Manual.

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Page 2 of 6

Procedure

- Identify patient – refer to PROC.1310 Patient Identification.
 - Pediatric Patients: Determine whether it is best for the parent to leave or remain in the room. Reassure child and inform him/her of the order of events to help lessen their fear. Refer to PROC.1100 Job Aid D.
- Verify patient diet restrictions and/or medication interval to blood collection time is correct.
- Sanitize hands and put on gloves.
- Have patient positioned to ensure it is safe for collector and patient. Choose the puncture site. See Procedural Notes.
- Warm puncture site, using commercial infant heel warmer or moist towel at a temperature < 42°C around the site for at least 3 minutes. See Procedural Notes.
- Assemble supplies. See Procedural Notes.
- Cleanse the puncture site with alcohol pad, using a circular motion from the centre to the periphery. Allow to air dry.
- Select skin incision device appropriate for site and weight of newborn.

If:	Then:
Pt weighs > 2500 g (5.5 lb)	Use 1.0 mm depth lancet
Pt weighs < 2500 g (5.5 lb)	Use 0.85 mm depth lancet

- Hold the patient's heel or finger firmly to prevent sudden movement.
- Puncture the skin with the automated skin incision device as per manufacturer's guidelines.
- Wipe away the first drop of blood with a plain gauze pad.
- Touch the second drop of blood that forms to the tip of a microtainer or to a circle of the Neonatal Metabolic Screening card.
- Continue to collect drops of blood, by holding the puncture site downward and gently applying intermittent pressure to the surrounding tissue. See Procedural Notes. While collecting, tap tube gently to hasten the contact of the blood to the anticoagulant. See Procedural Notes.
- Mix adequately by gentle inversion according to manufacturer's recommendation.
- Stop flow of blood by applying pressure to puncture site with gauze pad and extremity slightly elevated. Apply pressure until bleeding stops.
- When bleeding has stopped a bandage may be applied to those patients 2 years of age or older. See Procedural Notes.

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Site:

Date Printed:

Page 3 of 6

- Label each microtainer according to PROC.1320 Sample Labeling. Complete required information on the Neonatal Metabolic Screening card. See Procedural Notes.
- Ensure all collection supplies are accounted for and removed. Ensure room is left as it was found on arrival. Discard incision device in sharps container.
- Remove gloves and wash hands.
- Document on the label or requisition if any problems have occurred during micropuncture to be entered into the LIS.

Procedural Notes

- Oral Analgesics: Studies have shown that the use of oral glucose solution just prior to or breastfeeding during the micropuncture or venipuncture procedure can help reduce pain related responses in term or preterm infants. If an oral analgesic is requested a nurse must administer it.
- Breastfeeding: It is acceptable for the infant to breastfeed during the procedure if the baby can be positioned in such a way to safely obtain the sample.
- Guidelines for blood collection by micropuncture are using heels of newborns to 6 months, but can be used generally up to 1 year, particularly if premature. Children greater than 1 year are suitable for a finger micropuncture. Conversely, collection by venipuncture are not recommended < 1 year of age because it may be difficult and potentially hazardous. It will be done; however, when lab tests require larger volumes, ie. blood cultures, coagulation testing, referral samples, and will require additional competency by the collector.
- Blood should not be taken from the fingers on the same side affected by a mastectomy.
- Infants: If infant needs to be repositioned or moved, check with nurse/parents. If infant is in an isolette, check with nursing if it can be opened or access is restricted to porthole. If baby has phototherapy light on, turn it off while collecting, and then turn back on when done, ensuring the eye patches are still in place.
- Recommended order of draw for micropunctures:
 - Whole blood microtainer (EDTA – lavender)
 - Other additive microtainers (Hep – green)
 - Serum separator microtainer (yellow or red)
 - Neonatal Metabolic Screening card (PKU)
 - Neonatal Metabolic Screening cards are collected by thoroughly saturating each circle (approx 70 μ L) on the card, by touching it to a drop of the infant's blood. Use one large drop of blood for each circle. Do not re-apply a second drop of blood to the card after it has started to dry.
 - Allow cards to dry for 3 hours on a level, open, non-absorbent surface.
 - Ensure all information areas are completed on the card.

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Page 4 of 6

- Collector is required to fill in date, time and collector ID on Neonatal Metabolic Screening card.
- The Screen should be done between 24 hours and 5 days of age.
- Avoid strong repetitive pressure (milking) and scooping the blood up from the surface of the skin as these may result in hemolysis or tissue-fluid contamination of the specimen and increasing the possibility of bruising. Check with nursing before collecting if patient is extremely bruised or edematous.
- Infants should be positioned at an angle so gravity helps blood flow. Raising an infant's heel and gently flexing and extending the knee helps the blood flow.
- Number of micropunctures:
 - A Phlebotomist may perform TWO micropunctures on the patient to obtain blood samples. If there is low probability of obtaining the sample, or another collector is unsuccessful, then inform the attending physician if an out-patient, or the attending nurse if an in-patient.
- Patient Complications or Adverse Reactions::
 - Refer to *PROC.1100 Venipuncture*, for the following patient complications or adverse reactions:
 - Tremors/Unconscious or Unresponsive Patients.
 - Violent /Psychiatric Patients.
 - Burns/Obesity.
 - Syncope/Fainting.
 - Nausea.
 - Vomiting
 - Seizures
 - Latex allergies.

References

- Clinical and Laboratory Standards Institute: "Procedures and Devices for the Collection of Diagnostic Capillary Blood Specimens; Approved Standard – Sixth Edition. H04-A6 Volume 28 Number 25, Sept 2008.
- Alberta's Newborn Metabolic Screening Program - Information for Healthcare Providers, April 2007.
- Carbajal R, Veerpen S, Couderc S, Jugie M, Ville Y. Analgesic Effect Of Breast-Feeding In Term Neonates: Randomized Controlled Trial. *BMJ* 2003 Jan. 4:326(7379):13.
- Phillips R, Chantry C, Gallagher M. Analgesic Effects Of Breastfeeding Or Pacifier Use With Maternal Holding In Term Infants. *Ambul Pediatr.* 2005;5(6):359-64.

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Page 5 of 6

- BD contact – Activated Lancet Quick Reference Card, Becton-Dickinson and Company, Franklin Lakes, NJ 09/07 VS7536-02.
- Bibliography
 - Pre-Examination Specimen Collection – Skin Puncture – Heel, SC190, Calgary Lab Services, November 22 2012.

Related Documents

- [PROC.1100 Job Aid D](#) - The Top Ten Things to Do During Pediatric Venipuncture
- [PROC.1100](#) - Venipuncture - Central Zone
- [PROC.1310](#) - Patient Identification - Central Zone
- [PROC.1320](#) - Sample Labeling - Central Zone

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Page 6 of 6