



PROCEDURE

Capillary Blood Sampling (Heel and Finger Prick)

Scope (Staff):	Community health
Scope (Area):	CAHS-CH, WACHS

Child Safe Organisation Statement of Commitment

CAHS commits to being a child safe organisation by applying the National Principles for Child Safe Organisations. This is a commitment to a strong culture supported by robust policies and procedures to reduce the likelihood of harm to children and young people.

This document should be read in conjunction with this [disclaimer](#)

Aim

To provide guidance for undertaking a capillary blood sample.

Risk

- Incorrect methods of collecting, labelling and storing blood specimens can result in patient injury, false results and delayed diagnosis, and can necessitate repeat sampling that causes unnecessary distress for the client and family.^{1, 2}
- Failure to comply with safe work practices places the healthcare worker at risk of needle stick injury and exposure to blood borne pathogens.¹

Background

Capillary blood sampling is used for a range of tests where small amounts of blood are required, usually <1mL.³ In the community health setting, these tests include:

- Haemoglobin estimation (Hb)
- Blood glucose levels (BGL)
- Newborn Bloodspot Screening Test (NBST)

If any other blood specimens are required (e.g. Full Blood Count, Urea and Electrolytes, drug testing), direct families to services where appropriately trained staff can perform a venepuncture. Venepuncture may be the preferred method of blood sampling in infants as it causes less pain and is a more reliable collection method with less need for repeat sampling.⁴

Key points

- To be performed only by staff with appropriate training.
- All nurses will refer to the [Nursing and Midwifery Board AHPRA Decision-making framework](#) in relation to scope of practice and delegation of care to ensure that decision-making is consistent, safe, person-centred and evidence-based.
- Nurses need to provide a culturally safe service delivery which demonstrates a welcoming environment that recognises the importance of cultural beliefs and practices of all clients.
- The client's identity must be confirmed prior to the sample being taken.
- Selection of the site chosen for blood sampling will depend on the client's age and weight.¹ – see **Table 1** below for further clarification.
- The equipment being used for analysis of BGL and Hb must be well maintained and regularly calibrated. Correct collection technique must be performed as per manufacturer's guidelines.^{5, 6}
- Use safety-engineered auto-lancets and adhere to sharps safety measures.
- Do not use soft paraffin (e.g. Vaseline™) or any cream at the puncture site as it can cause abnormal blood results and can clog the collection tube and analysing equipment.⁴
- Community health nurses must follow the organisation's overarching Infection Control Policies and perform hand hygiene in accordance with WA Health guidelines at all appropriate stages of the procedure.

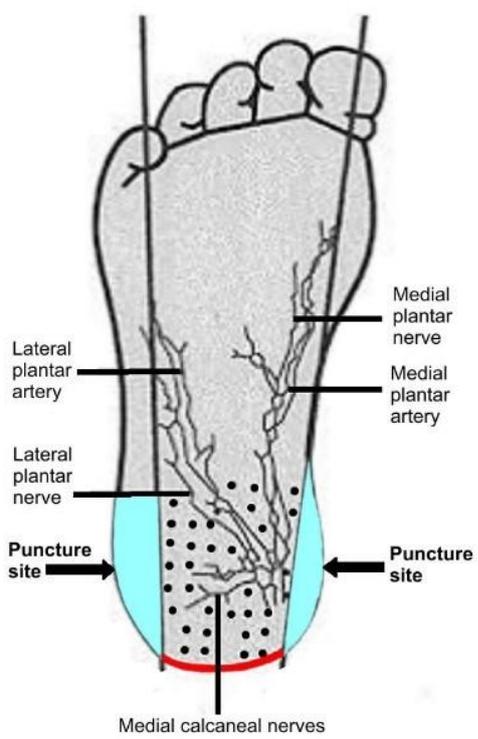
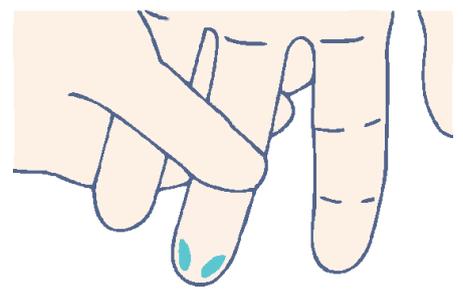
Factors that affect blood sample quality¹

- Failing to let alcohol or disinfectant dry before puncturing the skin
- Excessive massaging or squeezing of the foot/finger
- Cool peripheries and decreased blood flow

Unsuccessful attempts

- If a satisfactory sample has not been obtained after two attempts, seek advice from a senior clinician or the referring doctor to decide if a further attempt is necessary, the test is to be cancelled, or an alternative blood collection method needs to be arranged (e.g. venous sample).^{1, 4}
- Where further sampling is deemed essential, explain the reason/s to the client/parent/carer.

Table 1: Selecting the site for capillary blood sampling ^{1, 2, 4, 6}

Factors	Heel prick	Finger prick
Age	<ul style="list-style-type: none"> • Birth to 6 months (approximately) 	<ul style="list-style-type: none"> • Over 6 months
Weight	<ul style="list-style-type: none"> • 3 – 10 kg (approximately) 	<ul style="list-style-type: none"> • Over 10kg
Puncture depth	<ul style="list-style-type: none"> • 0.85mm for neonates • Maximum 2.4mm 	<ul style="list-style-type: none"> • 1.5mm: from 6m to 8 years • 2.4mm: over 8 years
Placement of lancet	<ul style="list-style-type: none"> • Safest sites are on medial or lateral aspect of heel (blue shaded areas in diagram below)⁷ • Avoid red or spotted areas shown in diagram, due to risk of injury 	<ul style="list-style-type: none"> • Safest sites are on the sides of fingertip of middle or ring fingers (blue shaded areas in diagram below) ² • Avoid using thumb or index finger, as these are more sensitive than other fingers and may have calluses or scars • Avoid using little finger, as tissue depth is insufficient to prevent bone injury 

Additional Information about site selection and puncture depth:

- The medial or lateral plantar surface of the heel is the preferred puncture site for infants under 6 months and/or less than 10kg. Puncturing in these areas protects the heel bone (calcaneus) from injury and related complications.^{1, 7}
- Staff should make themselves familiar with the depth settings of their locally used autolancets. The widely used Accu-Chek® Safe-T-Pro Plus lancing device has three adjustable depth settings of 1.3, 1.8 and 2.3 mm.

Equipment ⁴

- Approved automated lancet device
- Correct specimen collection receptacle, within expiry dates. Microcuvettes used with HemoCue® machines, testing strip for BGL estimation, Newborn Screening Test (NBST) card for NBST.
- Correct, functional, cleaned and calibrated specimen-analysing equipment
- Appropriate ‘sharps’ disposal container
- Gauze wipes, cotton wool, or tissues
- Disposable gloves ^{4, 5}

Procedure

Steps	Additional Information
<p>1. Engagement and consent</p> <ul style="list-style-type: none"> • If parent/carer present; provide relevant information, enable discussion and obtain informed consent (verbal). • Check that investigation ordered is correct for the client. • Encourage parent/carer to stay with client to provide support. 	<ul style="list-style-type: none"> • In settings where parent/carer is not present (e.g. school), ensure client identification procedures are adhered to.
<p>2. Preparation</p> <ul style="list-style-type: none"> • Ensure equipment for estimation of BGL or Hb is calibrated and operated in accordance with manufacturer’s guidelines.⁶ • Identify correct puncture site, as per Table 1. 	<ul style="list-style-type: none"> • Equipment that is not calibrated or maintained may result in false results leading to unnecessary further testing. • Blood taken from cool, poorly perfused sites can make it difficult to obtain the specimen

Steps	Additional Information
<ul style="list-style-type: none"> • Ensure the finger or heel is warm before blood collection.^{1, 7} • If limb is cool or poorly perfused, apply extra clothing or warm the site with a soft cloth moistened with warm water prior to the procedure. • Choose appropriate depth setting on lancet for client.^{1, 5} • Clean skin if visibly soiled. Alcohol swab can be used,^{6, 7} unless testing for BGL. Allow skin to dry thoroughly. • Wash hands and put on gloves. 	<p>and can affect blood sample quality.^{1, 5, 6}</p> <ul style="list-style-type: none"> • Ensure skin is dry after cleansing or using an alcohol swab, as puncturing the skin before it is dry can dilute or haemolyse the sample and adversely affect the test results.^{1, 7} • Retractable incision devices are recommended because they minimize risk of patient and healthcare worker injury.^{1, 2} • Use of disposable gloves is required as per CAHS Infection Control policies.
<p>3a. Positioning for HEEL PRICK</p> <ul style="list-style-type: none"> • Ask parent/carer to have a firm comfortable hold of the infant during the procedure. • Partly encircle the infant's heel at the arch and ankle with non-dominant hand and gently squeeze foot to bulge flesh away from bone.² 	<ul style="list-style-type: none"> • Patient immobilisation is crucial to the safety of the paediatric client undergoing heel/finger-prick for blood sampling, and to the success of the procedure. A helper is essential for properly immobilising the client.¹ • Engage or distract client. Consider appropriate support, such as being held by parent, breastfeeding, or dummy.^{2, 4} • Place heel to be punctured in a dependent position below heart level to improve circulation.^{2, 7}
<p>3b. Positioning for FINGER PRICK</p> <ul style="list-style-type: none"> • Ask the parent/carer to have a firm comfortable hold of the client, and then immobilise the finger to be punctured to prevent sudden movement and accidental injury.¹ • Select puncture site on the medial or lateral aspect of the fingertip of the middle or ring finger.^{1, 5} 	<ul style="list-style-type: none"> • Engage or distract client. Consider appropriate support, such as being held by parent, breastfeeding or dummy. • Hold puncture site downward to aid flow via gravity.²

Steps	Additional Information
<p>4. Activate the lancet</p> <ul style="list-style-type: none"> • Hold the lancet device firmly and at 90° against the skin. • Activate the autolancet to make a quick puncture. • Dispose of lancet into sharps container. • Relax tension on the heel / finger and wipe the first drop of blood away as it may be diluted by interstitial fluid. For Hb testing wipe away first 2-3 drops.^{5, 6} • As the next drops of blood form, fill the Microcuvette or test pad/strip in one continuous process.⁵ • If needed, apply intermittent gentle pressure with fingers to aid blood drops to form.⁵ • If blood does not flow freely, perform another puncture with a new lancet in a different site rather than squeezing heel or finger.^{3, 5} • Apply cotton wool ball or gauze against the site and apply pressure until bleeding ceases. • If unable to obtain a blood sample easily, perform another puncture on a different site. 	<ul style="list-style-type: none"> • Avoid too much pressure when lancing as this deepens puncture depth.¹ • Avoid excessive squeezing, as this can cause more pain,⁷ and haemolysis leading to inaccurate results.¹ • Wiping the first drop of blood away eliminates cellular debris and residual alcohol which can alter test results.⁵ • DO NOT puncture the skin more than once with the same lancet, or use a single puncture site more than once, because this can lead to bacterial contamination and infection.¹
<p>5.1 Blood Glucose Estimation</p> <ul style="list-style-type: none"> • Ensure selected site is clean and dry prior to puncture - do not use alcohol swab. • Wipe the first drop of blood away. • Collect the second large drop and cover test pad evenly with blood. 	<ul style="list-style-type: none"> • Alcohol residue on the skin may adversely affect the BGL test results.⁴ • Clients must wash hands first with soap and water to remove potential traces of glucose.⁸

Steps	Additional Information
<p>5.2 Haemoglobin Analysis⁵</p> <ul style="list-style-type: none"> • If using HemoCue® analyser or other machine, follow manufacturer's instructions.⁵ • When a large drop of blood has formed, fill the microcuvette in one continuous process. Do not refill as this promotes bubbles and an inaccurate result.^{5, 6} 	<ul style="list-style-type: none"> • Check expiry dates on Microcuvettes before use. • Ensure correct storage of cuvettes as per manufacturer recommendations. • Note: The microcuvette should be filled within 3 minutes after the microcuvette has been taken out of its package • Refer to Appendix A for Hb levels indicating anaemia. For further information about anaemia in childhood, refer to local guidelines.
<p>5.3 Newborn Screening Test (NBST)⁹</p> <ul style="list-style-type: none"> • Refer to Neonatology guideline - <i>Newborn Screening Test</i>. 	<ul style="list-style-type: none"> • When checking client ID, complete ALL required information on the NBST card • Use an automated device to make a skin puncture on heel to a depth of 2 mm or less. • Fill each circle on the blood spot card by allowing a single blood drop to flow naturally from the front to the back side of the card. Contact between the sampling site and the card must be avoided.
<p>6. Post Procedure</p> <ul style="list-style-type: none"> • Press cotton ball or tissue onto puncture site until bleeding stops. • Offer comfort and reassurance to client/parent/carer. • Dispose of waste materials, and handle and dispose of all sharps appropriately, in accordance with relevant policy guidelines. • Remove and dispose of gloves and perform hand hygiene. 	<ul style="list-style-type: none"> • Adhesive tape is not usually required or recommended. ²

Referral pathway

Refer to a medical practitioner if:

- Inadequate blood sample obtained
- Sample not able to be obtained due to client refusal.
- Blood results not within normal limits.

If performing BGL testing in school setting, follow the appropriate pathway in individual student's [Diabetes Management Plan](#) once result is obtained.

Documentation

Nurses maintain accurate, comprehensive and contemporaneous documentation of assessments, planning, decision making and evaluations according to CAHS-CH and WACHS processes.

References

1. World Health Organization. WHO guidelines on drawing blood: best practices in phlebotomy. 2010. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK138647/>.
2. Krleza JL, Dorotic A, Grzunov A, Maradin M. Capillary blood sampling: national recommendations on behalf of the Croatian Society of Medical Biochemistry and Laboratory Medicine. *Biochemia medica*. 2015;25(3):335–58.
3. Child and Adolescent Health Services. Blood Sampling: Capillary, Venepuncture, Peripheral Arterial, UAC, UVC and CVC. Perth: Neonatology; 2019.
4. Child and Adolescent Health Service. Capillary Blood Sampling (Heel and Finger Prick). Perth: Perth Children's Hospital; 2021.
5. Hemocue. Hemocue 801 - Operating Manual. 2019.
6. Kimberley Aboriginal Health Planning Forum. Anaemia in Children. Kimberley Aboriginal Medical Service; 2015.
7. Vedder T. Heel Sticks: Periprocedural Care Techniques Overview. 2015.
8. Olamoyegun MA, Oloyede T, Adewoye OG, Abdulkarim SO, Adeleke AA. Pseudohyperglycemia: Effects of Unwashed Hand after Fruit Peeling or Handling on Fingertips Blood Glucose Monitoring Results. *Annals of Medical and Health Sciences Research*. 2016;6(6):362-6.
9. Child and Adolescent Health Services. Newborn Screening Test. Perth: Neonatology; 2021.
10. PathWest. Haematology Methods Manual. Haematology Reference Data. Version Number 1.2 ed. QEII Perth, 2018.

Related internal policies, procedures and guidelines
The following documents can be accessed in the CH Clinical Nursing Manual: HealthPoint link or Internet link or for WACHS staff in the WACHS Policy link
Clinical Handover – Nursing
The following documents can be accessed in the CAHS-CH Operational Policy Manual
Blood and Body Fluid Exposure Management
Blood and Body Fluid Spill Management
Client Identification
Consent for Services
Hand Hygiene
Latex Minimisation
The following documents can be accessed in the CAHS Policy Manual
Blood Glucose Testing & Monitoring
Capillary Blood Sampling (Heel and Finger Prick)
Newborn Screening Test
Sharps Management
Standard and Transmission Based Precautions
The following documents can be accessed in the WACHS Policy Manual
Blood and Blood Products Management - WACHS Clinical Practice Standard
Hand Hygiene policy
Infection Prevention and Control Policy
Iron Deficiency Assessment for Child Health procedure
Patient Identification policy
Waste management policy

Related internal resources (including related forms) (if required)

The following resources and forms can be accessed from the CAHS-Community Health Forms page on HealthPoint

[Clinical Handover/Referral Form](#) (CHS663)

[Diabetes Record Management Chart for Education Support Students](#) (CHS427)

Related external resources (including related forms) (if required)

Diabetes WA – [Diabetes management and action plans](#)

HemoCue® Hb 201+ - [Operating Manual](#)

HemoCue® Hb 801 Analyzer - [Operating Manual](#)

Appendix 1: Haemoglobin Levels for Anaemia ¹⁰

Haemoglobin levels for Anaemia	
Age	Anaemia if Haemoglobin below:
At birth M&F	135 g/L
7 - 35 days M&F	100 g/L
5 - 11 weeks M&F	95 g/L
3 - 6 months M&F	95 g/L
7 months – 2 years M&F	105 g/L
2 - 6 years M&F	110 g/L
6 - 12 years M&F	115 g/L
12 - 18 years <u>Male</u>	125 g/L
12 - 18 years <u>Female</u>	120 g/L

Source: PathWest QEII Haematology Reference Data – Haematology Methods Manual
HM038 Version 1.2 2018

Capillary Blood Sampling (Heel and Finger Prick)

This document can be made available in alternative formats on request.

Document Owner:	Nurse Co-Director, Community Health		
Reviewer / Team:	Clinical Nursing Policy Team		
Date First Issued:	30 July 2019	Last Reviewed:	30 July 2019
Amendment Dates:		Next Review Date:	16 September 2025
Approved by:	Community Health Clinical Nursing Policy Governance Group	Date:	26 August 2022
Endorsed by:	Executive Director - Community Health Executive Director – Nursing	Date:	16 September 2022
Standards Applicable:	NSQHS Standards:  1.6, 1.7, 1.27, 1.29, 2.4, 2.5, 2.6, 3.1, 3.5, 3.6, 3.8, 3.9, 5.5, 5.11, 6.1, 6.4, 6.5, 6.6, 6.8, 6.11 Child Safe Standards: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10		

Printed or personally saved electronic copies of this document are considered uncontrolled



Healthy kids, healthy communities

Compassion
Excellence
Collaboration
Accountability
Equity
Respect

Neonatology | Community Health | Mental Health | Perth Children's Hospital