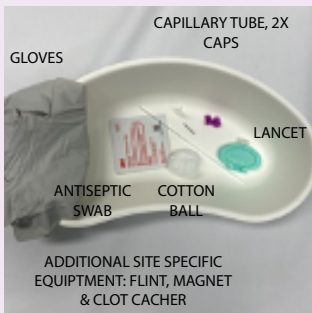


Paediatric Capillary Blood Gas Sample

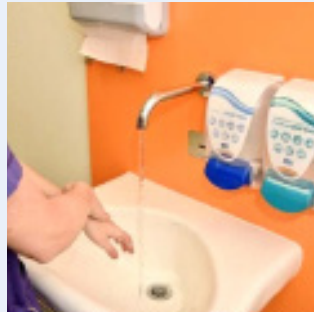
A capillary blood gas is an alternative to an arterial blood gas and is a less invasive sampling method. It involves puncturing the skin in a highly vascular site to obtain a sample of blood. It is obtained in infants and children with cardio-respiratory compromise, and used to assess an infant or child's oxygenation, adequacy of ventilation and acid base balance. As blood gas machines differ from site to site this skill sheet focuses on the collection process. For this reason ensure you have undergone training specific to your site on running a capillary blood gas through the analyser post collection.

1 GATHER EQUIPMENT



2 PREPARE

Attend to Hand hygiene and don PPE.



3

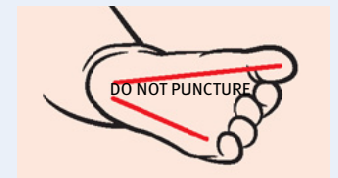
Explain the procedure and gain verbal consent.



4

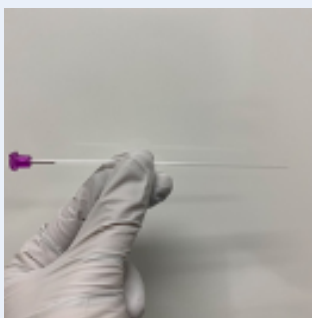
Choose the puncture site

- 0-12 months on the outer aspect of the heel as seen in the illustration below
- Over 1 year on the outer aspect of the fingertip (usually middle or ring finger)



5 PROCEDURE

Attach cap to one end of the capillary tube. If appropriate to your site: insert flint into the tube.



6

Firmly support the finger or heel with your non-dominant hand.



7

With your dominant hand clean the selected site with a sterile alcohol wipe giving it time to dry.



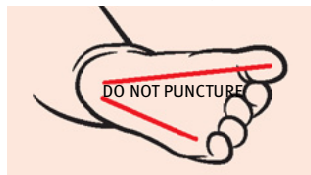
8

Puncture the site once and wipe away the first drop of blood with a gauze swab to avoid inaccurate results.



ALERT

In neonates and infants, the puncture should be no deeper than ~ 2.0 mm and should only be made in the outer aspects of the heel. Penetration of the underlying calcaneus bone can result in necrotising osteochondritis.



9

If appropriate, elevate the puncture site or tilt the bed to use gravity to assist you in sample collection.



10

Once a drop of blood has formed, place the uncapped end of the capillary tube in the centre of the blood drop.



11

Allow blood to flow freely into the tube. Do not squeeze the lanced site excessively as this can lead to inaccurate results.



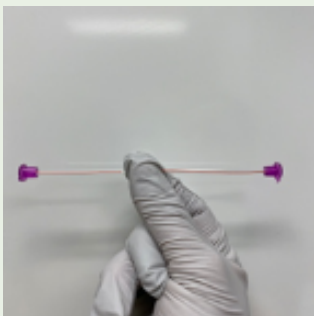
12

During the collection hold the capillary tube horizontal to the collection point to avoid any air entering the tube.



13

Once capillary tube is full immediately seal the open end with the 2nd cap.



14

Apply pressure to puncture using gauze



15

Prevent sample clotting by following site specific practice e.g. the use of a magnet to move the flint along the length of the tube or holding the capillary tube between 2 fingers while inverting.



16

Take the sample to the analyser machine and process the sample as per your local training. Remember to select 'capillary sample'.



17

Ask the treating medical officer to review the capillary blood gas results.



ALERT

The practice of using paraffin solutions (or skin lotions) on the heel prick site to facilitate pooling of blood for more efficient collection is NOT recommended. This practice may alter blood results, increases the risk of infection, and may clog the equipment.



Tips in Children

- If permitted, use sucrose in infants, to minimise procedural discomfort. A medical order and parental consent is required prior to use.
- Blood collected for the purposes of a Serum Bilirubin (SBR) must not be obtained under phototherapy lights. Phototherapy lights break down the bilirubin in the sample causing an erroneous result.
- To optimise blood flow and collection, try the following:
 1. Warm the puncture site using blankets/bunny rugs prior enabling blood vessels to dilate & accelerating blood flow.
 2. Use gravity to assist collection by elevating the puncture site slightly.
 3. Apply gentle intermittent pressure to surrounding tissue whilst allowing sufficient time for reperfusion.
 4. Avoid air bubbles in the capillary tube by holding the tube horizontal to the puncture site

For further information:

[Townsville Hospital and Health Service Procedure: Heel prick blood collection for infants](#)

References:

This Queensland Paediatric Emergency Nursing Skill Sheet was developed by the Emergency Care of Children working group (funded by the Queensland Emergency Department Strategic Advisory Panel) with the help of the following resources:

Faan, P. R. P. M. H. J., & C(Inc), R. D. (2018b). Wong's Nursing Care of Infants and Children. In Chapter 22 Pediatric Nursing Interventions and Skills (11th ed., pp. 706–708). Mosby.

Townsville Hospital and Health Service. (2021, January 19). Procedure: Heel prick blood collection for infants. Queensland Health Intranet. https://qheps.health.qld.gov.au/_data/assets/pdf_file/0019/2044702/thhscli171160.pdf

Nursing Skill Sheet Legal Disclaimer

The information contained in the Queensland Paediatric Emergency Care nursing skill sheets are intended for use by nursing staff for information purposes only. The information has been prepared using a multidisciplinary approach with reference to the best information and evidence available at the time of preparation. No assurance is given that the information is entirely complete, current, or accurate in every respect. The nursing skill sheets are not a substitute for clinical judgement, knowledge and expertise, or medical advice. Variation from the nursing skill sheets, taking into account individual circumstances may be appropriate. This does not address all elements of standard practice and accepts that individual clinicians are responsible for the following:

- Providing care within the context of locally available resources, expertise, and scope of practice.
- Supporting consumer rights and informed decision making in partnership with healthcare practitioners including the right to decline intervention or ongoing management.
- Advising consumers of their choices in an environment that is culturally appropriate and which enables comfortable and confidential discussion. This includes the use of interpreter services where necessary.
- Ensuring informed consent is obtained prior to delivering care.
- Meeting all legislative requirements and professional standards.
- Applying standard precautions, and additional precautions as necessary, when delivering care.
- Documenting all care in accordance with mandatory and local requirements.

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