10 NEONATAL CARE

10.3 NEONATAL SCREENING

10.3.3 BLOOD – COLLECTION FROM A NEONATE

10.3.3.1 CAPILLARY BLOOD COLLECTION FROM A NEONATE (HEEL STAB)

Keywords: Neonatal blood collection, capillary blood collection, blood sampling neonates, neonatal blood tests, heel stab, heel prick

AIM

To inform staff on the procedure for neonatal blood collection for diagnostic investigation.

KEY POINTS¹

- Including environmental, behavioural and non-pharmacological comfort measures is recommended for the procedure.¹ ² This includes providing a calm relaxing environment with reduced noxious stimuli where possible.¹ ²
- Distance from other painful procedures by >2 hours for the neonate to recover.¹
- It is not necessary to warm the heel to facilitate blood flow to the area prior to lancing.¹ ³⁻⁵ Unsafe heel warming practices may lead to skin burns³ ⁻⁵, instead dress the infant warmly prior to the blood collection and minimise unwrapping.³ ⁷ ¹⁻² ³⁻⁵ This increases peripheral blood supply.⁷ ⁸
- Whenever possible, invite the mother to be involved in the procedure, using skin to skin contact or breast feeding.¹ ³⁻⁵ ⁸ When this is not possible, sucrose and non nutritive sucking may be used.¹⁻³ ⁹, ¹⁰
- Avoid squeezing the heel as this causes unnecessary pain¹, bruising,⁵ and limits perfusion.
- The use of analgesia or local anaesthetic cream (e.g. EMLA, paracetamol) is not recommended as it is ineffective pain relief for heel lancing.¹, ¹⁰
- Use an automatic lancet rather than manual lancet.¹ ³⁻⁵ ¹⁰
- Soft paraffin solutions should not be used for heel punctures.⁵

NEONATAL CAPILLARY BLOOD COLLECTION (HEEL STAB) QRG:

1. Explain procedure to parent & gain verbal consent.
2. Check baby’s identity matches request form.
3. Collect equipment, wash hands & put on gloves.
4. Identify correct skin puncture site (lateral section of plantar heel surface).
5. Provide pain relief measures for neonate by involving mother (e.g. breastfeeding, skin to skin, swaddle) if available. Administer sucrose if appropriate. Position neonate’s foot lower than body.
6. Clean site if soiled, swab site with alcohol swab & allow to dry.
7. Hold foot firmly with palm & index finger & lance to puncture skin.
8. Wait 5 seconds, then wipe away first blood drop with gauze.
9. Collect blood as required. Gently “pump” the heel allowing time for capillary refill; however avoid squeezing as tissue fluid dilutes the collection, and bruising, pain & haemolysis may occur.
10. Place cotton wool over site with gentle pressure when finished.
11. Comfort neonate, discard equipment appropriately and wash hands.

Note: This QRG represents minimum care & should be read in conjunction with the full guideline. Additional care should be individualised to situation.

DPMS
Ref: 5324

All guidelines should be read in conjunction with the Disclaimer at the beginning of this manual Page 1 of 5
If a skilled phlebotomist is available venipuncture is the preferred method for obtaining blood in term neonates.\textsuperscript{1, 7, 10} It causes less pain to the neonate, takes less time\textsuperscript{7} and is associated with less maternal anxiety.\textsuperscript{10}

**EQUIPMENT**

- Automated lancet\textsuperscript{1, 3, 5, 10}
- Warm water and gauze\textsuperscript{5}
- Cotton ball
- Alcohol wipe\textsuperscript{7}
- Disposable gloves
- Correct specimen tubes or Newborn Blood Screening Test card
- Laboratory request form
- Sharps container
- Sucrose\textsuperscript{10}. See also KEMH NCCU Clinical Guideline Section 3: Oral Sucrose for procedural pain relief for contraindications/ dosages and further information.

**PROCEDURE**

<table>
<thead>
<tr>
<th>PROCEDURE</th>
<th>ADDITIONAL INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Preparation</td>
<td>Explain the procedure to the mother and obtain verbal consent.\textsuperscript{11} Advise the mother she may be present while the procedure is done.\textsuperscript{7}</td>
</tr>
<tr>
<td>1.1</td>
<td></td>
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<tr>
<td>1.2 Collect equipment.\textsuperscript{7}</td>
<td>Check the identity of the neonate with the laboratory test request form.\textsuperscript{7, 12} Perform hand hygiene and don gloves.\textsuperscript{7, 12}</td>
</tr>
<tr>
<td>2 Choosing a site for the heel prick</td>
<td>Using the lateral or medial edges of plantar area of the foot decreases the risk of damage to sensitive areas,\textsuperscript{3} such as the calcaneus. The recommended maximum lancet depth is 2.4mm when used on the lateral or medial edges of plantar area of the foot.\textsuperscript{7, 13} Serious complications of the heel prick can include necrotising chondritis, calcaneal osteomyelitis, and soft tissue damage.\textsuperscript{7}</td>
</tr>
<tr>
<td>2.1 Use the most medial or lateral portions of the plantar surface of the heel\textsuperscript{12} (in diagram below areas indicated by arrows). Limit the depth of the puncture wound by using an automated lancet.\textsuperscript{3}</td>
<td></td>
</tr>
</tbody>
</table>
**PROCEDURE**

### 2.2 Only consider using the whole plantar surface of the foot (using automated lancets of 2.2mm in length or less) for neonates over 33 weeks’ gestation if they are having multiple/frequent heel pricks.14, 15

In small or premature neonates, damage can occur as the calcaneus may be <2mm below the plantar surface, and <1mm at the posterior heel area.12 Do not use the posterior surface of the foot because the calcaneum is more superficial at this area.5, 12

### 3 Preparation of the neonate

#### 3.1 Methods to reduce pain for the neonate:

- Skin-to-skin contact with the mother2
- Swaddling/containment/ rocking², 5, 10
- Breastfeeding³, 5, 9
- Administration of oral Sucrose³, 5, 10, 16 if available

Skin-to-skin contact for 10-15 minutes prior to heel stab is an effective, easily implemented and safe method to reduce pain in the neonate.

Breastfeeding or breast milk should be offered to alleviate procedural pain in neonates.³, 5, 9 Administration of sucrose/glucose has a similar effect at reducing pain.5, 10

#### 3.2 Position the neonate: Ensure the foot is lower than the body.³, 5, 17

Assists with blood flow.

### 4 Taking the blood sample

#### 4.1 Choose a puncture site.

*Do not use a previous puncture site.*

Automated lancets cause less bruising and facilitate faster healing of the foot. Avoid too much pressure when lancing as this deepens puncture depth.7

#### 4.2 Clean the heel site (i.e. gauze and water⁷) if the foot appears unclean (e.g. faecal material), wipe with alcohol swab*7, 12 and allow to dry.⁴, 7

*Alcohol impregnated wipes reduce infection complications ⁷, however should be wiped off if used before glucose or Newborn Blood Screening Tests18, or not used at all as they can affect these tests accuracy ³. Alcohol swabs have been associated with chemical burns in premature infants.⁵

#### 4.3 Encircle the foot with the palm of the hand and the index finger.¹⁷

#### 4.4 Make a quick puncture with the automated lancet device.³, 7

#### 4.5 Wipe off the first drop of blood with a gauze swab.³, 3, 12, 17

The first drop of blood may be diluted by interstitial fluid.⁷

#### 4.6 Allow enough time for capillary refill of the heel and only gently "pump" the heel if necessary to continue the blood flow.⁷, 17

Squeezing the heel causes or increases pain for the neonate, dilutes the sample with tissue fluid, and can cause haemolysis and soft tissue damage.³, 7

#### 4.7 Apply gentle pressure with a gauze swab or cotton ball to puncture site holding until bleeding stops.³, 7

Avoid adhesive tape or bandaids as they may cause pain and skin damage on removal.⁷

#### 4.8 Dispose of equipment appropriately¹², comfort neonate⁷ & document as required.³

Ensure correct labelling of sample against neonate and request form.¹² Document test and any results in neonatal notes.
CARE IN THE HOME (VISITING MIDWIFERY SERVICE)

- Follow the procedure as documented above
- Document the sample collection date and time in the Care of the Well Neonate pathway (MR 425.10)
- The blood sample must be:
  - Labelled correctly
  - Accompanied by a completed pathology request form (yellow and pre signed in the VMS cars) and a VMS to EC referral form (MR026) with all relevant history details and contact numbers for the parents
  - Sealed in an appropriate specimen bag
  - Be kept cool and out of direct sunlight
  - Taken by the parent/ carer directly to the Emergency Centre at KEMH (within 4 hours)
REFERENCES (STANDARDS)


National Standards – 1- Care provided by the clinical workforce is guided by current best practice
Legislation - Nil
Related Policies - Nil
Other related documents – KEMH Clinical Guideline Section B: 10.3.3.2 Newborn Screening Test (Guthrie)
KEMH NCCU Clinical Guideline Section 3: Oral Sucrose for procedural pain relief

RESPONSIBILITY
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Last Amended
Review date September 2017

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