## Document Control

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<th>Capillary Blood Sampling Guidelines for Neonates</th>
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<tr>
<td><strong>Author’s job title</strong></td>
<td>Staff Nurse, SCU</td>
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<td><strong>Directorate</strong></td>
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### Main Contact

**Special Care Unit**  
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### Lead Director

Medical Director

### Superseded Documents

Plymouth Hospital’s Capillary Blood Sampling Guidelines

### Issue Date

September 2015

### Review Date

September 2018

### Review Cycle

Three years

### Consulted with the following stakeholders:

- Paediatric Consultants
- Neonatal Nurses
- Paediatric Nurses
- Head of Midwifery
- Midwives

### Approval and Review Process

- Neonatal/Paediatrics

### Local Archive Reference

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### Policy categories for Trust’s internal website (Bob)

- Neonatal, Paediatric

### Tags for Trust’s internal website (Bob)

- Infant, Heelprick, Blood Gas
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1. **Introduction and Purpose**

   Blood sampling via heel prick with correct technique obtains adequate volumes for a variety of tests and minimises trauma to venous access sites.

   Capillary blood sampling is the most commonly performed invasive procedure in the neonatal period (Barker and Rutter 1995, Johnston et. al 1997).

   Heel pricks are performed by doctors, nurses and midwives- although the procedure is quick and easy to learn, if it is carried out incorrectly it can cause unnecessary pain, tissue damage and inaccurate test results.

   Capillary sampling can be used to monitor:

   - Blood glucose levels
   - Blood gases
   - Full blood counts
   - Drug levels
   - Urea and electrolytes
   - Bilirubin levels
   - Newborn Bloodspot Screening Tests ([Newborn Bloodspot screening Guideline](#))

2. **Responsibilities**

   Role of all clinical staff including nurses, midwives and doctors who take capillary blood samples:

   - To act in accordance with this guideline
   - To minimise the pain associated with the blood sampling

3. **Risks**

   Risks of Capillary Blood Sampling:

   - Increased pain compared to venous sampling
   - Local trauma
   - Damage to nerves, blood vessels and bones
   - Excessive blood loss
   - Infection
   - Scarring
These problems can be avoided by good technique.

4. **Consent**

A full explanation should be given to the parents before the procedure and informed consent gained where possible. If parents are not available then check if parents they have consented to routine procedures using SCU consent documentation on admission to ward.

5. **Capillary Blood Sampling – Heel Prick Technique**

Before doing taking a heel prick sample consider whether a venous sample would be more appropriate.

- A venous sample is less painful for the infant.
- Poor peripheral perfusion does not permit successful capillary sampling

5.1. **Equipment**

- Cardboard tray
- The heel should be cleaned with sterile water and gauze/ saline wipe. Allow area to dry. **Alcohol wipes should not be used**, due to absorption and drying to the skin, it has also been association with chemical burns in preterm infants, minimising chemical exposure in the newborn and injury to delicate skin or healing tissue (Association of Women's Health 2001 and (UKNSPC) UK Newborn Screening Programme Centre (2012)).
- Cotton wool
- Non-sterile Gloves
- Dressing packs (for very preterm infants)
- Appropriate single use lancet device
- Sucrose (prescribed), pacifier/ EBM
- Soft yellow paraffin (optional)* (put a small blob on cardboard tray)
- Capillary tubes, blood bottles, NBBS card
- Sharps disposal box
*The use of soft yellow paraffin after firing the heel prick lancet varies amongst health professionals and between units. There is no evidence for or against its use so is left to the preference of the health professional.
Paraffin should not be applied before the heel prick as:

- It may cause the lancet to slip and misfire
- Any substance on the skin can be pushed into the wound as the blade pierces the skin therefore increasing the risk of infection.

When samples are difficult to collect soft paraffin may be used. When using paraffin, apply the smallest amount possible to avoid it blocking the blood gas machine or tubes.

Theoretically, paraffin causes blood to ‘bead’ which helps collection into bottles and tubes. It does not affect test results but may block the gas machine inlet. To prevent this, the opposite end to which the sample was collected in should be inserted into the gas machine inlet.

**Soft paraffin shouldn’t be used for capillary blood gas samples, Blood Glucose or Newborn bloodspot screening though, but only for filling blood bottles (Nottingham Capillary Blood Sampling Guidelines 2013).**

<table>
<thead>
<tr>
<th>DEVICE</th>
<th>INFANT WEIGHT</th>
<th>DEVICE ACTION AND INCISION DEPTH</th>
<th>SPECIMEN TYPE</th>
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</thead>
<tbody>
<tr>
<td>Quickheel Preemie Lancet</td>
<td>Infants &lt; 2000g</td>
<td>Uniform incision with surgical blade 0.85mm</td>
<td>Larger samples e.g. FBC, U&amp;E</td>
</tr>
<tr>
<td>(purple)</td>
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<tr>
<td>Quickheel Lancet (Green)</td>
<td>Infants &gt; 2000g</td>
<td>Uniform incision with surgical blade 1.00mm</td>
<td>Larger Samples e.g. FBC, U&amp;E</td>
</tr>
<tr>
<td>Unistik 3 Comfort</td>
<td>Infants &gt; 2000g</td>
<td>Skin Puncture Up to 1.8mm</td>
<td>Small single samples e.g. Blood Sugar, Blood Gas,</td>
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Heel puncture depths need not be deeper than the vascular bed to obtain the blood sample. The subcutaneous depth from skin surface to the vascular bed is from 0.35mm to 0.82mm in babies between 1000g and 2000g and from 0.82mm to 1.6mm in babies between 2000g and 6kg.

### 5.2. Preparation

- Confirm identity of infant
- Explain procedure and blood test to family/carers and gain consent
- Co-ordinate procedure at appropriate time with other planned cares for baby
- Collect all equipment before starting procedure
- Wash hands & use gloves (in accordance with Infection Control policy)
- Administer appropriate pain relief such as sucrose/EBM to reduce discomfort
• Inspect heel to identify optimal area, avoiding previously bruised or damaged sites

• Ensure foot is warm and well perfused

5.3. During Procedure

• Adhere to Trust Infection Control Policy for handling of bodily fluids at all times

• Provide appropriate support and developmental care to infant during and after procedure to minimise pain and discomfort, such as sucrose/EBM, dummy/sucking, stroking, containment, parental contact, skin to skin

5.4. Procedure

• Use positive touch techniques to prepare infant for the procedure

• Samples should be taken only from the medial/outer aspect of the heel

• Grasp foot exposing heel between thumb and index finger

• Clean and allow to dry (with water and cotton wool or saline wipe)

• Place sample device flush to infant's heel without exerting excessive pressure

• Activate lancet

• Allow heel to recover for a few seconds

• Apply thin layer of soft paraffin (if required)

• If blood is not flowing well the foot should be ‘milked’ by a GENTLE squeeze and release action

• DO NOT apply excessive pressure as this can lead to spurious results and bruising
• Collect sample in appropriate container
• Apply pressure with cotton wool ball to stop bleeding
• Dispose of lancet as per sharps policy
• Wash hands
• Record result
• Settle infant using developmental care techniques e.g. (containment, and positioning).
• Label blood sample by cot side (follow Pathology Specimen Acceptance Policy).

Note – If baby is undergoing many blood tests then keep cumulative total of all blood taken

6. Cross References

- Gloves policy
- Guidelines for Developmental Care
- Guidelines for the use of Non-nutritive sucking
- Guidelines for the use of Sucrose for Preventative Treatment of Pain and Stress in the Neonate.
- Health and Safety (Sharp Instruments in Healthcare) Regulations 2013 Guidance Newborn Bloodspot screening Guideline
- Pain and Stress for Neonates guidelines
- Pathology Specimen Acceptance Policy
- Prevention of Inoculations Injuries Guidelines
- Waste policy

7. Monitoring Compliance with and the Effectiveness of the Guideline

7.1. Standards/ Key Performance Indicators

Key Performance indicators on which to base care in the Special Care Unit are:
• Nice Neonatal Quality Standards
• NHS Toolkit for High Quality Neonatal Services
• National Neonatal Audit Programme
• NHS Standard Contract for Neonatal Critical Care
7.2. Process for Implementation & Monitoring Compliance and Effectiveness

- Implementation of this guideline not required, as this practice is already in place on SCU.
- Staff are informed of revised documentation. There is an expectation that staff are responsible to keep updated on any improvements to practice and deliver care accordingly.
- Non-adherence to the guideline is reported by use of the Datix system. Incidents are monitored and reviewed by the neonatal governance team and action plans made if required. Individual cases are discussed at handover, on ward rounds and weekly on grand rounds and are used for learning in safeguarding supervision.
- Further discussion and reviews occur at Directorate meetings, Neonatal/Paediatric Governance meetings Maternity Patient Safety Meetings and locally at Ward meetings. Learning and action plans are cascaded at these meetings and improvements implemented. Key findings and learning points will be disseminated to relevant staff.

8. References

- Alliance Laboratory Services (2002) Infant Heel Puncture
- BD Quickheel Lancet

• (UKNSPC) UK Newborn Screening Programme Centre (2012) Guideline for Newborn Blood Spot Sampling. [Online]  
  [Online]  
  [Online]            
    www.newbornbloodspot.screening.nhs.uk/bloodspotsampling  (Accessed 18/11/14)