

Neonatal Arterial Line Blood Sampling

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1. Introduction and Who Guideline applies to

This guideline is aimed at all Health care professionals involved in the care of infants within the Neonatal Service.

Key Points

All nursing and medical staff participating in the withdrawal of blood from an indwelling line must do so in the manner which is safe in terms of accuracy of results and use of equipment and reflects the infants clinical condition.

Background

In the critically ill infant, umbilical arterial and peripheral arterial lines are routinely used in neonatal units to obtain samples of arterial blood (for blood gas analysis, and biochemical / haematological lab investigations) with little repeated disturbance to the infant (Schulz, 2003). These lines are also used to monitor invasive blood pressure.

Aims

- Pain free phlebotomy
- Invasive blood pressure monitoring

Related documents

[Aseptic Non Touch Technique UHL Guideline.pdf](#)

[Infection Prevention UHL Policy.pdf](#)

[Peripheral Arterial Line Insertion UHL Neonatal Guideline.pdf](#)

[Sharps Management UHL Policy.pdf](#)

2. Guideline Standards and Procedures

Theoretical knowledge

- The anatomy and physiology of arteries and the common arteries used for the insertion of an indwelling arterial line ([Peripheral Arterial Line Insertion UHL Neonatal Guideline.pdf](#)).
- Potential complications associated with the withdrawal of blood from an indwelling arterial line; how these would present and what if any short / long term effects that could result from these.
- The use of equipment needed to maintain an indwelling arterial line as well as equipment used in conjunction with an arterial line.
- Awareness of the Trust policies, which relate to withdrawal of blood from an arterial line such as infection control and waste disposal.

Practical knowledge

- The ability to visually assess the site of the indwelling line and any surrounding area that could be affected by the arterial line such as fingers/toes and to determine potential problems and action to take should a problem occur.
- The ability to follow aseptic non-touch technique during sampling.
- Following withdrawal of blood the practitioner should ensure that the line is left in good working order.
- The correct procedure must be followed for disposal of clinical waste and sharps.
- Accurate records of the volume of blood taken, time and test to be performed is made.

Management

- Sodium Chloride 0.9% or 0.45% saline with heparin (500units in 500 ml) should be infused at 0.5-1ml/ hr via umbilical/arterial lines to keep the line patent.
- Only appropriately trained staff may sample from umbilical/arterial lines.
- All umbilical/arterial lines should be clearly identified and labelled.
- Clean aseptic non-touch technique should be maintained during sampling to reduce risk of infection as per UHL guidelines for reducing infection.
- Transducers should always be used to monitor invasive blood pressure when umbilical/arterial lines are in place.
- Monitor the toes or fingers in case of peripheral arterial line for blanching while withdrawing the blood and pushing heparinized saline for clearing the line.

3. Education and Training

Only appropriately trained staff may sample from umbilical/arterial lines.
Training will be provided on the neonatal unit.

4. Monitoring Compliance

None identified at present.

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NB: Paper copies of this document may not be most recent version. The definitive version is held on UHL Connect in the [Policies and Guidelines Library](#)

5. Supporting References

Schulz et al (2003)- Slow blood sampling form umbilical artery catheter prevents decrease in cerebral oxygenation in the preterm newborn. Pediatrics, 111:73-76

O'Hara, & Chilvers, R.J. (2001)-Arterial blood sampling in practices in intensive care units in England and Wales. Anaesthesia 56:568-584.

6. Key Words

Aseptic non-touch technique, Umbilical artery catheter.

The Trust recognises the diversity of the local community it serves. Our aim therefore is to provide a safe environment free from discrimination and treat all individuals fairly with dignity and appropriately according to their needs. As part of its development, this policy and its impact on equality have been reviewed and no detriment was identified.

CONTACT AND REVIEW DETAILS			
Guideline Lead (Name and Title) Author: Anjali Sood Sumit Mittal – Neonatal Consultant – clinical guidelines lead		Executive Lead Chief Nurse	
Details of Changes made during review:			
Date	Issue Number	Reviewed By	Description Of Changes (If Any)
Jul 2009	1		
Oct 2015	2	Anjali Sood Neonatal Guidelines Meeting Neonatal Governance Meeting	No amendments required
Nov 2018	3	Anjali Sood Neonatal Guidelines Meeting Neonatal Governance Meeting	No amendments required
Sept 2021	4	Anjali Sood Neonatal Guidelines Meeting Neonatal Governance Meeting	Added infant weight considerations when administering sodium chloride/heparin to maintain line patency Added image of equipment to appendix Added application of PPE in accordance to Trust guidance to the procedure flow chart Updated reference list
September 2024	5	Anjali Sood Neonatal Guidelines Meeting Neonatal Governance Meeting	Updated practical knowledge, management sections and procedure flow chart. Removed equipment images

Procedure for Arterial Sampling

