Peripheral Temperature Monitoring of infants in the Neonatal Intensive Care Unit

Procedure Responsibilities and Authorisation

Department Responsible for Procedure	NICU
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Target Audience	Nurses
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Procedure Review History

Version	Updated by	Date Updated	Summary of Changes
1	Joyce Mok	June 2010	Update and review an existing NICU nursing procedure to comply with Waikato DHB requirements for controlled documents
2	Joyce Mok	Feb 2014	3-yearly update
3	Joyce Mok	April 2017	3-yearly update
4	Joyce Mok	May 2020	3-yearly update
5	Chloe Bateman & Aira Javier	December 2023	3 yearly update

Peripheral Temperature Monitoring of infants in the Neonatal Intensive Care Unit

1 Overview

1.1 Purpose

To outline the procedure for measuring peripheral temperature.

1.2 Staff group

Health NZ Waikato staff working in Newborn Intensive Care Unit (NICU).

1.3 Patient / client group

Babies and infants in NICU, e.g. critically ill infants, surgical babies, and extreme low birthweight infants.

1.4 Definitions

CNS	Clinical Nurse Specialist
CPAP	Continuous positive airway pressure
Medical staff	Includes registrar and consultant and fellow
NNP	Neonatal Nurse Practitioner
Peripheral Temperature	Peripheral temperature is the measurement of the skin temperature of the infant's foot or hand as an indicator of peripheral perfusion. Observations such as blood pressure, core temperature, peripheral temperature, urine output, lactate (from blood analysis) and colour of the baby can be used to assess for alteration in perfusion in critically ill infants. This assists in the evaluation of the effectiveness of treatment.

2 Clinical Management

2.1 Competency required

Registered nurses who completed Level 3 (minimum with CPAP orientation).

2.2 Equipment

- Temperature probe and cable to the monitor or incubator
- Adhesive foam / Silicone tape for babies <1000 g or ≤28 weeks gestation

2.3 Procedure

2.3.1 Preparation

- Gather equipment.
- Perform hand hygiene.

2.3.2 Temperature probe placement

- Select appropriate limb to secure temperature probe to ensure accurate measurement.

  Note: Dopamine infusion may affect circulation to the limb.
- Place the probe onto a limb that does not have peripheral arterial line, e.g. radial arterial line, as the circulation to this limb is already compromised.
- Peripheral temperature is usually measured by a probe attached to the bottom of the foot or the palm of the hand.
- Use either hand if an umbilical arterial line is in situ.
- Position the probe and secure by adhesive foam/ silicone tape over the probe.
- Connect the probe to the monitor or incubator.

2.3.3 Observations and documentation

- Record hourly peripheral temperature and as indicated.
- Ensure there is continuous monitoring of a central temperature (on abdomen or on back if prone) via Giraffe incubator temperature probe and a peripheral temperature, aim for a central-peripheral temperature difference of around 1.0°C.
- See Thermoregulation of Infants in Newborn Intensive Care Unit (NICU) Ref 1476
- Take note of blood pressure (BP) and report peripheral temperature of <35°C to CNS/NNP/Registrar.
- Take note of lactate in the blood gas results as lactate is one of the parameters for assessment of tissue perfusion.
- Urine output – this is also a good indicator of fluid status and perfusion, e.g. an output of 0.5-2.0ml/kg/hr is normal.
- Assess baby's skin condition regularly and change probe site with cares to ensure no pressure areas or skin breakdown.
- Assess capillary refilling time (CRT)--normal value of CRT in healthy neonate is less than three seconds.

2.3.4 When variations in peripheral temperature are identified:

- For baby whose peripheral temperature is <35°C and/or babies who are less than 1000g birthweight: temperature difference between central and peripheral <1.0°C, e.g. core temperature <36°C, perform the following:

(A) Check equipment and baby

- Check and ensure the probe is securely attached to an appropriate limb.
- Check that infant is not lying on limb with probe as this may interfere with circulation.
- Ensure probe, cable/lead and monitor/incubator are functioning correctly.
- Check infant's core/axilla temperature is within normal range because hypothermia may cause vasoconstriction and compromise peripheral perfusion.
- Assess warmth of limbs to touch. Note that opening of incubator ports, recent handling/cares can temporarily reduce incubator temperature.
- Ensure temperature probe is intact because broken probe gives false reading.
- Review other parameters of peripheral perfusion such as blood pressure, core temperature, urine output, lactate (from blood analysis) and colour.

2.4 Potential complications

Skin injury.

2.5 After care

Clean peripheral temperature probe and cable according to Lippincott Procedure: Decontamination of Reusable Shared Patient Care Equipment
https://procedures.lww.com/lnp/view.do?pId=4298004

3 Bibliography

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4 Associated Health NZ Waikato Documents

- Administration of a slow infusion/Intermittent infusion in NICU (Ref. 4360)
- Admission to Level III Intensive Care Nursery in NICU (Ref. 4571)
- Arterial Lines: Sampling, Nursing Management and Removal in NICU (Ref. 1638)
- Care of Ventilated Infant in NICU (Ref. 0432)
- Criticool™ cooling device: Use of (Ref. 1639)
- High frequency oscillation ventilation: Nursing care of infant on HFOV (Ref. 0396)
- Thermoregulation of Infants in Newborn Intensive Care Unit (NICU) (Ref 1476)
- Lippincott Procedures: Decontamination of Reusable Shared Patient Care Equipment.