

## Peripheral Temperature Monitoring of infants in Newborn Intensive Care Unit

### Procedure Responsibilities and Authorisation

<b>Department Responsible for Procedure</b>	NICU
<b>Document Facilitator Name</b>	Joyce Mok
<b>Document Facilitator Title</b>	ACNM
<b>Document Owner Name</b>	Chantelle Hill
<b>Document Owner Title</b>	Charge Nurse Manager
<b>Target Audience</b>	Nurses
<p><b>Disclaimer:</b> This document has been developed by Waikato District Health Board specifically for its own use. Use of this document and any reliance on the information contained therein by any third party is at their own risk and Waikato District Health Board assumes no responsibility whatsoever.</p>	

### 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

## Peripheral Temperature Monitoring of infants in Newborn Intensive Care Unit

### 1 Overview

#### 1.1 Purpose

To outline the procedure for measuring peripheral temperature

#### 1.2 Scope

Waikato DHB 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

<b>Peripheral Temperature</b>	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.
<b>CPAP</b>	Continuous positive airway pressure
<b>CNS</b>	Clinical Nurse Specialist
<b>NNP</b>	Neonatal Nurse Practitioner
<b>Medical staff</b>	They include registrar and consultant and fellow

### 2 Clinical Management

#### 2.1 Competency required

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

#### 2.2 Equipment

- Temperature probe and lead to the monitor or incubator
- Adhesive foam

## Peripheral Temperature Monitoring of infants in Newborn Intensive Care Unit

### 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 foot
- Use either hand if an umbilical arterial line is in situ.
- Position the probe and secure by adhesive foam 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 and a peripheral temperature, aim for a central-peripheral temperature difference of around 1.0°C.
- Take note of 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.

#### 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 core 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.

Doc ID:	2895	Version:	04	Issue Date:	8 JUN 2020	Review Date:	8 JUN 2023
Facilitator Title:	ACNM			Department:	NICU		
IF THIS DOCUMENT IS PRINTED, IT IS VALID ONLY FOR THE DAY OF PRINTING							Page 3 of 5

## Peripheral Temperature Monitoring of infants in Newborn Intensive Care Unit

- Ensure probe, cable/lead and monitor/incubator are functioning correctly.
- Check infant's core temperature is within normal range because hypothermia may cause vasoconstriction and compromise peripheral perfusion.
- Assess warmth of limbs to touch.
- 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.

### 2.3.5 Administer volume expander

- When indicated, CNS/NNP/Registrar specific and prescribe volume expander, e.g. sodium chloride 0.9%.
- Administer as a slow infusion over 20-30 minutes intravenously (IV), via umbilical lines when IV is not available. Administer infusion slowly to prevent sudden infusion of large fluid volume that may cause periventricular haemorrhage in preterm and asphyxiated infants. Refer to [Administration of a slow infusion/Intermittent infusion in NICU](#) (4360).
- Monitor, report and record response to treatment.

### 2.4 Potential complications

Skin injury

### 2.5 After care

Clean peripheral temperature probe and cable according to Waikato DHB Procedure: Decontamination of Reusable Shared Patient Care Equipment.

## 3 Audit

### 3.1 Indicators

- All peripheral probes are correctly placed as per 2.3.2
- There is documented evidence of physiological observations, taken at the recommended intervals, as per 2.3.3

Doc ID:	2895	Version:	04	Issue Date:	8 JUN 2020	Review Date:	8 JUN 2023
Facilitator Title:	ACNM			Department:	NICU		
IF THIS DOCUMENT IS PRINTED, IT IS VALID ONLY FOR THE DAY OF PRINTING							Page 4 of 5

## Peripheral Temperature Monitoring of infants in Newborn Intensive Care Unit

### 4 Bibliography

- Lyon, A. & Püschner (2015). ThermoMonitoring: A step forward in neonatal intensive care. Drägerwerk AG & Co. KGaA. Retrieved on May 1, 2020 from <https://www.draeger.com/Library/Content/thermomonitoring-bk-9097384-us.pdf>
- Gardner, S. et al. (2016). *Merenstein & Gardner's handbook of neonatal intensive care*. St Louis: Mosby Elsevier.
- Ishiguro, A. et al. (2011). Effect of dopamine on peripheral perfusion in very-low-birth-weight infants during the transitional period. *Paediatric Research*, 72, 1, 86-89.
- Riding, D. (2009). Comparing three methods of assessing peripheral perfusion in critically ill children. *Pediatric Nursing*, 35, 1, 11-15 & 42.

### 5 Associated Waikato DHB Documents

- Waikato DHB NICU Nursing Procedure: [Admission to Level III Intensive Care Nursery in NICU](#) (4571)
- Waikato DHB NICU Nursing Procedure: [Arterial Lines: Sampling, Nursing Management and Removal in NICU](#) (1638)
- Waikato DHB NICU Nursing Procedure: [Continuous Positive Airway Pressure \(CPAP\) - Management in NICU](#) (4939)
- Waikato DHB NICU Nursing Procedure: [Care of Ventilated Infant in NICU](#) (0432)
- Waikato DHB NICU Nursing procedure: [Criticool™ cooling device: Use of](#) (1639)
- Waikato DHB NICU Nursing procedure: [High frequency oscillation ventilation: Nursing care of infant on HFOV](#) (0396)
- Waikato DHB NICU Nursing procedure: [Temperature Control of infants in NICU](#) (1476)
- Waikato DHB NICU Nursing procedure: [Administration of a slow infusion/Intermittent infusion in NICU](#) (4360)
- Waikato DHB (2017). Lippincott Procedures: [Decontamination of Reusable Shared Patient Care Equipment](#).

Doc ID:	2895	Version:	04	Issue Date:	8 JUN 2020	Review Date:	8 JUN 2023
Facilitator Title:	ACNM			Department:	NICU		
IF THIS DOCUMENT IS PRINTED, IT IS VALID ONLY FOR THE DAY OF PRINTING							Page 5 of 5