

# Optimal Thermoregulation of the Preterm Infant on Admission to the Neonatal Intensive Care Unit



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## Introduction

Mortality rates in the preterm infant are increased by 28% for every 1 degree decrease in the recorded temperature of a baby on admission to the Neonatal Unit. To optimise outcomes, at least 90% of preterm babies under 34 weeks gestation are required to have a normothermic temperature (36.5 - 37.5C) measured within one hour of their admission to NICU.

Gloucestershire Royal Hospital is enrolled in PERIPrem (Perinatal Excellence to Reduce Injury in Premature Birth), an 11 element perinatal bundle to reduce mortality & brain injury in preterm infants in the South West. At baseline audit, Normothermia compliance was found to be variable and a perinatal Quality Improvement project launched to optimise normothermia.

## THERMO REGULATION

### WHY DOES IT MATTER?

Hypothermia in preterm infants increases risk of:

- increased risk of death
  - hypoglycaemia
  - metabolic acidosis
  - respiratory distress and acidosis
  - necrotising enterocolitis
  - coagulation defects
  - intraventricular haemorrhage

McCall et al 2018

FOR EVERY 1 DEGREE DECREASE IN ADMISSION TEMPERATURE MORTALITY INCREASES BY 28%

Laptook et al 2007

IMPROVE TEMPERATURE BY: PUTTING IN A PLASTIC BAG

REAL TIME TEMP MONITORING DURING RESUSCITATION

PUTTING A HAT ON + WRAP UP WARM

USE BAPM + QI TO INVESTIGATE HYPOTHERMIA + IMPROVE OUTCOMES

www.bapm.org/pages/105-normothermia-toolkit



**ACT:**  
Contribute to optimisation tool review as data capture recording subsets not reflective of overall compliance with required standard

**PLAN:**  
Identify environmental barriers to optimal thermoregulation: cold towels

**STUDY:**  
Collect data via optimisation tool  
Analyse data for trends

**DO:**  
Purchase towel heater  
Engage Trust's Estates department to consider environmental factors



## Results & Lessons Learned:

This project highlights the importance of the perinatal team dynamic in improving patient safety in preterm infants.

By ensuring obstetric, midwifery and neonatal staff are working collaboratively as a highly functioning team, rather than separately, normothermia care is optimised.

On monthly data review, where compliance of 90% was not achieved, clinical patient factors were identified as the reason for non-compliance and not failure to consider the provision of optimal thermoregulatory care.

Learning from the design and implementation of the Optimal Thermoregulation Project will inform subsequent perinatal QI and contribute to improved patient safety.

## Outcomes:

Improved optimal thermoregulation was achieved through:

- Improved perinatal team cohesion and functioning
- Theatre staff ensuring optimal room temperature in the theatre setting
- Pre-heated towels available from a dedicated towel warmer on Delivery Suite
- Individual Transwarmer pads placed under the preterm baby to ensure optimal temperature control
- Monthly review of cases and continuous improvements made to factors impacting optimisation