



Research Article

ENHANCING THERMOREGULATION MONITORING PRACTICES IN NEONATES: A QUALITY IMPROVEMENT PROJECT IN THE NICU

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Abstract: Background: Thermoregulation is a critical component of neonatal care, especially for preterm and low-birth-weight infants. Audits conducted in the Neonatal Intensive Care Unit (NICU) identified inconsistent temperature monitoring and documentation, resulting in delayed recognition of hypothermia or hyperthermia. Such deviations pose serious risks to neonatal safety and clinical outcomes.

Objectives: To achieve **100% compliance** in accurate and timely monitoring and documentation of neonatal thermoregulation in the NICU by 04 October 2025 through the implementation of a standardized checklist, structured staff training, and regular monitoring audits.

Methods: A quasi-experimental pre–post intervention study was conducted between July and September 2025. Interventions included staff re-orientation, development of a thermoregulation monitoring checklist, visual reminders, and continuous audit–feedback cycles. Key indicators measured were monitoring compliance, documentation accuracy, and adherence to the 2-hourly temperature monitoring schedule. Data were analysed using descriptive statistics and trend analysis.

Results: Thermoregulation monitoring compliance improved from **70%** at baseline to **97%** post-implementation. Documentation accuracy increased from **72%** to **96%**, while adherence to the monitoring schedule rose from **68%** to **94%**. All indicators exceeded project targets.

Conclusion: Standardizing temperature monitoring practices through a unified checklist, combined with structured training and continuous supervision, significantly improved compliance and documentation accuracy. The interventions enhanced neonatal safety and established sustainable monitoring practices in the NICU.

Keywords: Neonatal thermoregulation, NICU, quality improvement, temperature monitoring, patient safety, nursing documentation

INTRODUCTION

Neonates—especially preterm and low-birth-weight infants—are highly vulnerable to temperature instability due to immature

thermoregulatory systems. Maintaining optimal temperature is essential for preventing metabolic derangements, respiratory distress, hypoglycemia, and increased mortality risks.

During routine quality rounds in the NICU at WDGH, significant inconsistencies were observed in how nurses monitored and documented neonatal temperatures. Baseline audits revealed incomplete temperature entries, variations in monitoring frequency across shifts, and delayed responses to abnormal readings.

In alignment with MOH, JCIA, and CBAHI standards, the Nursing Quality Department launched a structured project to standardize and strengthen thermoregulation monitoring practices across the NICU.

Aim

To enhance compliance with neonatal thermoregulation monitoring standards through standardization, staff training, and structured documentation.

Intervention Process

The intervention began with a baseline audit revealing inconsistent temperature monitoring and documentation practices. To address these gaps, a standardized thermoregulation monitoring checklist was developed and integrated into NICU documentation. Staff were re-oriented through structured training and bedside demonstrations to reinforce correct monitoring intervals and documentation standards. Visual reminders, including posters and quick-reference charts, were placed throughout the unit to support adherence. Continuous monitoring was carried out using monthly audits, and targeted feedback was provided to staff to correct deviations and reinforce compliance expectations. This structured approach resulted in progressive improvement and sustained compliance by project completion.

Timeline

Phase	Key Activities	Period
Baseline Assessment	Audit of thermoregulation practices	July 2025
Standardization	Checklist development and validation	August 2025
Training & Coaching	Staff orientation and bedside teaching	July–September 2025
Implementation	Checklist use + visual reminders	August–September 2025
Monitoring & Evaluation	Monthly audits + feedback	Aug–Sept 2025

Objectives

1. Achieve $\geq 95\%$ compliance in thermoregulation monitoring and documentation by September 2025.
2. Improve documentation accuracy to $\geq 95\%$ through use of a standardized checklist.
3. Ensure staff adherence to the 2-hourly temperature monitoring schedule reaches $\geq 90\%$.
4. Sustain compliance through continuous audits and feedback mechanisms.

METHODOLOGY

Study Design

Quasi-experimental, pre–post intervention study.

Study Setting

Neonatal Intensive Care Unit, WDGH.

Study Participants

All NICU nurses responsible for thermoregulation monitoring.

Sample Size

All neonates monitored during scheduled audits in July, August, and September 2025.

Post-Intervention Assessment

Performance indicators were assessed in September 2025 and compared with baseline to determine effectiveness.

Data Collection Tools

- Thermoregulation Monitoring Checklist
- Daily NICU log sheet
- Audit forms for documentation accuracy
- Monitoring schedule adherence checklist

Data Analysis

Descriptive statistics, calculation of compliance percentages, and monthly trend comparison.

RESULTS

DISCUSSION

This project demonstrated that structured, evidence-based interventions can effectively standardize neonatal thermoregulation practices and significantly improve compliance. The introduction of a standardized checklist minimized documentation variability and strengthened accountability. Staff training addressed knowledge

Table 1. Pre–Post Performance Indicator Comparison

Indicator	Baseline (July 2025)	Target	Post (September 2025)	Status
Thermoregulation Monitoring Compliance	70%	≥95%	97%	Achieved
Documentation Accuracy	72%	≥95%	96%	Achieved
Staff Adherence to 2-Hourly Schedule	68%	≥90%	94%	Achieved

Table 2. Trend of Improvement (July–September 2025)

Month	Monitoring Compliance (%)	Documentation Accuracy (%)	Monitoring Adherence (%)
July (Baseline)	70	72	68
August	85	88	82
September	97	96	94

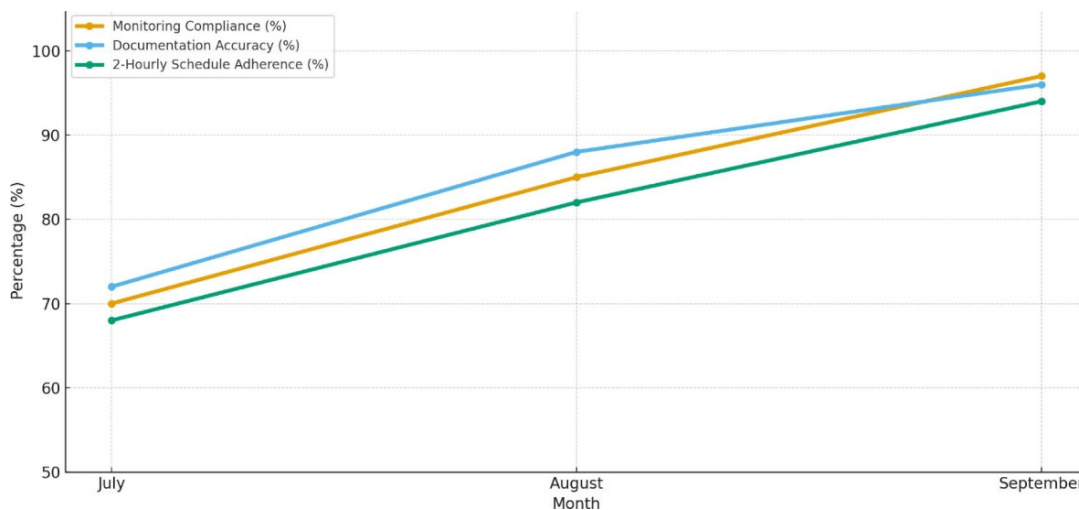


Figure 1. Trend of Indicator Improvement

gaps, while bedside coaching reinforced practical skills.

Visual reminders and continuous audit–feedback loops created a culture of ongoing awareness and performance improvement. The rapid rise from baseline to post-implementation (70% → 97%) reflects strong staff engagement and adaptability.

Similar QI initiatives reported in neonatal care literature also highlight the effectiveness of standardized monitoring tools in reducing hypothermia events and improving early recognition of temperature instability. The improvements achieved in this project are therefore consistent with global best practices in neonatal safety.

CONCLUSION

Standardizing thermoregulation monitoring procedures, supported by staff education and continuous quality audits, significantly improved compliance and documentation accuracy in the NICU. The project achieved and sustained all targeted indicators, demonstrating its effectiveness and feasibility for long-term integration into NICU practice. With continued audits, training, and administrative support, the improvements are expected to remain sustainable.

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