

**Neonatal Hypothermia Prevention Initiative****Charter**

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| **ALPQC Neonatal Hypothermia Prevention Initiative Team** |
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**Problem Statement**

Neonatal Hypothermia is defined as a reduction of a newborns core temperature to below 36.5 degrees Celsius.1 NH is categorized in mild (36°C–36.4°C), moderate (32°C–35.9°C) and severe (<32°C) hypothermia. Regardless of gestational age, neonatal hypothermia occurs in about 21.7% of infants, with 4.6% experiencing moderate/severe hypothermia.1 The infant mortality rate in Alabama is 7.2 deaths per 1000 live births, which is higher than the national average of 5.4 per 1000 live births.2

Hypothermia is a contributing factor to neonatal mortality and morbidity. It is associated with a higher risk of infants developing hypoglycemia, jaundice, respiratory distress syndrome, sepsis, and suffering from intraventricular hemorrhage.1 There is inconsistency in delivery room protocols regarding neonatal hypothermia prevention, early interventions, monitoring, and identification of high risk-factors after birth.1

**Rationale**

Newborns are at the highest risk of experiencing hypothermia immediately after birth. Newborns are more prone to rapid heat loss due to many factors including having less subcutaneous fat, a higher body water content, and their metabolic mechanisms not yet being fully developed.3 With each degree decrease, there is an 80% increase chance of infant mortality.1 Preterm infants are at a much higher risk of neonatal hypothermia due to these factors as well. Standardized and early interventions are vital in the prevention, care, and management of neonatal hypothermia.3

**Expected Outcomes and Benefits**

We expect this project will lead to improvements in readiness, management, debriefing, and education related to neonatal hypothermia, with the ultimate outcome of decreasing the incidence of neonatal hypothermia present at time of admission. Beyond improvements in neonatal safety, reducing the burden of neonatal hypothermia has the potential to reduce healthcare costs of hypothermia-associated complications.

**Project Description**

The Neonatal Hypothermia Prevention (NHP) Initiative was created to assist neonatal/pediatric providers, clinical staff, hospitals and healthcare organizations with evidence-based strategies to prevent neonatal hypothermia. Neonatal hypothermia is associated with increased infant morbidity and mortality. Implementation of the NHP bundle in all delivery hospitals should include standardized, facility-wide protocols and checklists, availability of equipment (radiant warmer) and supplies (thermometers, pre-warmed blankets, head caps, polyethylene bags/occlusive plastic wrap, etc.), timely debriefs, and education regarding best care practices for hypothermia prevention disseminated to staff, patients, and families. Hospitals will implement this initiative alongside peer Alabama birthing hospitals. Monthly webinars, Action Period calls, and 1:1 Quality Improvement RN calls will cover different components of the bundle, review progress toward goals, and learn from hospitals sharing successes and challenges. Hospitals will engage in cycles of testing and implementation of changes that lead to improvements. Please see the expectations for participation on page four of this document. See the **Neonatal Hypothermia Prevention: Getting Started Kit** (under “Key Documents” at www.alpqc.org) for the first steps to get started with the initiative.

**Project Aim**

The NHP Initiative aims to reduce by 20% the proportion of infants that are hypothermic on admission by July 1, 2025, in infants born in Alabama at ≥32 weeks gestational age.

The measures we will use to monitor progress toward our aim are listed below.

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| **Structure Measures** | The measures we want to use to track clinical protocols and organization. |
| 1. Develop a standardized, facility-wide protocol to prevent neonatal hypothermia.
2. Develop a checklist of supplies and equipment to be present in the delivery room prior to delivery.
3. Establish a system to perform regular formal debriefs with the clinical team after hypothermic events.
4. Develop patient education materials for preventing neonatal hypothermia that align with culturally and linguistically appropriate standards.
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| **Process Measures** | The measures that will tell us if the system is performing as planned affect the outcome measure.  |
| 1. Temperature of infants is checked at 10 minutes after delivery.
2. In hypothermic infants, temperature is checked every 10 minutes until normothermic.
3. Verbal and written education provided to patients and identified support people on signs and symptoms and how to prevent neonatal hypothermia.
4. Annual role-specific education for all L&D/NICU/MBU nurses and providers on neonatal hypothermia signs and symptoms, treatment, and prevention.
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| **Outcome Measures** | The measures we ultimately want to affect as a result of this project. |
| 1. Neonatal Morbidity
2. Neonatal Morbidity among Newborns who experienced a hypothermic event prior to admission to the NICU/MBU.
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| **Data Reporting**  |
| **Baseline Data**: December 2023 through February 2024 | Baseline due March 31, 2024 |
| **Prospective Initiative data**: Monthly data – starting March 2024Quarterly data – starting April-June 2024  | Due 30 days after the end of the reporting period: First month is due April 30, 2024 (For March 1-31, 2024)First quarter due July 31, 2024  |

**Framework**

This initiative takes the structure of an [Institute for Healthcare Improvement’s (IHI) Breakthrough Series Collaborative](https://www.ihi.org/resources/Pages/IHIWhitePapers/TheBreakthroughSeriesIHIsCollaborativeModelforAchievingBreakthroughImprovement.aspx). A Breakthrough Series (BTS) Collaborative is a systematic approach to healthcare quality improvement in which organizations test and measure practice innovations and share their experiences in an effort to accelerate learning and widespread implementation of best practices. Participating in a Collaborative is an excellent foundational tool for creating long-term success, helping hospitals accelerate work that is underway and plan for meaningful progress over time.

Teams will embark on this project with other Alabama birthing hospitals focused on the same aim and objectives. We will achieve our aim via engaging in iterative cycles of testing and implementation of changes in **the** [**Neonatal Hypothermia Prevention Toolkit**](http://www.alpqc.org/initiatives/obh/), along the way measuring progress toward meeting our goals, and sharing lessons learned with various forms of support. The overall framework of the collaborative is as follows:

*Learning Sessions*

Learning Sessions are in-person or virtual meetings bringing together participating hospital teams and expert faculty to exchange ideas in real time. Faculty experts present a vision for ideal care and specific changes, based on the Change Package (Toolkit), that when applied locally will significantly improve the hospital’s performance. The teams also learn the [Model for Improvement](http://www.ihi.org/resources/Pages/HowtoImprove/default.aspx), which enables them to test these powerful change ideas locally by conducting [Plan-Do-Study-Act (PDSA) cycles](http://www.ihi.org/resources/Pages/HowtoImprove/ScienceofImprovementTestingChanges.aspx)—PDSAs are a tool to help hospitals test changes in a way that helps them reflect on, learn from, and refine a change before successfully implementing it in their unit.

During learning sessions, team members also learn from one another as they share successes, barriers, and lessons learned during the learning sessions.

*Action Periods*

Between Learning Sessions, participating hospitals will engage in Action Periods that provide the time for maximal learning—this is when teams implement changes and receive support from ALPQC and peers. The goals of the Action Periods are to support teams in their improvement work, build collaboration and shared learning, and assess collaboration and progress.

Actions Periods will include the following:

* *PDSA Cycles:* Teams implement site-specific tests of change that align with the collaborative’s aim and their team’s chosen aim.
* *All-Teams Action Period Conference Calls:*Hospital teams are to participate in monthly, one-hour calls on different change topics related to the work. These calls are led by ALPQCprojectfaculty and feature opportunities for team learning and highlighting successes and lessons learned in the collaborative.
* *Monthly Reporting:*ALPQCdeveloped a monthly reporting system, including assessment using a 0-5 scale, to collect and review progress on implementation tasks from each hospital, reflect on lessons learned during that month, and plan for the next month. The ALPQCteam will review each report submitted by teams to provide feedback.
* *Monthly 1:1 Quality Improvement-RN Meetings*: Hospital-designated contacts will participate in monthly coaching calls with the ALPQC Quality Improvement RN to discuss data, facility performance, opportunities for improvement, challenges, and resources.

**Expectations for participation in the collaborative:**

The ALPQC Team will:

* Include a project lead, improvement advisor and coordinator, data portal resources, and faculty who have expertise in the subject matter and improvement methods.
* Provide information on neonatal hypothermia, application of evidence-based practices to improve care, and quality improvement methods for structure, process, and outcome improvement.
* Provide guidance, feedback, and resources to teams throughout the course of the project.
* Facilitate communication to keep teams connected to the ALPQC team and each other.

Participating Hospitals Expectations:

* Form your hospital team consisting of at least one physician champion, one nurse champion, one pharmacy champion, and a data champion (someone with access to medical charts).
* Set an aim and a 30-60-90-Day Plan for your team related to the collaborative’s aim stated above.
* Actively participate in learning sessions, monthly action period calls and coaching calls to share learning and results with your peers and the ALPQC team.
* Conduct tests of change (PDSA cycles) in alignment with your aim and your 30-60-90 Day Plan. After successful testing and adaptation of changes tested, implement changes in your unit. Report PDSAs to ALPQC.
* Complete pre-work activities as applicable to prepare for the learning sessions and action periods, including reviewing the **Getting Started Kit** and completing activities inside the kit (found on our website www.alpqc.org under “Key Documents”).
* Report data measures and narratives monthly and quarterly for the duration of the project.

By participating, hospitals agree de-identified versions of their data may be shared. The information will be used to provide national benchmarking of de-identified measures and evaluate the ALPQC’s initiative.

Aggregate, de-identified data may be presented or published and shared with other participating hospitals and the larger perinatal community for the purposes of group learning and progress updates.

**Opportunities for Spread**

In the work of IHI and other states over many years, some important lessons have emerged about promoting and sustaining the spread of improvement over time, including:

* The development of an explicit tracking plan so senior leaders can quickly assess the progress made during spread of the changes, and readily intervene to help when the spread plan is not performing as planned
* The development of a spread infrastructure (training, communication methods, reviews of progress)
* The assessment of groups and individuals for readiness to adapt and adopt the changes before deployment
* The expectation that other sites will want to customize the changes
* Senior leaders decide on the level of desired spread (the number of areas to which applicable changes are spread) and establish a schedule for spread (the tempo and order of spread)
* Senior leaders make the work visible and give it high priority

The strategy for rapid spread within participating hospitals is an integral part of the collaborative that is fueled by participating hospitals documented successes, engages senior leaders, and allows for local adaptation and customization.

**References**

1Yitayew, Y. A., Aitaye, E.B., Lechissa, H.W., & Gebeyehu, L.O. (2020). Neonatal hypothermia and associated factors among newborns admitted in the Neonatal Intensive Care Unit of Dessie Referral Hospital, Amhara Region, Northeast Ethiopia. *International Journal of Pediatrics, 14*:3013427. doi: 10.1155/2020/3013427

2March of Dimes (2023). *2023 March of Dimes Report Card: The state of maternal and infant health for American Families*. <https://www.marchofdimes.org/report-card>

3Donnellan, D., Moore, Z., Patton, D., O'Connor, T., Nugent, L. (2020). The effect of thermoregulation quality improvement initiatives on the admission temperature of premature/very low birth-weight infants in neonatal intensive care units: A systematic review. *Journal for Specialist in Pediatric Nursing, 25*(e12286). <https://doi.org/10.1111/jspn.12286>