The Born to Thrive: Care of the Late Preterm Infant (BTT: LPI)

Tennessee Initiative for Perinatal Quality Care

Inter-Institutional Quality Improvement Project

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TIPQC
Tennessee Initiative for Perinatal Quality Care

Project Development Leaders

Diane M. Attardi, MD, FAAP
Neonatologist, Monroe Carrell Jr. Children's Hospital at Vanderbilt

Courtney Gutman, MD
Neonatologist, University of Tennessee Medical Center Knoxville

Christine Krier, DO
Pediatrician, Monroe Carrell Jr. Children's Hospital at Vanderbilt

Kelley McManigle, DO
Neonatologist, Monroe Carrell Jr. Children's Hospital at Vanderbilt

Patricia A. Scott, DNP, APRN, NNP-BC, C-NPT
TIPQC Infant Quality Improvement Specialist

Karen Schetzina, MD, MPH
TIPQC Infant Medical Director

Brenda Barker, MEd, MBA
TIPQC Executive Director

Alicia Mastronardi, MPH
TIPQC Data Manager

Anastacia Volz, MPA

TIPQC Project Manager

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Project Pilot Teams

University of Tennessee Medical Center
Cookeville Regional Medical Center
Maury Regional Medical Center

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Introduction: *What are we trying to accomplish?*

Problem

The late preterm infant (LPI) is an infant born between 34 0/7 weeks and 36 6/7 weeks' gestation. LPIs account for approximately 75% of the preterm births in the US, and for approximately 20% of the NICU admissions (McCormick et al, 2006). LPIs are often referred to as the "great imposter" because their size is misleading, often being metabolically and physiologically immature.

The morbidity and mortality rates for LPIs are quite different than for term newborns. The morbidity rate approximately doubles for every week below 38 weeks' gestational age at birth. In a large population-based study that compared the LPI to the term infant, the morbidity for the LPI was seven times greater than for the term newborn. These authors also noted that the morbidity increased with increasing numbers of maternal risk factors (Shapiro-Mendoza, 2008 & Barfield, 2025). Their mortality rate is also higher than a term newborn, with approximately 8% of all neonatal deaths in the U.S. occurring in LPIs (Ely et al., 2020).

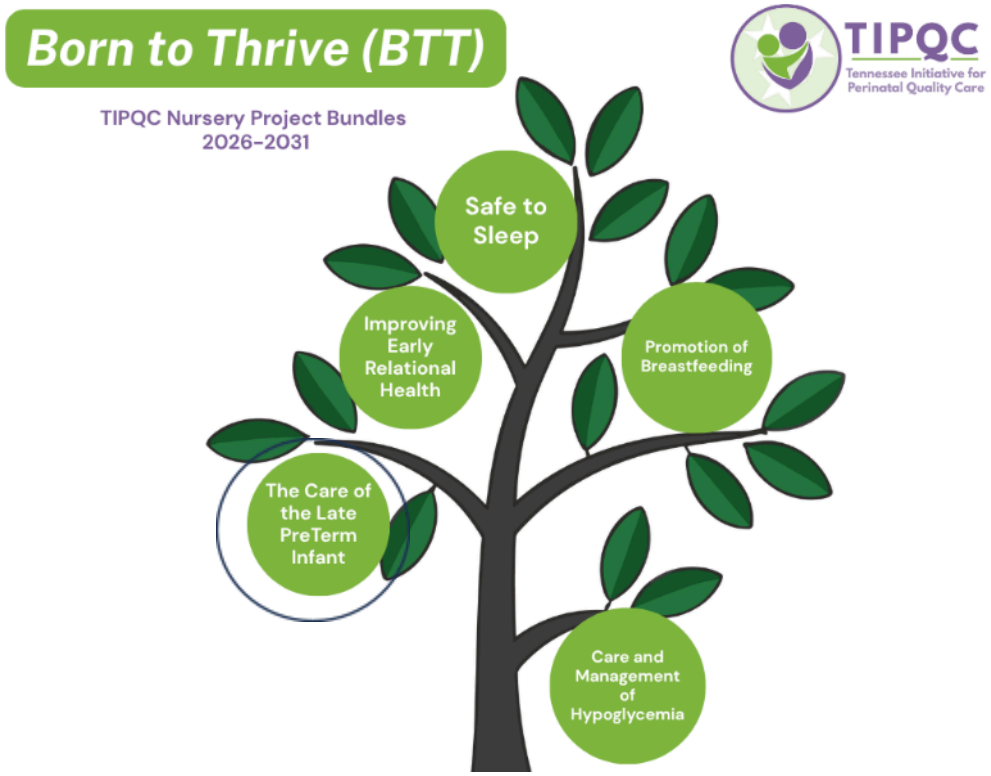
LPIs are also more likely to be re-hospitalized within 2 weeks of discharge, usually due to hyperbilirubinemia, feeding difficulties, and dehydration (Isayama et al., 2017). When a newborn is readmitted to the hospital after discharge from the birth hospital, the American Academy of Pediatrics (AAP) "Policy Statement - Hospital Stay for Healthy Term Infants" describes this as a potential indicator of "inadequate assessment" by healthcare providers of the newborn's readiness for discharge, a lack of resources and/or an inability of a parent to provide early newborn care or inappropriate use or lack of outpatient care (American Academy of Pediatrics, 2010).

In 2024, 8.1% of infants were born in the late preterm category among Tennessee resident births (Tennessee Department of Health, 2025). In an average week in Tennessee, this equals approximately 130 babies being born per week between 34 0/7 and 36 6/7 weeks. Comparatively, 6.5% of 2014-2022 live births in the U.S. were in the late preterm gestational age range according to the most recent available data from the National Center for Health Statistics from 2022 (Centers for Disease Control and Prevention, 2024). Tennessee's late preterm birth rate is higher than the national average, demonstrating the need to implement potentially better practices throughout the state to care for this at-risk population.

Project Description

We are seeking to improve the care of the Late Preterm Infant by focusing on the implementation of potentially better practices (PBPs) which can improve the care of the LPI, as well as decrease hospital readmissions.

The development and implementation of the Born to Thrive bundle will occur from Q3 2026 to Q3 2031. The project has been developed and will be launched in phases determined by specific care *bundles* – see Figure 1. The intent is to have participating hospitals implement the care bundles *cumulatively* – incorporating the potentially better practices from each bundle into their unit. *This toolkit is focused on the Care of the Late Preterm Infant bundle.* The project is proposed to end in Q2 2027.



TIPQC Nursery Bundle of Projects
2026-2031
Figure 1: Born to Thrive Care Bundles

TIPQC agrees to the following:

- Provide a toolkit (see attachments) and other resources to participating teams.
- Offer monthly huddles, quarterly learning sessions, and annual statewide meetings.
- Facilitate the sharing between participating teams, allowing them to learn from each other.
- Facilitate capture of data metrics and provide reports to participating teams to show their progress towards improvement.
- Provide guidance and feedback to participating teams, facilitating their achievement of the project aim.

Participating teams will agree to the following:

- Hold regular, at least monthly, team meetings.
- Obtain a baseline assessment of current practices for this population.
- Regularly review and revise team goals, current system, opportunities for improvement, and barriers.
- Develop an evidenced-based policy for care of the 34-36 week infant – this policy should include the implementation or maintenance of best practices related to delivery room care, transition, infection, nutrition, parent education and discharge readiness. The policy should also include nursing education specific to this population, a nursing care plan/care path, and a discharge readiness checklist (example in Appendix 1).
- Optional: Develop a mechanism to monitor the readmission rates of their 34-36 week infants within the first week after discharge via a follow-up call no sooner than 7 days after discharge.
- Monitor the length of stay for their 34-36 week population and track transfers to a higher level of care.
- Note if discharging home when submitting data.
- Monitor the use of a discharge readiness checklist in all 34-36 week discharges from the Newborn Nursery or NICU.

    - An example is included in the protocol appendices (Appendix 1).
- Monitor the documentation of parent education in the medical records for these infants.
    - Examples of parent education tools/checklists can be found at: https://coinnurses.org/wp-content/uploads/2013/06/LPI-Clinical_Guidelines-OK.pdf
- Hospitals should develop and share with staff a standard written feeding plan for late preterm infants which may include more frequent feedings.
    - Examples are located in Appendices 2 and 3.
- Document recommendations for follow up provider(s) and timing. If available, document date, time, and location of appointment(s) made.
- Keep a log of interventions they have implemented in their unit so that efficacy and balancing measures may be tracked.
- Plan and conduct tests of the recommended changes detailed in this toolkit.
- After successful testing and adaptation, implement the changes in their facility.
- Attend and actively participate in the monthly huddles, quarterly learning session(s), and annual statewide meetings.
- Capture and submit the defined project data as required (with minimal to no data lag).
- Submit a monthly report that includes data as well as information on changes being tested and/or implemented.
- Strive to achieve the project aim and the project's process and structure measure goals:
    - At least 90% compliance on all defined process measures.
    - Have all structures (defined by the structure measures) in place by the end of the project.

Rationale

Many state perinatal collaboratives have worked on care of the Late Preterm Infant. Tennessee previously worked on Improvement of the Care of the Late Preterm (35-36 Weeks) Infant in 2018-2019. With state support, monthly huddles and data capture, teams should be able to better adopt potentially better practices. These potentially better practices will improve care for these babies in the hospital, ensure discharge readiness and appropriate parent education, and ultimately, decrease the need for hospital readmission.

Expected Outcomes and Benefits

Participating in this project will help participating centers improve the care of the late preterm infant (being born between 34 0/7 and 36 6/7 weeks). If successful, this project will (in turn) result in improved care as well as reduced readmission rates for the LPI. Ultimately, improving outcomes for all infants should lead to decreased long term costs to the healthcare system.

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Aim Statement

Global AIM: Improve the care and outcomes for all infants born in participating Tennessee neonatal intensive care units (NICUs) and nurseries by implementing evidence-based practices in the Born to Thrive Project bundles by June 2031.

The Aim of this project is to:
Improve care and outcomes for infants 34 0/7 to 36 6/7 by systematically implementing evidence-based practices to improve consistency across the state to ensure stability at the time of discharge by achieving completion of an appropriate readiness checklist for 90-100% of discharged LPI by June 2027.

Summary of Evidence: *Care of the Late Preterm Infant (LPI)*

Late preterm infants (34–36 6/7 weeks) require strict discharge assessment because they face higher risks of morbidities like jaundice, hypoglycemia, infection, and feeding difficulties compared to term infants. Evidence shows they have less physiological maturity, higher readmission rates, and need to demonstrate stable thermoregulation and respiratory control.

After a review of the literature, TIPQC recommends the following Potentially Better Practices as noted below:

- Parental Support and Discharge Readiness
- Infection Prevention
- Nutrition for the Late Preterm Infant
- Assessment and Stabilization
- Physiologic Jaundice / Unconjugated Hyperbilirubinemia
- Thermoregulation

As the late preterm infant carries its own vulnerabilities, infants earlier in gestation will need more support and have more potential for needed interventions than older infants. This Toolkit provides guidance on ways to optimize care of all late preterm infants between 34/0 weeks gestation (GA) to 36/6 weeks gestation, as categorized by the AAP, who are cared for in a hospital's newborn nursery or NICU. The recommendations referenced in this toolkit apply to the newborn nursery and NICU, as determined in accordance with the hospital's guidelines based on each individual infant's needs.

From the Tennessee Department of Health, and as per the 2020 9th Edition of the "Tennessee Perinatal Care System Guidelines for Regionalization, Hospital Care Levels, Staffing and Facilities" a Level 1 facility can care for stable term newborn infants and infants born between 35 and 37 weeks GA who remain physiologically stable. These facilities can stabilize ill newborns and those born less than 35 weeks GA until transfer to another site that can provide the appropriate level of neonatal care is completed. Outlined PBPs will seek to guide care to best practices but all care options may not be applicable to all gestational ages. In addition, care suggestions will differ between infants located in a NICU versus a Newborn Nursery. Even among NICU patients, individual babies will progress and develop at their own rate. As the late preterm infant may not require a lengthy hospitalization and will remain vulnerable after discharge, this

project seeks to maximize discharge readiness. With improved stability and safety at discharge, we hope this will decrease readmissions for this population (Tennessee Department of Health, 2020).

Variation in outcomes among NICUs have also been reported (Horbar et al, 1997; Lee et al, 2000; Vohr et al, 2004). Practice variation, even amongst providers in the same group, can be a contributing factor to these varied outcomes (Institute of Medicine, 2001; Aziz et al, 2005). As we have fortunately witnessed significant progress in the care of the late preterm infant over the past few decades, more of these vulnerable infants are ready for discharge earlier, making proving their stability at discharge paramount to their early success at home.

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Potentially Better Practices for Care of the LPI

All improvement requires change. And while there are many kinds of changes that will lead to improvement, the specific changes are developed from a limited number of *change concepts*. As described in the Model for Improvement, "A change concept is a general notion or approach to change that has been found to be useful in developing specific ideas for changes that lead to improvement." These change concepts are used to design and run tests of change (i.e., Plan-Do-Study-Act (PDSA) cycles) to see if they result in improvement.

A similar idea to change concepts are *Potentially Better Practices* (PBPs), which are a set of clinical practices that have the potential to improve the outcomes of care. They are labeled 'potentially better' rather than 'better' or 'best' because until the practices are evaluated, customized, and tested in your own institution, you will not know whether the practices are truly 'better' or 'best' (or 'worse'). Depending on the circumstances in your facility, you may have to implement other practices or modify existing ones to successfully improve outcomes. The PBPs in this collection are not necessarily the only ones required to achieve the improved outcomes targeted. Thus, this list of PBPs is not exhaustive, exclusive, or all inclusive. Changes in practice, guided by these PBPs, will require testing and adaptation to your circumstances and context to achieve measured improvements in outcomes.

In designing this project and reviewing the evidence for practices for the care of the LPI, TIPQC's faculty have recommended that all participating NICUs and Newborn Nurseries (NBN) implement all these PBPs at a minimum. It is vitally important that each hospital forms a multi-disciplinary team who can effectively implement these PBPs and possibly identify others which may be ideal for your facility and situation.

Parental Support & Discharge Readiness

Better practices for transitioning parents from observers to primary caregivers that promote positive relational health is through structured family-centered care (FCC) models. These practices focus on direct physical involvement, improved communication tools, and psychological support. Parental support can continue through educational avenues appropriate for the infant's care setting, recognizing that parental direct care opportunities may increase as the late preterm infant nears discharge.

- **Direct Care & Physical Involvement:**
    - **Skin-to-Skin or Kangaroo Care (STS):** Encouraging parents to provide skin-to-skin contact has been shown to have benefits to the late preterm infant as well as to the caregiver. Benefits to the infant include: improved thermoregulation, weight gain, neurodevelopmental outcomes, cardiovascular and respiratory stability, reduced pain,decreased periodic breathing/apnea, increased quiet alert and quiet sleep periods, and potentially earlier discharge from the hospital. Benefits to caregivers include improved bonding, parental confidence, and increased production of breast milk in mothers as well as lengthened duration of lactation.
    - **Active Care Participation:** Empowering parents to perform routine tasks such as feeding, diaper changes, temperatures, and postural support rather than just visiting.
    - **Supporting and enhancing NICU sensory experiences (SENSE):** Teaching parents to participate in scheduled allotted times for enhancing senses: skin to skin, infant massage, music, singing, reading a book,scent cloth, close contact with parents, cycled light,rocking, and free unrestricted movement.
    - **Beads of Encouragement:** Using beads or some other process to acknowledge milestones infants have achieved during hospital stay; focusing on positives rather than negative.

- **Enhanced Communication & Education**
    - **Family-Centered Medical Rounds:** Inviting parents to participate in daily clinical discussions to ensure they are informed and involved in decision-making.
    - **Virtual Update Platforms:** Using dedicated secure apps (e.g., AngelEye) or telehealth platforms to provide real-time photo and video updates to parents when they cannot be physically present.
    - **Education:** Providing resources and sessions on medical terms, equipment, and infant care basics to build confidence.
- **Environmental Adjustments**
    - **Provide interventions to prevent social risks to having a baby in the NICU:** Assist with transportation services, gas cards, food, comfortable area to stay close, Language support and appropriate translations services for families
    - **Nurturing Surroundings:** Encouraging families to personalize the bed space with family photos, black-and-white visual stimulation for the infant, and reading or singing to the baby.

Discharge Readiness: A late preterm infant's caretaker should actively participate in their infant's care the last 24-48 hours of admission by either being at the bedside participating in each feeding and care time or participating in a "rooming in" environment. This will also give the medical team the opportunity to educate and review discharge planning, including feeding plan, safe sleep, prescriptions, follow-up appointments and preventive care. Caretaker involvement, education, and review are all pertinent for prevention of LPI readmission.

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Infection Prevention

Late preterm infants are at an increased risk of sepsis (Verklan, 2021). The early onset sepsis rate in late preterm infants is 1 per 1000 live births (Puopolo, 2018). An underdeveloped immune system, inadequate transference of maternal antibodies, impaired skin integrity, and increased exposure to pathogens contribute to systemic infection in this vulnerable population (Verklan, 2021 and CPQCC, 2013).

Group B Streptococcus (GBS) disease and EOS are likewise more prevalent with prematurity (Puopolo, 2018). However, this lends preterm infants exposure to increased sepsis evaluations and antibiotics that may be unnecessary. This equates to an approximate 200-fold higher rate of antibiotics than the actual EOS incidence (Kuzniewicz, 2016), making antibiotic stewardship a critical co-component of sepsis awareness in this population.

1. Assess the Risk Factors for Sepsis (California Perinatal Quality Collaborative, 2013 and Association of Women's Health, Obstetric and Neonatal Nurses, 2026)
    a. Maternal: Preterm Premature Rupture of Membranes (PPROM), ROM>18 hrs
    b. Maternal: Chorioamnionitis or Triple I (intrauterine inflammation or infection or both) (Chun-Chih, 2017)
    c. Maternal: Potential subclinical intraamniotic infection responsible for preterm labor with intact membranes
        i. Intraamniotic infection during pregnancy has been associated with three- to six-fold increased odds of EOS in newborns (Beck, 2021)
    d. Maternal: Intrapartum fever (>38 C or 100.4 F)
    e. Maternal: Group B Streptococcus (GBS) status
        i. Unknown GBS status
        ii. Increased risk of GBS with delivery
            1. Risk ratio for PT birth with GBS colonization is 1.21, indicating a significant relationship between GBS and preterm birth (Bianchi-Jassir, 2017).
        iii. Previous delivery of infant with invasive GBS
        iv. History of maternal GBS bacteriuria with this pregnancy
        v. Adequate GBS prophylaxis: Administration of intrapartum antibiotics before delivery interrupts vertical transmission of group B streptococci and decreases the incidence of invasive GBS EOD. Adequate administration consists of intravenous penicillin, ampicillin, or cefazolin at least 4 hours before delivery.
    f. Neonatal: Complications during delivery (meconium, need for resuscitation to indicate unwellness)
    g. Neonatal: VLBW, congenital anomalies, low Apgar score, multiple-pregnancy
        i. Factors requiring invasive devices such as central lines and endotracheal tubes, delayed enteral feeding, medications, and complex management in a NICU all increase risk of infection. (Glaser, 2021)
2. Assess for signs of sepsis
        i. Frequent initial assessments for vitals, clinical status, tone and activity (National Perinatal Association, 2026)
        ii. Signs of sepsis:
            1. Need for respiratory support outside the delivery room
            2. Hemodynamic instability

3. Perinatal depression (Apgar<5 at 5 min)/neonatal encephalopathy (abnormal neuro exam, seizure)
4. Need for supplemental oxygen >2 hours
5. Apnea
6. Glucose instability
7. Abnormal exam: hypotonia, jitteriness, pale, mottled, or cyanotic color, lethargy
8. Feeding problems> abdominal distension, vomiting
9. 2 or more of the following physiologic abnormalities lasting >2 hours
    a. Persistent tachycardia (>160)
    b. Persistent tachypnea (RR >60)
    c. Temperature instability (>100.4 F or <97.5 F)
    d. Respiratory distress (grunting/flaring/retracting)

3. Determine the risk for sepsis using a risk calculator, if applicable. (See Appendix 1)
    a. The EOS calculator is designed for use in infants born at 35 weeks of gestation or later and produces the probability of EOS per 1,000 infants (Helmbrecht, 2019; Kuzniewicz, 2016; Puopolo, 2018).
    b. Kaiser Permanente Neonatal EOS Risk Calculator Infection Probability Calculator - Neonatal Sepsis Calculator (https://neonatalsepsiscalculator.kaiserpermanente.org/) (See Appendix 4)
4. Initiate a full diagnostic evaluation for sepsis if clinical signs are noted or the calculator recommends it. Evaluation may include but is not limited to the following (AWHONN, 2026; Aleem & Greenberg, 2019; Puopolo, 2018):
    i. Complete blood count (CBC)
    ii. Blood culture
    iii. Chest x-ray if respiratory symptoms are present
    iv. Lumbar puncture
    v. Measurement of nonspecific inflammatory markers
5. Initiate broad spectrum antibiotics against common EOS pathogens if indicated by either clinical concern or sepsis risk calculator (Batton, 2007; Fell, 2017).
    a. Ampicillin in combination with an aminoglycoside provides broad-spectrum treatment for suspected or confirmed EOS.
    b. If meningitis is suspected or confirmed, ampicillin and a cephalosporin (for improved cerebrospinal fluid penetration) are preferred (Glaser, 2021 and Pupolo, 2018).
    c. Antibiotic stewardship is essential to limit unnecessary antibiotic exposure as infection is ruled out. An automatic stop time is an option for a negative blood culture at 36 or 48 hours, as for newborns born at 34 weeks of gestation or later, the time to positivity of pathogens was found to be less than 24 hours (Marks, 2020).

Discharge Readiness: A late preterm infant should not show any concern for a current infectious process prior to discharge. As unit best practices are followed via these or additional Potentially Better Practices, the risk for ongoing infection at discharge can be minimized, limiting readmission and outpatient sepsis evaluation. For late preterm infants clinical wellness and resolution of infectious concerns should be documented and maintained for at least 24 hours prior to discharge.

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Nutrition for the Late Preterm Infant

Hospitals should have specific programs, policies, and professional education and training to support LPI feeding (UC San Diego Health, 2016; California Perinatal Quality Collaborative, 2013). Engaging parents in education and dialogue about

feeding behaviors, assessing readiness to feed, facilitating early and frequent feedings, and monitoring effectiveness of feeds are essential for the LPI and may improve breastfeeding success (Carpay et al, 2021). Facilitating extended skin-to-skin contact after birth will improve early breastfeeding as well as temperature, blood glucose control, and vital signs (Cartwright et al 2017). Protecting and stimulating the mother's breastmilk supply with milk expression when direct breastfeeding is not possible or is ineffective will assist with lactogenesis, an exclusive breastmilk diet, and long-term milk supply (Jonsdottir et al 2020). Supplementation of breastfeeding when medically indicated or when a parent makes an informed choice to supplement to potentially support growth and development, and prevent dehydration and excessive weight loss. Breastfeeding adjuncts, such as nipple shields and breast compression are more likely to be needed in LPIs. Evaluation and management by a professional(s) with expertise in infant feeding and lactation management should occur as soon as possible (Boies & Vaucher, 2016). It is important to note that LPIs born at 34 0/7 to 34 6/7 weeks may need a higher level of care and monitoring given their 50% risk of morbidity during the birth hospitalization (Shapiro-Mendoza, 2008; Pulver et al, 2010).

Potentially Better Practices for Nutritional Care

- Develop and share with staff a standard written feeding plan for late preterm infants which may include more frequent feedings (Appendix 2).

- Determine gestational age by obstetrical dating and Ballard/modified Dubowitz scoring (Ballard et al, 1991).

- Recognize that LPIs are at increased risk for ineffective feeding.

- Closely observe LPIs during the first 24 hours of life to detect any physiologic instability, including during skin-to-skin (STS) and rooming in. Monitor vital signs every 6-8 hours.

- Initiate screening of at-risk infants with plasma glucose analysis within 2 hours of age, including those who are late-preterm, small for gestational age, large for gestational age, or are infants born to diabetic mothers (recommended in the 2011 American Academy of Pediatrics Clinical Report and 2014 Academy of Breastfeeding Medicine Protocol #1). Note that updated hypoglycemia recommendations are forthcoming. Stable newborns should be fed in the first hour of life to mitigate the physiologic postnatal glucose nadir (please see below for details).

- Continue screening before each feeding for the first 24 hours of life or until acceptable levels are consistently obtained (generally at least 45 mg/dL). Newborns with clinical signs (jitteriness, lethargy, poor feeding, cyanosis, diaphoresis, apnea, tachypnea, weak or high-pitched cry, seizures, etc.) or plasma glucose less than 20-25 mg/dL (or less than 35mg/dL at 4-24 hours of life) should be treated with intravenous glucose (2mL/kg of D10W IV bolus and/or a continuous infusion of D10 W at 5-8 mg/kg/min or 80-100 ml/kg/day). The AWHONN Clinical Practice Guideline also recommends having organizational protocols to address hypoglycemia and to include considerations for the use of oral dextrose gel to improve blood glucose levels and reduce the need for intravenous fluids.

- Support rooming-in 24 hours a day.

- Encourage early and frequent STS contact and use of kangaroo care, appropriate dressing and swaddling, and the use of a cap to avoid hypothermia. Intermittent use of an incubator may be necessary.

- Observe and validate caregiver knowledge about common feeding behaviors of LPIs, including:
    - Patterns of sucking, including coordination of sucking, swallowing, and breathing

    - Need to wake before feedings
    - Need for frequent feedings
    - Breastfeeding positions, including adequate jaw and head support
    - Need for frequent STS contact
    - Importance of monitoring milk intake
    - Provision of updated written and oral instructions

- Assess readiness to feed before initiating oral feedings using the following behavioral feeding cues:
    - Rooting
    - Hand-to-mouth movements
    - Sucking movements or sounds
    - Opening of mouth in response to tactile stimulation
    - Transition between behavioral states from sleep to drowsy and quietly alert

- Evaluate the LPI's ability to coordinate sucking, swallowing, and breathing, including behaviors suggesting success or stress.

- Facilitate early and frequent feedings. The initial feeding should be within the first hour of birth.
    - Encourage the parent to express colostrum in addition to feedings/feeding attempts within the first hour and at approximately 2- to 3-hour intervals.
    - The LPI should feed approximately every 3 hours during the first few days, or 8-12 times within a 24 hour period.
    - Encourage breastfeeding on demand based on infant hunger cues.
    - It is important to awaken the LPI to feed by 4 hours after the last feed if they do not demonstrate feeding cues or arouse on their own (this is not uncommon in LPIs).
    - Support the parent to begin expressing milk within an hour if supplementation is indicated or the parent and newborn are separated, using hand expression (may be as or more effective for colostrum), an electronic pump, or both.

- Assess effectiveness of feeding effort, including milk transfer and oral–motor function, using a validated feeding assessment tool such as the following (Jensen et al, 1994; Matthews, 1988; Mulford, 1992; Ingram et al, 2015):
    - Preterm Infant Breastfeeding Behavior Scale
    - LATCH score
    - Infant Breastfeeding Assessment Tool (IBFAT)
    - Mother/Baby Assessment Tool

- Assess and document feeding effectiveness at least twice in 24 hours.

- Feeding assessments should be done by two different professionals trained in feeding and lactation management, whenever possible.

- Monitor the LPI for physiologic stability during early feedings.

- Monitor oral intake, stool and urine output, weight change, and milk supply.

- Further assessment and monitoring is indicated for weight loss of 3% or more in the first 24 hours or 7% or more by day of life 3.

- Pre- and post-feeding weights with some feeds may also be useful to assess milk transfer. Breast compression while the infant feeds at the breast and/or use of a nipple shield with close monitoring by a lactation-trained professional should be considered in cases of ineffective milk transfer.

- Provide supplemental feeding after breastfeeding with appropriate volumes, if medically indicated. Note that many LPIs will not effectively breastfeed initially so milk expression and feeding expressed colostrum should be considered after the first attempted breastfeed. Supplemental feedings are frequently necessary for multiple gestations, which is more common in LPIs. Medical indications include but are not limited to the following:
    - Excessive weight loss
    - Poor feeding
    - Hyperbilirubinemia
    - Parent–newborn separation

      a. Prioritize supplemental feedings in the following order:
        1. Expressed human milk
        2. Pasteurized donor human milk (PDHM)
        3. Fortified human milk
        4. Formula

      b. Supplemental feeding methods include:
        - Gavage feeding
        - Cup feeding
        - Syringe feeding
        - Spoon feeding
        - Supplementing system at the breast
        - Bottle feedings

      c. Appropriate quantities of supplementation are 5-10 mL per feeding day 1 and 10-30 mL per feeding thereafter.

      d. If supplementing, the mother should express her milk six times within 24 hours to maintain adequate milk supply. If the infant is not directly breastfeeding at all, the mother should express milk at least 8 times in 24 hours.

Discharge Readiness: Readiness for discharge may be indicated by physiologic stability (able to maintain body temperature for at least 24 hours) and adequate feeding, either exclusively at the breast or with supplemental feedings. Preferably, weight should be no more than 10% below birth weight. A discharge feeding plan should be documented and communicated to parents and healthcare professionals who will be following up with the infant. The first follow up appointment or home health visit should occur 1-3 days after discharge. Relevant feeding history (including feeding problems and need for supplementation) should be documented in the medical record along with prenatal, perinatal, and infant history with gestational age with birth weights/weights for access by the outpatient provider.

<u>Education and Training</u>

Resources for staff education and training:

- AAP Breastfeeding Curriculum
- ABM Breastfeeding Protocols

- AWHONN Clinical Practice Guideline
- International Lactation Consultant Association
- US Breastfeeding Committee
- Lactation Education Resources
- Childbirth and Postpartum Professional Association

Peer Support

- La Leche League

Measures

- Communication of written feeding plan at discharge. (Examples Appendices 2 and 3)
- Weight loss of less than 7-10% BW at time of discharge.
- Scheduled outpatient follow-up within 1-3 days of discharge.

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Assessment & Stabilization

1. Review the maternal and neonatal history for risk factors that increase the risk of respiratory distress in the newborn.
    a. Prematurity – there is an inverse relationship between gestational age and the incidence of respiratory distress
    b. Maternal diabetes – neonatal hyperinsulinemia inhibits the production of surfactant, increasing the risk of respiratory distress
    c. Prolonged rupture of membranes – ROM for > 18 hours increases the risk of neonatal sepsis/pneumonia
    d. Multiple pregnancy
    e. Maternal medical conditions: pregestational or chronic hypertension, chorioamnionitis, gestational hypertension
    f. C/section delivery – labor triggers the reduction of alveolar fluid secretion and the release of surfactant, infants delivered via c/section without the benefit of labor have an increased risk of transient pulmonary edema (transient tachypnea of the newborn)
    g. Male gender – male newborns have a higher risk of respiratory distress
    h. Perinatal asphyxia – negatively affects surfactant production in the newborn
    i. Rapid labor
    j. Low birth weight
    k. Hypothermia – hypothermia increases oxygen consumption and metabolic demand, which can lead to respiratory distress
    l. Meconium-Stained Amniotic Fluid- may indicate fetal stress

2. Did the mother receive antenatal steroids? If so, how many doses and when in relation to the date/time of birth.
    a. A single course of betamethasone is recommended for pregnant women between 34 0/7 weeks and 36 6/7 weeks of gestation at risk of preterm birth within 7 days, and who have not received a previous course of antenatal corticosteroids (ACOG, reaffirmed 2024).

3. Examine the newborn for any of the following signs of respiratory distress:
    a. Tachypnea

b. Grunting
c. Retracting
d. Nasal flaring
e. Oxygen desaturations in RA
f. Apnea or periodic breathing

4. If the newborn is showing signs of respiratory distress, provide the following care:
    a. CPAP, PPV or intubation per NRP guidelines.
    b. Administer the lowest amount of heated, humidified and blended supplemental oxygen that supports the newborn as evidenced by oxygen saturations within acceptable range for age
    c. Support the newborn's thermoregulation
    d. Continuously monitor the newborn's heart rate, respiratory rate, and oxygen saturations with electronic monitoring
    e. Evaluate the newborn's blood pressure and perfusion
    f. Consider the evaluation of a blood gas, chest radiograph, and glucose level

Discharge Readiness: Any late preterm newborn who required supplemental oxygen and/or ventilatory support should be monitored for a minimum of 48 hours without any support prior to discharge.

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Physiologic Jaundice / Unconjugated Hyperbilirubinemia

1. Recognize that the LPI is at increased risk for hyperbilirubinemia.
    a. Preterm infants are more likely to develop hyperbilirubinemia which is often more severe and lasts longer in this population compared to term infants. This is related to the immaturity of red blood cells, hepatic cells, and the gastrointestinal tract. Approximately 60% of term and 80% of preterm infants develop jaundice in the first week of age. Preterm infants have a more permeable blood-brain barrier and albumin in preterm infants has a decreased binding affinity and capacity. As a result, premature infants can develop bilirubin toxicity and long-term neurologic sequelae at much lower Total Serum Bilirubin (TSB) levels compared with term infants.
2. Prevention of hyperbilirubinemia
    a. Review maternal blood type, RhD, DAT.

i. If the maternal antibody screen is positive or unknown because the mother did not have prenatal antibody screening, the infant should have a direct antiglobulin test (DAT) and the infant's blood type should be determined as soon as possible using either cord or peripheral blood.

b. Monitor for risk factors

i. Significant hyperbilirubinemia

1. Lower gestational age (ie, risk increases with each additional week less than 40 wk)
2. Jaundice in the first 24 h after birth
3. Predischarge transcutaneous bilirubin (TcB) or total serum bilirubin (TSB) concentration close to the phototherapy threshold
4. Hemolysis from any cause, if known or suspected based on a rapid rate of increase in the TSB or TcB of >0.3 mg/dL per hour in the first 24 h or >0.2 mg/dL per hour thereafter.
5. Phototherapy before discharge
6. Parent or sibling requiring phototherapy or exchange transfusion
7. Family history or genetic ancestry suggestive of inherited red blood cell disorders, including glucose-6-phosphate dehydrogenase (G6PD) deficiency
8. Exclusive breastfeeding with suboptimal intake
9. Scalp hematoma or significant bruising
10. Down syndrome
11. Macrosomic infant of a diabetic mother

ii. Neurotoxicity

1. Gestational age <38 week and this risk increases with the degree of prematurity
2. Albumin <3.0 g/dL
3. Isoimmune hemolytic disease (ie, DAT), G6PD deficiency, or other hemolytic conditions
4. Sepsis
5. Significant clinical instability in the previous 24 hours

c. Feeding support

i. Adequate feeding is an important component of preventing hyperbilirubinemia. The AAP recommends implementation of maternity care practices that promote comprehensive, evidence-based, family-centered breastfeeding support.

3. Assess the presence of jaundice in the first 24 hours of life – initiate immediate screening if noted in the first 24 hours of life.

a. All infants should be visually assessed for jaundice at least every 12 hours following delivery until discharge. TSB or TcB should be measured as soon as possible for infants noted to be jaundiced <24 hours after birth.

b. Infants with one or multiple neurotoxicity risk factors should have TSB or TcB measured immediately, then every 4 hours 2 times, then every 12 hours 3 times at a minimum, and as dictated by specifics of the clinical situation.

c. The TcB or TSB should be measured between 24 and 48 hours after birth or before discharge if that occurs earlier.

d. For all infants, TSB should be measured if the TcB exceeds or is within 3 mg/dL of the phototherapy treatment threshold or if the TcB is >15 mg/dL.

e. If more than 1 TcB or TSB measure is available, the rate of increase may be used to identify infants at higher risk of subsequent hyperbilirubinemia. A rapid rate of increase (>0.3 mg/dL per hour in the first 24 hours or >0.2 mg/dL per hour thereafter) suggests hemolysis.

f. If appropriate follow-up cannot be arranged for an infant recommended to have an outpatient follow-up bilirubin measure, discharge may be delayed.

4. Plot bilirubin level on a hour-specific nomogram.

    a. For 35 weeks and above, https://bilitool.org/

    b. For 34 6/7 weeks and below, https://pbr.stanfordchildrens.org/

5. Treatment of Unconjugated Hyperbilirubinemia:

    a. Providing phototherapy: Intensive phototherapy is recommended at the total serum bilirubin thresholds on the basis of gestational age, hyperbilirubinemia neurotoxicity risk factors, and age of the infant in hours.

    b. For hospitalized infants, TSB should be measured within 12 hours after starting phototherapy. The timing of the initial TSB measure after starting phototherapy and the frequency of TSB monitoring during phototherapy should be guided by the age of the child, the presence of hyperbilirubinemia neurotoxicity risk factors, the TSB concentration, and the TSB trajectory.

    c. Discontinuing phototherapy: Discontinuing phototherapy is an option when the TSB has decreased by at least 2 mg/dL below the hour-specific threshold at the initiation of phototherapy. A longer period of phototherapy is an option if there are risk factors for rebound hyperbilirubinemia (ie, gestational age <38 weeks, age <48 hours at the start of phototherapy, hemolytic disease).

6. Discharge Education:

    a. Before discharge, all families should receive written and verbal education about neonatal jaundice. Parents should be provided written information to facilitate post discharge care, including the date, time, and place of the follow-up appointment and, when necessary, a prescription and appointment for a follow-up TcB or TSB. Birth hospitalization information, including the last TcB or TSB and the age at which it was measured, and DAT results (if any) should be transmitted to the primary care provider who will see the infant at follow-up. If there is uncertainty about who will provide the follow-up care, this information should also be provided to families.

7. Post Discharge follow up:

        i. Once discharge is being considered, the difference between the bilirubin concentration measured closest to discharge and the phototherapy threshold at the time of the bilirubin measurement should be calculated and used to guide follow-up.

ii. If appropriate follow-up cannot be arranged for an infant recommended to have an outpatient follow-up bilirubin measure, discharge may be delayed.

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Thermoregulation

Late-preterm infants are at risk for hypothermia for the following reasons:

- Immature epidermal barrier
- Low birth weight with a concomitant decrease in insulation by white fat
- Increased surface area to weight ratio
- Decreased metabolic response caused by:
    - Decreased amount of brown fat
    - Decreased concentrations and an immature, diminished response from important regulatory hormones such as: prolactin, leptin, norepinephrine, T3, cortisol
- Increased need of interventions after delivery (Horgan, 2015; Engle, 2007; Wang, 2004)

Hypothermia may also exacerbate hypoglycemia and respiratory distress, which are other significant morbidities in this late-preterm population (Horgan, 2015; Engle, 2007; Raju, 2006; Wang, 2004).

The thermoneutral environment (TNE) refers to a range of ambient temperature that is necessary to maintain normal metabolism. It will depend on the weight, gestational age, and postnatal age of the infant. This temperature will increase with decreasing GA of the infant (Ringer, 2013; Hodson, 2018).

Small for gestational age (SGA) infants will be susceptible to hypothermia based on their increased surface area to weight ratio, and will also manifest an increase in metabolic rate for their given weight (Ringer, 2013; Hodson, 2018).

Physical exam findings and/or clinical signs of hypothermia may include the following:

- Respiratory distress: tachypnea, nasal flaring, grunting, chest wall retractions
- Hypoxemia
- Periodic breathing, apnea
- Decreased activity, listlessness, hypotonia
- Hypoperfusion, mottling, cyanosis
- Poor feeding

- Hypoglycemia

All newborn infants are susceptible to heat loss at the time of birth. Late-preterm infants will remain particularly vulnerable for several hours in various locations in the hospital, including post-partum rooms, transitional care nurseries and Neonatal Intensive Care Units (NICUs). They may lose heat by evaporative, convective, conductive, and radiant mechanisms.

Given the higher risk of hypothermia and the associated morbidities in this fragile population, it is important to establish preventative strategies or Potentially Better Practices (PBPs), such as:

- Close attention to settings and maintenance of environmental temperatures in the Delivery Room (DR), Operating Room (OR), mother-baby room, transitional care nursery, and/or NICU
    - Thermostats should be set at a minimum of 22 deg C (72 deg F)
- Avoid evaporative, convective, conductive, and radiant heat loss
    - Prompt and thorough drying of the infant at delivery
    - Use prewarmed blankets, beds and scales
    - Use prewarmed double walled incubator as clinically warranted
- Delay the time for the first bath of the infant depending on thermal stability
- Use hats and dress and swaddle the infant appropriately while adhering to safe sleep guidelines
- Initiate Skin-to-Skin Care (STS) with the mother as soon as possible
- Perform continuous STS, whenever feasible, with close monitoring
- Maintain safe and proper positioning of the infant and parent during STS
- Promote and facilitate STS for both the mother and father
- Carefully observe and monitor the infant during STS
    - Obtain serial axillary temperatures of the infant during prolonged periods of STS as directed by hospital protocol

Axillary temperatures in the infant should be followed closely and maintained in the normal range, between 36.5 deg C (97.7 deg F) and 37.5 deg C (99.5 deg F). Careful surveillance and monitoring are required to avoid both hypothermia and hyperthermia.

A consensus committee that developed standards for NICU design recommend the ambient temperature in rooms during delivery, resuscitation, and stabilization of newborn infants, and particularly for those born low-birth weight and/or preterm, be kept between 22 deg C (72 deg F) and 26 deg C (78 deg F) (Kilpatrick, 2017).

Discharger Readiness: Discharge readiness demonstrated by a late-preterm infant should include a period of at least 24 hours of normal axillary temperatures while appropriately dressed and swaddled in an open crib, in accordance with safe sleep practices. Clinicians may choose to lengthen this surveillance interval to 48 hours for an infant that has demonstrated temperature instability requiring a prolonged period of weaning of heat in the incubator, for an infant that has had an event of hypothermia after transition to the open crib, or an infant who has just learned to successfully orally feed. Clinicians should provide families with verbal and written communication of hypothermia preventative measures for a safe and successful transition to home.

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Measures: *How will we know that a change is an improvement?*

Target population

Infants born between 34 0/7 to 36 6/7 weeks and discharged from one of the participating nurseries or NICUs.
Inclusion/Exclusion criteria:

- Includes all transfers admitted to the participating nursery or NICU.
- Includes each instance of multiples
- Excludes infants that died in delivery room
- Excludes infants that died before discharge

Outcome measures

Outcome measures will be calculated from the captured "TIPQC BTT_LPI PROJECT CLINICAL CARE CHECKLIST" form and entered into the TIPQC-specified platform MONTHLY. See form for details. *This information will be captured by race/ethnicity and payor status of mother.*

#1: Percent of infants discharged with "Discharge ready" checklist completion (For example, see Appendix 1.)

Numerator: Number of infants born between 34 0/7 to 36 6/7 weeks and discharged from one of the participating nurseries or NICUs for care with documented "discharge ready" checklist completion

Denominator: Number of infants born between 34 0/7 to 36 6/7 weeks and discharged from one of the participating nurseries or NICUs for care.

Optional: Readmission rates (if feasible or desired by individual teams)

Process measures

Process measures will be calculated from the captured "TIPQC BTT_LPI PROJECT CLINICAL CARE CHECKLIST" form and entered into the TIPQC-specified platform MONTHLY. See form for details.

#1: Percent of infants receiving human milk [mother's own milk (MOM) or donor breast milk (DBM)] during hospitalization and/or discharge (Y, N, unable to receive human milk*, or unknown)

Numerator: Number of infants born between 34 0/7 to 36 6/7 weeks and discharged from one of the participating nurseries or NICUs for care with documented receipt of human milk [mother's own milk (MOM) or donor breast milk (DBM)] mother's own milk during hospitalization and/or discharge

Denominator: Number of infants born between 34 0/7 to 36 6/7 weeks and discharged from one of the participating nurseries or NICUs for care *(not including unknown or N/A responses)*

#2: Percent of infants offered lactation consultation via CLC or nursing/staff member with lactation training

Numerator: Number of infants born between 34 0/7 to 36 6/7 weeks and discharged from one of the participating nurseries or NICUs for care with documented lactation consultant time during hospitalization

Denominator: Number of infants born between 34 0/7 to 36 6/7 weeks and discharged from one of the participating nurseries or NICUs for care

#3: Percent of infants discharging with a written feeding plan in discharge paperwork (See Appendices 2 and 3)

Numerator: Number of infants born between 34 0/7 to 36 6/7 weeks and discharged from one of the participating nurseries or NICUs for care with a written feeding plan

Denominator: Number of infants born between 34 0/7 to 36 6/7 weeks and discharged from one of the participating nurseries or NICUs for care

#4: Percent of infants discharging with infection assessment documentation (calculator used as applicable)

Numerator: Number of infants born between 34 0/7 to 36 6/7 weeks and discharged from one of the participating nurseries or NICUs for care with documented infection assessment documented during hospitalization (Y, N, or unknown)

Denominator: Number of infants born between 34 0/7 to 36 6/7 weeks and discharged from one of the participating nurseries or NICUs for care (do not include unknown)

#5: Percent of infants discharging with hyperbilirubinemia measured (transcutaneous or serum) and used to guide appropriate discharge and follow-up

Numerator: Number of infants born between 34 0/7 to 36 6/7 weeks and discharged from one of the participating nurseries or NICUs for care with documented measured hyperbilirubinemia

Denominator: Number of infants born between 34 0/7 to 36 6/7 weeks and discharged from one of the participating nurseries or NICUs for care

Structure measures

These Structure measures will be calculated from the captured data in a TIPQC-specified data platform. An example for data collection is provided in the "TIPQC BTT_LPI_PROJECT QUARTERLY CAPTURE OF STRUCTURE MEASURES" form.

Report your progress in the implementation of policy and procedures, education and patient/family partner engagement in percent increments (0%, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 100%) quarterly.

- Policy & Procedure
    - Policy and procedure prepared and implemented on LPI-specific discharge requirements, including a discharge ready checklist
    - Policy and procedure prepared and implemented for LPI-specific (individualized per infant's needs) written feeding plans at discharge (Examples in Appendices 2 and 3.)
- Provider & Nursing Education
    - LPI-specific discharge ready checklist accessible and communicated to staff (including extended skin-to-skin care after birth, rooming-in/STS contact/kangaroo care or double wrapping)
- Patient/Family Partner engagement

Data Collection

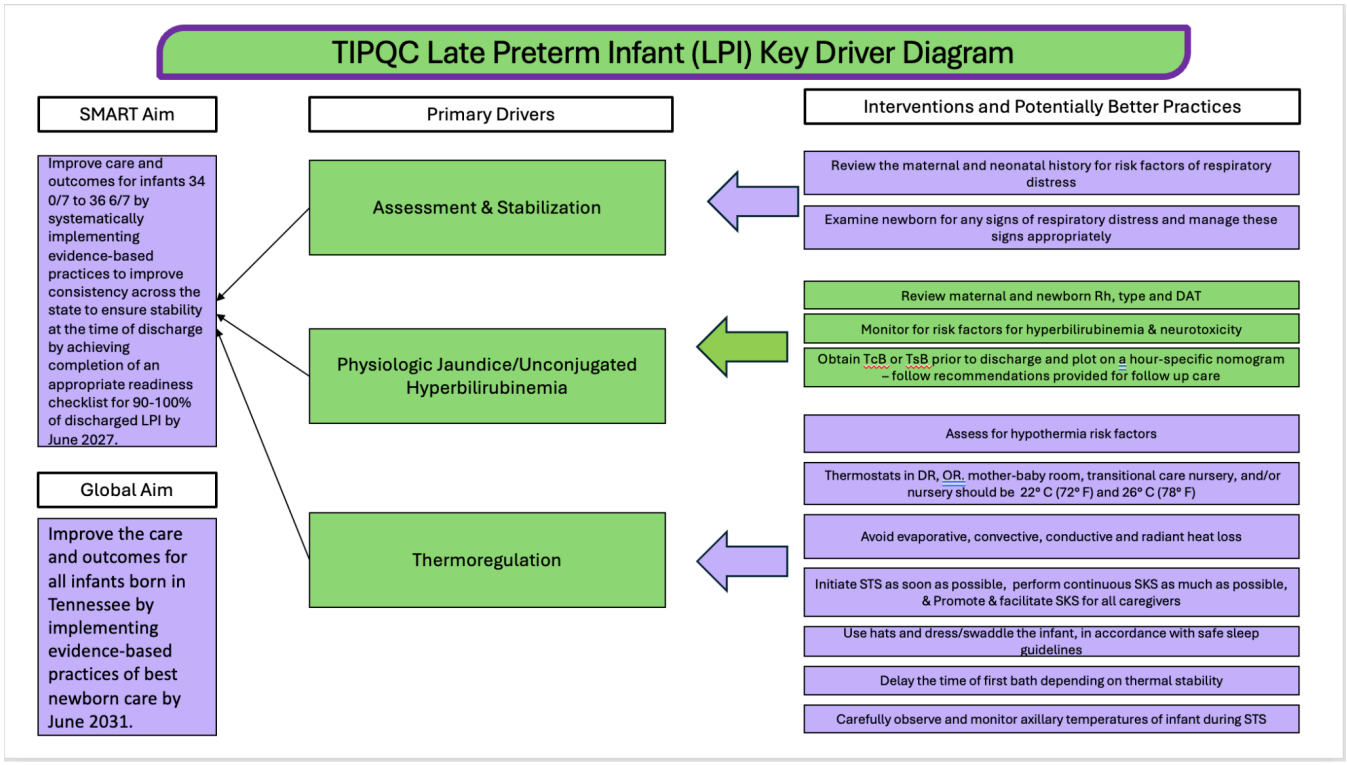
Participating nurseries and Level 2 NICUs will capture data on each infant using the provided "TIPQC BTT: LPI PROJECT CLINICAL CARE CHECKLIST" form. Each team will determine the process in which the data will be collected . This data will be collected monthly with appropriate numerators and denominators as defined.

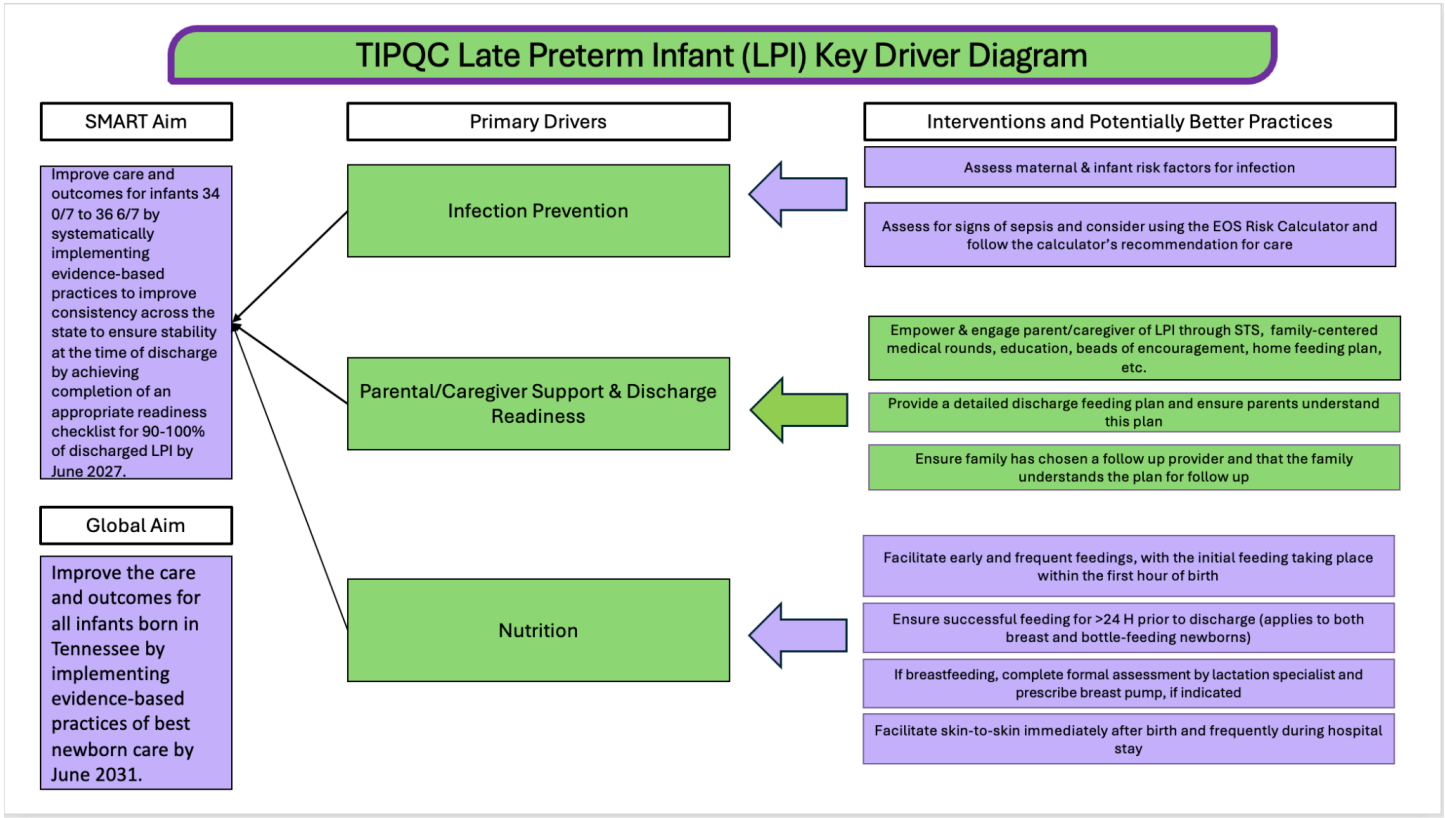
As mentioned, the defined Outcome, Process, and Balancing measures will be calculated from the individual targeted measures captured in the TIPQC-specified platform. Up-to-date data reporting will be made available to the participating nursery teams as data is entered.

The defined Structure measures will be collected quarterly using TIPQC-specified data platform and entered in by hospital teams. An example for data collection is provided in the "TIPQC BTT: LPI PROJECT QUARTERLY CAPTURE OF STRUCTURE MEASURES" form. Each participating NICU will be sent an email each quarter as a reminder to submit their data. Generated data reports will also include summaries of these Process and Structure measures.

Key Driver Diagram

A driver diagram is a visual display of a QI collaborative's (or team's) theory of what "drives," or contributes to, the achievement of the project aim – that is, the project's "theory of change." The far-right column of the driver diagram lists the specific *change ideas to test* using PDSA cycles.


TIPQC Late Preterm Infant (LPI) Key Driver Diagram
SMART Aim
Improve care and outcomes for infants 34 0/7 to 36 6/7 by systematically implementing evidence-based practices to improve consistency across the state to ensure stability at the time of discharge by achieving completion of an appropriate readiness checklist for 90-100% of discharged LPI by June 2027.
Global Aim
Improve the care and outcomes for all infants born in Tennessee by implementing evidence-based practices of best newborn care by June 2031.
Primary Drivers
Assessment & Stabilization
Physiologic Jaundice/Unconjugated Hyperbilirubinemia
Thermoregulation
Interventions and Potentially Better Practices
Review the maternal and neonatal history for risk factors of respiratory distress
Examine newborn for any signs of respiratory distress and manage these signs appropriately
Review maternal and newborn Rh, type and DAT
Monitor for risk factors for hyperbilirubinemia & neurotoxicity
Obtain TcB or TsB prior to discharge and plot on a hour-specific nomogram – follow recommendations provided for follow up care
Assess for hypothermia risk factors
Thermostats in DR, OR, mother-baby room, transitional care nursery, and/or nursery should be 22° C (72° F) and 26° C (78° F)
Avoid evaporative, convective, conductive and radiant heat loss
Initiate STS as soon as possible, perform continuous SKS as much as possible, & Promote & facilitate SKS for all caregivers
Use hats and dress/swaddle the infant, in accordance with safe sleep guidelines
Delay the time of first bath depending on thermal stability
Carefully observe and monitor axillary temperatures of infant during STS


TIPQC Late Preterm Infant (LPI) Key Driver Diagram
SMART Aim
Improve care and outcomes for infants 34 0/7 to 36 6/7 by systematically implementing evidence-based practices to improve consistency across the state to ensure stability at the time of discharge by achieving completion of an appropriate readiness checklist for 90-100% of discharged LPI by June 2027.
Global Aim
Improve the care and outcomes for all infants born in Tennessee by implementing evidence-based practices of best newborn care by June 2031.
Primary Drivers
Infection Prevention
Parental/Caregiver Support & Discharge Readiness
Nutrition
Interventions and Potentially Better Practices
Assess maternal & infant risk factors for infection
Assess for signs of sepsis and consider using the EOS Risk Calculator and follow the calculator's recommendation for care
Empower & engage parent/caregiver of LPI through STS, family-centered medical rounds, education, beads of encouragement, home feeding plan, etc.
Provide a detailed discharge feeding plan and ensure parents understand this plan
Ensure family has chosen a follow up provider and that the family understands the plan for follow up
Facilitate early and frequent feedings, with the initial feeding taking place within the first hour of birth
Ensure successful feeding for >24 H prior to discharge (applies to both breast and bottle-feeding newborns)
If breastfeeding, complete formal assessment by lactation specialist and prescribe breast pump, if indicated
Facilitate skin-to-skin immediately after birth and frequently during hospital stay

Appendix 1 – Discharge Ready Checklist Example

Tennessee Initiative for Perinatal Quality Care
Late Preterm Infant Project
Discharge Readiness Checklist

Activity	Date Verified / Initials	Additional Comments
Age & Stability		
Newborn is at least 48 hours of age		
Stable vital signs for at least 24 hours – in an open crib with appropriate clothing and swaddling		
Feeding		
Successful feeding for at least 24 hours prior to discharge.		
If breastfeeding, - A formal assessment by a lactation specialist has been performed at least twice before discharge - Prescription provided for breast pump, if indicated		
Provide a detailed feeding plan for after discharge.		
Evaluate parents'/caregiver's understanding of home feeding plan.		
If supplementation will be provided, recommended volumes understood.		
Weight loss < 10 % since birth		
Elimination		
No significant emesis		
Adequate voiding prior to discharge.		
Parents/Caregivers have been educated on how many wet diapers to expect each day. • 3 wet diapers by day 2 • 4 wet diapers by day 4 • 6 wet diapers per day by day 6 and thereafter.		
At least 1 stool/24 hours. • By day 3, expect 3 stools per day		

• By day 4, expect 4 stools per day • By day 6, expect 6 stools per day and thereafter.		
Jaundice & Bilirubin Monitoring		
Transcutaneous or serum bilirubin obtained and plotted on hour specific nomogram.		
Recommendation for outpatient follow up provider visit and any recommended follow up bilirubin levels were incorporated into follow up after discharge plan.		
Circumcision (If Applicable)		
If circumcision is performed, assess for bleeding for at least 2 hours.		
Document parents'/caregiver's understanding of the post-circumcision care.		
Infection Monitoring		
No clinical signs of infection – recommendations from the EOS Calculator were incorporated into newborn's care.		
Routine Newborn Screening		
Newborn metabolic screen obtained after 24 hours of age		
Hearing screening completed and results included on discharge paperwork		
Critical Congenital Heart Disease (CCHD) completed per state requirements and results included on discharge paperwork.		
Car seat test completed and results included on discharge summary, if indicated		
Hepatitis B vaccine administered and included in the discharge paperwork.		
RSV Immunization, if indicated		
General Parental/Caregiver Education on Newborn Care		
Bathing and diaper changing		
Cleaning and caring of the umbilicus		
Value of skin-to-skin holding		

Need for increased clothing to keep warm when not skin-to-skin		
Developmental Care		
Explain the differences between corrected gestational age and chronologic age		
Discuss the importance of close monitoring for corrected gestational age developmental milestones by primary care provider.		
Discuss the signs/behavioral cues of stress and overstimulation: • Finger/toe splaying • Twitches or startles • Arching or limpness • Facial grimace • Irregular breathing • Gaze aversion • Crying		
Discharge Education		
Safe sleep, including tummy time		
Avoidance of secondhand smoke		
When to call the provider after discharge		
Follow-Up Planning		
Follow up provider appointment made for 1-3 days after discharge (including the recommendations for bilirubin follow up).		
Copy of discharge summary sent to the follow up provider.		
Copy of discharge summary provided to parents/caregiver.		

Parent/Caregiver Signature & Date: _____

Nurse Signature & Date: _____

Nurse Signature & Date: _____

Nurse Signature & Date: _____

Appendix 2 - Written Feeding Plan Example - Late Preterm

Special Feeding Plan-- Late Preterm

Name: _____Date:_____
Reason for Feeding Plan:_____
Birth Weight: _____Current Weight:_____

1. Feed baby supplemental feeding of breastmilk or formula.

Recommended volumes listed below:

1st 24 hours	24-48 hours	48-72 hours	72 hours or older
10 mL	20ml	30ml	30-60ml

2. Place baby skin-to-skin and attempt latching. If the baby latches, allow the baby to nurse until he/she falls asleep. If the baby does not latch, may do STS for up to 30 minutes. Attempt latching no longer than 15 minutes.

3. Double pump after skin to skin for 15 minutes and save milk for the next feeding

Reminders:

- ☐ Remember - total feeding time including breastfeeding attempt, supplementing, and pumping should last no more than 45 minutes.
- ☐ Breastmilk can stay at room temperature for 4-6 hours, so leave this milk out for the next feeding
- ☐ Keep written records of feeds, supplements, and output on Breastfeeding Diary

Other Special Instructions: _____
_____
_____

Lactation consultant:_____

*Note: Any feeding plan should be tailored to the unique needs of mother and baby. Supplementation is frequently, but not always required.

Appendix 3 - Written Feeding Plan Example - Supplementation

Special Feeding Plan-- Supplementation

Name: _____Date:_____
Reason for Feeding Plan:_____
Birth Weight: _____Current Weight:_____

1. Skin to skin and attempt latching. May supplement at the breast with Supplemental nursing system (SNS) if possible
2. Allow the baby to nurse for 15min if not using SNS or up to 30min if using SNS.
3. Feed baby supplemental feeding of breastmilk or formula.

Recommended volumes listed below:

1st 24 hours	24-48 hours	48-72 hours	72 hours or older
5-10 mL	10-20ml	20-30ml	30-60ml

4. Double Pump after feeding for 15 minutes and save milk for the next feeding

Reminders:

- ☐ Remember - total feeding time including breastfeeding attempt, supplementing, and pumping should last no more than 45 minutes.
- ☐ Breastmilk can stay at room temperature for 4-6 hours, so leave this milk out for the next feeding
- ☐ Keep written records of feeds, supplements, and output on Breastfeeding Diary

Other Special Instructions: _____
_____
_____

Lactation consultant:_____

*Note: Any feeding plan should be tailored to the unique needs of mother and baby. Supplementation is frequently, but not always required.

Appendix 4 - Kaiser Permanente Neonatal Early-Onset Sepsis Calculator (2024 Update)

Predictor	Scenario
Calculator Version	○ Original (2017) - No Universal GBS Screening ○ Updated (2024) - Universal GBS Screening
Incidence of Early-Onset Sepsis	
Gestational age	weeks days
Highest maternal antepartum temperature	Fahrenheit
ROM (Hours)	
Maternal GBS status	○ Negative ○ Positive ○ Unknown
Type of intrapartum antibiotics	○ Broad spectrum antibiotics > 4 hrs prior to birth ○ Broad spectrum antibiotics 2-3.9 hrs prior to birth ○ GBS specific antibiotics > 2 hrs prior to birth ○ No antibiotics or any antibiotics < 2 hrs prior to birth

Calculate » Clear

Risk per 1000/births	
EOS Risk @ Birth	

EOS Risk after Clinical Exam	Risk per 1000/ births	Clinical Recommendation	Vitals
Well Appearing			
Equivocal			
Clinical Illness			

Classification of Infant's Clinical Presentation Clinical Illness Equivocal Well Appearing

Original EOS Calculator 2017 version