



Council of International Neonatal Nursing (COINN) Clinical Practice Guideline Late Pre-Term Infant

COINN Position:

The United Nations Millennium Development Goal (MDG) 4¹ calls for a 2/3rd reduction in under five years of age mortality. One third of the infant/child deaths occur during the neonatal period. Of these, ¾ occur in the first week and about 1/3rd of these within the first 24 hours. Forty to seventy percent of these are preventable through basic inexpensive interventions aimed at a continuum of care from preconception through to postnatal care.² The causes of morbidity and mortality are mostly preventable (i.e., infections such as malaria, pneumonia, and tetanus and diarrhea). While progress has been made in reducing overall infant mortality, neonatal mortality remains high.^{3,4} All newborn babies therefore require a basic standard of care in order to prevent these deaths particularly within the first 24 hours of life.

In the United States there was an increase of 18% in late preterm births from 1996 to 2006 representing 9.1% of all live preterm births.² This late preterm population accounted for more than 70% of all the preterm births in the US in the 2006.^{5,6} The same trend is seen worldwide with approximately 1 million premature infants dying during the neonatal period many of which are late premature infants.⁷ These infants are in fact, both physiologically and metabolically immature. Central nervous system function is also not at the level of term infants which reduces the self regulatory ability to adapt to the external stress.⁸ In spite of their appearance to mimic full term infants, immaturity places them at higher risk for health issues associated with increased morbidity and mortality. Although, many of the term infant care principles apply to the late preterm infants care, high risk factors must be recognized at birth to identify, prevent and intervene for the common late preterm issues such as respiratory distress, apnea, inadequate thermoregulation, hypoglycemia, feeding difficulty, hyperbilirubinemia (or Jaundice), sepsis, and other potential problems.^{9,10}

The American Academy of Pediatrics (AAP) and American Congress of Obstetricians and Gynecologists (ACOG) 6th edition *Guidelines for Perinatal Care* recommend careful observation of a newborn during the first 6-12 hours of transition period even for a well term infants.⁸ The late preterm infants require additional vigilance. Globally the problem is not always separated from over all preterm birth rates. Care given with prevention in mind to the vulnerable late preterm newborn infants during the first few hours and days of their lives may have a profound significance to the United Nations Millennium Development Goals (MDGs).

The Council of International Neonatal Nurses (COINN) is the international voice of neonatal nurses who provide care during this vulnerable period. In order to address identified gaps in current practice COINN supports and recommends the following Guideline for Care of late preterm infants.

General Information

The Late Preterm infant is that infant born between 34 and 0/7 and 36 6/7 weeks (as determined by first trimester ultrasound (U/S) or the Last Menstrual Period (LMP) if first trimester U/S is not available).

These infants are most commonly at increased risk for:

- Respiratory insufficiency
- Inadequate thermoregulation
- Hypoglycemia
- Jaundice
- Sepsis
- Feeding Difficulties

Admission Criteria:

1. Infants less than 35 0/7 weeks will be managed initially in the Neonatal Intensive Care Unit (NICU) for at least 12 hours unless arrangements can be made to provide transitional care and close monitoring in the mother's room or other facility.
2. Transfer to the Mother/Baby Unit will be considered when they demonstrate the following:
 - Stable vital signs including temperature
 - Stable blood sugars before feedings
 - Adequate feedings
3. Infants greater than or equal to 35 weeks may be admitted to the Mother/Baby Unit.

Hospital Management

- Admission Physical Exam
 - Determination of accurate **Gestational Age (GA)** on admission using the obstetrical estimate of GA if it is based on first trimester ultrasound. If there is a discrepancy between the GA based on the Last Menstrual Period (LMP) and newborn examination, use the GA based on the newborn exam.
 - Assessments once per shift
 - Vital Signs VS (Temperature-T, Heart Rate-HR, Respiratory Rate-RR) every 30 min X 2 hours or full two hours after obtaining a set of stable VS, then every 3 hours X 2 then every shift wild in hospital; Blood Pressure-BP and pulse oximeter on admission. If no such equipment is available then observe the infant's color including mucous membranes to ensure pink hue is maintained.
- Respiratory Risk (insufficiency)
 - Respiratory pattern, color should be assessed along with the vital signs and throughout the stay to avoid complications.
 - Apnea risk and respiratory insufficiency due to prematurity should be communicated to the mother while rooming in.
 - Cardio-Respiratory assessment should be provided for 48 hours.
- Thermoregulation
 - Initiate skin-to-skin contact with mother to facilitate temperature regulation of the infant.
 - Maintain skin-to-skin as much as possible.
 - Place in an isolette or a radiant warmer when not skin-to-skin until infant able to thermoregulate. If an isolette or warming device is not available then swaddle and warm as possible. Use of skin-to-skin is another option.
- Hypoglycemia
 - Obtain glucose within an hour of birth and notify the provider if it is less than 45.

- Initiate feeding as soon as infant is able.
- If unable to feed, notify the health professional.
- Jaundice
 - Hyperbilirubinemia screen at 24 hours (serum if severe or transcutaneous).
 - Utilize Bhutani nomogram's more conservative estimates to begin phototherapy or perform follow-up bilirubin given the significant risk factor of decreased Gestational Age-GA
- Sepsis Risks
 - Risk factors for sepsis
 - Maternal Group B Streptococcus (GBS) positive or unknown (adequate treatment is 1 dose of ampicillin, penicillin, or cefazolin \geq 4 hours prior to delivery.
 - Intrapartum temperature \geq 38.0 degrees C or 100.4 degrees F.
 - Prolonged Rupture of Membranes \geq 18 hours.
 - Prematurity < 37 completed weeks' gestation.
 - Signs/Symptoms of Sepsis
 - Lethargy; Feeding difficulties; temperature instability; tachypnea; hypoglycemia; grunting; apnea; tachycardia; hypothermia; abdominal distention.
 - Monitor cardio-respiratory status until stable times 48 hours if \leq 35 6/7 weeks' gestation.
- Feeding Difficulties
 - Initiate early feedings to stabilize blood glucose and to stimulate stooling.
 - Screen serum glucose per protocol.
 - Ensure good intake.
 - If unable to feed well (with good suck, swallow and breathing coordination) notify the care provider to avoid hypoglycemia, aspiration, and dehydration.
 - Establish "feeding plan" (see COINN's Position Statement on Child Health, Poverty and Breastfeeding).
- Breastfeed babies
 - Breast should be offered whenever infant cues to feed.
 - Formal evaluation at least once per shift.
 - Lactation consultant sees mother within 24 hours.
 - Mother initiates pumping within 4-6 hours of delivery.
- Formula babies
 - Formula should be offered whenever infant cues to feed.
 - Supplemental feedings (via gavage) if weight loss exceeds more than 3% per day or more than 10% of birth weight to discharge.

Discharge Criteria:

- **Discharge** should not be considered before **48 hours** after birth.
- **Vital signs** should be within normal range for the 12 hours preceding discharge (respiratory rate < 60/min; heart rate 100-160 beats per minute (bpm); axillary temperature 36.5 degrees C or 97.7 degrees F – 37.4 degrees C or 99.3 degrees F, in an open crib with appropriate clothing
- Passage of one **stool** spontaneously.
- 24 hours of successful **feeding**: ability to coordinate sucking, swallowing and breathing while feeding.
- If **weight loss** greater than 7% in 24 hours, should not be discharged.
- Formal evaluation of **breastfeeding** and documentation in the record by trained care givers at least twice daily after birth.

- A **feeding plan** should be developed.
- Serum **glucose screening** per hypoglycemia protocol.
- Risk assessment plan for **jaundice**.
- No evidence of active bleeding at **circumcision** site for at least 2 hours
- Maternal and infant **blood tests results** are available and have been reviewed.
- Initial **hepatitis B vaccine** has been given or an appointment scheduled for its admission
- **Metabolic and genetic screening** tests have been performed in accordance with country's local policies.
- **Hearing Screen** has been performed and results documented in the medical record. Follow-up if necessary has been scheduled.
- **Car Seat Safety Test** has been performed and passed.
- Family, environmental, and social **risk factors** have been assessed. When risk factors are present discharge should be delayed until they are resolved.
- Identification of a health care provider with a **follow-up visit** scheduled for 24-48 hours.

Education Plan

Nursing policies/routines:

- Late preterm
- Environment
- Visitation
- Equipment

Plan of care, diagnosis, tests:

- Rule out sepsis-antibiotics
- Jaundice, phototherapy
- Low blood sugar, glucose testing
- X-rays
- Circumcision
- Other

Safety plan:

- Security measures
- Bulb syringe use and storage in bed
- Safe sleep
- Fire alarm and other environmental safety

Formula Feeding:

- Hunger cues
- Feed on demand or at least every 3 hours
- Feeding and burping
- Bowel Movements and wet diapers
- Formula: type/prep/storage

Breastfeeding:

- Observed Breastfeeding, LATCH
- Hunger cues
- Feed on demand or at least every 3 hours
- Positioning
- Skin-to-skin
- Bowel Movement and wet diapers
- Using breast pump/hand express/storage

- Lactation consult Y/N
- Pump prescription given at discharge if needed

Immunizations:

- Vaccine Information Statement (VIS) per Centers Disease Control and Prevention (CDC) given
- Questions answered, consent obtained prior to vaccination
- Immunization record and registry information given

Newborn Metabolic/Genetic/Hearing Screen:

- Education
- Metabolic/Genetic Date: _____ Time _____ Kit# _____
- Hearing Screen Date: _____

Discharge:

- Car Seat Challenge
- Cardio Pulmonary Resuscitation
- *Synagis Y/N Date first dose given: _____
- Home health needed Y/N If yes, date ordered: _____
- Visit scheduled: _____
- Home address confirmed: _____
- Visit scheduled _____
- Follow-up with _____ in _____ days

* May not be available in all countries.

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Acknowledgement: COINN wishes to thank Lynda Kruse and University of Oklahoma Medical Center, Oklahoma City, OK and B. Bellah of the Oklahoma Healthy Mothers, Healthy Babies Coalition Infant Alliance USA for generously allowing an adaptation of their clinical guideline for the late preterm infant to be used.

COINN acknowledges that some countries may not be able to implement the recommendations as written due to limited resources-personnel, financial, and equipment. However, to improve health outcomes all the neonatal community must strive to uphold these recommendations. Determinations must be made within local and national organizations as to what constitutes basic, essential, and advanced care.

Approved by COINN Board of Directors

January 2010

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