

## TITLE

**CARE OF LATE PRETERM INFANTS****SCOPE**

Provincial: Neonatal Intensive Care Units (NICU), Newborn nurseries, Labour/delivery/recovery units and Postpartum units

## DOCUMENT #

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**NOTE:** The first appearance of terms in bold in the body of this document (except titles) are defined terms – please refer to the Definitions section.

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**OBJECTIVES**

- To facilitate the physiological stability and adaptation to extra-uterine life of late preterm infants, described as infants born between 34 and zero (0) days and 36 weeks and six (6) days gestation.
- To support the delivery of appropriate and safe care of late preterm infants using suitable assessment and monitoring activities given their medical vulnerability in comparison to full term infants and to anticipate the need for additional support.
- To facilitate the admission of late preterm infants to the appropriate level of care.

**PRINCIPLES**

Alberta Health Services recognizes the increased rate of preterm births and that late preterm births represent the greatest proportion.

Alberta Health Services is committed to recognizing that although late preterm infants may appear physically well-developed and may weigh the same as full term infants, late preterm infants have a higher risk for mortality, morbidity and re-admission to hospital than infants born at term (between 37 and 42 weeks of gestation), particularly if never admitted to a neonatal intensive care unit (NICU).

Alberta Health Services (AHS) is committed to mitigating the increased risks that can arise for late preterm infants through the promotion of a late preterm infant's physiological stability and adaptation to extra-uterine life.

Alberta Health Service is committed to ensuring that that assessment and monitoring of a late preterm infant shall be matched with needs of the individual infant.

An **order** from the **most responsible health care provider** is required to initiate all admission and transfer activities to an appropriate level of care in addition to all diagnostic testing and medication components of this guideline.

Clinical judgment may be exercised when a situation is determined to be outside the parameters provided in this guideline. If a deviation from this guideline is determined to be appropriate or necessary, documentation of the rationale shall be included on the patient's health record.

## APPLICABILITY

Compliance with this document is required by all Alberta Health Services employees, members of the medical and midwifery staffs, Students, Volunteers, and other persons acting on behalf of Alberta Health Services (including contracted service providers as necessary), working in AHS Neonatal Intensive Care Units (NICU), newborn nurseries, labour/delivery/recovery units and postpartum units.

## ELEMENTS

### 1. Determination of Gestational Age

- 1.1 Accurate gestational age should be determined based on the *Society of Obstetricians and Gynaecologists of Canada Guidelines* for early ultrasound evaluation. If that information is not available, then mother's last menstrual period in combination with a gestational age assessment exam should be used.

### 2. Skin-to-Skin

- 2.1 Immediately after delivery, a minimum of one (1) hour of uninterrupted skin-to-skin contact between infant and mother should be encouraged by the health care team if the late preterm infant has stable vital signs and no oxygen requirements. The father may provide this skin contact if the mother is unable to provide.
- 2.2 Monitoring of the infant shall be performed during this skin to skin contact, providing interventions to assist transition are not required (refer to section 5 of this guideline).
- 2.3 Skin-to-skin should be encouraged as an intervention to promote physiological stability and extra-uterine adaptation during throughout the hospitalization and at home.

### 3. Admission to Level of Care

- 3.1 A late preterm infant born less than 35 weeks and zero (0) days gestation shall be admitted to NICU.
- 3.2 For a late preterm infant born from 35 weeks and zero (0) days to 36 weeks and six (6) days gestation in a hospital with Level 2 or 3 neonatal care, gestational

age cut-offs to determine automatic admission to NICU may be determined locally or in consultation with the neonatal team where necessary.

- 3.3 For a late preterm infant who is born from 35 weeks and zero (0) days to 36 weeks and six (6) days gestation and who is born outside a hospital with Level 2 or 3 neonatal care, contact RAAPID to consult with a neonatologist or pediatrician regarding care and/or need to transfer to higher level of care
- 3.4 Some late preterm infants, particularly those born 36 weeks and zero (0) days or greater gestation, may be initially admitted to a regular newborn care area, if available, with increased ongoing monitoring (please refer to section 4 and 5 of this guideline).
- 3.5 Consideration should be given to keeping mother and infants together if increased monitoring and care can be delivered in that setting.

#### 4. Automatic Admission to Neonatal Intensive or Intermediate Care Unit

- 4.1 In addition to elements 3.1 to 3.3 of this document, regardless of gestation, a late preterm infant shall be admitted to a NICU if any of the following conditions are present:
  - a) weight below minimum birth weight according to locally established recommendations;
  - b) delayed transition exhibited by:
    - (i) low oxygen saturations (less than 90%) requiring oxygen;
    - (ii) persistent grunting respiration; or
    - (iii) persistent respiratory rate greater than 60 breaths/minute.
  - c) temperature instability (i.e. low temperature not responsive to usual warming techniques);
  - d) low blood glucose unresolved with feeding per local protocol for the infant at risk for hypoglycemia; or
  - e) any concerns raised antenatally or during labour that require detailed investigation or monitoring after birth.

#### 5. Care of Late Preterm Infant

- 5.1 Respiratory Monitoring.
  - a) Respiratory status shall be assessed:
    - (i) immediately after birth;

- (ii) at five minutes of life;
  - (iii) at ten minutes of life if APGAR is less than seven at five minutes of life;
  - (iv) every 15-30 minutes after birth until condition has been stable for two hours;
  - (v) once per shift after six (6) hours of age unless risk for infection or clinically warranted by assessment;
  - (vi) every shift after the first 24 hours until transition/discharge.
- b) Assessment may be done while infant provided with skin-to-skin unless help with breathing is required.
  - c) Assessment may need to be more frequent depending on symptom severity.
  - d) If signs of respiratory distress are present, cardiorespiratory and oxygen saturation monitoring initiated.
  - e) A warming environment (radiant warmer, incubator) shall be used for infants requiring respiratory support.
  - f) Consider referral to a NICU for an infant requiring respiratory support.
- 5.2 Vital Sign Monitoring.
- a) Level 1 care vital sign monitoring should include:
    - (i) respiratory monitoring as per Section 5.1 above; and
    - (ii) heart rate and temperature monitoring every shift after six (6) hours of age unless there are risk factors for infection or clinically warranted by assessment.
  - b) NICU vital sign monitoring shall include:
    - (i) continuous cardiorespiratory and oxygen saturation monitoring; and
    - (ii) temperature monitoring, as per local guidelines.
- 5.3 Hypoglycemia Monitoring.
- a) Monitoring for hypoglycemia includes measurement of:
    - (i) blood glucose monitoring at two hours of age followed by local guidelines for monitoring and management of blood glucose

level(s) with any unexpected change in clinical condition, particularly hypothermia since hypothermia may be associated with hypoglycemia.

#### 5.4 Hyperbilirubinemia Monitoring.

- a) Monitoring for hyperbilirubinemia includes assessment of the following:
- (i) gestational age and any additional risk factors, including:
    - bruising;
    - cephalohematoma;
    - vacuum or forceps delivery;
    - sibling that required phototherapy as a newborn;
    - male gender;
    - Maternal age greater than 25 years;
    - ABO incompatibility or other haemolytic disease; and
    - East Asian race.
  - (ii) feeding adequacy;
  - (iii) degree of jaundice at each assessment but without reliance on visual assessment alone; and
  - (iv) serum bilirubin level with evidence of jaundice in the first 24 hours of life.
- b) Serum bilirubin level is interpreted using the nomograms supported by the Canadian Paediatric Society for infants 35 weeks and greater. Late preterm infants less than 35 weeks shall have the level interpreted with site-specific guidelines.
- c) employ de-escalation strategies. TcB readings within 50 micromoles per litre ( $\mu\text{mol/L}$ ) of treatment recommendations should be confirmed with a serum bilirubin.
- d) Jaundice in the late preterm usually peaks between the fourth and seventh day of life. Bilirubin level is checked before discharge unless regular TcB measurements have been part of an established program.

#### 5.5 Infection Monitoring includes the following:

- a) Consideration of the risk for sepsis as a reason for premature birth

- b) review of antenatal and peri-partum histories for any risk of sepsis; and
- c) consideration of a sepsis work-up and antibiotics for any late preterm infant with signs of respiratory distress or signs of illness.
- d) Early jaundice may suggest sepsis

#### 5.6 Feeding Monitoring.

- a) Encourage breastfeeding with skin-to-skin for the first hour after delivery if the infant is well enough to feed.
- b) Early feeds (within 30-60 minutes) shall be initiated unless the infant is unwell.
- c) Monitoring of feeding includes assessment of the following:
  - (i) adequate latch and suck;
  - (ii) daily intake and output including a daily weight
  - (iii) infant's ability to sustain adequate intake when breast or bottle fed on demand; and
  - (iv) mother's milk supply.
- d) Pre and post breast feed weights to assess intake may be considered.
- e) Discuss the benefits of breastfeeding mother's own milk for a late preterm infant with the parent(s).
- f) An infant's family shall be educated about behavioral state and feeding cues.
- g) Early referral to a lactation consultant where available.
- h) Referral to a registered dietician if concerns with growth.
- i) Evaluate parent'(s) confidence and competence with feeding before discharge.
- j) A minimum period of effective feeding, optimally provided by the parent who plans to provide most of the feeding at home, is advised before discharge.
  - (i) Infants born between 36 and 36 plus (+) 6 days gestation at least 24 hours.
  - (ii) Infants born less than 36 weeks gestation at least 48 to 72 hours.

#### 5.7 Thermal Instability.

- a) Strategies to help prevent thermal instability include the following:
  - (i) skin-to-skin;
  - (ii) pre-warming resuscitation units and overhead warmers;
  - (iii) positioning infants away from vents and drafts;
  - (iv) providing appropriate supplemental heat sources, including the following:
    - loose swaddling with arms free;
    - pre-warmed blankets; and
    - incubator / radiant warmer care environment.
  - (v) providing warmed humidified oxygen when necessary.
- b) Continue to maintain a thermo-neutral environment.
- c) Delay of bathing until cardiorespiratory stability of the infant has been assured.

## 6. Parent(s) Education

- 6.1 A health care professional shall provide teaching to the infant's parent(s) regarding late preterm infant's increased risks compared to term infant, including:
  - a) respiratory distress,
  - b) hypothermia,
  - c) sepsis,
  - d) hypoglycemia,
  - e) inadequate feeding and dehydration,
  - f) hyperbilirubinemia, and
  - g) immature brain.
- 6.2 Written and verbal information shall be provided by a health care professional, in the manner best understood by the infant's parent(s) regarding:
  - a) infant feeding including:
    - (i) recognizing early hunger cues;
    - (ii) breastfeeding frequency and technique;

- (iii) supplemental feeding indications;
  - (iv) breast pumping and hand expression;
  - (v) milk storage;
  - (vi) formula preparation and storage (if indicated);
  - (vii) vitamin supplementation: Vitamin D and iron.
  - (viii) assessment of adequate intake; and
  - (ix) elimination patterns.
- b) general newborn care and issues specific to late preterm infants including:
- (i) bathing;
  - (ii) diaper changes;
  - (iii) care of umbilical cord; and
  - (iv) measures to maintain temperature.
- c) back-to-sleep practices including:
- (i) limited time in car seats and swings; and
  - (ii) avoidance of second-hand smoke.
- d) developmental care of preterm infants including:
- (i) signs of readiness for engagement;
  - (ii) stress cues;
  - (iii) need for positional support;
  - (iv) sleep/wake cycles; and
  - (v) extended sleep requirements.
- e) risk for hyperbilirubinemia
- (i) signs and symptoms of worsening hyperbilirubinemia and when to follow-up with the infant's primary health care provider (e.g., Physician or Nurse Practitioner).

## 7. Discharge home

- 7.1 The late preterm should not be expected to meet appropriate discharge criteria before 72 hours of age.
- 7.2 Discharge shall be determined by the clinical readiness of the infant rather than by either gestational or chronological age. Indicators for discharge suitability include the following:
- a) older than 72 hours of age;
  - b) documented stability of heart rate, respiratory rate, oxygen saturation, and temperature in conditions that would be expected at discharge for at least 24 hours;
  - c) successful feeding demonstrated by 10 to 12 breast feeds per day or 8-10 formula feeds by bottle per day or combinations of mother's milk with formula supplementation;
  - d) weight loss no more one (1) to three (3) per cent of birth weight per day for a total of 10 per cent during first week of life;
  - e) adequate voiding patterns:
    - (i) greater than 3-4 voids per day at day 3 and 4;
    - (ii) greater than 4-6 voids per day at day 5-6;
    - (iii) greater than six voids per 24 hours at seven days and older;
  - f) adequate stooling patterns:
    - (i) passed meconium;
    - (ii) four or greater seedy stools per day after 72 hours for human milk fed infants; and
    - (iii) one to two pale yellow / green stools per day after 72 hours for formula fed infants.
  - g) no signs of sepsis; and
  - h) documented bilirubin in the low risk zone.
- 7.3 A **health care professional** with lactation education should complete a formal, documented assessment of late preterm infant before discharge.
- 7.4 Early community in-person follow-up shall be completed within 48 hours of discharge.

- 7.5 Follow-up appointment with primary health care provider (e.g., Physician or Nurse Practitioner) within 4-7 days of discharge- providing that a public health nurse has seen the baby within 48 hours of discharge.
- 7.6 Measurement of bilirubin levels between five (5) to seven (7) days of life as bilirubin levels peak at this time.
- 7.7 Ongoing monitoring of feeding and weight.

## DEFINITIONS

**Authorized prescriber** means a health care professional who is permitted to prescribe medications as defined by Federal and Provincial legislation, her/his regulatory college, Alberta Health Services, and practice setting (where applicable).

**Health care professional** means an individual who is a member of a regulated health discipline, as defined by the Health Discipline Act or the Health Professions Act and who practises within scope and role.

**Order** means a direction given by a regulated health care professional to carry out specific activities as part of the diagnostic and/or therapeutic care and treatment to the benefit of a patient. An Order may be written (including handwritten and or electronic), verbal, by telephone or facsimile.

**Parent** means the adult guardian of a child, with the legal authority to make decisions on behalf of the minor, in accordance with the Family Law Act [Alberta].

## REFERENCES

- Appendix A: Bibliography

## VERSION HISTORY

Date	Action Taken
January 29, 2019	Non-substantive change
<a href="#">Click here to enter a date</a>	Optional: Choose an item

## APPENDIX A

## BIBLIOGRAPHY

- Acute Care of the at Risk Newborn (ACoRN). (2012). ACoRN Neonatal Society.
- Boyle M, et al. (2015). Neonatal outcomes and delivery of care for infants born late preterm or moderately preterm: a prospective population-based study. *ADC Fetal and Neonatal Edition*
- Butt, Kimberly; & Lim, Kim. (2014) Determination of Gestational Age. *SOGC Clinical Practice Guideline*
- Engle WA, et al. (2007), "Late-preterm" infants" A population at risk. *Pediatrics*; 120:1390-1401.
- Forsythe, Erica Saleski; Allen, Patricia Jackson (2013). Health Risks Associated with Late-Preterm Infants: Implications For Newborn Primary Care. *Pediatric Nursing*, Jul/Aug 2013, Vol. 39 Issue 4, p197-201, 5p, 1 Chart pg. 199
- Health Risks Associated with Late- Preterm Infants: Implications For Newborn Primary Care. (2013) *Pediatric Nursing*. Vol. 39 Issue 4 pp197-201.
- Kitsommart, R. (et al.) (2009) Outcomes of late-preterm infants: a retrospective single center Canadian study. *Clinical Pediatrics* Vol. 48. (8) pp 844-50.
- Leduc, Dean; Bringer, Anne; Lee, Lilly; Dy, Jessica; (2013) Induction of Labor. *SOGC Clinical Practice Guideline*
- Matthews, TJ et al. (2005-07) Late Preterm Birth: Every Week Matters" *AWHONN* with references from marchofdimes.com March
- Miller, Katherine, Couchie, Carol; Ehman, William; Grzybowski, Stefan; Graves, Lisa & Medves, Jennifer. (2012). Rural Maternity Care. *SOGC Position Paper*
- MORE<sup>OB</sup>- Taking Care of Life (2016) - SALUS corp. MOREOB. Induction of Labour. <https://secure.moreob.com>
- Petrini JR, et al. (2009). Increased risk of adverse neurological development for late preterm infants. *Journal of Pediatrics*. 154:169-176.
- Premji, Shahirose Sadrudin, Young, Marilyn; Rogers, Carol; Reilly, Sandra (2012). Transitions in the Early-Life of Late Preterm Infants: Vulnerabilities and Implications for Postpartum Care. *The Journal of Perinatal & Neonatal Nursing*. Issue: Volume 26(1), January/March 2012, p 57–68