

A Sample Care Plan for Late Preterm Infants (Gestational age 34 0/7 wks to 36 6/7 wks)

Challenges	Desired Outcomes (short/long)	Interventions	Outcomes Met
Risk assessment	<ul style="list-style-type: none"> Infant receives care appropriate for identified risk factors. 	<ul style="list-style-type: none"> Review maternal medical history, including medications. Review maternal social history. 	
Gestational age assessment	<ul style="list-style-type: none"> Infant gestational age is verified. Infant is classified as small-, appropriate-, or large-for-gestational age. 	<ul style="list-style-type: none"> Review prenatal history to determine how gestational age assessed—LMP, ultrasound between 15 and 19 weeks, or other. Assess gestational age using a postnatal gestational assessment tool (e.g., the New Ballard Score). Measure and record length, weight, and head circumference on a growth curve. Classify as small-for-gestational age (SGA), appropriate for gestational age (AGA), or large for gestational age (LGA). 	
Vital signs	<ul style="list-style-type: none"> Infant displays normal and stable vital signs on admission. Infant displays normal and stable vital signs throughout hospitalization. 	<ul style="list-style-type: none"> Check and record HR and RR at admission, then every 30 minutes until stable for 2 hours, then with every feeding for the first 24 hours, then every other feeding or once per shift until discharge. Heart rate should be between 100 and 160 bpm (may be lower during sleep and higher with activity). Respiratory rate should be between 30 and 60 breaths/min. Respirations may be irregular initially with respiratory rate up to 100 breaths/min during transition. Check and record BP at admission, then with every other feeding until within defined limits, then daily. See Versmold et al. (1981) and Zubrow et al. (1995). Blood pressure mean should be between 30 and 55, based on gestational age or birth weight. See Versmold et al. (1981) and Zubrow et al. (1995). Contact pediatric care provider if RR < 30 or > 60 breaths/min when counted for one full minute. Contact pediatric care provider if HR < 100 or > 160 beats/min at rest. Contact pediatric care provider if BP mean < 30 or > 55, based on gestational age or birth weight. See Versmold et al. (1981) and Zubrow et al. (1995). 	
Thermoregulation	<ul style="list-style-type: none"> Infant temperature remains between 36.5° C and 37.4° C (97.7° F and 99.3° F) during transition after birth. Infant temperature remains 	<ul style="list-style-type: none"> Place infant under radiant warmer or in heated incubator after delivery. Take and record infant temperature on admission, then every 30 minutes until stable for 2 hours, then with every feeding for the first 24 hours, then every other feeding or once per shift until discharge. 	

	<p>between 36.5° C and 37.4° C (97.7° F and 99.3° F) in open crib during the remainder of hospitalization.</p>	<ul style="list-style-type: none"> • If T < 36.5° C (97.7° F), skin to skin contact or swaddle infant and place hat on head and repeat T in 30 min. • If T remains the same at 30 minutes, place under radiant warmer. • When T > 36.5° C (97.7° F), remove from warmer and check T every hour until consistently > 36.5° C (97.7° F). • Call pediatric care provider if infant is returned to warmer a second time. <p>Incubator</p> <ul style="list-style-type: none"> • Assess infant for temperature instability, apnea and bradycardia, feeding intolerance, and hypoglycemia. • Wean incubator temperature by 0.5° C to 1° C every 8 hours to 27° C if (a) incubator temperature 32° C (89.6° F) or less, (b) infant maintains temperature between 36.5° C and 37.4° C (97.7° F and 99.3° F) while dressed in a t-shirt and blanket, and (c) infant is free of temperature instability, apnea and bradycardia, feeding intolerance, and hypoglycemia. • If T < 36.5° C (97.7° F) after weaning from incubator, assess infant and environment for possible causes, and place infant in skin-to-skin contact or swaddle infant and repeat T in 30 min. • If T remains < 36.5° C (97.7° F), return infant to incubator and contact pediatric care provider. <p>Bath</p> <ul style="list-style-type: none"> • Bathe when temperature and other vitals stable. • Minimize heat loss during and after bath. 	
Hypoglycemia	<ul style="list-style-type: none"> • Infant blood glucose level remains ≥ 45 prior to routine feedings throughout hospitalization. 	<ul style="list-style-type: none"> • Review maternal history for conditions increasing risk of hypoglycemia (e.g., gestational or pre-existing diabetes, maternal obesity, fetal distress, etc.) • Identify potential neonatal risk factors for hypoglycemia (e.g., intrauterine growth restriction, large for gestational age, polycythemia, sepsis/infection, 5-minute Apgar < 7, etc.) • For Symptomatic Infants • If infant shows symptoms of hypoglycemia (irritability, tremors, jitteriness, exaggerated Moro reflex, high-pitched cry, seizures, lethargy, floppiness, cyanosis, apnea, poor feeding), check plasma or blood glucose level immediately and call pediatric care provider. • If blood glucose < 40 mg/dl, give D10W 2 ml/kg and notify pediatric care provider. • For Asymptomatic Infants • Birth to 4 hours age • Check glucose 30 min after 1st feed 	

		<ol style="list-style-type: none"> 1. If initial screen is < 25 mg/dl, feed and check in hour. 2. If repeat screen is < 25 mg/dl, give D10 IV bolus 2 ml/kg and begin IV infusion of D10W at 80-100 ml/kg/d and notify pediatric care provider. 3. If repeat screen is 25-40 mg/dl, re-feed or give D10 IV bolus and/or begin infusion of D10W at 80-100 mg/kg/d, if ordered.* <ul style="list-style-type: none"> • 4 to 24 hours age • If feeding every 2-3 hours, screen glucose prior to each feeding <ol style="list-style-type: none"> 1. If screen is < 35 mg/dl, feed and check in 1 hour.* 2. If repeat screen is < 35 mg/dl, give D10 IV bolus 2 ml/kg and begin IV infusion of D10W at 80-100 ml/kg/d. 3. If repeat screen is 35-45 mg/dl, re-feed or give D10 IV bolus and/or begin infusion of D10W at 80-100 mg/kg/d, if ordered. <p>* Consider transferring to a unit providing a higher level of care, as necessary.</p> <p>See Adamkin et al. (2011).</p>	
Respiratory distress	<ul style="list-style-type: none"> • Infant transitions without developing cyanosis or respiratory distress. 	<ul style="list-style-type: none"> • Check and record HR and RR at admission, then every 30 minutes until stable for 2 hours, then with every feeding for the first 24 hours, then every other feeding or once per shift until discharge. • Call pediatric care provider if RR > 60 breaths/min. • If infant develops cyanosis or respiratory distress, reposition and suction as needed. • Then, place infant on cardiorespiratory monitor and pulse oximeter and call pediatric care provider. • Provide supplemental oxygen if respiratory distress or oxygen saturations < 92%, if ordered. 	
Apnea	<ul style="list-style-type: none"> • Infant remains free of apnea throughout hospitalization. 	<ul style="list-style-type: none"> • If infant develops apnea (cessation of breathing for 20 sec or more accompanied by bradycardia or cyanosis/oxygen desaturation), reposition infant and suction as needed. • Then, place infant on cardiorespiratory monitor and pulse oximeter and call pediatric care provider. • Record duration, color changes, and amount of stimulation required for episodes of apnea. 	
Feeding and nutrition	<ul style="list-style-type: none"> • Infant displays appropriate feeding skills (breast or bottle). • Infant tolerates feedings. • Infant feeding intake supports growth (~20-30g/day). 	<ul style="list-style-type: none"> • Weigh infant on admission, then daily. • Record percent change from birth weight daily [% change = 100 x (birth weight – current weight) / birth weight]. • Assess feeding behaviors (e.g., LATCH tool, others). • Encourage breast feeding 8-12 times/24 hours, beginning within one hour of birth. 	

		<ul style="list-style-type: none"> • Infant's mother begins pumping every 2-3 hours. • Initiate lactation consult to occur within the first 12 hours for all breast feeding dyads. • Begin feedings (breast feeding, breast milk, or premature infant formula) when clinically stable. • For bottle fed infants, offer feeding at least every 3 hours. • Limit feeding to 20-30 minutes. <p>If gavage feedings ordered,</p> <ul style="list-style-type: none"> • Select appropriate feeding tube. • Measure tip of nose to ear lobe and to point halfway between xiphoid and umbilicus. • Dip end of tube in water-soluble lubricant. • Turn head to side. • Pass feeding tube gently through mouth or naris to the desired depth. • Check tube placement by aspirating tube with a 3 ml syringe to determine amount of residual and observe the stomach then inject a small amount of air into the feeding tube while auscultating over the stomach. • Place prescribe volume of breast milk or formula in the syringe and administer by gravity over minimum of 10 min. • Regulate flow by raising or lowering the syringe. <ul style="list-style-type: none"> • If unable to begin feedings by 3 hours age, or if RR > 60 breaths/min, call pediatric care provider. • Hold oral feedings if RR > 60 breaths/min and call pediatric care provider. • Notify pediatric care provider if weight loss > 3% for first day or > 7% in first three days. • Call pediatric care provider for feeding intolerance [emesis, residuals (if gavage feeding), loose or frequent stools]. 	
Cardiovascular	<ul style="list-style-type: none"> • Infant is screened for cyanotic congenital heart disease. 	<ul style="list-style-type: none"> • Pulse oximetry screening for cyanotic congenital heart disease per protocol. See Kemper et al. (2011) and Wisconsin Shine Project. • Notify pediatric care provider of results. 	
Infection	<ul style="list-style-type: none"> • If risk factors for infection are present, then infant is evaluated as appropriate. 	<ul style="list-style-type: none"> • Review history for risk factors of sepsis. • Monitor infant for signs of sepsis. • Call pediatric provider if infant develops signs of sepsis—temperature instability, fever, respiratory distress, apnea/bradycardia, glucose instability, feeding intolerance, poor feeding, lethargy, hypotonia, decreased responsiveness, etc. 	
Jaundice	<ul style="list-style-type: none"> • If infant becomes jaundiced, then infant is treated appropriately 	<ul style="list-style-type: none"> • Check maternal history for ABO/Rh factors, if not first baby. • Assess skin color and sclerae for signs of jaundice. 	

		<ul style="list-style-type: none"> • Check bilirubin (serum or transcutaneous) at 24 hours age, if ordered. • Check bilirubin before 24 hours, if clinically jaundiced and ordered. • Notify pediatric care provider of bilirubin results. <p>If infant requires phototherapy</p> <ul style="list-style-type: none"> • Place in incubator or under radiant warmer. • Cover infant's eyes and genital area, as needed. • Begin phototherapy as ordered. <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> • Use phototherapy blanket in crib, as ordered. <ul style="list-style-type: none"> • Monitor bilirubin daily, or as ordered. • Check infant temperature with every feeding. • Record accurate input and output. • Notify pediatric care provider if urine output < 1.0 ml/kg/hr. <p>See AAP Subcommittee on Hyperbilirubinemia (2004).</p>	
Parent-infant attachment	<ul style="list-style-type: none"> • Parent(s) display appropriate attachment behaviors. 	<ul style="list-style-type: none"> • Support skin-to-skin holding. • Provide parent(s) with information about infant cues, including eating and sleeping. • Provide parent(s) with information about interacting with infant. • Provide parent(s) with information about role of fathers. • Provide parent(s) with information about infant issues that could affect attachment. • Provide parent(s) with information about effects of both short- and long-term parental depression. • Provide parent(s) with resources to alleviate parental stress. 	
Parent education	<ul style="list-style-type: none"> • Parent(s) display understanding of prematurity. • Parent(s) display understanding of developmental needs. • Parent(s) display understanding of risk for readmission. 	<ul style="list-style-type: none"> • Provide parent(s) with information about late preterm infants. • Provide parent(s) with information about what to watch after discharge (number of wet diapers, variations in stooling patterns, feeding and growth, jaundice, neurodevelopment, follow-up.) 	
Routine newborn care	<p>Newborn screening</p> <ul style="list-style-type: none"> • Infant is screened for inborn genetic and metabolic diseases. <p>CPR</p> <ul style="list-style-type: none"> • Parents display proper infant CPR. <p>Hearing screening</p> <ul style="list-style-type: none"> • Infant is screened for hearing 	<ul style="list-style-type: none"> • Provide parent(s) with information about newborn screening. • Newborn screen is drawn per protocol, or as ordered. <ul style="list-style-type: none"> • Provide parent(s) with instruction for proper performance of infant CPR. <ul style="list-style-type: none"> • Provide parent(s) with information about newborn hearing screening. 	

	<p>problems.</p> <p>Car seat testing</p> <ul style="list-style-type: none"> • Infant maintains physiologic stability in car safety seat. • Parent(s) display correct use of car safety seat. <p>Immunization update</p> <ul style="list-style-type: none"> • Infants receive appropriate immunizations. • Parents express understanding of immunizations. <p>Circumcision (if applicable)</p> <ul style="list-style-type: none"> • Parents express understanding of circumcision prior to procedure. • Parents express understanding of post-circumcision care. • Infant demonstrates no active bleeding at circumcision site for at least 2 hours. 	<ul style="list-style-type: none"> • Newborn hearing screen performed per protocol, or as ordered. • Provide parents with information about car safety seat use. • Observe infant in car safety seat per AAP recommendations. See AAP Committee on Injury and Poison Prevention (1999) and Bull and Engle (2009). • Provide parents with information regarding immunizations given and schedule for next immunizations. • Begin immunization care. • Update Wisconsin Immunization Registry (WIR). • Provide parents with information about circumcision. • Provide parents with information about post-circumcision care. 	
Discharge	<ul style="list-style-type: none"> • Parents express understanding of infant's hospital course and current condition. • Infant demonstrates physiologic stability (thermoregulation, expected pattern of urine and stool frequency for breastfeeding or formula-fed infant, and absence of medical illness). • Infant demonstrates feeding competency. • Infant and parents are prepared for discharge. 	<ul style="list-style-type: none"> • Do not discharge before 48 hours. • Provide parents with verbal or written summary of hospital course. • Provide parents with information regarding umbilical cord care. • Provide parents with information regarding skin care. • Provide parents with information regarding expected urine and stool frequency. • Provide parents with information regarding hand hygiene as a means to reduce risk of infection. • Provide parents with information regarding common signs and symptoms of illness (e.g., hyperbilirubinemia, sepsis, and dehydration). • Provide parents with instructions for the use of a thermometer to assess infant's axillary temperature. • Provide parents with information about safe sleep environment. 	

References:

AAP Committee on Injury and Poison Prevention. (1999). Safe Transportation of Newborns at Hospital Discharge. *Pediatrics*, 104(4), 986-987.

AAP Subcommittee on Hyperbilirubinemia. (2004). Management of Hyperbilirubinemia in the Newborn Infant 35 or More Weeks of Gestation. *Pediatrics*, 114(1), 297-316.

Adamkin, D.H. and Committee on Fetus and Newborn. (2011). Clinical Report—Postnatal Glucose Homeostasis in Late-Preterm and Term Infants. *Pediatrics*, 127(5), 575-579.

Bull, M.J. and Engle, W.A. (2009). Safe Transportation of Preterm and Low Birth Weight Infants at Hospital Discharge. *Pediatrics*, 123(5), 1424-1429.

Kemper, A.R., Mahle, W.T., Martin, G.R., Cooley, W.C., Kumar, P., Morrow, W.R., Kelm, K., Pearson, G.D., Glidewell, J., Grosse, S.D., Lloyd-Puryear, M., Howell, R.R. (2011). Strategies for Implementing Screening for Critical Congenital Heart Disease. *Pediatrics*, 128(5), e1-e8.

Versmold, H.T., Kitterman, J.A., Phibbs, R.H., Gregory, G.A., Tooley, W.H. (1981). Aortic Blood Pressure During the First 12 Hours of Life in Infants with Birth Weight 610 to 4,220 Grams. *Pediatrics*, 67(5), 607-613.

Wisconsin Shine Project at <http://wisconsinshine.org/>

Zubrow, A. B., Hulman S., Kushner, H., Falkner, B., Philadelphia Neonatal Blood Pressure Study Group. (1995). Determinants of Blood Pressure in Infants Admitted to Neonatal Intensive Care Units: A Prospective Multicenter Study. *Journal of Perinatology*, 15(6), 470-479.

Other Guidelines for Care:

Association of Women's Health, Obstetric and Neonatal Nurses (AWHONN). (2010). Assessment & Care of the Late Preterm Infant Guideline, 2010. (<http://www.awhonn.org/awhonn/store/productDetail.do?productCode=LPI-2010>)

Campbell, M.A. (2006) Development of a Clinical Pathway for Near-Term and Convalescing Premature Infants in a Level II Nursery. *Advances in Neonatal Care*, 6(3), 150-164.

National Perinatal Association. (2012). Multidisciplinary Guidelines for the Care of Late Preterm Infants. (<http://www.nationalperinatal.org/lptguidelines/pdf/NPALatePretermGuidelines-11-12.pdf>)

Oklahoma Infant Alliance. (2010). Caring for the Late Preterm Infant: A Clinical Practice Guideline. (http://www.oklahomainfantalliance.org/lpi_guidelines.html)

March 2013