

Breastfeeding the Premature (Less than 34 Weeks' Gestation) Infant

Description

Breastfeeding and breast milk are the normative standards for infant feeding and nutrition, with multiple benefits for infants. Benefits of breast milk in preterm infants include lower rates of sepsis and severe retinopathy of prematurity (ROP), fewer hospital readmissions for illness in the year after NICU discharge, and lower rates of necrotizing enterocolitis and the associated mortality, growth failure, and neurodevelopmental disabilities. In preterm infants, breast milk feeding improves feeding tolerance and sooner attainment of full enteral feeding. Breastfeeding and breast milk also reduce the risk of serious diseases (e.g., leukemia, diabetes mellitus, sudden infant death syndrome [SIDS]) and the frequency and severity of common childhood illnesses and disorders (e.g., ear infections, allergies).

Infant contraindications for oral feeding include an inability to suck and swallow effectively and safely, hypoxia, circulatory insufficiency, excessive secretions, sepsis, gagging, and central nervous system depression. Infant contraindications for ingestion of breast milk (via breastfeeding, bottle-feeding, or enteral feeding) include galactosemia (i.e., a hereditary disease caused by the absence of a hepatic enzyme that breaks down galactose) and, in preterm infants, cytomegalovirus (CMV) infection. Maternal contraindications for any breast milk provision include human T-cell lymphotropic virus and untreated brucellosis. Expressed breast milk can still be given if the mother has active untreated tuberculosis, H1N1 influenza, herpes simplex lesions on the breast, or varicella in the immediate pre/post-delivery time period. There are many potential obstacles to successful breastfeeding, including incorrect latch-on, inadequate transfer of milk (i.e., inadequate milk intake) to the infant, and infant thrush (also called candidiasis) (for more details on breastfeeding obstacles, see *Evidence-Based Care Sheet: Breastfeeding: Breast and Nipple Problems* and *Quick Lesson About ... Breastfeeding: Maternal Candidiasis and Infant Thrush*).

In premature infants born prior to 34 weeks' gestation, breastfeeding is usually initiated starting at approximately 32–33 weeks' gestational age. Prior to this, premature infants are usually unable to feed orally (i.e., bottle- or breastfeed) due to an inability to synchronize sucking and swallowing. Educating the mother about breastfeeding the premature infant is important; referral to a lactation specialist or other specialty clinician can be necessary if the infant requires evaluation for breastfeeding difficulty (for information on breastfeeding premature infants born at 34–37 weeks' gestation, see *Quick Lesson About ... Breastfeeding the Premature Infant: 34–37 Weeks' Gestation*).

Facts and Figures

Breastfeeding is initiated in 81% of full term infants born in the United States; the average rate of breastfeeding in preterm infants is approximately 50% at hospital discharge. In one study of breastfeeding in 16,839 mothers, researchers observed that mothers of premature infants born at < 34 weeks were 2.2 times more likely to initiate breastfeeding than mothers of term infants; however, these mothers were only 55% as likely as mothers of term infants to continue breastfeeding for at least 10 weeks (Colaizy et al., 2012).

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Risk Factors

Maternal risk factors for the development of breastfeeding obstacles (for details, see *Description/Etiology*, above) include medications (e.g., analgesics) during labor, poor milk supply, lack of encouragement or accurate information provided by healthcare providers, and engorged breasts or inverted or flat nipples. Infant risk factors include Down syndrome, sleepiness, cleft lip or palate, and neurologic disorders. General risk factors include separation of mother and infant after delivery, delayed breastfeeding after birth, and early use of nutritional supplements, pacifiers, and/or bottles. Risk factors for infant thrush include use of antibiotics or steroids in the infant, diabetes mellitus in the mother, and immune deficiency in the infant or mother.

Signs and Symptoms/Clinical Presentation

› Signs and symptoms associated with

- *incorrect latch-on* include maternal nipple pain, cracking, or bleeding and plugged ducts
- *poor milk transfer* include maternal mastitis, infant loss of 10% of birth weight or more during the first week of life, < 6 wet diapers and < 3 bowel movements over 24 hours, lack of audible swallowing, and lack of infant satiation

Assessment

› **Patient History**

- The family can report one or more risk factors for breastfeeding problems

› **Laboratory Tests**

- Serum bilirubin tests can be ordered to monitor the rate of increase in bilirubin. Infants are considered at low risk of jaundice if the rate of increase is < 17 mg/dL per hour. Jaundice can be reflective of breastfeeding problems as breast milk aids in the excretion of bilirubin. Additionally, jaundiced infants are typically more drowsy and difficult to wake, posing an additional barrier to effective breastfeeding

Treatment Goals

› **Establish and Maintain the Mother's Breast Milk Supply, Educate to Promote Adequate Infant Nutrition, and Monitor Infant and Mother for Complications**

- Assess the mother's desire to breastfeed and educate that all breastfeeding mothers should start pumping soon after birth. Instruct the breastfeeding mother to pump her milk frequently (8–10 times per 24 hours spaced fewer than 6 hours apart) using a hospital-grade pump starting as soon as possible in the postpartum period
 - The goal is to express 750–900 mL/day by the 10th day postpartum
 - Facilitate the infant's receipt of pumped breast milk enterally or by bottle, depending on infant's ability to suck and swallow
- Verify that adequate lactation support is received if the mother experiences inadequate expressed breast milk
 - Mothers of preterm infants with insufficient expressed breast milk might experience modest improvement from use of galactagogue medication (e.g., domperidone) if other lactation support has not improved expressed breast milk volumes; however, studies have only been conducted in mothers at more than 14 days post delivery
- Educate the mother (and partner, if present) to fortify feedings of pumped breast milk with formula until the treating pediatrician agrees that the infant has exhibited sufficient growth, has normal laboratory tests, and is able to obtain sufficient milk on an "on-demand" breastfeeding schedule; educate and encourage mothers, and their spouses and family members to participate in classes regarding breastfeeding of the premature infant, if available
- Provide supplementation with the appropriate formula if the mother does not provide enough breast milk or if there are contraindications to receipt of breast milk
 - Provide preterm formula (i.e., a calorically dense formula with a higher concentration of calcium, phosphorous, and protein than regular formula) for infants weighing < 4.5 lbs/2,041 kg
 - Provide transitional formula (i.e., a calorically dense formula but with lower calcium, phosphorous, and protein concentration than preterm formula) up to 9 months corrected gestational age (CGA)
- Monitor infant for signs of poor milk transfer and jaundice (for more information on promoting breastfeeding, see *Evidence-Based Care Sheet: Breastfeeding: Factors That Affect Initiation and Duration of Breastfeeding*)

Food for Thought

› Cochrane reviewers found inadequate evidence to support or refute the superiority of early enteral trophic feeding (i.e., giving very small amounts of enteral nutrition [e.g., breast milk]) in the first week of life) versus enteral fasting for

promoting general and bowel development in very preterm or very low birth weight (VLBW; i.e., < 1,500 g [3.3 lbs]) infants (Morgan et al., 2013)

- › In a study involving 88 infants born < 34 weeks gestational age, mothers were more likely to provide direct-breastfeeding at discharge if they were non-Hispanic, were primiparous, had a specific breastfeeding goal, and their infant had a short length of hospital stay (Briere et al., 2015)
- › Not all mothers are able to express an adequate amount of breast milk to meet their preterm infant's needs; mothers who underwent a cesarean section, have financial concerns, or are struggling psychologically have been identified as being of greatest risk for inadequate breast milk expression, and are therefore in greatest need of support (Ikonen et al., 2018)

Red Flags

- › Refer all breastfeeding mothers of premature infants to a lactation specialist
- › The orogastric or nasogastric routes are less risky methods of administration of enteral feeding for premature infants than the nasojunal route, which can cause intestinal perforation
- › Soy and goat milk formulas are not recommended for premature infants
- › VLBW infants with renal, cardiac, and/or pulmonary disease can require fluid restriction

What Do I Need to Tell the Patient/Patient's Family?

- › Emphasize to the mother the importance of
 - continued contact with the lactation specialist, particularly if there are any problems
 - continued medical surveillance of the infant by the pediatrician
 - consulting with the pediatric and the treating obstetric clinician prior to taking any prescription or over-the-counter medication
 - avoiding smoking, the use of illegal drugs, and heavy alcohol consumption
 - avoiding breastfeeding for at least 2 hours following consumption of even small amounts of alcohol

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