



Breastfeeding Overview

In a summary of the Agency for Healthcare Research and Quality's (AHRQ) evidence report on breastfeeding in developed countries, Ip, Chung, Raman, Trikalinos, and Lau (2009) concluded that breastfeeding is associated with a reduced risk for many diseases in infants and mothers. "The magnitude of health benefits linked to breastfeeding is vastly underappreciated. Breastfeeding is a public health issue" (Bartick & Reinhold, 2010, p. 1048). For the premature or ill infant, the use of mother's milk has even greater importance. Numerous studies demonstrate improved short- and long-term outcomes for the premature infant who is fed breast milk. These benefits include achieving full enteral feedings more rapidly, significantly lower rates of necrotizing enterocolitis (NEC), lower rates of nosocomial infections, and improved neurocognitive and visual acuity scores, to name a few (Patel, Meier, & Engstrom, 2007; Rodriguez, Miracle, & Meier, 2005; Meier, Engstrom, Patel, Jegier, and Bruns, 2010).

Improved outcomes translate to shorter hospital stays and cost savings for families and healthcare facilities. In a 2010 study published in *Pediatrics*, researchers analyzed the data cited by AHRQ on health outcomes related to breastfeeding for 10 pediatric diseases. The researchers found that if 90% of families in the United States complied with the recommendations to breastfeed exclusively for 6 months, the United States would save approximately \$13 billion per year in healthcare costs (Bartick & Reinhold, 2010).

Successful breastfeeding at discharge begins when the infant is admitted to the NICU and continues throughout the hospital stay. Establishing a good milk supply is the key to successful breastfeeding and requires early initiation of pumping. When a mother and her baby are separated, the healthcare professional may be hesitant to discuss pumping if the mother is undecided on breastfeeding or if she is recovering from the birth experience. Mothers who deliver a premature or ill infant need information on the science of breast milk so they can make the best decision for them with regard to providing breast

milk for their infant (Rodriguez, Miracle, & Meier, 2005). During this time, the nurse will want to distinguish between providing expressed breast milk (EBM) and breastfeeding. Some mothers will choose to pump for their infant but do not plan on feeding at the breast. The mother needs to know why her milk is important and the specifics related to use of an electric breast pump, collection of EBM, and the storage and transport of EBM.

The healthcare professional can explain that nutrition for the infant begins in the womb when the infant swallows amniotic fluid. Amniotic fluid contains growth factors, stem cells, and immunoglobulins. All mammals swallow amniotic fluid, which provides the essential growth factors to develop the gut and mature organs. During the last trimester, the infant swallows approximately 750 mL of amniotic fluid per day (Sangild et al., 2002; Meier, Engstrom, Patel, Jegier, & Bruns, 2010). The growth factors in the swallowed amniotic fluid more than double the weight of the intestinal mucosa (2010). The health professional also can explain to the mother that her colostrum is more like amniotic fluid than milk and will help the gut develop and mature after delivering prematurely. This may help her understand the importance of early pumping and feeding colostrum to her baby.

It is important to remember that mucous membranes are the defense system against all kinds of infection. Mother's milk will help to develop a healthy gastrointestinal tract, which is essential to a healthy immune system.

It is beneficial to tell the mother that although feeding her baby breast milk exclusively provides the greatest protection for her premature infant, even providing the mother's breast milk for 50% of daily feedings reduces the risk of infection by one-half (Rodriguez, Miracle, & Meier, 2005).

Pumping and Milk Storage

When a mother is separated from her infant, it is necessary to initiate pumping as early as possible, preferably within the first 6 hours after delivery. The mother should



receive instructions on breast massage and manual expression techniques, which can be done prior to using the electric breast pump. Combining hand expression with pumping has been found to increase milk volume (Morton et al., 2009). Providing the mother with an opportunity to put her infant skin to skin with her as early as possible has many benefits, including improved milk production and increased duration of breastfeeding (Moore, Anderson, Bergman, & Dowswell, 2012). In addition, skin-to-skin contact enhances an enteromammary response to produce immunoglobulins that protect the infant from the bacteria and viruses in the hospital environment (Calais, Dalbye, Nyqvist, & Berg, 2010).

The following guidelines should be provided to the new mother:

- Instruct the mother to pump every 2–3 hours in the daytime and at least once at night, for a total of eight or more pumping sessions in a 24-hour period.
- Provide an opportunity for pumping at the infant's bedside. Instruct the mother on pumping techniques, including hand washing; cleaning pump equipment; and storage, labeling, and transport of EBM.
- Provide the mother with a log to keep track of her milk volume and pump sessions.
- Instruct the mother to inform the neonatologist or neonatal nurse practitioner (NNP) if she is taking any medication while providing milk for her infant in the NICU. The provider, with the lactation consultant, will need to assess the compatibility of maternal medications with breastfeeding and use of EBM.

References

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Storage of Human Milk for NICU and High-Risk Infants

- Freshly expressed human milk is safe at room temperature for 4 hours.
- Milk can safely be refrigerated for 2–4 days.
- Time in freezer: 1–3 months; time in deep freezer: ≤ 12 months
- Human milk that is previously frozen and cold thawed but not warm: ≤ 24 hours in refrigerator
- Milk that is being fed to an infant via continuous feeding can be safely administered over a 4-hour period.
- Storage of fortified human milk: Milk with fortifiers should be given as soon as possible after the fortifier is added and as quickly as tolerated. Time in refrigerator: ≤ 24 hours

Refer to *Best Practice for Expressing, Storing and Handling Human Milk* (2011) from the Human Milk Banking Association of North America for additional information (www.hmbana.org).



Breastfeeding Overview: Information for Parents

The benefits of breast milk for preterm infants include fewer infections, shortened length of stay in the NICU, and decreased risk of developing an allergy.

Pacifier Use for the Preterm or Ill Infant

Nonnutritive sucking, or sucking without taking milk, has been shown to have many benefits for preterm or compromised infants, especially when provided during gavage (tube) feedings. Nonnutritive sucking may be provided with a pacifier or at the emptied breast (called nuzzling). Although pacifier use during the early postbirth period has been linked with breastfeeding problems in the healthy full-term infant, pacifier use during tube feedings for preterm or compromised infants does not cause problems. Discuss nuzzling during tube feedings with your infant's provider or NNP.

Protecting Your Milk Supply

In the early weeks following your baby's birth, the breast pump did the work of maintaining your milk supply. It is natural to think that once your baby starts to feed at the breast, you can stop pumping. In fact, most mothers cannot wait to stop pumping. They are anxious to get rid of the pump and just breastfeed. Remember, your baby may not be strong enough to empty your breast, and you have worked so hard to get your milk supply where it is. It is important to continue to pump your breasts after your premature baby has nursed to make sure that your breasts are empty. This will make sure you continue to make enough milk. Stopping too quickly may cause your milk to dry up.

Maintaining Your Milk Supply

Consider the following ideas for maintaining your milk supply:

- Start a pumping schedule that matches your baby's feeding schedule. Pump every 2 to 3 hours during the day and 3 to 4 hours during the night.

- Pump for about 10 to 15 minutes or until you have completely emptied both breasts. Continue to pump another 2 minutes once your milk flow has stopped.
- Drink plenty of fluids and eat three healthy meals a day.
- Keep going through the ups and downs of your milk supply.
- If your supply remains low, you might want to consider renting a hospital grade pump.

This journey you have been on toward successfully breastfeeding may be very difficult at times. You may even wonder if it is all worth the effort. Every study shows that it is worth it. Your gift of love will have health benefits for you and your baby that last for years to come.

Tips for Storing Your Milk for Your Infant at Home

- Wash your hands with warm water and soap before handling pump parts or breast milk.
- Use clean bottles or plastic nursing bags to store your breast milk.
- Write the date and time on each new bottle of pumped milk.
- Once at home, freshly expressed breast milk is safe at room temperature for 4–6 hours.
- Frozen milk can be stored in the freezer for 3–6 months.
- Thaw frozen milk in the refrigerator or in cold water and use within 24 hours.
- Do not store expressed milk in the refrigerator or freezer door; temperature variation is considered warmer inside door space.
- Do not add fresh milk to milk that is already frozen.
- Do not thaw or warm breast milk in the microwave.