WHAT IS MEDICALLY NECESSARY TO PROVIDE OPTIMAL HEALTH BENEFITS TO POSTPARTUM WOMEN AND FOR INFANT FEEDING

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Postpartum breastfeeding and breast pumping mothers often face medical challenges such as mastitis, postpartum depression, orthopedic pain, low milk supply, and more, hindering their ability to meet recommended breastfeeding 6-to-12-month milestones identified by the American Academy of Pediatrics.

These issues, along with the high percentage of infants requiring NICU treatment, incur substantial costs for insurance companies and hospitals.

Providing physical support for postpartum mothers is essential, particularly when they return to work, ensuring both maternal and infant long-term health outcomes by address the medical necessity of breast milk during early life.

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Benefits of Breastfeeding

According to the American College of Obstetricians and Gynecologists, breastfeeding initiation rates in the United States are increasing, and many women are aware of the maternal and infant health benefits of breastfeeding.

More than 83% of infants are breastfed at birth, and women are choosing to breastfeed longer. (1)

Breast milk is the most important functional food known. It is a dynamic food with both nutritional and health benefits for neonates and infants.(25)

Breastfeeding offers numerous advantages for both mothers and infants. For mothers, it reduces the risk of breast cancer, ovarian cancer, diabetes mellitus, and hypertensive heart disease. Breast milk adapts to the baby's nutritional needs as they grow and contains antibodies that boost the infant's immune system, protecting them from illnesses (1)(2).

Breast milk provides the ideal balance of nutrients, including easily absorbed carbohydrates and proteins, supporting the baby's brain development and overall growth.

Breastfed babies tend to perform better on intelligence tests and have healthier eyes due to specific fats in breast milk. The recommended duration is to breastfeed exclusively for the first six months and continue alongside solid foods for at least 1 to 2 years (3).

Additionally, breast milk's disease-fighting components shield babies from various infections and conditions. Breastfed infants experience fewer infections, including digestive, lung, and ear infections, and a reduced risk of NEC (necrotizing enterocolitis) for premature babies. Breastfeeding also lowers the risk of SIDS, asthma, allergies, and digestive problems, while reducing the likelihood of leukemia. Recent studies indicate potential benefits such as enhanced intelligence and reduced risk of childhood infections and obesity(3)(4)(14).

Breastfed Babies

- Perform better on intelligence tests
- Have healthier eyes
- Have fewer infections
- Have a reduced risk of NEC (necrotizing enterocolitis)
- Lowers risks of SIDS, asthma, allergies & digestive problems

Public health nurses have reported on the effects of fresh colostrum and human milk as a treatment for conjunctivitis, chapped nipples, rhinitis, infections of the skin and soft tissues. (25)

The discovery of growth factors, cytokines, and a heterogeneous population of cells—including stem cells, probiotic bacteria, and the HAMLET complex (human alpha-lactalbumin made lethal to tumor cells)—in human milk has led to researchers' increased interest in human breast milk as a natural medicine. There have been a number of reports on the topical application of human milk as an effective treatment for diaper rash, atopic eczema, diaper dermatitis, and umbilical cord separation. (25)

Breast milk's Disease-Fighting Factors Reduce the Incidence of Illnesses and Hospitalizations in Infants, Leading to Lower Insurance Costs.

Breast milk helps prevent mild to severe infections and hospitalization.

Babies born early (premature) who are breastfed are also less likely to get a serious infection of the intestines called NEC (necrotizing enterocolitis). (3)

Breast fed babies have far fewer digestive, lung, and ear infections.

Formula can negatively change healthy bacteria in a baby's intestines. The bacteria help with digestion and fighting disease. (4)

Despite these and other health benefits and the mother's desire to exclusively breastfeed for six months, there are challenges that lead many women to discontinue breastfeeding before reaching the diagnostically and medically recommended 6-12-month milestones.

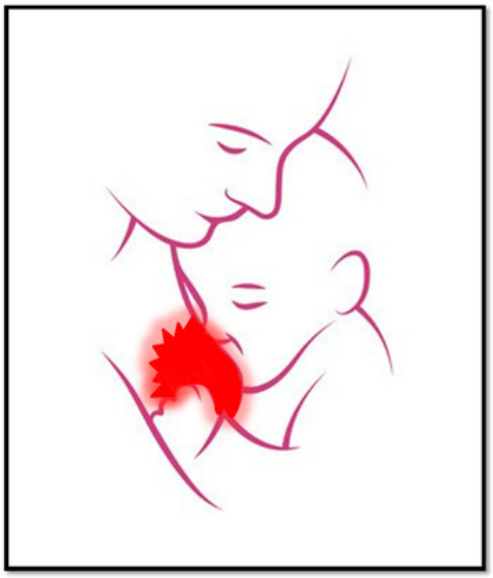


Illustration of mastitis while breastfeeding. Overall, improperly treated mastitis may cause the premature cessation of breastfeeding, and will cause suffering to both mother and baby; giving proper treatment and instructions to the mother are hence of utmost importance. (14)

Why Early Cessation of Breastfeeding Occurs

The early cessation of breastfeeding can be attributed to several documented challenges as shown in the NIH study for reasons cited by mothers for stopping breastfeeding, including persistent breast & nipple pain, engorgement, poor infant latch, and low milk supply, which can lead to persistent pain, nipple injury, and a perception of inadequate milk supply, often exacerbated by insufficient support by lactation professionals (1). Mastitis, a painful infection caused by a blocked milk duct or bacteria in the breast tissue, also contributes to breastfeeding discontinuation (14).

In addition to these challenges, women frequently experience exhaustion, stress, and fatigue during the postpartum period. This may increase cortisol levels and decrease breast milk output. Maintaining a demanding feeding schedule, which may require feeding every two hours or up to eight to 12 times within 24 hours with a newborn, can contribute to physical and emotional strain. Consistent sleep deprivation may lead to chronic physical and mental health issues.

Many new mothers are chronically fatigued due to sleep deprivation. Sleep plays an important role in physical health. Studies show that sleep deficiency changes activity in some parts of the brain. If you're sleep deficient, you may have trouble making decisions, solving problems, controlling your emotions and behavior, and coping with change. Sleep deficiency has also been linked to depression, suicide, and risk-taking behavior. (26)

Fatigue and exhaustion may alter proper ergonomics when using a breast pump. Ensuring safe, efficient, consistent, and effective breast pumping is crucial not only for infant nutrition but also for long-term breast health. These factors collectively underscore the importance of addressing barriers and providing adequate support to promote sustained breastfeeding.

NIH literature entitled:

Reasons for Earlier Than Desired Cessation of Breastfeeding

TABLE 2

Percentage of Mothers Citing Reasons as Important for Stopping Breastfeeding by Intention (N = 1177)

Reason	Did Not Meet Intentions (n = 706)	Met Intentions (n = 471)	P[a]
Lactational factor			
My baby had trouble sucking or latching on	26.8	7.6	<.0001
My nipples were sore, cracked, or bleeding	20.3	10.0	<.0001
Breastfeeding was too painful	15.2	7.0	<.0001
My breasts were overfull or engorged	10.9	5.7	.002
My breasts were infected or abscessed	6.1	3.2	.02
My breasts leaked too much	6.0	5.3	.64
Psychosocial factor			
Breastfeeding was too inconvenient	15.9	18.3	.28
I wanted or needed someone else to feed my baby	17.1	16.8	.87
I wanted to be able to leave my baby for several hours at a time	12.9	19.3	.003
Breastfeeding was too tiring	13.2	12.5	.75
I did not want to breastfeed in public	11.3	13.6	.25
I had too many household duties	10.1	9.3	.69
Someone else wanted to feed the baby	8.9	10.8	.28
Nutritional factor			
I didn't have enough milk	57.8	29.9	<.0001
Breast milk alone did not satisfy my baby	52.0	46.3	.06
I had trouble getting the milk flow to start	28.8	11.0	<.0001
I thought that my baby was not gaining enough weight	18.7	10.6	.0002
A health professional said my baby was not gaining enough weight	15.6	5.7	<.0001
Lifestyle factor			
I wanted my body back to myself	9.5	22.7	<.0001
I wanted to go on a weight loss diet	6.2	11.5	.002
I did not like breastfeeding	7.7	7.2	.79
I wanted to go back to my usual diet	6.1	7.9	.23
I wanted to smoke again or more than I did while breastfeeding	2.8	3.2	.73
Medical factor			
I was sick or had to take medicine	16.7	8.7	<.0001
My baby became sick and could not breastfeed	7.9	3.6	.003
I became pregnant or wanted to become pregnant again	4.7	6.4	.21
I was not present to feed my baby for reasons other than work	5.0	3.4	.20
Milk-pumping factor			
Pumping milk no longer seemed worth the effort that it required	20.7	15.9	.04
I could not or did not want to pump or breastfeed at work	14.5	16.1	.43
Baby's self-weaning factor			
My baby lost interest in nursing or began to wean him- or herself	26.9	35.7	.001
My baby was old enough that the difference between breast milk and formula no longer mattered	12.5	25.5	<.0001
My baby began to bite	9.2	28.5	<.0001

[a] P value for χ^2 difference test.

(7)

Figure 1 shows the adjusted odds ratios (aOR) of reasons for stopping breastfeeding that were significantly associated with not meeting desired breastfeeding duration, regardless of the direction of the association. Of the 32 reasons mothers rated, 13 were significantly associated with increased odds of not meeting desired duration (aOR range: 1.28–4.42) and were related to lactation, nutrition, medicine/illness, and milk-pumping concerns. In contrast, 6 reasons were significantly associated with decreased odds of not meeting desired breastfeeding duration (aOR range: 0.26–0.64) and were related to psychosocial concerns, lifestyle conflicts, and infant self-weaning. (7)

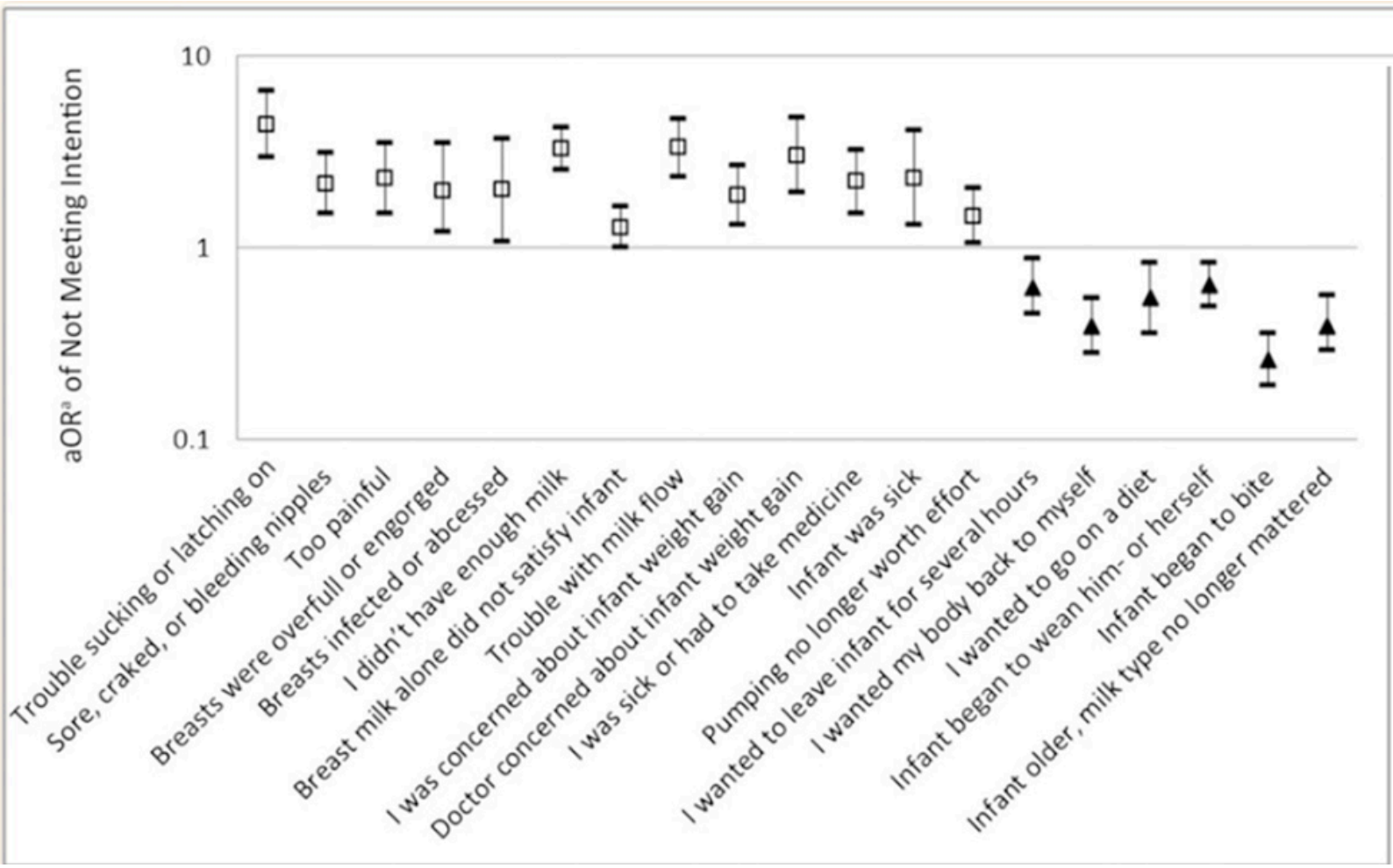


FIGURE 1

Reasons for stopping are significantly associated with mother's breastfeeding intention. a Adjusted for age, parity, household poverty level, race, marital status, education, WIC participation, and prenatal months of breastfeeding intention (N = 1177). (7)

Premature Cessation of Breastfeeding: Clinical Factors and Implications

Approximately 60% of mothers who stop breastfeeding earlier than desired express worries about difficulties with lactation, infant nutrition and weight, maternal illness or medication requirements, and the effort involved in milk pumping (7).

Factors Leading to Premature Cessation of Breastfeeding

Mothers often cease breastfeeding before their intended duration due to concerns related to maternal or child health and lactation challenges (7). Approximately 60% of mothers who stop breastfeeding earlier than desired express worries about difficulties with lactation, infant nutrition and weight, maternal illness or medication requirements, and the effort involved in milk pumping (7). A Canadian study revealed that the majority (73.6%) of mothers who discontinued breastfeeding within six months did so within the first six weeks, citing reasons such as inconvenience or fatigue associated with breastfeeding (22.6%) and concerns about milk supply (21.6%). Additionally, returning to work or school was linked to shorter breastfeeding durations, with 20% of women stopping after six weeks for this reason (6).

Conditions, Symptoms, and Management of Persistent Nipple and Breast Pain Adopted from the American College of Obstetricians and Gynecologists (1)

- Infant Ankyloglossia
- Breast pump trauma/ misuse
- Eczematous conditions
- Psoriasis
- Superficial bacterial infection associated with skin trauma
- Candida infection
- Herpes Simplex
- Herpes Zoster
- Vasospasm of the nipple
- Allodynia / functional pain
- Recurrent plugged (blocked) ducts
- Oversupply

Persistent Pain with Breastfeeding and Maternal Health

Persistent Pain with Breastfeeding and Maternal Health

Persistent pain or nipple injury is a significant factor leading to undesired early weaning and can be attributed to various causes, including latch issues, pump trauma, dermatoses, infection, vasospasm, allodynia, oversupply, or neonatal ankyloglossia.

The American College of Obstetricians and Gynecologists reports that pain during breastfeeding may also be associated with postpartum depression, underscoring the need for postpartum depression screening when caring for these patients (1).

Maternal mental and physical health is critical in the postpartum period, and some women find breastfeeding to be challenging, potentially contributing to life stressors and postpartum depression. Physicians often advise breastfeeding mothers diagnosed with postpartum depression to prioritize rest and self-care, emphasizing their importance in the postpartum healing and recovery process (5).

Conditions, symptoms, and management of persistent nipple and breast pain should be considered comprehensively, and factors associated with low or inadequate milk supply should also be evaluated to provide appropriate support and guidance (1).

Impact of NICU Hospitalization on Breastfeeding: Hidden Costs

In the context of breastfeeding infants in the Neonatal Intensive Care Unit (NICU), it is important to acknowledge the presence of significant gaps in breastfeeding support within hospital settings. Approximately 14% of infants born in the United States require NICU admission due to various medical complexities. Convincing evidence underscores the critical role of human milk over formula in NICU care, where optimal nutrition and health outcomes are paramount.

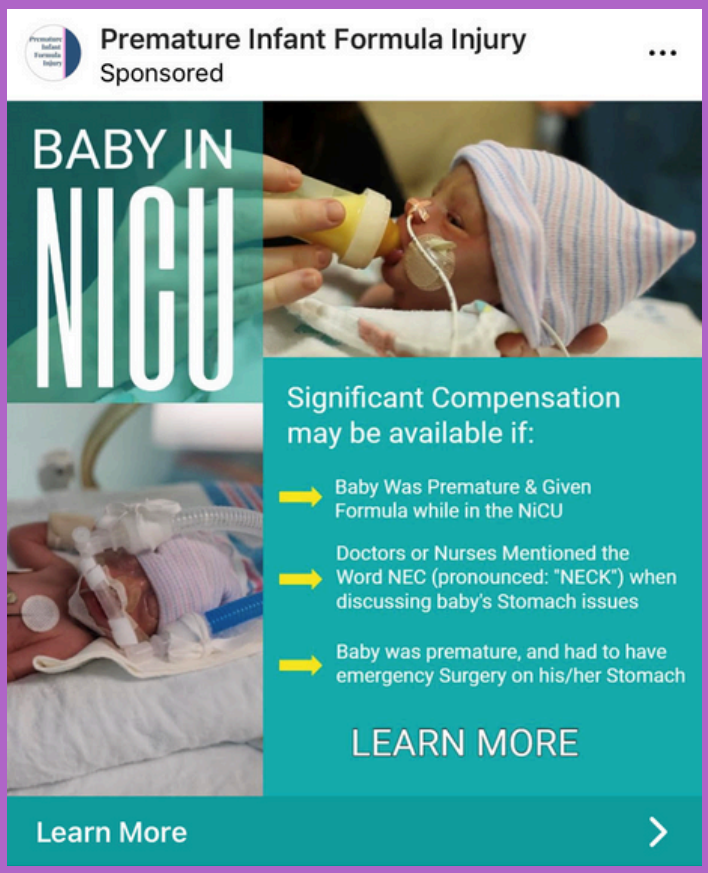
Infant's own mother's milk is less expensive than donor milk, specialty formula, & ready-to-feed formula that are commonly used in the NICU for this population. (15)

However, mothers with babies in the NICU face unique challenges, including a heightened risk of delayed lactation onset and insufficient milk production compared to healthy babies and their breastfeeding mothers. Regrettably, many NICU infants do not receive the necessary amount of breast milk, exposing them to potential health risks. The success of breastfeeding in this critical setting hinges on multiple factors, including the NICU environment and the support of healthcare providers (9).

Obstetrician-gynecologists play a pivotal role in shaping the decision to breastfeed and the overall success of providing human milk in the NICU. (9)

Their guidance and expertise are integral to navigating the complex landscape of NICU care and ensuring that mothers receive the support they need to initiate and maintain breastfeeding. By recognizing these gaps and proactively addressing them, healthcare professionals can contribute significantly to improving the breastfeeding experience for NICU infants and their mothers. (9)

Some examples of recent and active 2023 lawsuits regarding NICU infants receiving formula:



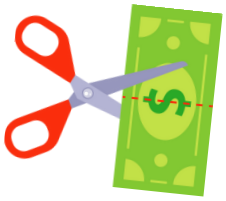
Stress in the NICU: Impact on Breastfeeding and Infant Well-Being

In the Neonatal Intensive Care Unit (NICU), maternal stress plays a pivotal role in influencing both the breastfeeding journey and the health outcomes of infants. Breast milk offers a multitude of medical and neurodevelopmental advantages for infants, spanning both short-term and long-term health benefits (2).

Chronic or acute stress can significantly affect breastfeeding, with potential immediate or delayed impacts on milk production. The NICU environment, while necessary for medical care for the infant, often poses a substantial barrier to initiating and sustaining breastfeeding. Addressing these stressors promptly is crucial (18).

Parental stress levels escalate significantly during infant hospitalization, particularly in the neonatal intensive care units (NICU). Research underscores that stress resulting from hospitalization can exert a considerable influence on breastfeeding outcomes, particularly during extended hospital stays (18).

Mothers of NICU infants may experience heightened anxiety and fears related to their child's health, which can directly impact the success of breastfeeding. Medical staff and nurses should extend their focus beyond the infant's care to actively support, promote, and protect breastfeeding. Creating a safe and nurturing environment is essential to counteract the negative effects of stress on breastfeeding (18).



Promoting Human Milk in NICUs: A Cost-Effective Strategy

Ensuring that very low birth weight (VLBW) infants in the Neonatal Intensive Care Unit (NICU) receive human milk (HM) can have substantial medical and economic benefits. Here are key takeaways from the medical journals regarding human milk in NICUs:

Reduced Risk of Necrotizing Enterocolitis (NEC): Early feeding of breast milk is associated with a significant reduction in the risk of necrotizing enterocolitis (NEC) in VLBW infants. Enteral feeding containing at least 50% HM within the first 14 days of life results in a sixfold decrease in the odds of NEC (16).

Necrotizing enterocolitis (NEC) is the leading cause of death from gastrointestinal disease in premature infants, affecting newborn babies at a rate of 1–3 per 1000 births per year in North America, with an average total treatment cost of US $500,000 per patient in the USA in current charges. (27)

A study in Breastfeeding Medicine, resulted in the mean costs of donor human milk at $27 for infants of mothers who provided sufficient breast milk through to discharge, $154 for infants of mothers who had insufficient milk supply during admission, $281 for infants of mothers who went home on formula but received any volume of mom's own milk (MOM) during admission, and $590 for infants who received no MOM during admission. (27)

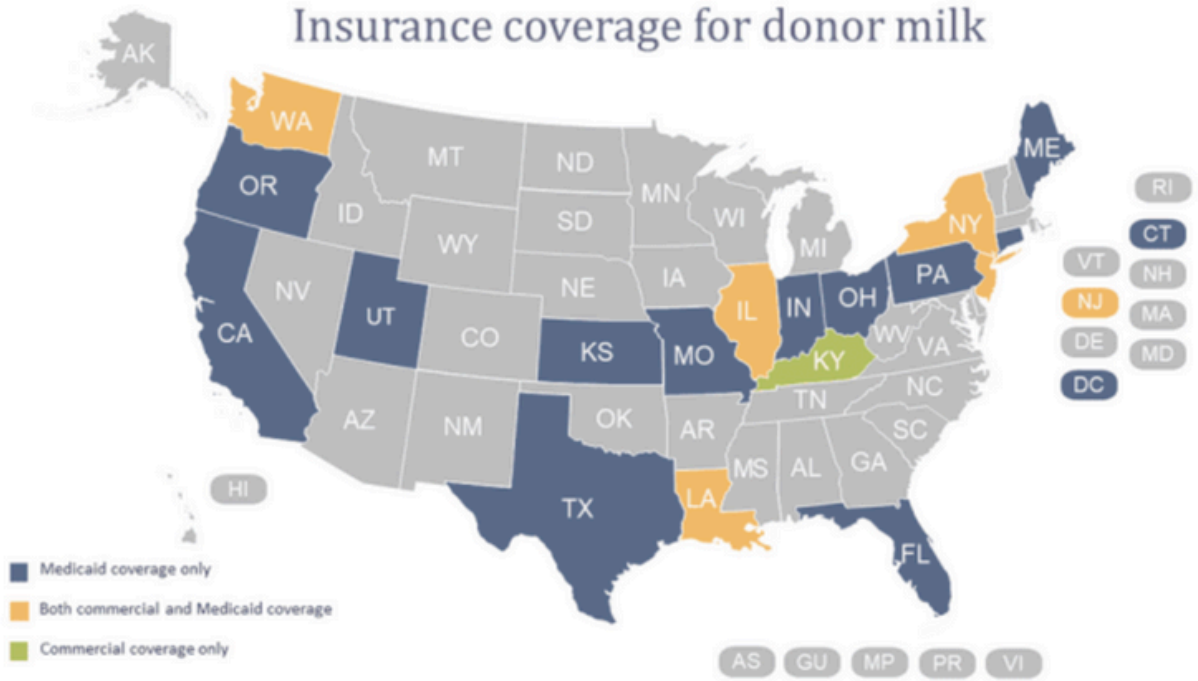
In this same study, most NICU mothers (72%) of very preterm infants were unable to provide all the milk necessary for an exclusively human milk diet. Few infants (15%) received exclusively donor milk. The cost of human donor milk per NICU infant ranged from $27 to $590 and was influenced by the mother's willingness or ability to provide human milk. (27)

Providing, safe, comfortable convenient spaces in the NICU for mothers to use a breast pump will save insurance companies from the purchase of Human Milk from Donators and overall save the hospital money from expensive extended NICU stays, if the infant is able to consume Mom's Own Milk (MOM). (15)

Significant Impact of Donor Milk: Donor milk plays a critical role in advanced neonatal care units. Hospitals often access donor milk from accredited milk banks, and its importance is underscored by its increasing use (17). In 2022, the Human Milk Banking Association of North America dispensed nearly 10 million ounces of donor milk. (28)

Cost Savings with Maternal Milk: Providing spaces in the NICU for mothers to express breast milk is not only beneficial for infants but also cost-effective for healthcare facilities. Access to adequate amounts of breast milk from the infant's own mother is crucial, as it can reduce the incidence and severity of costly prematurity-specific morbidities, including sepsis and NEC (15).

Data from NIH reveals that the cost of HM from the infant's own mother ($0.95–$1.55) is less expensive than donor milk ($13.59), specialty formula ($1.06), and ready-to-feed formula ($2.97) that are commonly used in the NICU for this population. (15)



Data from Journal of Perinatology and NCSL Maternal and Child Health Database.

Economic Barrier: Despite the substantial health benefits, the cost of providing human milk is often not reimbursed by payers, creating an economic barrier for many mothers. The cost of human milk from the infant's own mother is significantly lower than donor milk or various types of commercial formula commonly used in the NICU. This highlights the potential for cost savings by supporting mothers in providing their own milk (15).

Removal of Economic Barrier: Eliminating the economic barrier to accessing effective lactation equipment should be a priority. Providers, payers, and healthcare facilities can utilize these findings to justify the reimbursement of costs for breast pump rental fees, breast pump equipment, and collection kits for mothers of VLBW infants. This step can help ensure that all mothers of VLBW infants have access to the equipment needed for breastfeeding success (15).

In conclusion, promoting the use of maternal milk for VLBW infants in the NICU is not only medically essential but also cost-effective. Providing mothers with the necessary support and resources for breastfeeding not only benefits infant health but also offers economic advantages by reducing the need for costly treatments associated with NEC and other morbidities.

Clogged Ducts, Mastitis, and Breast Infections in Breastfeeding

Clogged milk ducts and mastitis are common conditions in breastfeeding that affect up to 20% of women.

It's crucial to recognize that breast infections during breastfeeding are relatively common and demand immediate and proper treatment. Without appropriate care, inflammation can escalate, potentially leading to the cessation of breastfeeding. Moreover, improper treatment may result in the development of a breast abscess.

Clogged milk ducts and mastitis, both common conditions affecting up to 20% of breastfeeding women, can lead to significant challenges. Plugged ducts typically develop gradually, causing symptoms such as breast pain, the presence of a hard lump, localized warmth and pain, or engorgement in a specific breast area (13).

Additional factors for plugged ducts that lead to mastitis are...

- Stress
- Fatigue
- Anemia
- Weakened immune system
- Inadequate breast emptying
- Poor draining techniques
- Poor latch or nipple pain
- Baby who is sleepy, tongue-tied or uncoordinated with suck and swallow
- Missed feedings due to busy fatigued moms
- Longer intervals between breast emptying sessions
- Pressure on the breast from a restricted pump bra
- Limited time during feedings occurring if rushed due to work or other pressures, or if the mother is feeding multiples

Mastitis

Mastitis can be caused by any of these risk factors, in addition to having sore cracked or bleeding nipples that can serve as an entry point for an infection and possibly lead to a prolonged hospital stay, all of which cost hospitals and insurance companies money.

Mastitis is characterized by breast swelling and inflammation, that is usually caused by an infection.

Mastitis is characterized by breast swelling and inflammation that is usually caused by an infection. The inflammation results in breast pain, swelling, warmth and redness, with symptoms appearing suddenly and encompassing fever, chills, fatigue, and body aches, often more intense than those associated with a plugged duct. Additionally, red streaking on the breasts may be observed (13).

Breast inflammation can stem from various causes, both infectious and non-infectious, but typically presents as a hard, swollen, and reddened breast area, accompanied by fever and a general flu-like feeling. (14)

A notable progression often observed is a continuum: stasis of breast milk may evolve into inflammation without infection, which can then progress to infectious mastitis and, in some cases, eventually culminate in an abscess (14). Recognizing and addressing these conditions promptly is essential for maintaining both maternal health and breastfeeding continuity. (14)

Treatment for Plugged Ducts and Mastitis

Swift and comprehensive treatment of plugged ducts is vital to prevent further progression, alleviate pain, and reduce frustration (13).

Treatment strategies include:

- Rest
- Increased fluid intake
- Maintaining a well-balanced, healthy diet
- Applying heat to the breast before feeding to enhance breast emptying
- Ensuring full breast emptying during each feeding through frequent feeding, hand expression, or pumping, along with experimenting with different nursing positions (13).

The Integrated Breast Massage Technique (IBM) has proven highly effective in resolving plugged milk ducts, offering faster relief with less pain and a significant reduction in mass size compared to other techniques. Moreover, IBM has shown no association with recurrent breast masses, mastitis, or breast abscess development during follow-up. It is considered a safe and efficient treatment for lactating women experiencing plugged ducts (20).

In cases of mastitis or a plugged duct, it is safe to continue breastfeeding, as breastfeeding aids in clearing the infection or ductal system. If the baby cannot latch, using a pump for milk extraction is a suitable alternative. Abruptly weaning will likely exacerbate the symptoms (13).

To support extended breastfeeding duration, physicians need to be proficient in helping mothers overcome breastfeeding challenges, including mastitis (8). Increasing awareness of low-impact, forward-leaning, hands-free, ergonomic positioning systems can greatly benefit both mothers, healthcare facilities and facilities that offer lactation suites.

While breast pump companies encourage users of breast pumps to lean forward while using their breast pumps, there still remains a lack of support for women to safely and effectively perform this task.

Sources:

1. https://www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2021/02/breastfeeding-challenges
2. https://www.cdc.gov/nccdphp/dnpao/features/breastfeeding-benefits/index.html
3. https://www.hopkinsmedicine.org/health/conditions-and-diseases/breastfeeding-your-baby/breast-milk-is-the-best-milk
4. https://www.mayoclinic.org/diseases-conditions/postpartum-depression/diagnosis-treatment/drc-20376623
5. https://www.acog.org/clinical/clinical-guidance/committee- opinion/articles/2018/05/optimizing-postpartum-care
6. https://pubmed.ncbi.nlm.nih.gov/25165836/
7. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4861949/
8. https://www.aafp.org/pubs/afp/issues/2008/0915/p727.html
9. https://pubmed.ncbi.nlm.nih.gov/26398299/
10 ://pubmed.ncbi.nlm.nih.gov/23323965/
11. https://pubmed.ncbi.nlm.nih.gov/32682581/
12. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5124124/
13. https://www.mayoclinichealthsystem.org/hometown-health/speaking-of-health/managing-plugged-ducts-mastitis-when-breastfeeding
14. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7465810/
15. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2879042/
16. https://pubmed.ncbi.nlm.nih.gov/17443195/
17. https://www.ncsl.org/state-legislatures-news/details/donor-human-milk-more-valuable-than-gold
18. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7068435/
19 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5901002/
20. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9162379/
21. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4920726/
22. https://www.dol.gov/agencies/whd/pump-at-work
23. Stanfordchildrens.org/en/topic/default?id=ineffective-latch-on-or-sucking-90-P02650
24. https://smartasset.com/financial-advisor/the-cost-of-baby-formula
25. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6567207/
26. https://www.nhlbi.nih.gov/health/sleep-deprivation/health-effects
27. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3663453/
28. https://www.hmbana.org/news/blog.html/article/2023/02/20/nonprofit-milk-banks-step-up-during-formula-crisis-dispensing-nearly-10-million-ounces-in-2022