Human Milk Banking: An Indian Experience

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Education Gaps

1. There is a scarcity of systematic data on human milk banking practices in India.
2. The role of policy and technical leaders in promoting human milk banking as part of an integrated approach in optimizing neonatal health needs to be understood.

Abstract

As part of integrated newborn care, human milk banks can reduce death and illness as well as lower health-care costs for infants born prematurely, especially with birthweights less than 1,500 g, and for infants born in resource-limited settings without access to their mother’s milk. Promotion of human milk banks is of special significance in India which has the highest burden of such infants. About 50 milk banks are insufficient to meet the needs of vulnerable infants. The government of India has acknowledged the role that human milk banking can play in reducing neonatal mortality and morbidity, and launched the “National Guidelines on Lactation Management Centers in Public Health Facilities” in 2017 with a vision to make breast milk universally available for all infants. The government is now working on an implementation strategy to scale up the lactation management center model (promotion of breastfeeding, kangaroo mother care, and donor human milk) for all newborn care units and delivery centers in the country. However, for effective expansion, it will be important to ensure improved government ownership, mandate availability of standard operating procedures at all facilities, stringent systems of quality control, standardized accreditation, and a robust monitoring system. Local evidence on the effectiveness of the comprehensive lactation management center (CLMC) model and knowledge, practices, and perceptions of human milk banking are limited. There is a need for rigorous implementation, process research, and technology innovation, along with a robust regulatory framework to prevent commercialization. In addition, attitude changes of mothers, maternal influencers, and health-care providers are all essential to successfully expand the CLMC model.

AUTHOR DISCLOSURE Drs Nangia and Sabharwal and Ms Sachdeva have disclosed no financial relationships relevant to this article. This commentary does not contain a discussion of an unapproved/investigative use of a commercial product/device.

ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>CLMC</td>
<td>Comprehensive Lactation Management Center</td>
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<tr>
<td>LMU</td>
<td>Lactation management unit</td>
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<tr>
<td>LSU</td>
<td>Lactation support unit</td>
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<tr>
<td>MAA</td>
<td>Mother’s absolute affection</td>
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<tr>
<td>MOM</td>
<td>Mother’s own milk</td>
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<td>MBFI+</td>
<td>Mother Baby Friendly Initiative Plus</td>
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<tr>
<td>NMR</td>
<td>Neonatal mortality rate</td>
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Objectives  After completing this article, readers should be able to:

1. Describe how prioritizing an integrated approach in human milk banking can save lives in India.

2. Recognize the salient features of the national guidelines on human milk banking along with the human milk banking environment in India.

3. Outline key initiatives to be addressed for effective scaling up of human milk banking in India.

THE POWER OF HUMAN MILK

Breastfeeding is the most natural, inexpensive, environment-friendly, and easily accessible method to provide all children, rich or poor, with the healthiest start to life and ensures that all children survive and thrive. Breast milk offers the ideal source of nutrition for the first 6 months after birth, and may remain a part of an infant’s diet for the first 2 years of age and beyond. (1) There is evidence that demonstrates the value of breastfeeding for both a mother and her child. Sushruta, an ancient Indian surgeon, has beautifully described mother’s milk in his Samhita, “One just cannot compare even water of seven seas with mother’s milk, which is nothing but water ensuring optimum growth, nutrition, and healthy life of hundred years.” (2)

However, many infants lack access to their mother’s own milk (MOM) because of issues related to the mother’s illness or death, abandonment, infant’s illness, inability to latch, or delay in milk production. This lack of access to breast milk leaves infants more vulnerable to disease, poor health, or death, especially when they are born preterm, have low birthweight, or are severely malnourished. (3)(4)(5) In such a scenario, the World Health Organization, (6) American Academy of Pediatrics, (7) the Committee on Nutrition of the European Society for Pediatric Gastroenterology, Hepatology, and Nutrition, (8) and other policy groups recommend donor human milk, made available through human milk banks, as the next best feeding option when MOM is unavailable. A human milk bank screens and recruits breast milk donors; collects, processes, and screens donated milk; and distributes the milk to infants in need.

As part of integrated newborn care, human milk banks reduce death and illness as well as lower health-care costs. Data exist, which support the health benefits of donor human milk, especially for infants born prematurely, with birthweight less than 1,500 g. (9) and for infants born in resource-limited settings where a non-breastfed child’s risk of death is 6 times that of a breastfed child. (10) A myriad studies demonstrate the positive effect of donor human milk on vulnerable infants as compared with formula, such as reduced risk of sepsis and necrotizing enterocolitis, greater feeding tolerance, reduced length of stay in NICUs, and substantial cost savings for resource-strapped public health systems (Table 1). (8)(11)(12)(13)(14)(15)(16)(17)(18)(19)(20)(21)(22)(23)(24)(25)(26)

A recent study found that if all premature infants born in the United Kingdom in 2013 were provided with mother’s milk in the NICU, the total lifetime cost savings to the National Health System would be an estimated $46.7 million (£30.1 million in the first year) as a result of improved health outcomes. The total lifetime quality-adjusted life-year gain was calculated to be 10,594 years. There would be 238 fewer deaths caused by neonatal infections and sudden infant death syndrome, leading to a savings of approximately £153.4 million in lifetime productivity. (27)

Providing donor human milk to vulnerable neonates without access to MOM not only saves lives but also enhances awareness about breastfeeding and improves breastfeeding rates. This increase in breastfeeding rates is important because it has the potential to prevent 820,000 “under-5” deaths (ie, death before age 5 years), of which 87% are infants younger than 6 months of age. (28) Improving breastfeeding rates worldwide is a fundamental driver to achieve Sustainable Development Goals by 2030.

HUMAN MILK BANKING: A CENTURY-OLD PRACTICE

Saving infants with the use of donor human milk through human milk banks is a century-old practice. Countries in North America and Europe established human milk banks in the early 20th century. The United Kingdom established its first human milk bank in the 1930s, and Brazil in the 1940s. Today, more than 600 milk banks have been established in more than 50 countries. Human milk banks have been extremely successful in Brazil, its network being the largest in the world with 213 milk banks and 199 collection...
centers. The Brazilian Network of Human Milk Banking has successfully demonstrated the effectiveness of a government-supported, nationalized, integrated human milk bank program that includes breastfeeding promotion, lactation support, and provision of donor milk, all of which have contributed to achieving a single-digit neonatal and infant mortality rate. Brazil’s integrated human milk banking program saves the country an estimated $540 million annually through improved neonatal health outcomes. (29)

India has made considerable progress over the last 2 decades in the area of maternal and child health through innovative and comprehensive health packages that cover the spectrum of life cycle stages. However, newborns have missed out on the attention. Even though the under-5 mortality rate decreased by 42%, from 74 (in 2005–06) to 43 (in 2015) per 1,000 live births, in the same period, neonatal mortality rate (NMR) decreased from 37 to 25 per 1,000 live births, accounting for a decrease of only 32%. (31)(32) This decline in NMR is laudable but it has to increase to effectively achieve sustainable development goals, which aim to eliminate preventable deaths of children less than 5 years of age, with all countries aiming to decrease the NMR to as low as 12 per 1,000 live births. (33)

Table 1. Studies Demonstrating the Impact of Donor Human Milk on Vulnerable Infants

<table>
<thead>
<tr>
<th>Condition</th>
<th>Description</th>
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<tbody>
<tr>
<td>Sepsis</td>
<td>Donor human milk reduced the risk of late-onset sepsis in vulnerable, low-birthweight infants by 19% in the first 28 days. (11)</td>
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<tr>
<td></td>
<td>Donor human milk has a greater protective effect compared with formula. (12)</td>
</tr>
<tr>
<td>Necrotizing enterocolitis</td>
<td>Human milk feeding, whether mother’s own milk or donor human milk reduces necrotizing enterocolitis by as much as 79% when formula is avoided. (13)</td>
</tr>
<tr>
<td></td>
<td>Four systematic reviews across study designs and countries found that donor human milk protects preterm infants against necrotizing enterocolitis more than formula. (8)(14)(15)(16)</td>
</tr>
<tr>
<td>Retinopathy of prematurity</td>
<td>Human milk feeding in the NICU is associated with lower rates of severe retinopathy of prematurity. (17,18)</td>
</tr>
<tr>
<td>Feeding tolerance</td>
<td>Preterm infants fed unfortified donor human milk had greater feeding tolerance, fewer vomits, less gastric stasis, and reduced diarrhea compared with formula-fed infants. (16)</td>
</tr>
<tr>
<td>Reduced length of stay in NICU</td>
<td>Cost of providing donor human milk to preterm infants is mitigated by a reduced risk of complications and shorter length of stay in NICU. (11)(19)</td>
</tr>
<tr>
<td></td>
<td>Fewer hospital readmissions for illness in the year after NICU discharge have been noted. (20)</td>
</tr>
<tr>
<td>Cost saving</td>
<td>The percentage of infants who are exclusively breastfed at discharge is about 13% higher in NICUs with a human milk bank. (21)</td>
</tr>
<tr>
<td></td>
<td>A study reported saving ~US $8,167 per infant using donor human milk through shortened length of stay and reduced cases of necrotizing enterocolitis and sepsis. (19)</td>
</tr>
<tr>
<td></td>
<td>Estimated savings to NICU or health care plan for every dollar spent on donor human milk: ~US $11. (22)</td>
</tr>
<tr>
<td></td>
<td>In Brazil, the national human milk banking network saves $540 million in health care costs annually. (23)</td>
</tr>
<tr>
<td>Neurodevelopmental outcomes and long-term benefits</td>
<td>Later in childhood and adulthood, preterm infants fed human milk have been shown to have lower rates of metabolic syndrome, (24)(25) increased white matter and brain volume, and significantly greater scores for mental, motor, and behavior ratings. (19)(26)</td>
</tr>
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PRIORITIZING AN INTEGRATED APPROACH FOR HUMAN MILK BANKING IN INDIA

India faces its own unique challenges. The country is the highest contributor to the global birth cohort, neonatal mortality rate, and birth of vulnerable infants, that is, infants born prematurely and with low birthweight. Of the 27 million infants born in India annually, 30% are born with low birthweight (ie, weighing <2,500 g), and 46% of all low-birthweight infants (estimated at 3.5 million infants), are born preterm (Fig 1). (30) Of the 0.76 million infants who die in the neonatal period, prematurity is the major cause, accounting for 35% of all deaths, followed by infection, accounting for another 33%. (30)
Breastfeeding has a pertinent and important role to play in improving the status of neonatal health in India. This emphasizes the need to universalize access to human milk as an integral component in the country’s health-care system, especially in all newborn units that provide care to sick infants. Providing human milk through human milk banks can work only if it is a part of the larger objective of promoting breastfeeding. There is a need to link human milk banking systems with breastfeeding and kangaroo mother care by establishing high-quality systems, sharing global best practices, and facilitating capacity building. An integrated intervention will not only assist in feeding human milk to preterm and low-birthweight infants, but will also increase breastfeeding rates in the country. Previous experience shows that human milk banks thrive in countries where they are protected, promoted, and endorsed as a critical component of breastfeeding and newborn care policies. (29)

Based on its existing toolkit on the establishment of human milk banks, “Strengthening Human Milk Banking: A Global Implementation Framework,” (36) PATH has proposed the “Mother Baby Friendly Initiative Plus” (MBFI+) model in which human milk banks collect, process, and store donor human milk while serving as centers that provide lactation and kangaroo mother care support. (29) Because successful breastfeeding often requires support from the family and community, the model also positions human milk banks to work with and engage local communities. These banks promote the significance of breastfeeding and milk donation, build awareness about the value of human milk, and collaborate with employers and other leaders to create an enabling and supportive environment for breastfeeding and milk donation. (36) The MBFI+ model is deliberately intended to be altered by each country to fit its unique needs. Similarly, the model has been adapted to suit India’s public health structure (Fig 2).

HUMAN MILK BANKING LANDSCAPE IN INDIA

In India, voluntary donation of human milk in the form of wet nursing has been an integral part of its tradition. Mythological anecdotes tell tales of Yashoda, who was a wet nurse (human milk donor) to Lord Krishna. In the 18th century, wet nursing was widely practiced for offspring of mothers born into nobility who refused to breastfeed their infants to preserve their beauty and figure. Later, the practice declined because of a fear of transfer of infections and diseases such as syphilis. Much later, the concept of human milk banks was introduced.

In Asia, the first human milk bank was established in 1989 by Dr Armida Fernandez in Lokmanyatilak Municipal Medical College and General Hospital, Mumbai, India. The milk bank was started after realizing the acute need to save sick infants in hospitals. It soon became sustainable as mothers who had delivered at the hospital and donated milk to the milk bank returned for follow-up care. (37) Despite the successful establishment of this bank, other hospitals were not encouraged to take up this venture and this remained the only human milk bank in the country until the year 2005. From 2005 to 2015, only 22 human milk banks were established, but in the past 2 years, this number has more than doubled. There are currently about 50 milk banks in India, which are still inadequate to meet the massive demand for donor human milk (Fig 3). To put this in perspective, the United Kingdom has 770,000 births each year and 16 operational milk banks, whereas India has 27 million births each year and only 50 operational milk banks.

Historically, implementation of effective regulated, country-specific, human milk banks have been slow to develop in India. Initially, human milk banks were concentrated in the western belt of the country because the first human milk bank was established in this region, and the majority of milk banks were modeled on this first one. The development of milk banks has met with several challenges including inadequate collaboration between obstetricians and pediatricians, lack of lactation counselors, and limited awareness. (37) There are also gaps in providing able leadership for sharing best practices and robust procedures. However, the changing landscape has facilitated an expansion in human milk banks in some parts of the country.

INDIA-SPECIFIC STUDIES ON HUMAN MILK BANKING

A recent study conducted to understand current practices, processes, infrastructure, personnel structure, and funding mechanisms in human milk banks with minimum 1 year of functioning (n=16) revealed that standardization of processes as well as data capturing and reporting were urgently needed. (38) Only 23% of the study sites pooled milk under laminar airflow. Sixty-two percent of the facilities used steel containers for milk pasteurization and storage, which is unique to India. Because steel is widely used in homes and laboratories and has good conductivity, it results in faster heating and cooling cycles. This helps preserve milk nutrients better, especially its sensitive immunologic components, because the duration of exposure to extremes of temperature is curtailed. Steel can be easily cleaned and sterilized by exposure to dry heat in a normal oven, therefore, it has been an obvious choice of milk banks in India. Only 52% of milk banks had dedicated full-time technicians. In the remaining milk banks, lactation counselors and other
staff managed the processes. Only 31% of milk banks had 3 or more dedicated lactation counseling staff; thus, the shortage of staff has been a stumbling block. Most of the milk banks pooled donor milk from multiple mothers. All the facilities used the Holder method of pasteurization. Processed donor human milk was used within a week or fortnight because of high demand in most of the sites. Milk collection was between 3 and 6 L every day in most of the facilities. The majority of milk banks reported a significant demand-supply gap. Hence, as a step to help mitigate the demand, select sites have recently developed satellite milk collection centers. The need to discard samples because of the presence of microbes after pasteurization was less than 5% at most study sites. (38)

Milk is predominantly collected at the facility level with one-third of the sites collecting milk at camps and homes as well. Donor milk collection in India is mainly from mothers of preterm infants, hospitalized mothers after delivery, and mothers who visit pediatric clinics for pediatric immunizations. These mothers are mostly cross-sectional donors. Longitudinal donation is not yet practiced in India. Even home-based collection of milk is not common and very few hospitals promote it. (38) Education for safe collection is imperative for home-based collection because of the potential risks of voltage fluctuations and electricity failures.

Only in-facility dispensation of donor human milk is promoted and once the infant goes home, there is no source of continuing human milk feeding if the mother cannot feed her child. (38)

Nearly 85% of milk banks in India have been established by nongovernment organizations, and only a handful had been supported by the government. (38) However, within the last 2 years nearly 50% of milk banks have been supported by the state governments. Rajasthan, one of the states with a high neonatal mortality rate, has supported the setting up of 10 milk banks during the last year. Similarly, the state government of Tamil Nadu has supported setting up 7 milk banks. The recurring cost of most milk banks is managed through hospital funds.

Various socioeconomic factors influence maternal motivation and willingness to donate breast milk. Katke and Saraogi reported that women at either end of the reproductive age spectrum and women with higher parity require more motivation to donate breast milk. Furthermore, milk donation can be promoted in India by teaching women about the benefits of donor milk. (39) A recent study surveyed mothers and influencers (fathers and grandmothers) about barriers to breastfeeding, kangaroo mother care, and providing donor human milk to preterm and sick neonates in India. (40) This study found limited awareness about human milk banks among mothers and influencers. Parents were
supportive about donating milk once they learned that it was life-saving and did not compromise the supply to their own infant. However, some parents had safety concerns about the use of donor human milk and were not aware of milk banking processes. Most grandmothers were not comfortable with having their daughters/daughters-in-law donate milk or having their grandchild receive donor milk because they felt it may hinder supply for their grandchild. Most mothers shared that physicians counseled them about their dietary intake during antenatal care, but did not provide them with information about breastfeeding. Few mothers shared the challenges they faced with feeding their preterm and sick infants. Mothers who practiced kangaroo mother care were aware of its benefits. Respondents shared that wet nursing is an old practice. They found wet nursing to be helpful, as the infant receives human milk and they are assured that it is not harmful for the infant if practiced within the family. (40)

**ROLE OF THE GOVERNMENT IN SCALING UP HUMAN MILK BANKING IN INDIA**

The government of India has acknowledged the role that human milk banking can play in reducing neonatal mortality and morbidity and held the first national consultative meeting for formulating national guidelines on human milk banking in 2013. Subsequently, the Indian Academy of Pediatrics formulated a set of guidelines in 2013. (41) The government of India highlighted the need for formulating operational guidelines with robust protocols and emphasis on implementation strategy, quality control mechanisms, monitoring, and accreditation. The Ministry of Health and Family Welfare took this initiative in 2014 and formed a group composed of human milk bank experts, neonatologists, regulatory officials, and quality and public health specialists to support this effort. Subsequently, the government launched the “National Guidelines on Lactation Management Centers in Public Health Facilities” in July 2017. (42) These guidelines are part of a program focusing on breastfeeding launched by the government of India called Mother’s Absolute Affection (MAA). MAA in Hindi, the national Indian language, means mother. The vision of the government is to make breast milk universally available for all infants by establishing comprehensive lactation management centers (CLMC), lactation management units (LMUs) and lactation support units (LSUs) at the facility level. The CLMC model is based on the MBFI+ model (Fig 4).

The model builds on India’s public health system which is a 3-tier system with primary, secondary, and tertiary levels of care. The district hospital is an essential component of the district health system and provides secondary level of care. Every district has a hospital that is linked to health facilities under the district such as subdistrict hospitals, community health centers, primary health centers, and health subcenters. Primary health centers are the cornerstone of rural health
services, providing basic essential newborn care. They cater to a population of around 30,000 with the help of a medical officer, pharmacist, and support staff. Community health centers, catering to a population of 120,000 people, are the first level where specialists are available. They aim to provide secondary level care with stabilization services for newborns. First referral units are being developed by upgrading selected community health centers and subdistrict hospitals where 24-hour emergency obstetric and child health services will be provided. (43) Currently, there are 715 functional special care newborn units, mostly at district hospitals, to reduce case fatality among sick newborns and to function as training centers for teaching newborn care skills. A large number of secondary and tertiary care units responsible for newborn care are usually within larger hospitals, many even higher than the district level such as at the medical college level.

**SALIENT FEATURES OF THE NATIONAL GUIDELINES**

LMCs are seen as an effort to promote the natural act of breastfeeding and ensure availability of safe donor human milk for sick infants when MOM is not available. A CLMC will be set up at tertiary care facilities/medical colleges with a functional NICU and high delivery load. This would function as a lactation support center to support breastfeeding, as well as to safely collect, process, and provide safe donor human milk. Subsequently, CLMCs will be set up at

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**Figure 3.** States with operational human milk banks in India.

**Figure 4.** Facility based lactation management at the three levels.
(Reprinted from reference 42.)
district hospitals that fulfill the prerequisites for establishing one. These units will support breastfeeding mothers, encourage kangaroo mother care, and support the formation of LMUs at first referral units/subdistrict hospitals. These LMUs will facilitate the expression and collection of MOM for her infant’s use. To maintain the continuum of care, LSUs will be established at all delivery points by forming a dedicated team of staff trained to provide round-the-clock breastfeeding support, lactation counseling, and kangaroo mother care support to mothers. (42)

The guidelines mandate informed consent by both the donor and the recipient. Donor milk will only be dispensed with a physician’s prescription and is recommended to meet the short- and long-term needs of newborns admitted in NICUs/sick newborn care units with the following conditions: 1) prematurity, 2) low birthweight, 3) malabsorption, and 4) feeding intolerance.

Donating human milk will be a completely voluntary and nonincentivized activity, and this milk cannot be used for any commercial purposes. The government is working on developing a regulatory mechanism to prevent human milk commercialization.

Human milk donation and dispensation will be done only at specialized units within the CLMC with the highest regard for safety and meticulous approach to ensuring quality. The guidelines consist of evidence-based and standardized technical protocols for donor screening and collection, processing, storage, and dispensation of human milk. Ensuring the quality and safety of donor human milk is an important component of these guidelines. In addition, recommendations have been made to minimize the risk of donor human milk to recipients. The standards of quality have been stated in detail with a strong focus on hygiene and handling of milk. The guidelines enforce mandatory training of staff on a Hazard Analysis Critical Control Points system, which is a management system designed to address food safety from production to consumption.

A National Human Milk Bank has been established which will function as the national resource center to provide training, undertake quality audits, and ensure technical support to establish new CLMCs and LMUs. Regional and zonal reference centers will be established in each geographical zone at well-performing CLMCs, to assist the

**TABLE 2. Suggested Initiatives for Technical and Policy Leaders to Improve Access to Human Milk**

<table>
<thead>
<tr>
<th>Initiative</th>
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<tr>
<td>Improve government ownership to meet recurring costs, address personnel shortages, and enhance community mobilization.</td>
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<tr>
<td>Mandate availability of standard operating procedures at facilities for uniform process implementation and to ensure safety.</td>
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<tr>
<td>Establish one national and few zonal reference centers to develop stringent systems for monitoring and evaluation, accreditation and quality control.</td>
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<tr>
<td>Develop a strong regulatory framework and effectively implement the same to prevent commercialization.</td>
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<tr>
<td>Generate local evidence on the CLMC model by undertaking research to determine knowledge, practices, and perceptions related to the establishment of CLMCs in similar community settings and to explore the multidimensional aspects in opportunities and challenges for scaling up human milk banking in India.</td>
</tr>
<tr>
<td>Develop robust behavior change communication strategies related to breastfeeding, kangaroo mother care, and donor human milk targeted at mothers and influencers, starting from the antenatal period.</td>
</tr>
<tr>
<td>Provide skill-based training to medical practitioners and health care providers on the CLMC model.</td>
</tr>
<tr>
<td>Ensure counseling of pregnant women and lactating mothers by health-care providers and peer educators to promote early initiation of breastfeeding in the labor room.</td>
</tr>
<tr>
<td>Use mother support groups to create a suitable environment for continued and sustained breastfeeding.</td>
</tr>
<tr>
<td>Slowly eliminate wet nursing, an ancient and deep-rooted practice, by generating intensive awareness about its adverse effects.</td>
</tr>
<tr>
<td>Establish satellite centers attached to milk banks to recruit more donors to benefit more infants.</td>
</tr>
<tr>
<td>Extend the guidelines to the private sector to ensure that infants born in the private sector (about 60% rural and 70% urban areas) are also covered. (44)</td>
</tr>
<tr>
<td>Gather technical and policy leaders to discuss steps to ensure access to donor human milk for all infants in need whether in the hospital or at home.</td>
</tr>
<tr>
<td>Develop technologies that improve quality systems and are easy to use and cost-effective to help human milk banks run safely and effectively not only in India but other low-resource settings around the globe.</td>
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CLMC=Comprehensive lactation management center.
national resource center by serving as a technical resource for nearby CLMCs, LMUs and LSUs. (42)

THE WAY FORWARD

Some noteworthy initiatives in the recent past have been the use of the “green corridor” (organ donation van) in Rajasthan to transfer milk to needy NICUs from the collection centers in record time, as well as the establishment of a mobile van equipped with a breast pump and a refrigerator for collecting donor milk from mothers in the community in the state of Maharashtra. The Human Milk Banking Network of India has been established to share best practices and create awareness among health-care providers. Media engagement has also increased over the past year and the issue is well covered across multiple platforms.

As a next step, as policy and technical leaders work toward implementing these guidelines to ensure that all infants have access to human milk (both MOM and safe donor human milk), it will be imperative that the following initiatives are taken (Table 2).

Effective scale up of human milk banking systems in India has significant potential. Estimates suggest that 30% to 50% of neonates admitted to the NICU and 10% to 20% of full-term infants are in need of donor human milk to meet the short- or long-term lack of mother’s milk. Increasing access to human milk has the potential to help approximately 5 million infants. When combined with enhanced breastfeeding methods, the impact could be 10-fold. (38)

As human milk banking systems expand and strengthen, this will not only have an impact on the immediate health of neonates but will also have long-term positive effects. India bears the highest global burden of neonatal births and deaths, therefore improvement in neonatal health indicators will help India and the world achieve their goal of reduced neonatal mortality and morbidity.

ACKNOWLEDGMENTS

Our special gratitude and acknowledgment is extended to the policy and technical experts in India who provided insights and guidance, which formed the basis of this work. We also acknowledge the human milk banks in India that are dedicated toward increasing access of human milk to all infants by promoting breastfeeding and providing safe donor human milk, and saving infant’s lives.

American Board of Pediatrics
Neonatal-Perinatal Content Specification

- Know the advantages and disadvantages of the use of donor human milk.

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<tr>
<th>Updated Information &amp; Services</th>
<th>including high resolution figures, can be found at: <a href="http://neoreviews.aappublications.org/content/19/4/e201">http://neoreviews.aappublications.org/content/19/4/e201</a></th>
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<tbody>
<tr>
<td>References</td>
<td>This article cites 25 articles, 6 of which you can access for free at: <a href="http://neoreviews.aappublications.org/content/19/4/e201#BIBL">http://neoreviews.aappublications.org/content/19/4/e201#BIBL</a></td>
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