

Donor Human Milk Banking—Time to Redirect the Focus?

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Keywords

breastfeeding, breastfeeding support, milk banking, mother-infant dyad, very low birth weight

Background

The growth of donor milk banking, globally, has reduced infant morbidity and mortality, providing life-saving human milk for the most vulnerable infants (Bertino et al., 2013; Kim et al., 2017). The World Health Organisation (2016) has advocated for its use where mother's milk is temporarily unavailable. Since researchers have established the benefits of using donor milk in very low birth-weight infants, demand for donor human milk has increased rapidly (Human Milk Banking Association of North America, 2020).

The current COVID-19 pandemic has resulted in concerns over maintaining the supply of donor milk (Marinelli, 2020). China's public health documents have recommended the separation of an infected mother and her infant, despite no evidence of risk of transmission via breastfeeding (National Health Commission of the People's Republic of China, 2020). Stuebe (2020) contended that the separation of the mother/infant dyad, and depriving the infant of the mother's milk, poses significant risks to both. Other challenges faced by milk banks include a reduced number of donor mothers due to screening and collection difficulties, and maintaining adequate numbers of staff, all of which increase pressure on the provision of donor milk (Shenker, 2020).

To date, around 600 donor human milk banks (DHMB) in many countries operate with dedicated people working tirelessly to raise awareness and feed the most vulnerable infants (Israel-Ballard et al., 2019). Globally, around 800,000 infants are being fed donor milk annually (Shenker, 2020). Community DHMBs also provide a valuable service, feeding vulnerable infants. The first community-based bank was established in South Africa 20 years ago, and has witnessed substantial improvements in the condition of HIV-infected orphans fed with donor human milk (Reimers et al., 2018). The Hearts Milk Bank in the United Kingdom, in addition to providing donor milk to hospitals, also supports mothers in the community who are temporarily unable to breastfeed

their infants. Women experiencing health issues or having chemotherapy have been given donor milk to enable them to continue feeding their infants (Hearts Milk Bank, 2020).

Strides have been made in developing guidelines and protocols to ensure a safer product. PATH (2019), a global NGO, has developed an extensive toolkit for the establishment of human milk banks. However, there is no differentiation between guidelines for developed and developing countries.

Donor human milk banking is inextricably linked to promoting, protecting, and supporting breastfeeding. Multiple researchers have shown an improvement in breastfeeding rates where donor milk is administered (Adhisivam et al., 2017; Kantorowska et al., 2016). A systematic review conducted by Williams et al. (2016) showed there was a positive impact on any breastfeeding rates upon discharge, but not upon exclusive breastfeeding (EBF) or the exclusive administration of mother's own milk. A single study center, included in their review, reported a significant decrease in the percentage of feeds, which were mothers' own milk, after donor milk was introduced (Williams et al., 2016). It is important to note that the authors confirmed the lack of high-quality data when conducting this review, with only 10 studies meeting their inclusion criteria. Six (60%) of the studies included were from the United States. Four (25%) of the studies were from conference abstracts, so had not been peer reviewed, and eight (80%) were retrospective, with a high risk of bias. It is problematic to measure breastfeeding rates at discharge from an neonatal intensive care unit (NICU), and given that few donor milk banks do this, it is difficult to ascertain what the true situation is.

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Data about rates of breastfeeding at discharge from NICUs, it appears, is not routinely collected, as is reflected in surveys conducted in Italy (De Nisi et al., 2015), China (Liu et al., 2019), and India (Sachdeva et al., 2019). While some toolkits for setting up a human milk bank provide a wealth of information on breastfeeding support (PATH, 2019), others, like in the United Kingdom (National Institute for Health and Clinical Excellence, 2010) and the European Milk Banking Association, focus on the operations of the milk bank, without specifically mentioning supporting breastfeeding (European Foundation for the care of newborn infants, 2018; Weaver et al., 2019). Brazil's extensive networks of human milk banks are also known as Breastfeeding Promotion Centers. In addition to collecting and processing donor milk, they provide lactation support, as do many trained lay people in the community (Schreiber, 2018).

Our premise is that in the developing world high infant mortality rates (IMR) suggest that the benefits of promoting and supporting breastfeeding far outweigh the benefits of establishing expensive donor milk banks. One cannot downplay the greater value of investing in breastfeeding support, the benefits of which have long-term health consequences and influence infant and maternal morbidity and mortality. In the quest to establish milk banks and provide donor milk to vulnerable infants, the focus on short-term goals has often obscured the long-term vision of meeting infants' nutritional needs after discharge. The significance of supporting breastfeeding more intentionally, and allocating resources appropriately, especially in developing countries, will improve infant survival and long-term health outcomes.

Measuring Success

As we look back over the past 20 years, how do we measure success in human milk banking? Is it to have recruited more donor mothers every year? Is it to have pasteurized more liters of human milk? Is it to have fed more infants with donor milk? Is it to have opened more milk banks? Wheatley and Kellner-Rogers (1999) challenged us to think, "Are we measuring what is meaningful? Should we rather let the greater meaning of the work define what we measure?" (p. 3). Is the greater meaning of the work of donor milk banks to ensure that infants have access to optimum nutrition long after discharge from a NICU?

The benefits of donor milk in reducing the risk of necrotizing enterocolitis (NEC) and reducing the risk of late onset sepsis are well established. (Quigley et al., 2019). The short-term benefits of having access to donor milk are indisputable. The danger is that reaching for the donor milk may become the default or easier option, instead of the more time-consuming intervention of supporting mothers to express in those early difficult days. Donor milk should always be viewed as a short-term intervention or bridge, never losing sight of the invaluable resource of mother's

Key Messages

- Donor human milk provides a life-saving, short-term intervention when mother's own milk is temporarily unavailable.
- Supporting breastfeeding to ensure a mother increases her supply to take over the provision of milk for her own infant is critical.
- Investing in breastfeeding support has long-term health consequences for both the mother and infant.
- Safe and sustainable models for establishing donor milk banks that are feasible in low resource settings are necessary.

own milk. An example of this is the Banco de Leche in the Roosevelt Hospital in Guatemala City which provides all infants up to the age of 33 weeks with donor milk, after which they are given preterm formula (Paynter & Celis-Hecht Mendoza, 2019). All mothers are asked to donate milk, and the majority do. Only once every weekday, mothers come to a pumping room in the hospital where they pump milk for all the infants in the NICU. Many only express a few milliliters at a time and can take a week to fill the 120 ml container. It is admirable that they have a NEC rate of less than 1%, but it is concerning that these mothers very possibly will not have established sufficient supply to continue to provide milk for their infants after discharge (Paynter & Celis-Hecht Mendoza, 2019).

We believe there has been too much emphasis on the commercialization of donor human milk. Australia has one milk bank making a shelf-stable, freeze-dried donor milk product for the public (Jacques, 2020) while, in the United States, for-profit human milk banks are making a range of human milk nutritional products (Prolacta, 2020). There have also been reports of women in low-resource settings being paid for their milk, which was shipped to first world countries and sold, placing the donors' infants at risk (Wong, 2017).

Resetting

Do we need to stop, reset, and get back to basics? Should we not rather be supporting every woman to initiate and provide her own milk, which is so perfectly suited for her own infant, and superior to donor milk? Pasteurization unfortunately results in the loss of some valuable immune and microbiome boosting properties. Wilson et al. (2015) reported a link to the early expressing of human milk in mothers of very preterm infants as a predictor of a higher milk yield at Day 3 and Day 7. This early expressing was also a predictor of EBF at 3 weeks. This demonstrates how critical it is to support

these mothers to supply their own milk in the first week after delivery, to ensure a long-term supply.

The Global Breastfeeding Collective (WHO/UNICEF, 2017), in their document on an investment case for breastfeeding, highlighted the fact that breastfeeding is one of the best investments for global health. The World Health Assembly's (2017) target is to increase the number of children EBF to 50% by 2025, at a cost of just \$4.70 per child. The economic gains generated by improving child survival and cognitive development would be around \$300 billion—a very worthwhile investment with a return of 5.2% (WHO/UNICEF, 2017). The Lancet Breastfeeding series highlighted how critical breastfeeding is for both the short- and long-term health of mothers and their infants. Despite this, in most countries around the world women are not receiving the support they require both to initiate and sustain breastfeeding (Victora et al., 2016). There is much work still required to remove structural and societal barriers to breastfeeding: Maternity and workplace policies supportive of breastfeeding are needed, and restricting the marketing of human milk substitutes also is essential (Rollins et al., 2016).

We call for limited valuable resources to be directed towards supporting breastfeeding within the donor milk bank environment. Donor human milk banks are merely one strategy for protecting, promoting, and supporting breastfeeding, and should form part of a nation's national breastfeeding policy. Safeguards are needed to ensure that funds are not prioritized for donor milk banks at the expense of other strategies.

Are the strides to get a global donor milk bank standard of “one size fits all,” including expensive equipment, necessary for developing countries? Would investment in breastfeeding support and innovative ways to set up milk banks simply but safely not be more beneficial? This would guarantee an equitable distribution of milk banks where they are needed most and, critically, would provide much needed breastfeeding support. The global community has a responsibility to ensure that developing countries are not pressured to aspire to replicate the technologically-advanced processes of the West, to the detriment of their health and scarce resources. Systems for donor milk banks need to be contextually appropriate, safe, and sustainable in order to provide a solution which will improve the lives of mothers and their infants.

Dr. Peter McCormick, a volunteer Pediatric oncologist and founder of the Beryl Thyer Memorial Africa Trust, worked in Cameroon for many years. He set up five simple milk banks to meet the needs of vulnerable infants. He said, “This is a worthwhile low-cost, low technology, small scale, life-saving project, tailored to the need of a resource-poor world” (Arnold, 2010, p. 374). He demonstrated that expensive technical apparatus and processes are not necessary to successfully run a HMB. Supporting breastfeeding was an integral part of his model. A number of low-cost, mobile pasteurization systems have also been developed in South Africa

for use in resource constrained settings, and are being used safely and successfully—in both rural and urban hospital settings alike—in Africa, Asia, and New Zealand (Daniels et al., 2018; Naicker et al., 2015).

Conclusion

The commitment to setting up donor milk banks needs to be harnessed to ensure the focus includes critical breastfeeding support, so countries looking to set up milk banks make it an integral part of their planning and operation. By providing safe and sustainable models for establishing donor milk banks, which are feasible for low-resource settings, we are making this valuable resource a possibility to many more vulnerable infants, globally. At the same time we are ensuring mothers' own milk is prioritized both in the short- and longer-term. As Frans Kafka said, “There are some things one can only achieve by a deliberate leap in the opposite direction.” Is it time, and are we brave enough to stop and leap towards supporting breastfeeding more intentionally?

Declaration of Conflicting Interests

The authors acknowledge that their experience in donor milk banking has been in developing countries but have had frequent international exposure and interactions working with various groups on donor milk banking. The authors are both founder and board members of the Human Milking Banking Association of South Africa and are members of the Global Virtual Collaborative Network of Human Milk Banks and Associations. They serve in an advisory capacity to a community-based milk bank in South Africa, for which they are not remunerated.

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