



Breastfeeding Briefs

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Dear readers of *Breastfeeding Briefs*,

As you will note immediately, this most recent issue of *Breastfeeding Briefs*, No. 52, is presented in a new format that we hope will correspond to our readers' needs and wishes. In future, each issue will centre solely on an editorial piece dealing with a hot topic, often a controversial one, which will be chosen for its timeliness, relevance and importance to the breastfeeding world. The theme will be explained at length and thoroughly and it will be followed by a number of abstracts on the same subject for more in-depth reading. Each editorial will be written by a specialist on the topic, whose opinions may sometimes slightly differ from those of IBFAN. It may be interesting for readers to bring forth their own opinions and if feasible, we may print some of them in following issues. We plan three editorials per year, appearing therefore more frequently than in past years. Our aim is to be more present and visible to our readers, but also to follow more closely the latest developments and discussions. Lastly, we have also decided to extend the editorial team to include not only our former editors Adriano Cattaneo and Marina Rea, but also, Lida Lhotska, Robert Peck and Elaine Petitot-Côté. We welcome all comments on your part. Please feel free to share your views on the current editorial or to make suggestions for future themes.

Cashing in on breastmilk?

From wet nursing to milk banks to internet distribution

Guest editor: Gillian Weaver¹

Changes are taking place in the milky firmament that is the world of infant feeding. Long gone are the days when babies were only fed at the breast of their mother or the breast of another.... Not to mention the commercialisation of infant feeding, that has become embedded in our way of life across most of the globe, including within some of the poorest parts of the world.

Whilst the artificial baby milk and bottle feeding industries grew, the provision of maternal milk remained a relatively market-free zone. Increasingly, in the latter third of the twentieth century this was no longer the case and expressing and pumping and storing breastmilk became big business. However, we are now seeing further changes in the choices available to mothers. Indeed, in what can be seen in part as a reaction against pumping and profit, the most recent developments in the provision of breastmilk are based more on sharing and caring than on making profit from breastmilk – or, in other terms, on “milking breastfeeding for all it’s worth”. Thus, a juxtaposition has arisen in which companies and individuals intent on profiting from ways of getting breastmilk into babies are intricately linked with the donation and sharing of breastmilk.

Breastfeeding versus breastmilk feeding

The background to the move to feed babies with breastmilk but not to breastfeed lies in the growing list of known adverse consequences associated with the use of artificial baby milk or infant formula. The list of disadvantages has extended to include major environmental considerations as well as short-, medium- and long-term health related problems. Health education campaigns encourage mothers to meet universally accepted and WHO-led infant feeding goals to breastfeed exclusively for 6 months followed by continued breastfeeding as part of a mixed diet to 2 years and beyond. The actual breastfeeding rates vary both between and within countries. However the widespread and easy availability of artificial milks and the consequent loss of breastfeeding expertise undermine efforts to get babies breastfeeding again... despite the wealth of research evidence and acceptance of the disadvantages as well as in some circumstances, the dangers of artificial feeding.

Currently dual obstacles hinder a reversal to long-term exclusive breastfeeding. Firstly, in many parts of the world attitudes towards breastfeeding have changed and the role of breasts in infant nutrition has become increasingly redundant. Worse than this, breastfeeding can be perceived as difficult and painful. Without access to well trained health professionals and without being surrounded by good breastfeeding role models and experienced supporters, new mothers who want to breastfeed often struggle. *The Infant Feeding Survey 2005* showed that throughout the UK 90% of mothers gave up breastfeeding before they wanted². The result is that mothers want their babies to be healthy but they hear that breastfeeding is hard. They are bombarded with scare stories

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² Bolling K, Grant C, Hamlyn B, Thornton A. Infant Feeding Survey 2005. The Information Centre, 2007.

about sore nipples and babies being readmitted to hospital as a result of insufficient milk. Formula is readily available and widely promoted and in the UK, mothers live in a culture where until recently breastfeeding mothers could legally be asked to leave public places, including, ironically, cafes and restaurants.

It probably then shouldn't come as any surprise that a relatively new emerging phenomenon is gathering pace in which mothers are opting to substitute breastfeeding with breastmilk feeding - some following difficulties with breastfeeding, others choosing to do so from the start. Does this then tick all the boxes? The baby receives the universally acclaimed superior nutrition and immunological benefits of breastmilk. The milk is expressed and collected without the need to address possible problems of poor attachment or positioning and the milk can be delivered without the need to put baby to breast and so risk embarrassment or harassment when out and about. And of course, in response to the commonly voiced desire, dad and others can feed the baby...

Win, win? Well no, because of course reality is very different and the inherent disadvantages of not nursing directly from the breast remain. These include those linked to the mode of delivery, namely the plastic feeding bottle which until recently contained the now banned bisphenol A, and with the baby sucking on a teat with the potential to adversely affect jaw and dental development. All of which also adds to the environmental burden of modern feeding choices. Other bottle feeding related risks apply also to breastmilk feeding, including the possibility for the care giver to overfeed by encouraging the infant to 'finish the bottle' and the fact that if the mother is not feeding the baby, this may influence how well she bonds with her baby.

Restricted maternity leave and the need for mothers to return to work to maintain employment and contribute to the family income play a part in the desire to breastmilk feed, but where mothers choose this method of feeding from the start the causes are less clear. However we do know that the trend to breastmilk feed is supported and to an extent fuelled by the breast pump industry. Once, sales or rental income were largely made in hospitals where pumps helped to support the expressing mother whose baby was too ill or too immature to feed directly at the breast. More recently, there are instances of companies promoting breastmilk feeding and all the associated pumping and bottle feeding as a lifestyle and baby rearing choice. This has led to one company being found to be in contravention of the WHO *International Code of Marketing of Breast-milk Substitutes* and as such is barred from exhibiting or advertising at many international lactation and breastfeeding related events³.

Breastmilk feeding

Once full breastfeeding has been established, including a bottle or cup of expressed breastmilk, given by the baby's father, a grandparent or other caregiver, enables exclusive breastmilk feeding to be maintained whilst mother and baby are separated. Incorporating the occasional bottle under these circumstances may even help mothers to withstand pressure to formula feed and it will almost certainly enable her to carry on breastfeeding when returning to work or when otherwise away from her baby for short periods of time. However the result of breastmilk feeding without substantial breastfeeding is that babies are likely to receive breastmilk for a shorter duration, and probably in larger quantities at each feed, than they would if the mother was supported to successfully breastfeed. The extent to which this is happening and the overall effects are not known, as breastfeeding and breastmilk feeding are not clearly differentiated in infant feeding surveys. Similarly bottle feeding indicators make no distinction between the contents of the bottle.

The rise in the use of expressed breastmilk (EBM) as a main source of feeding a baby can be perceived as a cause for concern or a cause for celebration, depending upon your point of view. The WHO goal of exclusive breastfeeding is accompanied by a league table in which the mother's own expressed milk is second above donor milk, with artificial milks down in the relegation zone. However the relative differences and indeed the distinct advantages of receiving breastmilk directly from source haven't yet been brought into mainstream health education campaigns. Instead a sense of 'well, at least it's breastmilk in the bottle' pervades health opinion and mothers are rightly congratulated for choosing breastmilk over formula. There are however a host of factors that will make the mother's choice less sustainable than breastfeeding. These include:

- the additional time required to first express the milk and then also to separately feed a baby, plus to clean pump parts and bottles and to warm feeds from the fridge;
- the inferior breast stimulation and breast emptying powers of even the best breast pumps compared to those of a breastfeeding baby, which may result in earlier weaning;
- the need to store milk and the effects of that on nutritional and immunological components of the milk and the increased opportunities for contamination;
- having to carry suitably stored EBM when travelling or just out and about with a baby, and so on.

These all add to the extra hassle and make long-term success more challenging. Unless there are medical reasons why breastfeeding is difficult or not possible, the choice to express and feed (as opposed to the necessity) is

³ The International Code forbids the promotion and advertising of bottles and teats, which are part of the pump products mothers buy; and therefore the marketing of these products does violate the Code.

awash with obstacles that will contribute to making the duration of breastmilk feeding shorter than breastfeeding might otherwise have been.

Expressing milk

The change from breastfeeding to breastmilk feeding arguably originated over a century ago with the introduction of human milk banks in the early 1900s and with the breastmilk donor, or rather the breastmilk seller - as most early contributors to milk banks, or "milk bureaux" as they were then known, were paid for their milk. These 20th century additions to the infant feeding spectrum were at first replacements for the wet nurses who since time immemorial had through kindness or as a means of income generation provided a replacement for the baby's own nursing mother. Milk banks however were able to supply breastmilk to babies unable to nurse and so this provided a lifeline particularly for premature infants. However it also fuelled a need for equipment to collect and store the disembodied breastmilk that would be increasingly used to feed babies both in and out of hospitals. The early milk banks relied on hand expressed milk, rubber bulb operated pumps or relievers (Figure 1) and, for mothers in hospital, on contraptions that were linked to flowing water via the mains taps to generate suction (Figure 2). The search for efficient, effective breast pumps had begun.

Outside of hospitals, up until 25 to 30 years ago, breastfeeding, as nature intends it, between a mother and her baby or babies, remained relatively commerce free. Breastfeeding bras, a few creams, lotions and potions purporting to ensure breastfeeding success, and pads and shells to soak up or collect excess milk were pretty well the full extent of the breastfeeding market apart from a small range of pumps. Buying a pump entailed a trip to the chemist or specialist baby shop and electric or battery operated versions were on very few new mothers' lists of essentials. The intervening decades have seen an unprecedented burgeoning of breastmilk related products as well as services and organisations devoted to the laudable, but also in some cases, profitable, aim of getting breastmilk into babies.

Pump hire and purchase has become big business in all industrialised countries. Within national laws, improved protection for breastfeeding that affords better opportunities for mothers to maintain their milk supply whilst at work supports the market for electric as well as manual pumps. Pump hire is a source of income for individuals and companies alike. Hand expressing without the aid of mechanical devices is a skill that all new mothers should be taught and has a number of advantages over using a pump, including less contaminated milk. However, despite the fact that pumps are not a necessity, many pregnant women acquire them even before their baby is born. It is relatively unusual for UK milk donors not to have their own breast pump even if they haven't yet started expressing milk. Little wonder that the resultant global market has led to fierce competition. Manufacturers and retailers of pumps want mothers to be exposed to their brand whilst in hospital and have funded research and development and brand promotion to an unprecedented extent.

Fears that they might 'run out of milk' or simply as a means of ensuring a ready stock in case of emergency have led breastfeeding mothers to take to expressing and freezing milk as a matter of course. When the emergency doesn't happen or the milk supply doesn't falter, the stockpile remains in the freezer and so the discovery that this milk can be donated to a milk bank or directly to another mother provides a solution as to what to do with it. Breastmilk sharing in one form or another is on the increase. Unlike the wet nurse of previous centuries, the breastmilk sharer is able to feed other mothers' babies without even being in the same city.

Breastmilk sharing

The 20th century saw the decline of the wet nurse and they were not replaced to any extent with a direct provider of breastmilk although milk banks are sometimes seen as having taken over their role. However it was the ready availability of artificial baby milk that was mainly responsible for their demise. Bottles and formula were deemed a safer and more hygienic alternative to the nursing services that had once provided the 'milk from another' alternative to milk from the mother.

Whilst breastmilk sharing has occurred throughout the intervening years, soliciting and obtaining breastmilk directly from a stranger is a very new phenomenon and one which simultaneously encourages altruistic giving and a sense of community amongst the milk sharers. The meteoric rise of Facebook was the catalyst for the current ready availability of breastmilk via the internet. Prior to a couple of years ago, if you wanted to try and find a source of breastmilk for your infant and you weren't able to access donor breastmilk from a milk bank, the only alternative was to ask around amongst your friends and family and local breastfeeding support groups. Advertising your search for someone to supply you with breastmilk would have been regarded with suspicion and where would you advertise? The United States had seen the establishment of a number of sites devoted to breastmilk sharing, but the numbers of mothers accessing these sites wasn't growing rapidly and most mothers knew nothing of their existence. It took the social networking phenomenon that is Facebook and Emma Kwasnika's innovative page '*Eats on Feets*' in particular, to bring about the current increased availability of expressed

breastmilk. The speed at which regional groups in Canada and the United States and then national and regional groups elsewhere were established took the infant feeding policy makers by surprise. Within a few short months thousands of mothers worldwide found a place to request or offer breastmilk. Furthermore proponents of breastmilk sharing could become involved and assist without actually requiring or offering milk themselves. Chapters were set up in 50 different countries within a few months and breastmilk was being transported and exchanged for grateful thanks in mutually agreed locations. An alternative group *Human Milk 4 Human Babies* also now operates along similar lines and the original internet-based organisations like *Milkshare* also continue to actively encourage mothers to donate their breastmilk to other mothers.

The response from mothers wanting to acquire breastmilk for their babies was enthusiastic and many did and continue to do so. Cautionary advice and warnings have been issued including from milk banking groups and associations. The experience of those working in milk banks is that not all healthy looking mothers with healthy sounding lifestyles are free of infections and diseases that can be transmitted via breastmilk. Many decades of testing breastmilk within milk banks has led to the accumulated knowledge that it can be heavily contaminated with pathogenic microorganisms. Occasionally mix-ups happen and in countries where it is tested for, breastmilk has, albeit rarely, been found to be adulterated with cow's milk. If this happens in a sphere devoted to providing breastmilk to sick infants and where extensive scrutiny is part of the donation process, is it even more likely to occur when milk is being more informally shared?

Warnings have also been issued from paediatric and neonatal societies including those in Canada and in France. The response from milk sharing advocates is that artificial baby milk is not risk free and their advice is to be responsible about safety and to take precautions. Suggestions for how to minimise potential hazards are listed and include asking for blood test results although even an up-to-date negative blood test is not a guarantee against recent infection. Also, often antenatal test results are being provided which may have been performed many months previously. Additional recommendations include checking for any medicines taken as well as how to heat-treat the milk at home to increase safety.

The rise of direct breastmilk sharing between mothers is thought to be competing with the sharing of milk via milk banks and in the United States, some milk banking experts have included it, together with increased demand from neonatal units for EBM, as a reason for supplies being low. The comments documented as part of internet chat room and forum threads back this up as mothers explain that they would rather donate directly to another mother than as part of the anonymous milk bank service. The erroneous perception amongst many women that all milk banks in North America operate commercially is also implicated and comments directly attribute mother-to-mother sharing to a desire to keep commerce out of breastmilk feeding. The high costs associated with operating a milk bank to nationally acceptable standards and to ensure safety for very premature and sick infants are often underestimated and so the contributions asked for supplying screened, tested and heat-treated EBM seem high given the fact that the milk was originally freely donated to the bank. However, where a fee is charged for donor breastmilk from a recognised and accredited milk bank, this is always only a contribution towards the milk bank's costs.

Milk banks versus milk sharing

Milk banks collect, screen, process, store and distribute donor breastmilk, mainly to sick and premature infants who are being cared for on neonatal units. The first milk banks were established in the early 20th century in Vienna (1909) and Boston (1910). They have seen a resurgence in recent years as they are able to facilitate the exclusive breastmilk feeding of those babies who are vulnerable to infections and severe inflammatory diseases of the gut. The numbers and the overall activity of milk banks are growing globally with currently 165 milk banks throughout Europe and over 200 in Brazil alone. Countries that had no milk banks even a few years ago are introducing them (Australia) and five European countries have opened a milk bank in the last 2 to 3 years (Estonia, Netherlands, Poland, Portugal, Serbia). The establishment of milk banking is being explored in Turkey, and the first milk bank is planned to open in Izmir. If this initiative goes ahead it will become the first modern human milk bank fully operating to internationally recognised standards, in a predominantly Islamic country, although the use of donor breastmilk on a neonatal unit in Kuwait has been previously described⁴.

The target recipients for the donor breastmilk from milk banks vary widely. In some settings only premature and sick hospitalised infants have access to it but in others it is all babies whose mothers are unable to provide enough of their own breastmilk.

In its recently published position paper on breastfeeding, in the preterm section, the American Academy of Pediatrics recommended: "If mother's own milk is unavailable despite significant lactation support, pasteurized donor milk should be used"⁵, with the important caveat that "quality control of pasteurized donor milk is important

⁴ Al-Naqeeb NA, Azab A, Eliwa MS, Mohammed BY. The introduction of breast milk donation in a Muslim country. *J Hum Lact* 2000;16:346-50. For more information about human milk banks in Islam, see abstract of article by Hsu HT et al., in next section of this issue.

⁵ American Academy of Pediatrics, Section on Breastfeeding. Breastfeeding and the Use of Human Milk. *Pediatrics* 2012;129:e827

and should be monitored⁶. In the UK, access to donor breastmilk as clinically indicated is included in the *Toolkit for Neonatal Services* published by the Department of Health in 2009⁶. Globally, in 2008 the 61st World Health Assembly required Member States to investigate the safe use of donor milk through human milk banks⁷. Organisations that represent milk banking at national and international level in Europe, including the *UK Association for Milk Banking* (UKAMB) and the *European Milk Banking Association* (EMBA), have issued statements about breastmilk sharing; these can be found on their websites⁸. They have tended not to condemn the practice of direct mother-to-mother milk sharing, but have rather drawn attention to the potential risks and encouraged mothers to first consider donating breastmilk to a milk bank where they and their donated milk will be screened but will also potentially help to save babies lives. Other organisations have been more condemning of the practice of milk sharing.

Ethical issues arise as a result of milk banking and the availability of EBM, not least of which is related to equity of access. In the absence of nationally organised services this is a very real concern with babies and families receiving very different services depending on their location. This is as true in countries with a long tradition of milk banking as it is in those with a newly developed single milk bank. Milk banks across the globe are almost exclusively not-for-profit and are funded by the State via health facilities in one form or another. Charitable fund raising often makes up the difference between the costs of the service and what can be recouped in fees for the milk.

For-profit milk providers

In 2006, a new model arrived on the scene in the US, that of the “for-profit provider” of screened and processed breastmilk. Based in California and claiming to operate to pharmaceutical standards and incorporating increased levels of traceability including DNA matching between donor and donated milk, the company has moved from only producing frozen donor milk for feeding to NICU infants to also producing unique breastmilk derived fortification products to add to maternal or donor milk to increase the protein, calcium and other nutrient composition. The company, Prolacta Bioscience, sources its breastmilk via various enterprises that operate across the United States and which add to the spectrum of possible ways in which mothers can share their breastmilk with other infants. Whilst all mothers donate their breastmilk freely, the small organisations that act as intermediaries in the recruitment process are paid in part according to the volume provided. Similarly NICUs have a vested interest in providing breastmilk to the company as this offsets the cost of the processed products supplied back to them. The high cost of the products and the for-profit model has not escaped controversy and adds to the ethical debate that is now inextricably linked with breastmilk, its expression and its use by mothers to feed babies within and outside hospitals. The large volumes of donated breastmilk required to produce the human milk fortifier which is then added to breastmilk also reduces the amount of donor breastmilk available and donors have no choice as to how their donated breastmilk is processed and used.

There are also internet-based facilities for women to directly sell their breastmilk. Mothers can advertise their services whilst individuals and families can also advertise their desire to purchase milk. Milk banks, and so the babies who receive donor breastmilk from the banks, seem once more to be adversely affected by this less well recognised form of milk sharing. The advertisers commonly state that they have been certified by a milk bank and where this is the case, the milk bank has funded the all important screening including via blood tests that the mother is using to help her find a buyer for her milk. The selling of breastmilk receives much clearer and wider condemnation than altruistic sharing although there can be a fine line between reimbursing expenses, as happens in some milk banks in Europe, and its profitable sale. The introduction of a financial incentive does however bring the need for additional scrutiny to the motivation of the mother selling the milk and to her trustworthiness when it comes to declaring all medications, etc. taken and to not be using drugs or diluting the milk. Despite this, many mothers do sell their breastmilk and there are willing purchasers.

The sale of breastmilk is not restricted to the disembodied expressed and usually frozen variety. The wet nurse is also making a comeback although this seems to be limited to poorly resourced areas of the world where they never disappeared and where financial gain is less likely to be a motive; and to China where deaths and ill health in babies as a result of melamine contaminated milk caused a large scare. In the West, the very affluent are also once again able to hire the services of a lactating woman. Whereas once the wet nurse was able to earn a tidy sum as a provider of the most highly paid service that women could choose to decently give, the advent of the 21st century wet nurse has enabled the rich to once again pay to have their children nursed. Wet nursing is included in the services on offer at a small number of agencies specialising in the provision of domestic staff. The going rate is around \$1000 (US) a week and that is in addition to accommodation and other expenses.

Conclusions

In conclusion, dilemmas and questions abound. Debates about the need for breastmilk feeding related equipment continue. Undoubtedly, pumps and EBM enable babies to be fed with breastmilk for longer when mothers go

⁶ NHS & Department of Health. Toolkit for High Quality Neonatal Services. London, UK, October 2009. http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_107845

⁷ WHA Resolution 61.20, May 2008.

⁸ www.ukamb.org and www.europeanmilkbanking.com

back to work. Pumps are also an integral part of the milk banking world where countless thousands of babies receive the safe donor breastmilk with its health promoting and life saving qualities. Would mothers whose babies are born premature and sick or with conditions that make breastfeeding impossible be able to express enough milk and eventually breastfeed without the research-based, highly engineered and user-friendly pumps that we have grown accustomed to? Should milk banks or other health providers be asked to help reduce the risks involved in breastmilk sharing by screening and testing mothers and should blood testing be freely available? How do we balance the very small risks associated with supporting mothers to safely and responsibly share their breastmilk against the known consequences of formula feeding? New questions will undoubtedly arise in the future but for now we must accept the fact that breasts and breastmilk are good for business – but business isn't necessarily good for breastfeeding.



Figure 1. Early to mid 20th century breast reliever type pumps. From the collection of Carolyn Westcott, former IBCLC and Milk Bank Manager.



Figure 2. Water pump circa 1940. Courtesy Queen Charlotte's and Chelsea Hospital Milk Bank.

Abstracts

Breastmilk expression, donation, storage, banking, sharing and sale

Rasmussen KM, Geraghty SR. The quiet revolution: breastfeeding transformed with the use of breast pumps. *Am J Public Health* 2011;101:1356-9

This commentary has been prompted by the fact that in recent years in the US, breastfeeding (or “at-the-breast feeding”) has been witnessing new competition in the form of manual and electric breast pumps and the resulting explosion of “breastmilk bottle feeding”. The development of human milk banks and of human milk sharing and selling is on the rise, including on the Internet, and is probably here to stay for a while. In the USA, as many as 85% of all breastfeeding mothers of 1.5-4.5 month-old infants have successfully expressed their milk; a high proportion of them has used a pump to do so; and as many as 5.6% of them have never given the breast to their child, though they do feed them their own milk. The authors do not judge this change in ways: breastmilk expression and feeding may indeed be a way to better feed more infants for longer periods in a time of stagnant or decreasing exclusive breastfeeding rates. However, they are weary of the general lack of understanding of this recent trend and discuss the need for data on who is expressing their milk, for how long and how the various forms of infant feeding inter-relate; they are also concerned about the consequences of milk expression and call for evaluation studies. The authors also wonder if milk expression, which is burdensome on mothers, will last and while it does, if it will diminish support for breastfeeding as we’ve always known it. They list a number of directions for further research: 1) Research on the possible benefits and harm to mothers: is milk expression a means to lose postpartum weight? does it allow bonding? does it extend the period of postpartum amenorrhea or reduce the risks of breast/ovarian cancer? can overuse of pumps lead to mastitis, nipple wounds? what is the frequency of milk expression? 2) Research on the possible benefits and harms to infants: are infants fed too much/more than if breastfed? what is the anti-infective value and the nutritional value - fore and hind milk - of stored milk? how is expressed milk managed and stored? is contamination more likely because of machines, nipple shields, plastic bottles? 3) Research related to data needs: what are the proportions of infants fed expressed breastmilk, human milk obtained from other sources, at-the-breast milk? what is the frequency of milk banks, shared milk, sold human milk? how are these practices managed and controlled? how is and should be treated expressed milk for non personal use?

Miracle DJ, Szucs KA, Torke AM, Helft PR. Contemporary ethical issues in human milk banking in the United States. *Pediatrics* 2011;128:1186-91

In very recent years in the US, human milk banking has become an important means of supplying milk to thousands of pre-term and ill newborns in hospitals, as well as outside of hospitals, to older infants, toddlers and children, and even to a number of adults; not to mention the milk sent abroad for humanitarian reasons, or used for medical and pharmaceutical research. Since 2000, there has been a considerable increase of human milk available in the USA. In 2008, 10 human milk banks, numerous for- and not-for-

profit entities, and 133 hospitals distributed more than 30,000 litres of pasteurised donor milk for about 4 million US\$. The growing need to collect, bank and re-distribute human milk and the increasing practice of sharing and buying human milk has led to several ethical questions that need to be researched. Some of these were listed by the authors and belong to four areas: 1) In relation to the relative lack of human milk and donors, how can governments integrate a donor milk policy in a comprehensive breastfeeding strategy aiming to improve infant and young child feeding? How to increase awareness among mothers and health professionals regarding milk donations and human milk banks? Are social campaigns a solution? Should there be a 12-month time limit for donating mothers? 2) In relation to informed decision and consent, research on the benefits of donated pasteurised human milk is only beginning and it may not always be clear if donated milk should be chosen over formula (or vice versa). On which criteria should doctors base their advice to parents? What do they know about donated breastmilk? How are parents to decide? What control mechanisms are in place to avoid doctors’ conflicts of interest regarding the alternatives they propose? 3) In relation to milk allocation and given the relative scarcity of pasteurised donated human milk, who is to receive it in priority? Who decides? What mechanisms and guidelines should be in place, including within Human Milk Bank Associations, to make sure the needy benefit in priority? How can the distribution policies of new organisations and agencies, some of which are for-profit, be better controlled? 4) In relation to the marketing and increased demand for donated human milk, banks and for- and not-for-profit entities seek to stimulate collection and are developing marketing practices that may not always be ethical. In the case of for-profit banks, when does profit become “disproportionately high”? How to ensure that milk donors are aware and have agreed that the milk they give will be sold to others for a profit? To collect higher quantities of milk from mothers, what marketing practices are acceptable and which ones are not? Should collecting agencies be allowed to provide incentives to donors and to hospitals? The authors of this article hope that research will answer a fundamental question: how to acknowledge, recognize, “do justice to” the mothers donating their milk in regards to the recipients that benefit from it (individuals, milk banks and for-profit entities)?

Akre JE, Gribble KD, Minchin M. Milk sharing: from private practice to public pursuit. *International Breastfeeding Journal* 2011;6:8

Over the past few months and years, the internet, via Facebook and two main websites, *Eats on Feets* and *Human Milk 4 Human Babies*, has been the means of the extraordinary development of commerce-free milk sharing. In 2011, in only 6 months, operations extended to 50 countries worldwide, and it appears that the trend is here to stay. Though mother-to-mother milk sharing can be considered a contemporary adaptation to wet nursing, and thus something that has existed since the beginning of time, it has met with much opposition. The authors give some of the reasons for this: 1) A long history of suspicion

has always concerned mothers' milk (and includes such beliefs as the transmission of the provider's looks, personality, morals, health... and today the transmission of infections by the donor) and seems to be enhanced by donating over the net. Methods and guidelines for quality control need to be developed as they are a real concern and cannot be ignored. 2) Mother-to-mother sharing acts as a challenge to the medical establishment which has no control over these exchanges or over the quality of the donated milk. Evidence-based research, guidelines and collaboration between health authorities and the exchange networks is necessary for such attitudes to change. 3) Mother-to-mother sharing may divert milk otherwise donated to milk banks and thus not be given to the infants most in need. This appears to be a false threat as the criteria for donors in both systems are very different and do not correspond, nor do the infants themselves (milk banks distribute to premature, low-weight and ill infants in hospital care; milk donated over the internet is not given to hospitalised infants but to healthy babies whose mothers cannot give them their own milk – working mothers for example). The authors insist that this new means of distributing human milk is not risk-free and that health authorities have a central role to play in making the practice as safe as possible (for example: guidelines and support, information on donor screening, reliable methods of exchange and feeding, sharing of medical records). Thus managed and evaluated appropriately, the new "made-by-mothers model" has enormous potential and the very clear advantage of allowing babies, who would otherwise probably have been given formula, the possibility of being fed with another mother's breastmilk.

Johnson S, Williamson I, Lyttle S, Leeming D. Expressing yourself: a feminist analysis of talk around expressing breast milk. *Soc Sci Med* 2009;69:900-7

This research, based on data from a longitudinal study on experiences related to breastfeeding, examined the practice of breastmilk expression and the discourse around it amongst 20 participants in the UK (first-time mothers intending to breastfeed their baby, singleton delivery, babies born close to term, no medical complications during the perinatal period, mothers of at least 16 years of age, of white race with a high/rather high level of education). The authors determined five main reasons why these mothers expressed their milk: 1) a way of managing pain while still breastfeeding; 2) a solution to the inefficiencies of the maternal body; 3) a way of enhancing or disrupting the bonding process; 4) a way of managing feeding in public; and 5) a way of negotiating some independence and managing the demands of breastfeeding. Contextualising the mothers' discourses within a broader socio-cultural discourse on the female body, the authors then analysed how breastmilk expression was a way for these mothers to seek or not some control over their maternal functions. Expressing breastmilk was a way of creating the image of a "good maternal body": it helped these mothers to manage difficulties and contradictions surrounding breastfeeding and provided them with ways of negotiating western lifestyles. Thus, for the authors, milk expression is a contemporary practice that attempts to "balance different sets of demands" put on women and can be considered as a way for them "of asserting autonomy". But in their view, the study showed at the same time the limitations between how discourse and practice remain confined to the larger social context based on gender-related power construc-

tions – and in this case limited women's possibilities regarding infant feeding.

Slusher TM, Slusher IL, Keating EM, Curtis BA, Smith EA, Orodriyo E, Awori S, Nakakeeto MK. Comparison of maternal milk (breastmilk) expression methods in an African nursery. *Breastfeed Med* 2012;7:107-11

Double electric breast pumps have been recently introduced in Uganda to help mothers of premature or sick term neonates stimulate milk production in the early days after delivery and provide efficient breast emptying with less discomfort. Electric pumps are an option only in large referral nurseries with reliable electricity supply; they are also expensive to obtain and maintain. The less expensive single manual breast pumps may be a viable alternative. In addition, many mothers, with coaching and support, can comfortably provide adequate maternal milk volumes (MMV) by hand expression alone. This study compares the MMV of 161 Ugandan mothers whose infants were in a special care nursery and who used double electric breast pumps (Group 1, n = 55), single non-electric manual breast pumps (Group 2, n = 59), and hand breastmilk expression (Group 3, n = 47). Data were collected from day 1 to day 7 postpartum, and mean MMV was measured and compared among the groups. The mean daily MMV was 647mL in Group 1, 520mL in Group 2, and 434mL in Group 3. The difference between Groups 1 and 3 is statistically significant, but the differences between Groups 1 and 2 or between Groups 2 and 3 are not. The authors conclude that electric breast pumps provide the highest mean MMV. However, many mothers obtain adequate feeding volumes for their infants' daily nutritional needs with the single non-electric manual breast pump and with hand breastmilk expression.

Hsu HT, Fong TV, Hassan NM, Wong HL, Rai JK, Khalid Z. Human milk donation is an alternative to human milk bank. *Breastfeed Med* 2012;7:118-22

The human milk bank is a source of human milk supply in many neonatal intensive care units. However, some hospitals go without this facility because of financial or religious impediments. In Muslim societies, for example, according to the Holy Quran concept of Mahram, a woman who provides her breastmilk for a baby is considered to be maternally related to the baby; marriage between the recipient of the donor milk and the offspring of the donor being forbidden, this poses an obstacle to the establishment of human milk banks in which the milk of several donors is collected. Wet nursing could be an alternative, but it is not as widespread a practice as it once was, especially since the introduction of commercial formula. This study was carried out to assess the feasibility of human milk donation in a private hospital in Sabah, Malaysia, a predominantly Muslim society. Human milk donation based on Islamic principles was introduced as an alternative to human milk banking. The suitable donor was defined as a healthy rooming-in mother, negative to HIV and syphilis, whose expressed breastmilk was in excess of her baby's demand. Following the official acceptance of the human milk donation by the recipient's family and the donor, a meeting was organised for both parties. Once the donor and the recipient's parent agreed to human milk donation, a meeting for both parties was arranged to fulfil the religious obligation that the donor know the parent of the recipient. As soon as both parties agreed to the dona-

tion and understood the religious implications, they were asked to provide a signed consent giving their authorization for the human milk donation to proceed. The unpasteurized frozen-thawed donor's milk was provided to the recipient only after written consent had been obtained from both parties. The names and religion of both parties were documented in the infant's medical record and in the human milk donation chart; the chart enables to trace the donor to the recipient and the recipient back to the donor. There was no compensation given or collected for this process. This study was carried out between January 2009 and December 2010. A total of 48 babies received donated breastmilk. Forty-two infants were from the special care nursery, and the remaining six were from the paediatric ward; 60% of the infants who received donated human milk were premature. Eighty-eight percent of the donors and 77% of the recipients were Muslims. The authors conclude that human milk donation is an option for hospitals without a human milk bank in a predominantly Muslim society.

Li R, Magadia J, Fein SB, Grummer-Strawn LM. Risk of bottle-feeding for rapid weight gain during the first year of life. *Arch Pediatr Adolesc Med* 2012;166:431-6

This paper and the attached editorial (*Arch Pediatr Adolesc Med* 2012;166:483-4) clearly show that breastmilk feeding and breastfeeding are far from being the same thing. The study was set up to better understand the mechanisms behind breastfeeding and childhood obesity by assessing the association of weight gain with the mode of milk delivery, aside from the type of milk given to in-

ants. A cohort of 1,899 infants recruited from a consumer mail panel throughout the United States between May 2005 and June 2007 was followed up from birth to age 1 year. Infants were weighed at least three times at 3, 5, 7 and 12 months. Infant weight gain was analysed by type of milk and feeding mode using six mutually exclusive feeding categories and proportions of milk feedings given as breastmilk or by bottle. Compared with infants fed at the breast, infants fed only by bottle gained 71 or 89 g more per month on average when fed respectively non-human milk only or human milk only. Among infants fed only breastmilk, monthly weight gain increased from 729 g when few feedings were by bottle to 780 g when most feedings were by bottle. The authors conclude that infant weight gain might be associated not only with the type of milk consumed but also with the mode of milk delivery. Regardless of the milk type, bottle feeding might be distinct from feeding at the breast in its effect on infant weight gain. The authors of the editorial accompanying the article list three possible reasons to feed breastmilk from a bottle: 1) working mothers who want to provide breastmilk to their infants but find it hard to feed from the breast under current US maternity legislation; 2) fathers increasingly involved in the care of their infants and wanting to feed them as a way to establish a good relationship; 3) parents worried about the amount of milk an infant takes and relieved by the possibility of checking with a bottle the amount they cannot check with the breast. In all of these cases, mothers and fathers want to do the right thing for their infants, but are forced to do it in an unnatural way by an environment that does not protect breastfeeding.

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