

Review Article:

Raw human milk banking in India: Scope and application

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Abstract:

Breastmilk feeding is the gold standard. Formula milk is getting easy access due to ignorance of scientific principles, lack of commitment and efforts to promote human milk, besides unavailability of human milk banks. There is a grave need to create awareness for using breastmilk in health care facilities.

Risk of unpasteurized donor human milk is probably overrated. Donated raw milk given to newborn infants produces no ill effects including HIV transmission, as observed and practiced in Norway.

Bacteriostatic qualities of fresh milk resist bacterial growth. Bacterial counts reduce in fresh breastmilk over initial few hours due to phagocytic activity. Newborns fed MoM with high commensal bacteria count has no untoward effects. Thus pasteurization of MoM is not recommended. Unprocessed mother's milk is choice of feeding pre-terms as often it grows only commensals on preserving. Such infants did not show higher late sepsis rates; had better fat absorption & growth; shorter hospital stay as compared to pasteurized donor milk.

Refrigerators are there everywhere so MoM feeding can be easily practiced with proper dissipation of scientific information on managing human milk. In resource poor and ethic restricted countries efforts are being put to use unpasteurized raw frozen donor milk after stringent donor

screening. These observations and facts open door to concept of raw human milk banking which has large scope in India. It is suggested that, before starting to donate, documenting two negative tests each for HIV, HBsAg and VDRL are desirable.

Key words: *Human Milk Banks, Breastfeeding, Mother's own Milk, Formula feeds, Pasteurized human milk*

Raw human milk banking in India: Scope and application

Breastmilk feeding is gold standard that covers all needs of newborns including sick ones. It is a potent tool to reduce neonatal mortality upto 16% in view of sepsis as major cause of mortality in India. All babies should have continuous supply of safe breastmilk including those admitted at health facilities. The choice of feeding is direct at mother's breast, if not possible then expressed MoM (Mother's Own Milk), then donated fresh milk, then pasteurized donated human milk and lastly other animal milk.

Formula milk is getting easy access due to ignorance of scientific principles of managing human milk and lactation, lack of commitment and efforts to promote human milk and unavailability of human milk banks. There is a grave need to create awareness for using breastmilk instead of formula milk in health care facilities too. Often maternity services give formula supplements as a general practice in first 48 hours after birth rather than proper management of lactation. A large

number of newborns are put on formula milk for various indications listed below and for perceived convenience.

1. VLBW or <32 weeks premature or sick newborn too weak to suck.
2. Mother separated due to her illness including varicella, active open tuberculosis, untreated brucellosis, H1N1 infection.
3. Working mothers.
4. Engorgement and other breast conditions like surgery, retracted nipples, skin problems like herpes on breast, etc.

Often MoM is available but the newborn cannot take directly from her breast and most conditions are temporary or manageable by medical/surgical management. To tide over the crisis the MoM can be expressed, stored and fed and later direct breastfeeding be resumed. With scientific information and infrastructure for proper storage of human milk most NICUs and maternity homes can cater newborns with human milk. Late preterms and operative deliveries will benefit the most. Working women can maintain their infants by storing MoM in workplace refrigerator. Table 1

Most of the dangers of transmitting infections and toxins to the recipients by donated breastmilk are evaded by using MoM. Mother with hepatitis-B or CMV can continue breastfeeding own child. In developing countries WHO recommends exclusive breastfeeding by HIV positive mothers after proper counseling. Most often breastfeeding by own child is not contraindicated except for certain maternal medications, rare neonatal metabolic disorders and nipple-areola infections.

Risk of unpasteurized donor human milk is probably overrated. Donated raw milk given to newborn infants produces no ill effects including HIV transmission, as observed over many years and still practiced in Norway milk banks where donors are screened regularly, strict protocol is followed and all milk is microbiologically tested. The risk is

very minimal especially if the donation is voluntary and is from within the known community. For ELBW babies, pasteurized milk or milk from the CMV-negative mothers may be used to prevent theoretical risk of CMV transmission. But given that large number of term and late preterm infants in our country who need it, use of raw human milk is quite practical.

Bacteriostatic qualities of fresh milk resist bacterial growth without refrigeration up to less than 6 hours. They are persistent with freezing also but destroyed by pasteurization thus pasteurized milk is more susceptible to later contamination. Bacterial counts reduce in fresh breastmilk over initial few hours due to phagocytic activity. So if not available, refrigeration may be done within 4 hours. Newborns fed MoM with high commensal bacteria count has no untoward effects and thus be fed raw and milk with potential pathogens should not be used. Thus pasteurization of MoM is not recommended. The decision not to freeze the milk may be made on practical grounds. Storage less than 48 hours before use retains antioxidant properties which is better with refrigeration than with freezing-thawing.

Pasteurization results in loss of many immunological properties. Unprocessed mother's milk is choice of feeding pre-terms as often it grows only commensals on preserving. Such infants did not show higher late sepsis rates; had better fat absorption and growth; shorter hospital stay as compared to pasteurized donor milk, , , .

The cost of a conventional milk bank is high and unsustainable at the village or a block level in India. Pasteurization process bears a major time, expertise, staff, maintenance and financial expenses. For conditions where fresh MoM can be used pasteurization may be avoided. It can be a major saving when implemented for large population.

In remote places, poor resources the situation is grave where breastfeeding is undermined by formula milks and absence of conceptualization of feeding raw milk. But refrigerators are there

everywhere so MoM feeding can be easily practiced with proper dissipation of scientific information on managing human milk. In resource poor and ethic restricted countries efforts are being put to use unpasteurized raw frozen donor milk after stringent donor screening .

These observations and facts opens door to concept of raw human milk banking which has large scope in India. It is suggested that, before starting to donate, documenting two negative tests done at longest interval of false negative window period for HIV, HBsAg and VDRL can be the strategy for recruitment of donor for safe raw milk banking in addition to strictly voluntary donation avoiding any commercial influence whatsoever at any stage, with stringent donor risk screening, microbiologic testing, strict hand and expression

hygiene and immediate storage at cold temperatures (Table-1) are mandatory to use unpasteurized human milk .

This strategy is an effort to provide breastmilk to all babies, in addition to the efforts to promote natural breastfeeding by mother. The Human Milk dispensing strategy for sick babies is an innovative strategy that has been implemented in many countries with much success in reducing hospital stay, improved survival outcome, low infection rates and human milk's contribution towards enhancement of the Intellectual quotient of the child. We need to conduct widespread awareness and training at all levels of health care of infants for management of human milk expression and storage to make this strategy successful.

Table 1: Storage Duration of Fresh Human Milk for Healthy Full Term Infants

Placement (Temp.)	Safe period	Remarks
Table top (<25°C)	6 to 8 hours	Keep covered and as cool as possible e.g. using cool cloth over container.
Cold box- insulated (4 to 15°C)	24 hours	Keep ice packs in contact with milk containers & restrict opening of box.
Fridge (up to 4°C)	5 days	
Freezer unit of a fridge (-15°C)	15 days	
Freezer unit of fridge with separate doors (-18°C)	3-6 months	Keep milk container toward the back of compartment to minimize temperature fluctuations
Deep freezer (-20°C)	6-12 months	

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