HUMAN MILK BANK:
Where every precious drop counts

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“There is only one pretty child and healthy milk in this world, and every mother has it.”

Introduction
According to a joint statement made by the WHO and UNICEF “The best food for baby who cannot be breastfed is milk expressed from the mother’s breast or from any other healthy mother”. Banked human milk may be a suitable feeding alternative for infants whose mothers are unable or unwilling to provide their own milk. Breast milk is a perfectly balanced source of nutrition. There is no finer investment for any community than feeding the babies on breast milk.

An estimated 1.3 million to 1.45 million childhood deaths in developing countries are attributed to suboptimal breastfeeding practices. In India where the IMR among the World's worst-47/1000 live births and infant deaths in the newborn period in the 1st month accounting for 43/1000 live births, preventive medical measures can go a long way. The Improved breastfeeding practices can contribute significantly to the achievement of the Millennium Development Goals. There are a total of 517 human milk banks across the world.

SCENARIO IN INDIA
Asia's first human milk bank was established at SION hospital, Mumbai on 27 November 1989 under the eminent guidance of Dr. Armida Fernandez, the pioneer of milk banking in India. Presently there are 10 working milk banks in India. 5 in Mumbai alone.

DEFINITION
An Institution Established For The Purpose Of Collecting, Screening, Processing, Storing & distributing, donated Human Milk that is dispensed to recipients who are not the biological offspring's of the donor mothers.

HISTORY
As the availability of wet nurses dwindled, breast milk banks were introduced early in the 20th century. The first official milk bank was opened in Vienna at the outset of the 20th century and 1911, another milk bank was started at Boston. The first milk bank in the U.K was started at Queen Charlotte's hospital in London in 1937. In the U.S.A, mother's milk bank of Wilmington Delaware, was started in 1947. After the first world war, formula feeds gained popularity, with only three functional milk banks existing in the early 70's. With increasing scientific data supporting the nutritional & immunological superiority of the breast milk, the demand for donated human milk increased & the human milk bank once again gained popularity. The American
Academy of Paediatrics was the first to publish the guidelines for milk banking operations in 1943. The Human Milk Banking Association of North America (HMBANA) was established in 1985, which has helped to provide information to develop and update milk banking practice.

**ORGANISATION**

The location of the milk bank should be near the NICU and the PNC ward with an incharge staff or overall supervision of milk bank’s activities, planning, developing, implementing & evaluating milk bank services. The services of Lactation management nurses, micro-biologist, bio-chemist, attendants, social-workers & counselors are required for the functioning.

The minimum requirements are as follows:

- Staff nurses of NICU
- 2 technicians
- 1 social worker/counselor
- 1 senior pediatrician

**SELECTION OF DONORS**

The next important step is to recruit the mothers who are willing for donation of the milk. PNC ward mothers and mothers coming to neonatal follow up clinics are the best candidates who can be counseled and motivated for donation. Donor screening has to be done routinely for HIV, HBsAg and STDs for the safety of the baby.

**ELIGIBILITY**: The following criteria should be fulfilled before donation

- consent of the mother
- physically fit-BMI around 18.5
- Hb around 10gm%
- HBsAg/HIV/VDRL-Negative

For willing donors these tests are done free of cost.

**WHO CAN DONATE**

Lactating mothers with surplus milk without any infection (HIV, Hep B, C, Syphilis, Tuberculosis).

Mothers of premature, sick or cleft pallet babies.

Women who have recently lost their babies.

Donors willing to undergo a medical test & a blood test at the milk banks expense to ensure medical safety.

**BENEFICIARY**: All the high risk infants especially extremely preterm and LBW babies. Other babies separated from their mothers due to post-partum emergencies like PPH or any other serious medical illness. If mothers have undergone LSCS done under general anesthesia then the child can be benefitted for few hours till mother gains consciousness.

Others:

- Mothers with flat or inverted nipples.
- Mother who delivers twins, triplets or quadruplets.
- Non lactating mother who has adopted a neonate.
- Abandoned neonate and sick neonate from orphanage admitted in NICU/pediatric ward.

**STORAGE**

The milk is stored in the container, tightly sealed & refrigerated according to its date of collection. Breast Milk is safe for four to six hrs at room temperature i.e.-15 to 250C. Fresh milk can be stored in the refrigerator for five to seven days and in the deep freezer at -20 deg centigrade for six months. Thawed refrigerated milk is safe for 24 hours.

Heat treatment & microwaving is NOT recommended. As per the recent most guidelines, milk has to be used within 96 hours so that the child gets the best quality milk without any nutrient substances depleted form the same.

**DISTRIBUTION**

As per the requisition, on the exact quantity in ml, with the name & registration number of the baby, the milk is to be transported in ice cold packs, preferably vaccine carriers, oldest milk being used first. Critical transport conditions defined early including temperature and time limit. Transport in secure, tamper evident containers and packaging.

Once the milk has been warmed at room temperature it should be used within 4-6 hrs.

**QUALITY ASSURANCE**

Registers should be maintained for the purpose and also
for tracking. Regular cultures are done of each and every sample collected to ensure quality and safety. Any bacterial growth in post heat treatment sample is unacceptable.

**EQUIPMENTS REQUIRED:**

- Pasteurizer-1
- Freezers lockable-1
- Refrigerators-1
- Ex-lockable room and computers
- Record maintaining registers.
- Breast milk pumps:
  - Electronic-4
  - Manual-20
- Milk collecting stainless steel containers.

**FUTURE PERSPECTIVE**

Infra Red Spectro-Photometry for macro nutrient contents.

Lacto-engineering of human milk so that different milks could be mixed together.

Developing lyophilizing (freeze drying) human milk

Ultra- Sonic homogenization of human milk.

**ORGANISATIONAL CHALLENGES**

No administrative support.

Lack of funding

**CONCLUSION**

As the incidence of low birth weight and preterm babies is very high in India, its imperative for the survival of these babies that constant and adequate supply of milk is guaranteed to them. Milk bank can perform a virtual function in such scenario. It acts as the most cost effective strategy for overall improvement in neonatal care.

**References**


