Human Milk Banking and the Use of Donor Milk During the COVID-19 Pandemic

COVID-19 Infant Feeding Research Interest Group

Facilitators: Kimberly Mansen, Kiersten Israel-Ballard
Panellists: Kim Updegrove, Gillian Weaver, Natalie Shenker, Sushma Nangia, Jenny Wright, Aleksandra Wesolowska
Human milk banks: Impacts of COVID-19 in provision of safe donor human milk
Donor human milk: Meeting needs for infants lacking mother’s own milk

UP TO 40% OF VULNERABLE INFANTS IN NEONATE WARDS ARE NOT RECEIVING FULL FEEDS OF THEIR MOTHER’S OWN MILK IN THE FIRST HOURS, DAYS OF LIFE (ANECDOTAL REPORTS)
### 2011 WHO Recommendations on optimal feeding of low-birth-weight infants

<table>
<thead>
<tr>
<th>No.</th>
<th>Recommendation</th>
<th>Type of recommendation</th>
<th>Quality of evidence (at least 1 critical outcome)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>What to feed?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>a. Choice of milk</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Low-birth-weight (LBW) infants, including those with very low birth weight (VLBW), should be fed mother’s own milk.</td>
<td>Strong</td>
<td>Moderate</td>
</tr>
<tr>
<td>2.</td>
<td>LBW infants, including those with VLBW, who cannot be fed mother’s own milk should be fed donor human milk (recommendation relevant for settings where safe and affordable milk-banking facilities are available or can be set up).</td>
<td>Strong situational</td>
<td>High</td>
</tr>
<tr>
<td>3.</td>
<td>LBW infants, including those with VLBW, who cannot be fed mother’s own milk or donor human milk should be fed standard infant formula (recommendation relevant for resource-limited settings). VLBW infants who cannot be fed mother’s own milk or donor human milk should be given preterm infant formula if they fail to gain weight despite adequate feeding with standard infant formula.</td>
<td>Weak situational</td>
<td>Low</td>
</tr>
</tbody>
</table>
Quality control processes for human milk banks to ensure safety

**Human milk bank:** A service established to recruit breast milk donors, collect donated milk, and then process, screen, store, and distribute the milk to meet infants’ specific needs for optimal health.


Processing of donor human milk at a human milk bank.
Inequity in global human milk bank systems and lack of global communication system

Map in progress - not to be distributed

~600 human milk banks worldwide is not adequate. Demand far outweighs safe supply.
Human milk bank practices are setting specific and vary around the world.

<table>
<thead>
<tr>
<th>Listed recommendations in setting-specific human milk banking guidelines:</th>
<th>BRAZIL</th>
<th>FRANCE</th>
<th>INDIA</th>
<th>NORTH AMERICA</th>
<th>POLAND</th>
<th>UNITED KINGDOM</th>
<th>VIETNAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage containers should be labelled with: N= name of donor, D= date of collection/expression, P= pasteurization, A= date of pasteurization, #= donors #, L= ID of Bank, F= date of freezing, B= batch number, T= date to be transported to central milk bank, M= medications taken by donor</td>
<td>#, D, F, P, N</td>
<td>N, D, B</td>
<td>#, D, P, A, I, F, B</td>
<td>N, P, A, I</td>
<td>N, D, P, A, B, M</td>
<td>#, D</td>
<td>N, D, P, A, B, M</td>
</tr>
<tr>
<td>Fresh milk can be kept safely at room temperature for</td>
<td>*</td>
<td>-</td>
<td>6h</td>
<td>4-6 h</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Maximum storage duration for raw milk in freezer before pasteurization</td>
<td>12m</td>
<td>3m</td>
<td>3m</td>
<td>3m</td>
<td>*</td>
<td>15d</td>
<td>3m</td>
</tr>
<tr>
<td>Maximum storage duration for raw milk in refrigerator before pasteurization</td>
<td>*</td>
<td>*</td>
<td>24h</td>
<td>24h</td>
<td>48h</td>
<td>12h (-3°C)</td>
<td>24h</td>
</tr>
<tr>
<td>Maximum storage freezer temperature</td>
<td>-18°C</td>
<td>-20°C</td>
<td>-20°C</td>
<td>-20°C</td>
<td>-18°C</td>
<td>-3°C</td>
<td>-20°C</td>
</tr>
<tr>
<td>Maximum storage refrigerator temperature</td>
<td>4°C</td>
<td>7°C</td>
<td>4°C</td>
<td>4°C</td>
<td>4°C</td>
<td>5°C</td>
<td>-</td>
</tr>
<tr>
<td>Maximum storage duration in freezer from expression until use (for preterm neonate)</td>
<td>1 yr</td>
<td>6m</td>
<td>3m</td>
<td>*</td>
<td>*</td>
<td>6m</td>
<td></td>
</tr>
<tr>
<td>Pasteurized milk can be stored in freezer for a maximum of: (preterm neonate)</td>
<td>12m</td>
<td>*</td>
<td>6m</td>
<td>3m</td>
<td>*</td>
<td>8m</td>
<td>6m</td>
</tr>
</tbody>
</table>
Challenges in standardized safety systems and rapid response systems due to lack of…

- Standards
- Policy alignment
- Data
- Integration
- Innovations
Global standards to inform aligned systems to ensure safe donor human milk are lacking: Resulting in challenges due to COVID-19

- Lack of legal framework (classification/regulation).
- Massive range in operations globally.
- Systematic platform for communication and sharing of best practices at a global level does not exist.

- Identify current challenges in processing and access.
- Determine if potential guidelines would be needed to ensure safety and quality.

**THE LANCET**
Global Health

**COMMENT | VOLUME 9, ISSUE 2, E104-E105, FEBRUARY 01, 2021**

**Human milk banks: a need for further evidence and guidance**
Mirriam Tyebally Fang • Laurence Grummer-Strawn • Yuyun Maryuningsih • Nikola Biller-Andorno

Open Access • Published: February, 2021 • DOI: https://doi.org/10.1016/S2214-109X(20)30468-X •
Maintaining safe provision of donor human milk as an essential service in care of small and sick newborns

- Systems should be in place to prioritize safe feeding for vulnerable newborn populations.
- Robust measures are needed to integrate human milk bank quality control and rapid communications into preparedness planning for maintaining essential newborn care.
- Equitable access to lactation support and donor human milk is essential, during and after the COVID-19 pandemic
Kim Updegrove

Executive Director of the Mothers' Milk Bank at Austin,
Chair of Standards Committee for the Human Milk Banking Association of North America
DHM use in Canada & US

Fear and fake news
K. Updegrove Feb 5, 2021
Donated Raw Milk COVID-19
Gillian Weaver

Co-founder Hearts Milk Bank and Human Milk Foundation, UK
International human milk banking expert advisor
United Kingdom – review and Covid-19 adaptations

27 January 2020: Hearts Milk Bank Covid-19 Statement
• No cases reported in UK
• Safety at heart of all operations
• Donor screening questions added

Milk banks faced:
• reduced donor numbers
• disruption to screening
• increased DHM demand & reduced availability
• logistics including transport
• queries re safe handling

HMBs: Scotland (1), Northern Ireland (1), England (13), Wales (0)
www.ukamb.org
Standards and recommendations

Actions:

• Milk Bank Covid Response WhatsApp Group
• 24 participants
• Developed Google Sheet to input responses to milk stock levels, staffing challenges etc

Do not address pandemic related challenges to milk bank service provision

Daisy Cooper MP (LibDem) – raised questions in Parliament about support for HMBs

Response of UK milk banks to ensure the safety and supply of donor human milk in the COVID-19 pandemic and beyond

The COVID-19 pandemic is presenting several challenges to human milk banks and has highlighted a number of vulnerabilities in service provision that have been long known by those who work in the sector. In recent weeks, milk banks across the UK have worked together to understand any risks posed to infants, milk bank staff and volunteers by COVID-19, and to put in place mitigation strategies to ensure the safeguarded provision and safety of donor human milk. The authors call on policymakers to better support these essential services for vulnerable neonates during the COVID-19 pandemic and minimise the impact of future challenges through greater investment in milk bank infrastructure, research and innovation.
Milk Banks – a global perspective

Human Milk Bank Global Map

Virtual Collaborative Network (GAMBA – Global Alliance of Milk Banks and Associations)

Currently over 100 members from 40+ countries
Dr. Natalie Shenker

Cofounder of the Human Milk Foundation and Hearts Milk Bank, UK

UKRI Future Leaders Fellow at Imperial College London
Research opportunities - background

Clinical trials  Longitudinal studies  Bioresource

Milk as a personalised therapy

UKRI Future Leaders Fellowship

Cancer screening tools

UK Research and Innovation  unicef  THE BABY FRIENDLY INITIATIVE  Imperial College London  NHS  QUEEN'S UNIVERSITY BELFAST
COVID-19 - could history repeat?

- Is COVID-19 transmissible through milk?
- Does milk bank processing destroy virus?
What research has GAMBA enabled?

- Estimation of the number of infants who receive DHM
- 2.1 million infant born preterm yearly
- DHM services reach ~800,000
- A consensus view on the key challenges facing milk banks
- Recommendations for mitigations
Future priorities

- Strengthening milk bank responses
- Human milk commercialisation
- Minimum global standards
- Environmental impact

**EDITORIALS**

Support for breastfeeding is an environmental imperative

Formula milk contributes to environmental degradation and climate change

Naomi Joffe technician and environmental lead, Flic Webster milk donor, Natalie Shenker researcher

BMJ 2019;367:l5945 doi: 10.1136/bmj.l5945 (Published 2 October 2019)

WDHMD 2020
Dr. Sushma Nangia

Director Professor & Head, Department of Neonatology,
Lady Hardinge Medical College & Kalawati Saran Children's Hospital, India
Human Milk Baking amid COVID 19 pandemic
Country Experience: INDIA

Dr. Sushma Nangia,
Director Professor and Head,
Incharge- Vatsalya: Maatri Amrit Kosh,
National Comprehensive Lactation Management Centre
Department of Neonatology,
Lady Hardinge Medical College and Associated Hospitals,
New Delhi India
Initial concerns/questions and adaptations made due to the pandemic

• The BIG question: “How to ensure the safety and quality of donor human milk provided in Human milk banks in India”

• Some Milk Banks have reportedly closed operations during COVID, while most others report shortage.

• NO COVID 19 Guideline for Donor human milk banks in India.
As highlighted, the centre in Jaipur was collecting approximately 80 litres per month before COVID (Box 1), due to precautionary measures and curtailment of donation during these times only 53.21 litres are collected since March 23 to 8 June 2020 (Box 2).
Adaptations

• **Counselling during COVID:**
  - Every week a dedicated Counsellor is responsible for providing lactation support to COVID Suspect/Positive mothers while adhering to adequate protective measures.
  - **Routine Counselling/ Group Counselling for COVID 19 negative Mothers with adequate safety measures**
• **Expression:**

  - Milk expressed by COVID 19 Positive/Suspect/Negative mother was transferred and transported to the NICU in a disposable polypropylene container.
  - Previously, stainless steel containers were also utilized and reused for the process.
  - Manpower in milk bank reduced to minimum as a precautionary measure during COVID 19.
  - Mothers in milk bank are reduced to 3 at a time instead of 5 mothers to promote and maintain social distancing.
• **Cleaning**
  
  • During COVID 19, Our Hygiene helper donned PPE to transport blood samples from donor to Department of Microbiology, LHMC.
  
  • Hygiene helpers are responsible for cleaning of Lactasets. The cleaning of breast pump accessories remains the same. However, to prevent exposure the hygiene helpers were provided with adequate protective gears.
  
  • The cleaning process remained the same. Cold water bath, then soap and water, kept in boiling water for ~ 20 min and dried.
• No Change in storage was observed.

• The milk is usually stored for an average of 2-3 months pre pasteurization in a CLMC as per the national guideline. Fortunately early in the pandemic, studies revealed that HOLDER pasteurisation is effective in inactivating SARS CoV 2 virus in human milk.

• Refocusing on MOM was done by inter-collaboration between two NICU and CLMC staff through whatsapp.

• Even in the pandemic, MOM has been proven to be the best choice for infant feeding. (based on emperical evidence)
DONATION TREND AT NCLMC DURING COVID TIMES

![Bar Chart]

- **April 2020**: 5150
- **May 2020**: 26525
- **June 2020**: 18955
- **July 2020**: 32005
- **August 2020**: 25010
- **September 2020**: 19860
- **October 2020**: 18878
- **November 2020**: 15010
- **December 2020**: 16195

- **April 2019**: 24085
- **May 2019**: 4100
- **June 2019**: 6685
- **July 2019**: 10775
- **August 2019**: 25010
- **September 2019**: 9065
- **October 2019**: 16605
- **November 2019**: 15010
- **December 2019**: 15853

**Linear (2020)**
What is needed going forward? What have we learned and what is needed as next steps?

• Inter-collaboration between the NICU and CLMC (or Human milk bank)

• Guidelines on Human milk banking amidst COVID-19 pandemic.

• Research and operational Funding to promote breastfeeding and donor human milk banking and disbursement.
Jenny Wright

Director of Milk Matters Human Milk Bank in Cape Town, South Africa
Milk Matters, South Africa

COVID-19: Initial concerns, questions and adaptations

Safety.  

Systems changes.  

Supply & demand trends.

www.milkmatters.org
The pandemic continues…..so what next?

COVID+ Mothers Vaccinations

Funding

Public awareness Managing supply

www.milkmatters.org

DONATING BREAST MILK IS AN ESSENTIAL SERVICE

www.milkmatters.org

Together we can...

... protect and support breastfeeding & provide the life-line of donor human milk

www.milkmatters.org

OUR SUPPLIES ARE UNDER PRESSURE.
HELP US HELP THE PREEMIES
Donate breast milk. Save lives.
www.milkmatters.org
Dr. Aleksandra Wesolowska

Faculty Health Sciences at the Medical University in Warsaw, Poland

Leader of Human Milk and Lactation Research Group at the Regional Human Milk Bank in Poland

Co-founder and President of Human Milk Bank Foundation in Poland
Initial concerns on COVID-19 and human milk and action undertaken in Poland

March 2020
- Adopted protocol from China
  Babies separated from mothers
  Mother’s milk was discarded as potentially biohazardous

- Implementation of safe milk handling procedure
- Consulation with MoH and experts
- Call for action

May 2020
- Relaxed restrictions
  Babies were still separated
  Expressed mother milk was allowed and donor milk was recommended

- Organized a multicenter study on risk analysis of SARS-CoV-2 vertical transmission
  - 110 milk samples
  - 17 cord blood /amniotic fluid free of virus

September 2020
- Rooming-in if mother’s consent received
  BF is not prohibited but expressed mothers milk is preferred

- Recommendation is poorly implemented
- Project on assessing the change in perinatal care during the pandemic on the babies’ nutrition
- Monitoring of HMB
What have we learned and what is needed as next steps?

Funds from MUW, WHO, Warsaw Univ, HBM and private sector

"Parents of premature babies have been included in ‘group 0’ vaccinations, so that they can visit their children in hospitals without any obstacles" Jan, 2021

The milk banks system is inefficient:
- About half of 16 units were closed for some time during COVID-19 pandemic
- Less than 10% of the children victimized by COVID-19 received donor milk

Walkouts of preterms’ mother against separation. Oct, 2020

Self-awareness of patients/mothers
Self-monitoring of the human milk banks

Research and Resources