

NICU: Expressed Breast Milk (EBM) - Safe Handling, Preparation, Administration, Storage and Transport

Site Applicability

SPH NICU

Practice Level

Basic:

- *NICU RN*
- *Caregiver (parent/infant support person)*

Requirements

Expressed Breast Milk (EBM) is a body fluid. Please treat handling, administration, transport and preparation with appropriate caution.

Need to Know

- The purpose of this practice support document and related appendices is to describe the safe handling, storage, administration and transport of expressed breast milk (EBM) in the NICU
- The goal is to help mothers/parents to maintain lactation during breastfeeding challenges such as separation from the infant; and to provide the infant with optimized nutrition.
- The health benefits of Expressed Breast Milk are optimized when administered as fresh milk. Some circumstances of infant-mother/parent separation require the storage of Expressed Breast Milk. Safe storage maximizes preservation of the nutritional and immunologic benefits of Expressed Breast Milk.

Procedure

1. Safe Handling

Milk Expression

After performing hand hygiene the mother/parent expresses the milk into clean, hard plastic bottles provided by the NICU during the infants stay.

- Use a new bottle with each milk expression. Do not layer. Rinse and recycle after use.
- Label milk (see details under 'Labeling')
 - Date and time of expression

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- For NICU first milk/colostrum (first 7 days) place a green dot on lid.
- Discard unlabeled EBM.

For Isolation Patients:

- For mothers/parents on isolation precautions expressed milk needs to be labeled and double bagged and placed into refrigerator.

2. Labeling

Expressed Breast Milk Labels are available to print from CERNER under PM Conversation → Print Labels → Breast Milk Label.

These labels are for use by nursing staff and parents. The labels must be adhered to all bottles of EBM stored or administered in the NICU. If a bottle is found with no label, it must be discarded.

- Provide the caregiver/Parent with pre-printed labels to label their own EBM bottles
- The preprinted Label includes:
 - Infants Name and Date of Birth
 - Identification Number (MRN)
 - Blank for date and time of expression
 - Blank for date and time when fully thawed (If applicable)
- Verify the information on the label is correct before storage.
- Ask the caregiver to verify the label is correct before storage. If the caregiver is not present, verify bottle with another RN before storage.
- Use green dot on lid for milk/colostrum expressed within the first 7 days

3. Storage of EBM (NICU)

Refrigerators and Freezers for milk storage.

- Within the NICU, EBM is only stored in monitored refrigerators designed for milk storage
- Ensure fridge is plugged into emergency power circuits to avoid thawing during a power outage.
- Ensure fridge temperature is recorded on a log every 24 hours
 - Fridge temperature is maintained before 2 to 4 degrees Celsius
 - Freezer temperature is maintained at minus 18 degrees Celsius
- Porter Ward Aides monitor and document temperature of fridge and freezer every 12 hours
- Housekeeping cleans all fridges and freezers on a regular monthly basis by defrosting and washing as appropriate.
- RNs to clean the fridge handles daily. Spills of milk are cleaned up promptly with disinfectant wipes (e.g. Cavi-Wipe)
- RNs are responsible for collecting milk from caregivers and placing in dedicated fridge to decrease touch points as per Infection Control.
- See [Appendix A](#) for Length of Storage of EBM.
- NOTE: Within Maternity/ post partum, pumped EBM can be placed in the patient fridges within the patient room for short periods of time (i.e. Less than 3 days). Alternatively, parents can ask for milk to be stored in the monitored milk fridges on the Infant Feeding Carts.

4. Warming and Thawing EBM

Warming milk to body temperature is recommended for preterm infants. Do NOT warm EBM in microwave.

Milk Warmers

- Milk warmers are available in the NICU to use for warming and defrosting of EBM. See [Appendix B](#) for Waterless Milk Warmer Guideline.

Thawing frozen EBM

- Use oldest dated EBM first.
- Incorporate one bottle of fresh EBM green dot every 24 hours
- Use defrost mode on Milk Warmer.
- Record the time the EBM is fully thawed on the printed label. Refrigerate immediately.
- Store thawed EBM for up to 24 hours in the fridge.
- See above instructions for warming refrigerated milk for use.

5. Administration and preparation of feeds

- Prepare and handle EBM using aseptic technique
- Prior to feed preparation verify EBM with another RN:
 - 2 Client ID (EBM label and infant identifiers)
 - Expiration date and time
 - Additives and order (if applicable)
- Clean the preparation area with disinfectant wipes (e.g. Cavi-wipe)
- Perform hand hygiene before and after handling milk and preparing feeds.
- May use gloves to handle EBM
- Prepare feeds into bottles (Snappies) or Syringes, add additives, if ordered, and label with MILK PREP LABELS.
- To access Milk Prep Labels: Cerner → PM Conversation → Print Labels
- First AND Second RN to sign initials on PREPPED MILK LABELS verifying, correct milk (e.g. Breast Milk, Donor Milk or Formula), Expiry, and additives. **IMPORTANT.** Verify the infant name and ID is the same on the original patient label (Breast milk pumped/thawed label or Patient Identification Label) and on the new Prepped Milk Label.
- Verify new EBM label on new container matches infant name and ID of previous container with another RN
- Shake the EBM gently to re-disperse the fat content

6. Discharge Planning and Transportation of EBM

Prior to discharge, assist families to manage EBM storage and safety plan for transport of extra EBM.

Transporting EBM

During transport, keep EBM refrigerated cold to and from hospital:

- Use wet or dry ice.
- Use coolers with freezer gel packs.

Frozen EBM must be kept frozen when being transported:

- Ensure dry ice is used and EBM is tightly packed – wet ice is warmer than frozen EBM.
- Thawed EBM (all liquid) cannot be refrozen. If less than 5% of milk is thawed, milk can be refrozen. Refreeze with caution.

Supplies for shipping frozen EBM can be purchased from retailers:

- Cooler with frozen gel freezer packs or Styrofoam container with Styrofoam chips. Remove all air from the container and seal with packing tape. This method keeps the milk frozen for about 18 hours.
- Dry ice is required when shipping for longer periods.

Discarding Expired Milk

To discard milk that has expired or has been left by the mother/parent after discharge:

- Milk can be thawed if frozen and poured down the drain
- If large amount of milk, and insufficient staff time to thaw and empty each container, the milk can be placed into medical waste container in biohazard bin NICU dirty utility room

NOTE: Contact the mother/parent if possible for consent to discard her milk

Documentation

TRIPLE Check

Check ONE: Verify ALL milk in patient basket belongs to the correct patient with a second RN prior to milk preparation or re-distribution.

Check TWO: After prepping/ re-distributing milk into bottles and adding additives if indicated, TWO RNs must sign the "Prepped Milk Label". All prepped milk (EBM or DEBM) with or without additives MUST have a "Prepped Milk Label. BOTH RNs are responsible for verifying the EBM or Donor EBM Label patient identification matches the new "Prepped Milk Label". See below for example.

CHECK THREE: Before administration always double check the correct infant is receiving the correct breast milk. At the bedside complete final double check of infant name and ID number.

- Check the EBM label with the infant ID bracelet AND confirm infant identity with another nurse or family member.
- Document CERNER → Interactive View → Newborn/Pediatric Feeding → EBM/ PDM Clinician Check OR EBM/PDM Non-Clinician Witness (ex. Caregiver/Parent)

Error Information

Follow organization adverse event procedures. Complete a PSLS report for any unsafe or near-miss milk handling incidents

Patient and Family Education

EBM Donation to Milk Bank

Donations of extra breast milk may be made to the BC Women's Milk Bank.

A screening process for the mother/parent is required prior to donation. Information about donating milk can be found at BC Women's Provincial Milk Bank website (<http://www.bcwomens.ca/our-services/labour-birth-post-birth-care/milk-bank>).

Educate parents on hand washing technique and rationale before expression of EBM Include:

- Washing of pumping equipment with soap and water and rinsing with water and
- Showering daily or cleaning breast with water

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Appendix A: Length of Storage of EBM

The use of fresh milk should be prioritized, followed by the use of stored colostrum, refrigerated EBM and, if needed, frozen EBM.

Summary of storage times by type

Breast Milk Storage Times	
Storage Type	Time
Fresh at Room Temp	4 hours
Warmed at Room Temp (if partially fed, milk has come in contact with saliva)	1 Hour
Warmed at Room Temp (not fed, no contact with saliva)	4 hours
Thawed EBM	24 hours
Thawed Donor Milk	24 hours
NICU Freezer	3 months
NICU Refrigerator	72 hours
Deep Freezer (-20 C)	Up to 12 months

Fresh EBM

Fresh EBM is safe at room temperature for up to 4 hours. If anticipated that the EBM will not be needed in that time period, immediately refrigerate or freeze as appropriate.

Refrigerated EBM

- Fresh EBM can be stored in the refrigerator for 72 hours.
- Refrigerate EBM as soon as possible after expression if not being used for next feed.
- Place EBM in labeled patient specific storage container in the interior of refrigerator.
- **Do not** store EBM in the door of the refrigerator or freezer. The temperature is more stable in the interior of the refrigerator.

Frozen EBM

In hospital, freeze any EBM that will not be used within 72 hours. EBM in the fridge for 48 hours should be placed in the freezer.

- Freeze EBM in a refrigerator that has a separate door for the freezer, use within six (6) months.
OR
- Freeze in a deep freezer with a temperature of minus 20C Celsius, use within twelve (12) months.
- When freezing milk fill container only $\frac{3}{4}$ full.
- **Do not** refreeze thawed EBM.
- **Do not** freeze EBM with additives.
- Discard any EBM not used by the expiry date.

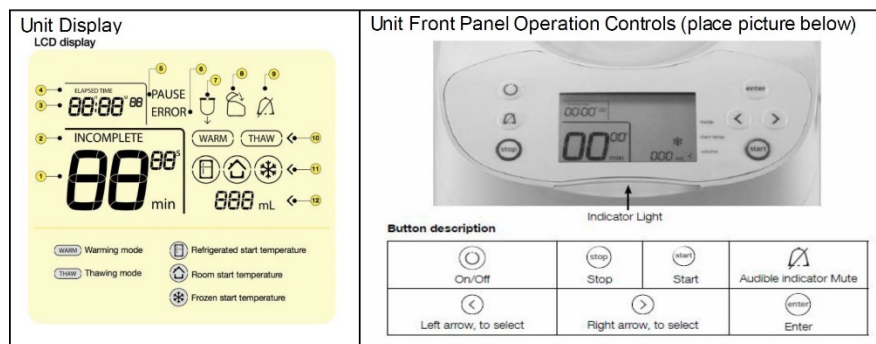
Appendix B: Waterless Milk Warmer

The use of the waterless milk warmer is a method to gently warm milk to keep living, bioactive, and essential components of stored human milk intact so that it remains as similar to fresh milk as possible.




Using a controlled method of warming/thawing is the best practice for preserving nutrient content and preventing adverse effects on human milk and milk additives.


Ideally, every patient will have their own Milk Warmer however, if this is not possible, the warmer can be cleaned with a Cavicide® solution using wipes (Cavi-wipes) between patients. When cleaning, warmer should be turned off and unplugged. Do not spray or pour liquid directly onto the warmer

Unit Display Controls



Initial Set Up

Steps	Notes
1. Obtain new insert from clean utility Room	
2. Write date, time and patient on the insert	
3. Install insert into warmer cavity and spread the bag part out uniformly along the warmer walls	

4. When using a milk storage container, open the lid of the warmer and place container in the chamber	
5. When using a syringe, close lid of warmer and insert tip of syringe into the round grommet portion located on the face of the insert until flange of syringe is flat against the face of the insert face	
6. Turn warmer on	

Steps for Warming	Notes
1. Obtain milk from fridge and initiate warming procedure as soon as possible	<ul style="list-style-type: none"> Fresh milk can be fed immediately to infant as it is at body temperature Prevention of additive degradation and to secure nutrition viability ideal milk temperature is 32 to 37 degrees Minimize handling of milk after taking it out of the fridge (eg. Do not leave on counter or hold in hand) to avoid temperature fluctuations that could result in a final temperature above 37 degrees.
2. Press enter to confirm “warm” mode	The warmer is set to default to warm mode when turned on and displayed in screen
3. Select milk starting temperature: refrigerate, room or frozen and press enter	If milk’s starting temperature is not chosen the warmer defaults to refrigerate
4. Select volume of milk by using arrow keys and press enter	
5. Press Start to confirm flashing information on screen is correct for completion time	If information is incorrect, press the stop button and go back to step 2 to correctly program the warmer
6. When warming is complete the warmer will make an audible noise and visual indicator will flash green	<p>Visual indicator will flash green continuously</p> <p>Audible noise will chime every 5 minutes if not muted</p>

7. When warming cycle is complete, the automatic holding cycle starts for 30 minutes, then automatically turns off	<ul style="list-style-type: none"> 30 minute holding cycle allows milk remain at desired temperature prior to feeding If lid or syringe is removed during the holding cycle the unit will pause for 60 seconds and the visual indicator will flash orange While paused syringe or lid can be placed back but start button must be pressed If 60 seconds is exceeded the unit will stop and reset
8. Gently Mix milk, feel container/Syringe to check temperature before feeding	<ul style="list-style-type: none"> If milk contains any ice at beginning of cycle the final temperature at the end of warming cycle may fall below the designed range of the device. Ensure milk that is warmed to feed is at fridge temperature to start. Warmed product should be gently shaken to avoid any hot spots before feeding infant (direction of warm air blowing in device may create temperature differences between top and bottom of syringes)
Steps for Thawing	
1. Turn warmer on and press arrow keys to highlight Thaw mode	Warmer will automatically choose Frozen as milk starting temperature
2. Follow steps 4 & 5	
3. When thawing cycle is complete the warmer will make an audible noise, visual indicator will flash green, and warming action will shut off.	If not muted, the audible indicator will chime every 15 minutes
4. Immediately remove thawed milk and prepare feeds or place in fridge.	If you are using thawed milk right away, place prepared feed back into Milk Warmer to achieve

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