Integrated Care Division

MATERNITY. CHILDREN'S & NEONATAL INTENSIVE CARE

GUIDELINE FOR THE STORAGE. CHECKING AND HANDLING OF MATERNAL EXPRESSED BREAST MILK (mEBM)

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1. Introduction

When a baby is unable to feed at the breast, the mother will need to express her breastmilk (mEBM). mEBM is a bodily fluid containing at least 600 species of various bacteria that offers health benefits to mother and child even after infancy. However, as breast milk is not sterile, it is necessary to ensure that it is stored correctly and used safely and easily.

2. Purpose and Outcome

- To ensure the safe storage of mEBM; to prevent cross contamination of mEBM with harmful organisms.
- To ensure the safe handling of mEBM, breast milk is classified as a body fluid like blood or plasma and contact with any type of body fluid carries a risk for transmission of infection.
- To ensure that the correct mEBM is given to the right baby safely.
- To ensure good hygiene when handling mEBM to prevent contamination of breastmilk with harmful organisms.
- To ensure mothers/carers are given written and verbal instructions on expressing/ handling and storing of expressed breast milk, for example 'Mothers and Other's guides' and/or 'getting to know your baby when they are in the neonatal unit' leaflet. Mothers should also have a minimum of 4 expressing assessments in the first two-weeks after birth using the UNICEF Baby Friendly UK (BFI) expressing assessment form (appendix1).

3. Abbreviations

- BFI UNICEF UK Baby Friendly Initiative
- BPA Bisphenol A
- CMV Cytomegalovirus
- HHR Hand Held Records
- HIV Human immunodeficiency virus
- mEBM maternal expressed breast milk & maternal expressed colostrum
- NMC Nursing & Midwifery Council
- NNU Neonatal Unit & Neonatal Intensive care Unit

4. Storage Containers

- mEBM should be stored in a sterile plastic container (bottle with well-fitting top or a colostrum collector syringe with occlusion cap).
- All containers should be Bisphenol A (BPA) free.
- A new storage container must be used at each time.
- Leave 2.5cm of space at the top to allow the mEBM to expand as it freezes.
- Plastic bottles and component parts become brittle when frozen and may become damaged when mishandled such as dropped, over tightened, or knocked over.
- Freezer bags (designed for breast milk) only fill with 60-120mls.Squeeze out the air before sealing the top (allow an inch of space for the breast milk to expand when frozen).

5. General Guidance

mEBM obtained from both breasts at the same expressing session may be mixed

Expect mEBM to separate during storage. Before feeding, gently mix the mEBM by swirling the container.

The colour of mEBM can/will vary. It may have a blue, yellow, or brown appearance. There is no reason not to use mEBM of any varying colour.

6. Labelling and Identification – a minimum of 3 identifiers must be recorded

all must be labelled with the following:

- Mothers full name (first and surname) and hospital number
- Infant's name, date of birth, unit number (if known)
- Date and time the mEBM was expressed
- Date and time mEBM was thawed (if applicable)
- A yellow care 'alert' sticker in the event of an infant or mother with the same or similar surname (neonates only)

This information should be written clearly on pre-printed sticky labels. Handwrite the information on a blank sticky label if no pre-printed labels are available.

If an infant has been transferred from another hospital, ensure that a completed label has been attached to each bottle/syringe.

Before placing the mEBM in the refrigerator or freezer, the member of staff **must** make sure the label has been fully completed.

7. Storage - appropriately stored mEBM leads to minimal changes in immune components such as secretory IgA, lactoferrin and white blood cells

When a mother expresses more breast milk than is immediately required for a feed, appropriate handling and storage of the milk is required. Storage may include in a refrigerator and/or in a freezer depending on the mother's lactation and ability to be with her baby.

Hospital milk storage refrigerators and freezers should be lockable or housed in a locked room if they are not constantly supervised. To help prevent milk errors and to promote best practice for the handling and storage of mEBM, only staff should have access to fridges and freezers.

mEBM must be stored in a specific milk refrigerator or freezer on the ward, in an individual named box/storage bag clearly labelled with the mother's and/or baby's name.

Do not use mEBM if it smells sour.

Fresh mEBM can be safely stored under the following conditions: *please make sure parents know the different storage timings for hospital and home storage respectively.*

Room Temperature	Hospital Refrigerator	Hospital Deep Freezer
19ºc-26ºc	0ºc - 4ºc	-18ºc20ºc
Hospital – up to 4 hours depending on the room temperature, gestation (not preterm) & location Home – up to 6 hours depending on the room temperature, gestation (not preterm) & location	48 hours. If the mEBM is not required within the 48 hours place in freezer a.s.a.p. within 24 hours	3 months
Well-Insulated Cool Bag	Home Refrigerator	Home Deep Freezer
-15°c - 4°c	0ºc - 4ºc	≤-18⁰c
Maximum 24 hours	Up to 5 days. If the temperature rises above 4°c the milk should be discarded after 3-days	6 months

For more information on the safe storage of breastmilk:

https://www.nhs.uk/conditions/baby/breastfeeding-and-bottle-feeding/breastfeeding/expressingbreast-milk/ or https://www.unicef.org.uk/babyfriendly/baby-friendly-resources/breastfeedingresources/expressing-and-storing-breastmilk-bfn/

Freshly mEBM may be kept at room temperature (room temperature $\leq 26 \circ c$) for up to 4 hours (not preterm/sick – this mEBM must be refrigerated immediately unless a feed is imminent). However, if the mEBM will not be used within this time, it should be refrigerated immediately following expression. If mEBM is kept at room temperature and subsequently not used within ≤ 4 hours, it should be discarded.

Fresh mEBM not for immediate use can be stored in a refrigerator for up to 48 hours at 2-4°c. 48 hours includes any time in the home fridge and whilst being appropriately transported.

Any mEBM not required for a feed within the 48 hours recommended storage time should be frozen as soon as possible, preferably within 24 hours.

mEBM for babies in hospital should be collected in labelled, sterile containers provided by the hospital (colostrum collection syringes, 20ml colostrum storage containers or 50ml bottles unless larger containers are required). All mEBM storage containers must be labelled.

Any mEBM left at bedside (room temperature) must be labeled and stored in a sterile tray.

8. Transport of mEBM to Hospital or Home

8.1 Storing mEBM prior to arrival at the Hospital

We recommend any mEBM that will not be used within 4 hours of expression is frozen before transport into hospital.

Advise mothers that breast milk should not be stored in the door of the fridge.

Containers of mEBM should be placed in a new (preferably sealable) polythene bag or a clean plastic box with a lid before being placed in a home freezer. This is to protect them from being handled unnecessarily or from becoming contaminated by other foods. It also enables all containers to be moved without additional handling when being transferred to an insulated container for transporting to the hospital.

8.2 Transport of mEBM to Hospital

Parents should be advised to use a well-insulated cool bag, with several frozen 'ice-blocks'. Frozen mEBM should be transferred to the hospital refrigerator as soon as possible.

Care should be taken to ensure the temperature of the milk is maintained throughout the journey by avoiding placing the cool bag next to a car heater, or the parcel shelf.

Place containers of mEBM in a new or clean polythene bag or in a clean plastic box before placing them in the cool bag. This is to protect the container from becoming contaminated; it will also prevent milk residues on the outside of the containers contaminating the interior of the cool bag.

On arrival at hospital the chilled, or frozen mEBM should be checked and transferred immediately to the appropriate refrigerator or freezer. If the mEBM has not been transported appropriately and has not remained chilled or frozen a decision based on the condition of the baby, the temperature of the milk and the stocks of mEBM otherwise available should be made.

If frozen mEBM has just started to thaw but remains largely frozen it can be transferred to the freezer and stored as usual. Otherwise, transfer to the ward refrigerator to complete the thawing process.

Partially thawed mEBM would have to be discarded because it wouldn't be used within the safe storage time (\leq 48 hours) a decision based on the clinical condition of the baby may be made.

8.3 Transport of mEBM to Home

Due to limited refrigerator and freezer space only 1 basket of mEBM per baby may be stored at a given period. Parents are asked to take additional (>1 basket) mEBM for home storage. Transport from hospital to home should be via a well-insulated cool bag, with several frozen 'ice-blocks'.

Place containers of mEBM in a new or clean polythene bag or in a clean plastic box before placing them in the cool bag.

9 Thawing & warming mEBM

Using fresh mEBM where possible will always be best for the baby. Stored mEBM can be used to supplement feeds when fresh mEBM is not available. When freezing mEBM it reduces vitamin B6 and C and affects fat levels.

Use freshly expressed colostrum first. It is then recommended that colostrum is used in the order in which it is expressed to support optimal priming of the baby's gut. It is useful to freeze any unused colostrum for later use if the baby becomes feed intolerant or develops complications.

Only use water free methods for thawing and warming feeds. This is to prevent contamination of feeds with water borne organisms which can lead to outbreaks of infection. Containers tip over easily when standing in water and this can lead to ingress of water and possible contaminants into the feed.

To defrost mEBM – place the container of frozen mEBM in a refrigerator to thaw. This may take up to 12 hours or more depending on the refrigerator temperature and the volume of mEBM. Ensure the mEBM is placed within the tub and/or purple tray to prevent drips of condensation.

For ease of recording and to maintain the quality of the mEBM if thawing mEBM solely in the refrigerator use within 24 hours (12 hours for thawing (no ice remaining) plus 12 hours storage).

Frozen mEBM, if needed more quickly, may be thawed at room temperature. This takes 30 minutes – 4 hours depending on the volume and room temperature. To prevent the temperature of the mEBM and bacteria levels rising check the mEBM every 30 minutes. Transfer to the refrigerator once thawed or almost thawed (when the last few ice crystals remain).

Clearly label mEBM with the time it was fully defrosted and whether it had been defrosted at room temperature or in the refrigerator. If the mEBM has been defrosted at room temperature it needs to be used within 12 hours from the removal from the freezer.

Do not use a microwave to defrost under any circumstances.

Before giving the mEBM to the infant, check the temperature of the milk, and then discard any surplus mEBM, do not re-store after defrosting the mEBM in this way.

If using an electric milk thawing/warming device, follow manufacturer's instructions for its use and cleaning to prevent cross contamination and overheating.

Warming thawed mEBM – all thawed mEBM needs to be at room temperature before it is given to the infant. A feed should generally take no more than 30 minutes to reach a suitable feeding temperature although large volume feeds may take longer. It should not be necessary to keep mEBM at room temperature for more than 2 hours.

10 Transfer and collecting mEBM from non-neonatal

wards (Delivery Suite, Maternity HDU, Antenatal and Postnatal Wards, Children's Wards)

10.1 Transferring mEBM from non-neonatal wards

RDH - Non neonatal wards should use their own 'milk refrigerator' (where available) to store mEBM. **mEBM should only be transferred to the NNU if it needs to be frozen**.

QHB maternity do not have a ward-based refrigerator, therefore any mEBM that requires refrigeration and/or freezing should be taken to the NNU.

Frozen antenatal mEBM that **will** be used within 24 hours of admission should be stored within the ward-based breastmilk refrigerator.

Frozen antenatal mEBM that **will not** be used within 24 hours of admission – transfer to the NNU freezers.

Before transferring, non-neonatal staff must make sure all syringes and/or bottles of mEBM are labelled. The date and time of transfer to the NNU refrigerator (QHB only) or freezer and the number of syringes/bottles should be documented in the patient HHR.

mEBM may then be received, signed in and safely stored in the appropriate refrigerator (QHB only) or freezer on the NNU.

Place a 'sign' next to the mother's name on the ward-based hand-over board to indicate mEBM is being stored (appendix 2). The date, time, and amount of mEBM placed in NNU refrigerator/freezer must be recorded on the non-neonatal ward mEBM individual audit sheet and HHR.

10.2 Collecting mEBM from the neonatal ward:

To minimise error, staff collecting mEBM must use a mother and/or baby identifier/details, for example a patient label, to ensure the correct mEBM is retrieved. The date, time, and amount of mEBM collected from the NNU must be recorded on the non-neonatal ward mEBM individual audit sheet and HHR.

All deposits of mEBM into NNU refrigerator/freezer from non-neonatal wards must be signed in and out.

Please see the instructional flow chart - appendix 3

11. Ensuring mEBM is given to the correct baby(ies)

To help prevent milk errors for the handling and storage of mEBM, only staff should have access to the refrigerators and freezers. Therefore, a staff member must accompany the parent when collecting their stored mEBM from the ward refrigerator.

When mEBM is stored on NNU the nursing/midwifery staff will retrieve the mEBM for the family.

To ensure the correct mEBM is given to the right baby the label on the mEBM container must always be checked against the mother's and/or baby's identification band.

The first checker must be a registered practitioner/health care assistance; the second checker can be another member of staff or the parent

All actions must be clearly documented in the mother's/baby's HHR.

12. Disposal of mEBM

The disposal of mEBM audit paperwork must be completed for any mEBM removed from the ward and/or NNU refrigerator or freezer and not given to an infant. Record appropriately (see appendix 4)

13. Record Keeping

It is expected that every episode of care be recorded clearly, in chronological order and as contemporaneously as possible by all healthcare professionals as per the Trust Policy.

This is in accordance with standards set by NMC.

The baby's feed chart must be initialed by the 2 people involved in checking the correct mEBM has been given.

14. Fridge/Freezer Temperature Monitoring

The refrigerator or freezer used for the storage of mEBM must be dedicated for that purpose alone.

The temperature should be monitored and charted daily. This monitoring will be undertaken by the ward housekeeper who will alert the midwife/nurse in charge if the temperature is outside this range.

Any unused mEBM which is \geq 48 hours old will be removed from hospital refrigerators and discarded (see appendix 3)

On mother's transfer home, any unused mEBM stored on site, will be given to the mother to take home, and recorded on the discharge paperwork.

15. If an Infant has been inadvertently given the wrong mEBM

15.1 Prevention

All mEBM containers must be clearly labelled according to Trust guidance. mEBM should be checked by two members of staff, one a registered professional, the other a member of staff and/or the parent before administration.

15.2 Management of the Incident

- Inform the midwife/nurse in charge and Paediatric staff.
- Consider aspirating the milk from the stomach.
- Both the donor mother and the mother of the recipient baby must be informed of the incident but should not be told names.
- Document the episode in the recipient baby electronic health care record including a record of the donor's hospital number.
- An incident form must be completed via Datix.

The major concern relates to possible transmission of infection. Therefore:

- Liaise with the Infection Control Team.
- The donor mother may need to be tested for hepatitis B and C, CMV and HIV (this relies on the donor mother's consent to testing). If the donor mother refuses any of the above tests, consider retesting the recipient baby in three months.
- Test and document the hepatitis B and C, CMV and HIV status of the recipient baby.

References

Baby Friendly Initiative (2021) assessment of breast milk expression: <u>https://www.unicef.org.uk/babyfriendly/baby-friendly-resources/implementing-standards-resources/assessment-of-breastmilk-expression-checklist/</u>

BPAM (2020) Maternal Breast Milk Toolkit; Optimising Early Maternal Breast Milk for Preterm Infants: A Quality Improvement Toolkit: <u>https://www.bapm.org/pages/196-maternal-breast-milk-toolkit</u>

Breastfeeding Network (2015) **Expressing and storing milk:** <u>https://www.breastfeedingnetwork.org.uk/breastfeeding-help/expressing-storing/</u> The Breastfeeding Network.

Drenckpohl, D., Bowers L, Cooper H (2007) **Use of the six-sigma methodology to reduce incidence of breast milk administration errors in the NICU.** Neonatal Network: 26 (3): 161-6.

NHS Choices (2019) **Expressing and storing breast milk**. Available at <u>https://www.nhs.uk/conditions/baby/breastfeeding-and-bottle-feeding/breastfeeding/expressing-breast-milk/</u> (accessed 05 December 2021)

The Association of UK Dietitians (2019) Guidelines for the Preparation and handling of Expressed and Donor Breast milk and Specialist feeds for Infants and children in the Neonatal and Paediatric Health care settings:

https://www.bda.uk.com/uploads/assets/913a1f78-c805-42c1-8d85e37ca75e0fc0/2019sfuguidelines.pdf (accessed 05 December 2021)



Appendix 1 – Expressing Assessment Form

An assessment of how a mother is expressing should be carried out at least 4 times within the first 14-days following birth.

Expressing assessment form

If any responses in the right hand column are ticked refer to specialist practitioner. Any additional concerns should be followed up as needed. Please date and sign when you have completed the assessments.

Mother's name:	Baby's name:	Date of assessment:		t	Birth weight:					
	Date of birth:					Gestation:				
What to observe/ask about	Answer indicating effective expressing	1	1	1	1	Answer suggestive of a problem	1	1	1	1
Frequency of expression	At least 8-10 times in 24 hours including once during the night.					Fewer than 8 times. Leaving out the night expression.				
Timings of expressions	Timings work around her lifestyle – if cluster expressing, no gaps of longer than 4 hours (daytime) and 6 hours (night time)					Frequent long gaps between expressions. Difficulty 'fitting in' 8 expressions in 24 hours.				
Stimulating milk ejection	Uses breast massage, relaxation, skin contact and/or being close to baby. Photos or items of baby clothing to help stimulate oxytocin.					Difficulty eliciting a milk ejection reflex. Stressed and anxious.				
*Hand expression	*Confident with technique. Appropriate leaflet/information provided.					*Poor technique observed. Mother not confident.				
Using a breast pump	Access to electric pump. Effective technique including suction settings, correct breast shield fit. Double pumping (or switching breasts) to ensure good breast drainage. Uses massage and/or breast compression to increase flow.					Concern about technique. Suction setting too high/low, restricting expression length, breast shield too small/large.				
Breast condition	Mother reports breast fullness prior to expression which softens following expression. No red areas or nipple trauma.					Breasts hard and painful to touch. Evidence of friction or trauma to nipple.				
Milk flow	Good milk flow. Breasts feel soft after expression.					Milk flow delayed and slow. Breasts remain full after expression.				
Milk volumes	Gradual increases in 24 hr volume at each assessment.					Milk volumes slow to increase or are decreasing at each assessment.				

Hand expression may not need to be reviewed every time

Appendix 2 -

An example of the 'sign' placed next to the mother's name on the maternity ward-based hand-over board

mEBM stored on NNU

Appendix 3 - Flow Chart - transfer of mEBM from non-neonatal wards to the Neonatal

Freezer (Delivery Suite, HDU, Antenatal or Postnatal Wards, Children's Wards)

Please note:

RDH - each ward has a refrigerator that can be used to store mEBM therefore only mEBM that needs to remain frozen or needs to be frozen should be transferred to the NNU.

QHB - maternity wards do not have dedicated mEBM refrigerators. mEBM is therefore always stored on the NNU.

Frozen antenatal mEBM that **will** be used within 24 hours of admission – stored in the wardbased breastmilk refrigerator (RDH) or NNU refrigerator (QHB).

Frozen antenatal mEBM that **will not** be used within 24 hours of admission – transfer to the NNU freezers.

Fresh mEBM may remain at bedside/cot side for up to 4 hours (not preterm/sick). If the mEBM will not be used within 4 hours of expressing, please refrigerate.



Infants admitted to Neonatal Units - mEBM intended for an infant under the care of the NNU should be given to the Nurse responsible for the infant's care.

Non-neonatal ward - Document in the mothers HHR the date, time, and amount of mEBM and the name of staff member of the mEBM was handed to

Appendix 3 continued - Removal of mEBM by non-neonatal wards (Delivery Suite, HDU,

Antenatal or postnatal wards, children's ward)



Additional Information

All mEBM transfers in and out of the NNU refrigerators/freezers must be verified and signed for by the staff member.

Audit Trail - The disposal of any mEBM must be witnessed and recorded for by 2 members of staff. Record in mother &/or baby HHR & the disposal of mEBM audit form

Appendix 3 continued Sign in/out sheet - Non-Neonatal Wards

Refrigerator (fridge)

Mothers Name: Hospital Number: Baby's Name: Date form commenced:

Date of Birth.

mEBM transferred from Non-Neonatal Wards. Before placing mEBM into the **refrigerator** please check all mEBM is labelled with the mother's name and hospital identifier, infant's name (if known), date and time mEBM was expressed. All entries must be signed for by the staff member depositing and retrieving the mEBM.

NB: Draw a line diagonally across the chart when the mother &/or baby are discharged & any remaining stocks of mEBM is removed from the refrigerator

The number in and number removed refers to the number of syringes or bottles.

From e.g., ward 11 or	Date Expressed	In the Fridge			Out of Fridge			
314, Dolphin Date		Number In	Running Total	Staff Name	Number removed	Date	Total left	Staff Name
314 23.1.2023	23.1.2023	5	5	N Porter				
314 23.1.2023	23.1.2023	5	10	H. Goodwin				
314 24.1.2023	24.1.2023	5	15	J. Cuming				
314					6	3.2.2023	9	N. Porter

Freezer

Mothers Name: Hospital Number: Baby's Name: Date form commenced

Date of Birth.

mEBM transferred from Non-Neonatal Wards. Before placing mEBM into the **freezer** please check all mEBM is labelled with the mother's name, infant's name, and date of birth (if known), date and time mEBM was expressed. All entries must be signed for by the staff member depositing and retrieving the mEBM.

NB: Draw a line through each entry when the entire stock of the individuals mEBM is removed from the freezer

The number in and number removed refers to the number of syringes or bottles

From e.g., ward 11 or	Date Expressed	In the Freezer			Out of Freezer			
314, Dolphin Date		Number In	Running Total	Staff Name	Number removed	Date	Total left	Staff Name
314 23.1.2023	23.1.2023	5	5	N Porter				
314 23.1.2023	23.1.2023	5	10	H. Goodwin				
314 24.1.2023	24.1.2023	5	15	J. Cuming				
314					6	3.2.2023	9	N. Porter

Appendix 4 – Disposal of mEBM not given to an infant.

Please complete the following information before disposing of any mEBM that has been stored in a UHDB refrigerator and/or freezer.

Date	Name DOB &/or	Amount disposed.	Contact w (Neona	Staff Signature	
	Hospital number	Syringe (S) Bottles (B)	Parents Collecting	Permission to Dispose	
27.5.21	K Thompson 1235461	2 x S 1 x B	Yes 28.5.21 pm	N/A	Mary Lou

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Amendment	1	20/04/2015	Karen Payne Infant Feeding Advisor	New			
	2	25.1.2023	Katy Thompson Specialist Midwife – Infant	Update			
			Feeding Nickki Porter - Specialist				
			Midwife – Infant Feeding Dally Holait-Bhogal – BFI				
			lead NNU RDH Claire Shotter – BFI lead NNU QHB				
Intended Recipient	s. All staff	with responsib	lity for caring for breast feedir	a mothers			
Training and Dissemination		Cascaded thro ail circulation lis	ugh lead midwives/neonatal l t: Article in M&G/GUM newsle	ead nurse: etter			
To be read in conju	Inction wit	th: Supporting	Patient information				
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