



HEALTH HOLDING

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<b>Department:</b>	Neonatal Intensive Care Unit (NICU)		
<b>Document:</b>	Departmental Policy and Procedure		
<b>Title:</b>	Breast Milk Collection and Storage In NICU		
<b>Applies To:</b>	All NICU Staff		
<b>Preparation Date:</b>	January 05, 2025	<b>Index No:</b>	NICU-DPP-029
<b>Approval Date:</b>	January 19, 2025	<b>Version :</b>	4
<b>Effective Date:</b>	February 19, 2025	<b>Replacement No.:</b>	NUR-380 (3)
<b>Review Date:</b>	February 19, 2028	<b>No. of Pages:</b>	5

## 1. PURPOSE:

- 1.1 Ensure proper collection and storage of collected breast milk.
- 1.2 Ensure safe administration of expressed breast milk to hospitalized neonates until they can nurse directly from their mother's breast.

## 2. DEFINITIONS:

- 2.1 When direct breastfeeding is not possible, expressed breast milk is encouraged. Breast milk advantages are too numerous to count and include:
  - 2.1.1 Breast milk has a nutritional composition which is superior to proprietary formulas and promotes digestion and absorption of its nutrients in unique biological ways. It contains PUFAs which are utilized in brain and retinal development, easily digestible whey protein (mostly  $\alpha$ -lactalbumin) and other non-protein nitrogen sources, including urea and free amino acids, particularly glutamine and taurine. It also contains free nucleotides, carnitine, and inositol which are not readily available in all formulas. Breast milk also contains numerous antioxidant factors (cysteine, vitamin E, and  $\beta$ -carotene) which may be particularly beneficial to the preterm neonate frequently exposed to a hyperoxic environment.
  - 2.1.2 Breast milk offers remarkable immunologic benefits:
    - 2.1.2.1 Cellular factors are present as well as secretory IgA, lysozymes and lactoferrin. EBM fed preterm infants have a lower incidence of nosocomial infections.
    - 2.1.2.2 Furthermore, exclusive breastfeeding offers some protection for infants with atopic predispositions.
  - 2.1.3 For the ELBW infants, EBM is better tolerated by the immature gut. It has a low osmolality and results in faster gastric emptying than formulas. It contains growth factors and hormones, which may accelerate gut maturity, and also anti-inflammatory factor. Breast milk feeds promote gut colonization with benign fecal flora (lactobacillus) rather than potentially pathogenic Gram negative rods. Premature infants being fed EBM are able to tolerate larger feeding volumes sooner and have a lower incidence of NEC.
  - 2.1.4 Breastfed preterm infants have decreased incidence and severity of ROP. Early human milk contains Insulin like Growth Factor-I (IGF-I) and newborns fed human milk have higher serum IGF-I.
  - 2.1.5 There is credible evidence that breastfed term and preterm infants may have better neurodevelopmental outcomes at school age.
  - 2.1.6 Involvement of the mother in providing breast milk to her baby may promote a more satisfactory bonding experience.

Abbreviations:

PUFAs: Poly-Unsaturated long chain Fatty Acids

EBM: Expressed Breast Milk

ROP: Retinopathy of Prematurity.

ELBW: Extremely Low Birth Weight

NEC: Necrotizing Enterocolitis.

VLBW: Very Low Birth Weight.



### 3. POLICY:

- 3.1 All neonates admitted to the neonatology department units who can have enteral feeding and newborns in the postnatal wards should be fed breast milk except if there is medical contraindication.
- 3.2 Exclusive breastfeeding must be encouraged and mothers assisted whether the infant is in the neonatology department or the postnatal wards.
- 3.3 Neonates who cannot feed directly from the breast can be fed expressed breast milk.
- 3.4 For admitted neonates physician order to start feeding is required to ensure there is no contraindication.
- 3.5 Contraindications include:
  - 3.5.1 Galactosemia
  - 3.5.2 Few maternal infections that transiently contraindicate breastfeeding e.g.
    - 3.5.2.1 Active untreated maternal tuberculosis, requiring separation of the mother and infant.
    - 3.5.2.2 Active herpetic lesion on the breast.
    - 3.5.2.3 Primary maternal varicella with onset within 5 days before or up to 48 hours after delivery.
  - 3.5.3 Cytomegalovirus: seropositive mothers may shed viable CMV virus in the breast milk.
  - 3.5.4 Maternal HIV infection.
  - 3.5.5 Maternal Human T-cell lymphotropic virus type 1 or 2 (infected lymphocytes found in breast Milk).
  - 3.5.6 Certain maternal medications that can be transferred to the baby through the breast milk may harm him/her.
- 3.6 Preterm neonates should receive breast milk as early as clinically indicated:
  - 3.6.1 Early breast milk from mothers who have delivered preterm has a higher concentration of protein, calories, calcium, sodium, and iron than the breast milk of mothers delivering at term. After 2 weeks to one month of lactation, mothers of preterm neonates produce breast milk more like that of term mothers. Because of the unique nutritional aspects of early preterm breast milk, efforts should be made to feed the breast milk produced in the initial 2 weeks of lactation first to the infant once starting enteral feeding.
  - 3.6.2 Freezing and then thawing breast milk has little effect on its nutritional components, but does decrease the cellular and host defence properties of the milk. Therefore, after the first 2 weeks worth of milk have been fed, fresh breast milk should be given to the infant when available instead of freezing the fresh milk and giving the infant thawed older milk.
  - 3.6.3 Breast milk alone does not provide adequate calories, protein, calcium, phosphorus, sodium, iron, or vitamins for the VLBW infant. Human milk fortifier are designed to be added to breast milk produced after the first 2 weeks.
- 3.7 Expressed breast milk must be properly collected, handled, labelled and stored to ensure it's safe use and to prevent it's contamination:
  - 3.7.1 The assigned nursing and/or medical staff instruct mothers about proper methods of breast milk collection storage and transport to the hospital.
  - 3.7.2 Breast milk is properly stored in a refrigerator designated only to storing breast milk.
  - 3.7.3 The assigned nurse ensures proper thawing and handling of the milk.
  - 3.7.4 It is mandatory that the assigned nurse double check the identification of the breast milk of each baby, both on receiving it from the parent and before administering it to the infant in order to ensure giving the correct milk to the correct patients.

### 4. PROCEDURE:

- 4.1 Assigned nurse/breastfeeding instructor will assist and encourage mothers of preterm infants to express breast milk early (within first hours of delivery) if medically fit.
- 4.2 Breast milk is a body fluid and may contain pathogens. Both parents and healthcare professionals use hand hygiene before and after handling breast milk.



- 4.3 Milk expression and collection procedure must be clean to avoid contamination of the milk: Human milk containing fewer bacteria at the time of expression develops less bacterial growth during storage and has higher protein levels compared to milk that has an abundance of bacteria.
  - 4.3.1 Mother must wash hands for at least 1 minute with soap and water, and scrub under fingernails before each milk expression. A waterless hand cleanser may be used if their hands do not appear dirty. Unclean hands may transmit viruses and bacteria some of which can cause illness.
  - 4.3.2 Instruct mother to maintain daily personal hygiene.
  - 4.3.3 She should wash areola and nipple with only water before each collection and avoid using soap or alcohol.
  - 4.3.4 Instruct mother to thoroughly clean all milk collection equipments coming in contact with the breast before and following each collection.
  - 4.3.5 Breast milk is collected and stored in sterilized containers, such as glass bottles or hard plastic cups with tight caps. Avoid using ordinary plastic storage bags or formula bottle bags, as these could easily leak or spill. Instruct parents to wash containers with soap and water then place it in boiling water for five minutes. Air dry it, and then add the milk.
  - 4.3.6 In the neonatology units; use disposable collecting cups and tubing and sterilize the collecting electrical machine between patients.
  - 4.3.7 Quantity of milk per container should be small or approximately equivalent to the amount the infant requires for each feed.
- 4.4 Method of breast milk expression:
  - 4.4.1 Before starting milk collection, stimulate the flow of milk (milk ejection reflex) by: applying warm moist heat to the breast e.g. warm wash cloths or shower. Massage the entire breast gently, both top and underside, starting from the top and stroking towards the nipple. Do this several times before collection so that the whole breast is massaged.
  - 4.4.2 Breast milk expression can be achieved by hand or by pump which may be manual or electric pumps.
    - 4.4.2.1 **Manual milk expression:**  
Place the thumb and finger diagonally opposite on the edge of the areola. Gently press inward towards the center of the breast and squeeze the finger and thumb together. Repeat with a rhythmic movement. Move fingers around areola and express to empty all stores of the breast. Mother should switch sites at least twice, expressing 5-10 minutes each side.
    - 4.4.2.2 **Electric or manual pump expression:**  
Place the breast cup on the areola centring the nipple. Start the suction strength on low, gradually increasing as long as there is no discomfort. Mother should follow the user's instructions for the specific pump she is using at home.
- 4.5 Duration and frequency of expression
  - 4.5.1 Express for 10-15 minutes for simultaneous double pumping
  - 4.5.2 Express for 20-30 minutes for single pumping, alternating between breasts every 5-10 minutes.
  - 4.5.3 Express 6-8 times in 24 hours.
- 4.6 Proper identification of the breast milk of each baby is mandatory:
  - 4.6.1 Immediately on receiving the milk, the assigned nurse ensures that infant's name (4 names for Saudi or Complete name for Non-Saudi), medical record number, sex and date and time of collection and the sticker is attached to the milk bottle. Patient's identification address stickers are used. She double checks the label of the breast milk with another nurse or the parent of the receiving infant.
  - 4.6.2 Before feeding the baby, breast milk identification is double checked by two nurses to ensure that the name and medical record number on the milk bottle match the infant's name and number on their identification bands.
- 4.7 Handling and storage of breast milk:
  - 4.7.1 Transport breast milk in an insulated container with ice packs 15°C. Keep ice packs in contact with milk containers at all times, limit opening cooler bag. Duration is up to a maximum of 24 hours.
  - 4.7.2 Store breast milk according to the following guidelines:



- 4.7.2.1 Use freshly expressed breast milk as soon as possible after expression; otherwise it should be refrigerated immediately.
- 4.7.2.2 Breast milk that is fed to a baby orally can be kept at room temperature only for one hour and should not be saved for subsequent feeds. Contamination with saliva can lead to bacterial growth.
- 4.7.2.3 Breast milk that has not been in contact with baby's mouth can be kept at room temperature for 4 hours.
- 4.7.2.4 Storage
  - 4.7.2.4.1 Store in the refrigerator at 4°C up to 48 hours
  - 4.7.2.4.2 Freezer compartment of a one door refrigerator-- 15°C: store for 2 weeks
  - 4.7.2.4.3 Freezer compartment of a two doors refrigerator--18°C: store for 3 months
  - 4.7.2.4.4 Deep freezer-- 20°C: store for 6 months
  - 4.7.2.4.5 Previously thawed milk may be kept in refrigerator 4°C for a maximum of only 24hours.
  - 4.7.2.4.6 Do not add fresh milk to already frozen milk within storage container
  - 4.7.2.4.7 Store breast milk bottles for each infant in separate labelled plastic bag or bins in order to prevent risk of cross contamination and reduce risk of administration errors.
  - 4.7.2.4.8 Keep the milk in the back of the freezer to prevent intermittent re-warming due to freezer door opening.
- 4.7.2.5 Breast milk with fortifier can be kept at room temperature for only 2 hours, refrigerated for 24 hours and should not be frozen.
- 4.7.2.6 The sequence of using milk should be: colostrum (fresh or frozen) first, then fresh milk, most recent first followed by frozen milk.
- 4.8 Thawing breast milk:
  - 4.8.1 As time permits, thaw frozen milk by transferring it to the refrigerator for thawing or by swirling it in a bowl of lukewarm water for few minutes. Do not use excessive heat.
  - 4.8.2 Never thaw or warm breast milk in microwave oven and do not allow it to sit at room temperature to thaw.
  - 4.8.3 Never re-freeze or re-warm thawed breast milk.
- 4.9 Human breast milk fortifiers:
 

Infants receiving breast milk feeds who were < 1500 gm, birth weight should have a human milk fortifier added to their feeds after they have reached at least 100 ml/kg/day or full enteral feeding volumes

  - 4.9.1 One packet of human milk fortifier added to 50 cc of breast milk creates~22 kcal / 30 ml milk
  - 4.9.2 One packet of human milk fortifier added to 25 cc of breast milk creates~24 kcal / 30 ml milk
- 4.10 The assigned nurse will:
  - 4.10.1 Document amount of milk fed, time, method of feeding e.g. nasogastric or oral, and tolerance to feeding in the progress notes. Also, document parental teaching and attitude on the "Interdisciplinary patient/family education record form".
  - 4.10.2 Thoroughly clean and disinfect the electrical collection machine after each use.
  - 4.10.3 Upon discharge of the infamy remove and dispose any remaining breast milk in the freezer.
- 4.11 Before discharge of all neonates, the breastfeeding instructor/assigned nurse fills the Breastfeeding Performance Monitoring sheet and keeps it in the Breastfeeding Performance Monitoring log book.

## 5. MATERIAL AND EQUIPMENT:

- 5.1 Electric breast pump
- 5.2 Refrigerator with separate door freezer
- 5.3 Identification labels
- 5.4 Clean bottles (sterilized bottles for the preterm infants)

## 6. RESPONSIBILITIES:

- 6.1 Physician
- 6.2 Nurse






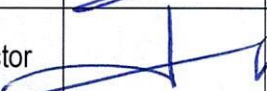

## 7. APPENDICES:

N/A

## 8. REFERENCES:

- 8.1 National guidelines clearinghouse: Management of breast feeding for preterm infants.2010
- 8.2 Center for Disease Control and Prevention: Proper handling and Storage of Human Milk. 2010
- 8.3 MOH Nursing clinical practice guidelines; Management of breast feeding for preterm. Singapore 2006
- 8.4 Academy of Breastfeeding Medicine Protocol Committee. Clinical Protocol # 7: Model Breastfeeding Policy (Revision 2010).
- 8.5 Academy of Breastfeeding Medicine Protocol Committee. Clinical Protocol # 8: Human Milk Storage information for home use for full term infants (Revision # 1 March 2010).

## 9. APPROVALS:

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