GUIDELINES FOR OLCHC STAFF CARING FOR MOTHERS EXPRESSING BREAST MILK IN OLCHC

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1.0 Introduction

Our Lady’s Children’s Hospital Crumlin (OLCHC) believe that breastfeeding is the healthiest way for a woman to feed her infant. Staff in OLCHC support mothers who choose to breastfeed according to the Breastfeeding Policy Statement (Nurse Practice Committee (NPC) 2013a). World Health Organisation (WHO) (2002) recommends exclusive breastfeeding for six months and continued breastfeeding for a minimum of two years; this is inclusive of the consumption of expressed breast milk (EBM). Not all infants are able to feed at the breast for a variety of reasons; hence mothers may need to express and store their own breast milk for administration enterally at a later date (Becker et al 2016). This guideline aims to assist nurses to provide consistent and accurate advice and education, and to provide appropriate support and encouragement for mothers of infants receiving EBM and when transitioning from expressing to direct breastfeeding.

2.0 Definition of expressed breast milk

Expressing breast milk means squeezing milk from the breasts, either with a pump or by hand, after which it can be stored and fed to an infant at a later date. It is the only way, apart from breastfeeding directly, which releases breast milk (Riordan 2010, La Leche League (LLL) 2012).

3.0 Indications for using express breast milk (this is not an exhaustive list)

Most infants are able to breastfeed directly at the breast, however, in children’s hospitals, breastfeeding may be difficult to establish, leading mothers to express if:

- Initially after birth, mothers are unable to be with their sick infant due to post-partum conditions or environmental/ geographic reasons
- Uncorrected anatomical anomalies e.g. Gastrointestinal (GI) obstructions (atresia/stenosis), or a diagnosis where an infant is nil orally, fluid restricted or breast milk alone cannot provide adequate nutrition (UNICEF 2011, Beech 2011, Becker et al 2016)
- Infants are ill or premature

Expressing may also be performed for a variety of other reasons, these may include

- to stimulate or increase a breast milk supply;
- to stimulate attachment
- to tempt infants to attach and feed
- to help infants attach to a very full breast
- to demonstrate how their breasts work
- to add breast milk to infant's solid feed
- if separation from infants is required i.e.: going out or returning to work
- if infants are not sucking well but mothers still want to give breast milk
- if breasts feel uncomfortably full or engorged
- to allow other people to feed the infant
- if own preference to express and feed by bottle
- to donate EBM to other infants via the milk bank

4.0 Benefits of breast milk (this is not an exhaustive list)

Breast milk is associated with long and short term health benefits and has been shown to:

- Reduced mortality rate among preterm and low birth weight infants from necrotising enterocolitis (NEC)
- Reduce the risk of developing:
  - GI infections
  - Respiratory infections
  - Otitis media
  - Juvenile onset diabetes
  - Obesity
  - Celiac disease (when small amounts of gluten is introduced while still exclusively breastfeeding)
  - clinical asthma, atopic dermatitis, and eczema
  - dental caries
  - leukemia
  - childhood inflammatory disease
  - SIDS
- Promote brain growth and cognition
- Enhance intellectual and visual development
- Protect preterm infants against infection
- Improve GI function and maturity
- Prime the GI tract to protect against microbial invasion (through trophic feeds)
- Improve glucose tolerance
- Stimulate the maturity of the immune system


4.1 Trophic Feeds

Trophic feeds consist of small volumes of enteral nutrition (ideally breast milk) (less than 10mls/kg/day) administered to ‘prime the gut’ without increasing the risk of NEC and late onset of sepsis (Cortez et al 2018, Tyson and Kennedy 2009, Morgan et al 2009). Most often used with preterm infants and surgical neonates and, where appropriate, for those on TPN. It is not designed to serve as a significant source of caloric or volume intake. Trophic feeds are kept at a constant volume daily until infants are deemed clinically stable to advance to enteral nutrition - but not usually advanced before Day 7-10 of trophic feeds. This is a clinical decision is made in conjunction with the dietitian and medical teams.

5.0 Types of expressing methods

Becker et al (2016) states that the most suitable method of milk expression may depend on the time since birth, the purpose for expressing and the individual mother and infant. A variety of methods have been used to obtain breast milk:

- **Hand expressing** (Hand action stimulates milk ejection reflex and compresses milk ducts) is the cheapest way to express. It is an important skill to learn as it allows mothers to express EBM in any situation (Beech 2011).

  **And/or**
  - **Breast pumps** are available in manual, electric and battery forms (Wall 1998). Negative pressure
created by hand/arm or pump action of the pump causes milk to flow from breast to pump. Suction pressures may be difficult to control in some pumps while others have adjustable suction pressures available (Becker et al. 2016). **Electric hospital grade pumps** are a good choice if mothers have to express for a long time or if expressing more than a couple of times a day. There are several types, and most can be adapted to allow single or double pumping.

**In combination with:**
- **Hands on Pumping (HOP)** involves using breast compression and breast massage while hand expressing or using a breast pump. This technique has been shown to increase breast milk production (Morton 2009).

There is no specific type of pump that is suitable for all mothers and/or circumstances (Becker et al. 2016). However, Slusher et al (2007) revealed greater maternal milk volumes with electric breast pumps than hand expression. Becker et al (2016) identified that hand expression or large electric pumps provide higher protein content than manual pumps and fat content was higher with breast massage when pumping. For mothers expressing breast milk for infants in OLCHC, it is advisable to use the electric hospital grade pump (Medela Symphony) available in OLCHC in combination with HOP (This and similar pumps can also be rented for home use).

### 6.0 Potential risks associated with expressing breast milk

**For mothers:**
- Injury to the mother (Clemons and Amir 2010), (e.g. Mastitis, discomfort and irritation if incorrect funnel size or pump pressure is used)
- Reduced milk supply (Rasmussen 2011)
- Reduced maternal self-confidence (Buckley 2009)

**For infants:**
- Risk of misappropriated EBM (given to the wrong infant) (Warner and Sapsford 2004)
- Risk of medication transfer from mother to infant (rarely does breastfeeding or expressing need to be disrupted)

### 7.0 EBM and Maternal Medication

Almost all prescription and over-the-counter medications taken by the mother are safe during breastfeeding American Academy of Family Physicians (2015). Nevertheless, mothers should be asked if they are taking any medications (either recreational, ‘over the counter’ or prescribed). Several resources are available to help estimate the degree of medication exposure an infant will receive through breast milk and medication compatibility with breast milk. These resources include the Pharmacy Department in OLCHC, with reference to Briggs et al (2016) or for out of hours advice use: [www.ukmicentral.nhs.uk](http://www.ukmicentral.nhs.uk). Other Medication and Lactation databases include [www.nmic.ie](http://www.nmic.ie), [www.infantrisk.com](http://www.infantrisk.com), [www.toxnet.nlm.nih.gov](http://www.toxnet.nlm.nih.gov) and [www.uktis.org](http://www.uktis.org). This compatibility should also be performed in consultation with the infants medical team to determine the compatibility of medication with breastfeeding or if a safer alternative can be found. Rarely does breastfeeding have to be disrupted.
Infant’s exposure to such medications is dependent on the:
- extent of medication transfer into breast milk,
- effects of medication on milk production and composition, and
- extent and consequent effects of exposure to medication in breast milk on breast-fed infants
- infants age
- action of medications may vary among mothers over periods of time (absorption, distribution, metabolism, excretion)

(Briggs et al 2016, AAP 2012)

8.0 Principles of teaching both hand/pump expressing

Mothers should be assisted to learn the skill of hand expression before discharge from maternity services (WHO/ UNICEF 1989). This skill ensures that expressing is effective to establish and/or maintain an adequate breast milk supply (Becker et al 2016). However, due to the nature of emergency admissions from maternity to children’s hospitals, this skill may not be taught. Therefore, it is important that nurses in OLCHC teach this skill to mothers who choose to breastfeed and/or express breast milk for their infants.

Mothers who receive breastfeeding education and support were more likely to be breastfeeding at discharge (Ahmed 2008). The best way to support breastfeeding is difficult to define, as many methods can be useful (Hannula et al 2008). **Hands-off Technique (HOT)** is one principle that can be used to teach mothers how to breastfeed with minimal intervention of ‘showing’ rather than ‘doing’ the attachment for mother, nurses are encouraged to educate and facilitate the mother and infant to attach independently with the assistance of teaching aids like information leaflets, dolls, and demonstrate attachments (Ingram et al. 2002, Hannula et al 2008, McGorrian et al 2010, LLL 2012). Mothers should be given verbal and written information on handwashing, expressing, supply, labelling, storage, handling of EBM and care of pump and expressing equipment (HMBANA 2011) (written information is available in the ‘Information leaflet for mothers expressing breast milk in OLCHC’ (NPC 2011a). This can assist in consolidating the verbal advice given by nursing staff in OLCHC.

9.0 Privacy, rest and expressing

Privacy should be maintained while expressing by providing a single cubicle space where possible with screens/curtains, a bed for mothers and a ‘do not disturb’ sign. Privacy is essential as stress may affect the milk ejection reflex in some mothers. This may mean the reallocation of beds in a ward area, with due consideration for the medical condition, and infection risk of infants involved. A single cubicle space for mothers allows mothers to rest both day and night and facilitates skin to skin contact (Ludington-Hue 2011). There are also dedicated Breastfeeding/Expressing Rooms in the Infant Wards and PICU’s within OLCHC for mothers to express while their sick infants is hospitalised. There is no dedicated room for mothers who wish to express while visiting or if their infant is an out patient in OLCHC. However, a room will be made available to accommodate this or they can avail of the Breastfeeding/Expressing Rooms in the Infant Wards if appropriate.
10.0 Establishing and maintaining the process of expressing breast milk for infants in OLCHC

The process often involves the following steps:
- Skin to Skin Contact
- Stimulating the Milk Ejection Reflex
- Hand or pump expressing
- Expressing Assessment Tool
- Safe Handling of EBM
- (Re)Establishing breastfeeding after expressing breast milk

10.1 Skin to Skin Contact (SCC)

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<th>Diagrams</th>
<th>Rationale &amp; Reference</th>
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| Mothers should be encouraged to perform **Skin to Skin Contact (SCC)**:  
- Place the infant (with nappy and hat) prone onto the mothers chest, skin to skin, inside their clothes with the infants head exposed  
- Mothers should be encouraged to wear a front opening top  
- Cover the infant with the mothers clothes and a pre-warmed blanket  
- Monitor the infants regularly or as clinically indicated | [SSC](#) | SSC has been shown to stimulate prolactin, promote a better milk ejection reflex, improve breastfeeding rates (with longer and more exclusive breastfeeding) and higher volumes of expressed breast milk, trigger mammary antibody production (Jones and Hartmann 2005, Conde-Agudelo and Diaz-Rossello 2016, Gregson and Blacker 2011, Ludington-Hue 2011, Moore et al 2016, AAP 2012, Acuna-Muga et al 2014, AAP 2015)  
To facilitate SSC and easy access to the infant during SCC (Ludington-Hue 2011, Moore et al 2016)  
To maintain the infants body temperature and stay dry (Moore et al 2016)  
Healthy newborn infants temperature will remain in a safe range provided SSC is uninterrupted and infants are dry and covered with a pre-warmed blanket (or other material) and their... |
This can be performed at regular intervals throughout the day/night or as tolerated by the infant (at least one hour daily).

Documented in nursing care plan
- Daily frequency and duration of SCC
- Performed by whom
- Evidence the SCC was tolerated or not


To improve the transition to breastfeeding (Edwards and Spatz 2010)

To provide evidence that SCC was either tolerated or not (Spatz 2004). Good clinical records are essential to provide documentary evidence of the delivery of quality patient care (National Hospitals Office 2009, Nursing and Midwifery Board of Ireland (NMBI) 2015a).

10.2 Milk Ejection Reflex (MER)(Let down Reflex)

To obtain quantities of milk by any method requires an effective milk ejection or let down reflex (WHO 2006, Becker et al 2016). This reflex is dependent on the hormone oxytocin, produced in the posterior pituitary gland. Oxytocin causes the contraction of the myoepithelial cells surrounding the alveoli and makes the milk flow from the alveoli and down the ducts (Riordan 2010). Improved MER can result in more fat-rich hind milk being available, though restricting the length of the pumping session may reduce the hind milk obtained (Becker et al 2016).

10.2.1 Milk Ejection Reflex Responses

Milk ejection reflex responses differ between the early days of establishing milk supply to when milk supply is well established, and can also depend on:
- mothers parity
- previous breastfeeding experience
- gestation of infant at birth
- mothers level of distress
- the length of time since commencing pumping
- the length of pumping sessions
- breastfeeding directly in addition to expressing

(Becker et al 2016)

10.2.2 Signs of the milk ejection reflex

After birth, mothers may experience:
- Painful uterine contractions
- Spraying of milk from the breast
- Leaking from the breast not being suckled
- An increase in thirst
- Feeling a squeezing sensation
- Breast’s feel tingly, with a warm sensation during milk ejection
- Slow deep sucks and swallowing by the baby
- Some mothers may not feel any sensation (WHO 2006, Noonan 2011)

Mothers are more likely to feel the MER at the beginning of full breast release (LLL 2012) but it can also occur later in the expressing process (Prime et al 2011). However, not all mothers feel the MER happen and therefore, taken on its own, it cannot be used as a reliable sign of milk sufficiency (West and Marasco 2009). Milk expression may be an unusual stimulus for mothers to trigger the MER (Kent et al 2012a) however, over time mothers often may even become conditioned to having a MER to the pump (LLL 2012).

### 10.2.3 How to stimulate the Milk Ejection Reflex (MER)?

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<td>Mothers should decontaminate their hands</td>
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<td>Prevention of cross infection (HSE 2009a, CDC 2018, Infection Control Department 2017a, HMBANA 2011, NPC 2017c)</td>
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<td>Allow plenty of time</td>
<td></td>
<td>To promote a relaxing atmosphere (LLL 2012)</td>
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<td>Ensure mothers have easy access to fluids</td>
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<td>Mother should drink according to their thirst (about 8 to 10 glasses of fluids per day) while breastfeeding to maintain hydration status (LLL 2004)</td>
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<td>To stimulate MER encourage mothers to use:</td>
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<td>The use of relaxation/visualisation techniques and tactile/olfactory stimulation has been shown to help stimulate MER and improve milk yield (Rondo and Souza 2007, Jackson 2010, Conde-Agudelo and Diaz-Rossello 2016, LLL 2012 HSE 2016). Stress may inhibit the MER leading to insufficient milk production (Geddes 2007). Greater milk volumes are yielded when mothers use relaxation techniques such as listening to music, relaxation techniques, breast</td>
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<td>- relaxation techniques such as deep breathing exercises</td>
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<td>- visualisation techniques such as picturing their infant, looking at a photo or recordings of their infant</td>
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<td>- using tactile and olfactory reminders such as their clothing</td>
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Encourage mothers to get a back and neck massage (up and down the back on either side of the spine between the shoulder blades)

Choose a comfortable chair with a high back and supportive arms.

Facilitate expressing at the infant’s bedside

Maintain privacy to express:
• Use a screen or curtains in a single cubicle space beside the infant

Advice mothers to place warm moist compresses (face cloth) on their breasts.

Do not feel rushed while expressing.

Mothers should:
• **Massage** around their breasts gently in small circular motions with their fingers from the chest towards the nipple,

• **Stroke** their breasts from the chest towards the nipple, and

• Lean forward and **shake** their breasts gently.

• Gently roll their nipples between their fingers

massage (Becker et al 2016)

To help stimulate MER and express effectively and comfortably (WHO 2009, HSE 2016). To yield a greater milk volume (Becker et al 2016)

To help stimulate MER and express effectively and comfortably (WHO 2009, HSE 2016)

To help stimulate MER and improve milk yield

To help stimulate MER and assist the milk to flow

To help stimulate MER and assist the milk to flow (Kent et al 2012b)

To help stimulate MER and assist the milk to flow

To help stimulate MER and assist the milk to flow (Morton 2009, HSE 2016) and improve the quality and quantity of breast milk (Foda et al 2004, Carlson-Bowles 2011, Becker et al 2016)

To help stimulate MER and assist the milk to flow

To help stimulate MER and assist the milk to flow

To help stimulate MER and assist the milk to flow
### 10.3 How to teach a mother to hand express?

**Equipment:**
- Sterile wide necked bowl/container
- Hand cleansing facilities

#### ACTION

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<tr>
<td>Gather equipment</td>
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<td>To prepare environment (Trigg &amp; Mohammed 2010)</td>
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<td>All bowl / container must be rinsed, washed, sterilised as per Section 16:</td>
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<td>As per OLCHC Guidelines (Infection Control Department 2012a)</td>
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<tr>
<td>Decontaminate hands</td>
<td></td>
<td>Prevention of cross infection (HSE 2009a, CDC 2018, Infection Control Department 2017a, HMBANA 2011, NPC 2017c, OLCHC 2012a)</td>
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<td>Explain the procedure to the mother in simple language using a hands off technique</td>
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<td>Explanations can gain cooperation and trust and allay fears (Trigg &amp; Mohammed 2010) and facilitate the mother and infant to attach independently (LLL 2012)</td>
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<td>Stimulate the 'milk ejection' reflex as shown in Section 10.2.3 above, then, the mother should:</td>
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<td>To ensure the fingers and thumb are positioned behind the alveolar ducts (HSE 2016) Refer to the following web link for a video clip of hand expressing for visual footage: <a href="https://www.healthpromotion.ie/hp-files/docs/HPM00972.pdf">https://www.healthpromotion.ie/hp-files/docs/HPM00972.pdf</a></td>
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<td>• With one hand, <strong>position</strong> the thumb and 1st two fingers in a ‘C’ shape on the edge of the areola,</td>
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<td>• <strong>Compress and release</strong> the breast tissue using rhythmic movements.</td>
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<td>Sliding and rubbing the nipple may hurt and should be avoided (HSE 2009a)</td>
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- **Collect** the milk as it is released

- Do not slide or rub along the nipples

- If the milk doesn’t flow, try moving fingers slightly towards the aerola or further away.

- When the flow of breast milk slows down, move to the other breast and **repeat** the process.

- Aim the nipple into a sterile bowl/container to collect the breast milk

- Transfer this milk from the sterile bowl into a sterile screw top container/bottle when finished expressing

Do not collect milk in breast shield during or between pumping sessions

| Label the EBM | 2016) Otherwise known as ‘drip milk’, collected in breast shells between or during pumping sessions has been found to have 50% less fat that actively expressed milk and is at risk of being heavily contaminated with skin flora (Gessler et al 2004, HMBANA 2011) |
| Store EBM | As per Section 11.1 |
| Provide the ‘Log Book for Mothers Expressing EBM’ Document (available in OLCHC Intranet) (not for filing in HCR, for mothers own | As per Section 11.2 |

To permit quick assessment and detect decreases in mothers milk supply so that remedial action to increase supply can be taken (Spatz 2004, Dougherty and Luther 2008, Spatz et al 2012)

Good clinical records are essential to provide documentary evidence of the delivery of quality patient care (National Hospitals Office 2009, Nursing and Midwifery Board of Ireland (NMBI) 2015 a)
use) and review by the nurse daily (Appendix 1a) or the 'Log Book for Mothers Breastfeeding / Expressing’ Document (Appendix 1b)

Document same in Nursing Care Plans

10.4 How to teach a mother to express using a breast pump with/without Hands on Pumping (HOP)?

Equipment:
- Breast pump
- Hand cleansing facilities
- Breast pump equipment with appropriate fitting breast shield(s) (See Appendix 2 for diagrams of same)

<table>
<thead>
<tr>
<th>ACTION</th>
<th>DIAGRAMS</th>
<th>RATIONALE &amp; REFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gather equipment</td>
<td></td>
<td>To prepare environment (Trigg &amp; Mohammed 2010)</td>
</tr>
<tr>
<td>Decontaminate hands</td>
<td></td>
<td>Prevention of cross infection (HSE 2009a, CDC 2018, Infection Control Department 2017a, HMBANA 2011, NPC 2017c, OLCHC 2012a)</td>
</tr>
<tr>
<td>Clean equipment before use: As per Section 16</td>
<td></td>
<td>As per hospital guidelines (Infection Control Department 2011 and HMBANA 2011)</td>
</tr>
<tr>
<td>Assemble expressing set equipment (connection tubing and breast shield) once cleaned and sterilised (as per manufacturers instructions)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attach the sterile EBM Bottle to the bottom of the funnel</td>
<td></td>
<td>To express effectively and comfortably. To allow gravity to work to the mothers advantage</td>
</tr>
</tbody>
</table>
Advise the mother to sit in a comfortable chair with their back supported (sitting upright and slightly forward).

**Stimulate the ‘Milk Ejection’ reflex** as per Section 10 above

**Breast shield assessment:**
Perform when using the breast shield equipment and pump for the first time (See Appendix 3a, Appendix 3b and Section 10.4.1)

**Single or double pumping**

- When breast shield is positioned correctly:
  - Turn the pump on
  - Teach mothers to gradually increase the pressure setting from minimum to a comfortable level tolerated by mother
  - Continue to express until

To ensure the shield is fitting correctly as ill fitting breast shields may impede breast milk drainage by occluding ducts resulting in milk stasis and the eventual reduction in breast milk supply (Zoppi 2012)

Double pumping as opposed to single pumping is associated with more milk ejections, more efficient and effective milk removal resulting in higher fat content and improved drainage of the breast and is time saving (Prime et al 2010)

(LLL 2012)

To avoid hurting or damaging alveolar tissue.

Liquid expands when frozen (ABM 2010)

To mimic infants natural breastfeeding (Medela 2010)
the flow of EBM slows down, then mothers should **massage their breasts** for 1-2 minutes and express any remaining milk either by hand expressing or pumping

- Continue to pump for a further 1-2 minutes after the flow stops.
- Turn off the breast pump before removing the breast shield.
- Always leave a 2cm gap at the top of each bottle.
- Continue to the other breast if single pumping.

The Medela Symphony breast pump uses two phase expression:
- Phase 1: rhythm, rapid stimulation followed by
- Phase 2: slower expression (It is normal for the breast pump sound to change and sound slower during Phase 2)

**Use Hands On Pumping (HOP)**

Usually performed while single pumping, but can be performed with double pumping if the breast pump suction causes milk to be removed from the breast but does not completely empty the breast. Combining pumping and HOP (breast massage and compression) has been shown to increase milk supply and help provide more of the fatty hind milk (Morton 2009, Carlson-Bowles 2011). Refer to the following web link for a video clip of maximizing your breast milk supply for visual footage: [https://globalhealthmedia.org/portfolio-items/is-your-baby-getting-enough-milk/?portfolioID=5623](https://globalhealthmedia.org/portfolio-items/is-your-baby-getting-enough-milk/?portfolioID=5623) (LLL 2012)

To prevent contamination of EBM (HMBANA 2011)

As per Section 11.1

To prevent contamination of EBM (Jones and Hartmann 2005, HMBANA 2011)
shields are held firmly in place
- While this continues, with a mother's free hand, use HOP, moving between **breast compression** and **breast massage** to further stimulate milk flow (some extra milk should be seen spurting out of the nipple).
- **Breast compression** consists of mothers firmly supporting their breast with their cupped hand, and squeezing to increase the internal pressure of the whole breast (without causing discomfort).
- Release the pressure when the milk stops dropping and repeat this by moving their hand around the breast.
- Mothers should **massage their breasts** gently with their fingers in small circular motions from the chest towards the nipple.
- When the flow of breast milk has stopped mothers should move to the other breast.
- If the milk doesn't flow, mothers should try moving their fingers slightly towards the nipple or further away.
- Continue to pump for 1-2 minutes after the last flow is seen.

When finished expressing,
remove the EBM bottle from the expressing equipment and place the lid on the EBM container

Label the EBM container

Store the container in the EBM refrigerator/freezer immediately as per Section 11.2.1 below or consume immediately as per Section 12.

10.4.1 Expressing Assessment Tool (EAT)

Nurses should discuss the process of expressing of breast milk with mothers and what is normal and what indicates when there is a problem with expressing breast milk. The Expressing Assessment Tool (EAT) can help to determine when expressing is going well for mothers (See Expressing Assessment Tool, Appendix 4a and Table 1 below). The EAT is performed on a daily basis, with green indicating effective expressing of breast milk and pink indicating a expressing problem that needs to be resolved. This Expressing Assessment Tool is available as a Mothers Version (Appendix 4b) and is available for download on www.olchc.ie, so mothers can also assess how expressing breast milk is going for them.

Table 1 (Expressing Assessment Tool (EAT))

10.4.2 Breast Shield Assessment

Breast shield assessment is performed to determine that the correct breast shield size is used when using a breast pump (Prime et al 2010, LLL 2012, Becker et al 2016). The breast shield size is determined by the nipple size not the breast size. Some pumps have a flexible breast shield that compress the breast and some have a choice of sizes of breast shields (Becker et al 2016). Medela breast pumps are available in OLCHC. Medela have a choice of breast shield sizes available (standard size (24mm) is available with all expressing kits). Other available sizes include: sizes S(21mm), M(24mm standard), L(27mm), XL(30mm), XXL(35mm))

It is essential that the correct breast shield size is used when expressing. If the breast shield is too small, too big or not centred correctly the nipple and alveolar tissue will not move freely into the breast shield causing redness, soreness and a white ring around the nipple. Incorrectly fitted breast shields may also impede breast milk drainage by occluding ducts resulting in milk stasis and the eventual reduction in breast milk supply (Zoppi 2012).
Breast Shield Assessment Tool (Adapted from Zoppi 2012)

Breast Shields fit correctly when the:

<table>
<thead>
<tr>
<th>Nipple:</th>
<th>Correctly Fitting Breast Shield</th>
</tr>
</thead>
<tbody>
<tr>
<td>• is centred and pointing in the direction of the funnel</td>
<td><img src="image" alt="Correctly Fitting Breast Shield" /></td>
</tr>
<tr>
<td>• moves freely in the tunnel</td>
<td></td>
</tr>
<tr>
<td>• is gently pulled into the tunnel</td>
<td></td>
</tr>
<tr>
<td>• does not rub against the sides of the breast shield</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Areolar tissue:</th>
<th>Correctly Fitting Breast Shield</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Little or none is pulled into the tunnel</td>
<td><img src="image" alt="Correctly Fitting Breast Shield" /></td>
</tr>
<tr>
<td>• Has no white rings after pumping</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Breast:</th>
<th>Correctly Fitting Breast Shield</th>
</tr>
</thead>
<tbody>
<tr>
<td>• moves gently and rhythmic</td>
<td><img src="image" alt="Correctly Fitting Breast Shield" /></td>
</tr>
<tr>
<td>• is completely empty with no lumps after pumping</td>
<td></td>
</tr>
</tbody>
</table>

No pain or discomfort is experienced while pumping

When performing the breast shield assessment the nurse must also be cognisant that:
- Some mothers alveolar size may have different between the right and left alveolar
- The breast shield size will depend on the mothers breast tissues and skin elasticity
- The breast shield size may change over the duration of the pumping experience
- The nipple size may change when the pump pressure is turned on (during both the stimulation and expressing phase of the expressing cycle)
- If the breast shield is pressed too hard onto the alveolar it may block the milk ducts.

(Medela 2017)

10.5 Frequencies, duration of expressing

<table>
<thead>
<tr>
<th>Action</th>
<th>Rationale &amp; Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother should aim to express in a pattern similar to their infants typical breastfeeding rhythm. Encourage mothers to design a breastfeeding and expressing regimen that works for both mother and infant</td>
<td>Breast storage capacity and infant nursing style varies widely. To ensure that mothers are still producing sufficient milk to facilitate their infants demands (Meier et al 1998, LLL 2012)</td>
</tr>
<tr>
<td>Mothers should be advised to tailor their expressing frequency to their breast storage capacity</td>
<td>Breast storage capacity and infant nursing style varies widely. Mothers whose breasts have a small storage capacity will need to empty their breasts more frequently and avoid expended intervals between emptying (Kent et al 2012)</td>
</tr>
</tbody>
</table>
If the infant is a newborn mothers should aim to:

- Express as soon as possible after delivery
- Express milk 8-10 times in 24 hours for 10-14 days
- Avoid leaving gaps of more than three hours (during the day)
- Express every 5-6 hours (at night)
- Produce between 750-1000ml EBM per day (24hours) by day 10 of birth.
- If short of time mothers are advised to pump for short periods (5-10 minutes) more frequently than to leave long gaps between pumping sessions.
- Be aware that mothers will only express small amounts initially. The amount expressed can vary at each expression, from

To mimic the normal initiation of breastfeeding (Kent et al 2012a)

This mimics the increased frequency of feeding by breastfeeding infants in order to increase mother breast milk supply (Dougherty and Luther 2008). Maximum total milk production is set early in lactation (LLL 2012, Schanler et al 1999). Mothers who express less than 6 times daily have lower daily yields (Hill et al 2001)

Restricting the length of the pumping session may reduce the hindmilk obtained (Becker et al 2016)

Prolactin, the hormone necessary for milk production, is released in greater quantities during night-time suckling, thus milk production may get its greatest boost when infant feeds at night (LLL 2004). Night feeds may also provide infants with a substantial amount of their 24 hour intake (Dougherty and Luther 2008).

To establish an EBM supply and that mothers will still produce sufficient EBM to facilitate infant led feeding at discharge (Jones and Hartmann 2005, Riordan 2009)

To establish an EBM supply and that mothers will still produce sufficient EBM to facilitate infant led feeding at discharge (Jones and Hartmann 2005, Riordan 2009)

Colostrum is produced in small quantities and therefore expression times, and quantities, in the first few days will be minimal (Riordan 2010)

To mimic their infants usual breastfeeding pattern (Hill et al 2001)

To maintain an EBM supply while infants are
each breast, and from day to day.

If the infant is not a newborn, mothers should aim to:
- express at regular intervals or at the same times their infant would usually breastfeed.

If the infant is starting to breastfeed after receiving expressed breast milk for a while, mothers may need to:
- continue expressing EBM until the infant is totally established on breast feeds (allowing infants to breastfeed first and then express)

If EBM is not required immediately, it should be disconnected from the expressing set, capped, labelled and placed in the appropriate storage facility as per Section 11

Praise mothers throughout this process regardless of the EBM volume produced

Document these observations in the infants expressing care plan and continue to assess the mothers expressing progress using the Expressing Assessment Tool (EAT) (Appendix 4a) (a mother version is also available (Appendix 4b) and on www.olchc.ie

being (re)established on breastfeeds

Frequent feeding is important in the establishment of a milk supply. The composition of breast milk changes throughout the course of a feed, the fat content of the feed increases throughout the feed, the highest fat content being towards the end of the feed. (Jones 2005, ASPEN 2009)

To boost mother confidence in their expressing abilities

Good clinical records are essential to provide documentary evidence of the delivery of quality patient care (National Hospitals Office 2009, Nursing and Midwifery Board of Ireland (NMBI) 2015a).

11.0 Safe handling of EBM
The process often involves the following steps:
- Labelling
- Defrosting
- Storage
- Decanting
11.1 Labelling of EBM

<table>
<thead>
<tr>
<th>Action</th>
<th>Diagrams</th>
<th>Rationale &amp; Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Label each expressed breast milk bottle using the preprinted OLCHC</td>
<td></td>
<td>Label EBM with the date of collection, including year if freezing (LLL 2012)</td>
</tr>
<tr>
<td>‘Expressed Breast Milk’ labels (Appendix 5), where available with the</td>
<td></td>
<td>Labelling EBM should be performed by mothers in order to minimise the number of</td>
</tr>
<tr>
<td>following information:</td>
<td></td>
<td>people handling and potentially contaminating EBM (Lang 2002).</td>
</tr>
<tr>
<td>• Mother’s name</td>
<td></td>
<td>To promote and enhance safer administration of EBM and prevent the misappropriation</td>
</tr>
<tr>
<td>• Infant’s name</td>
<td></td>
<td>of EBM, legible pre-printed EBM labels should be used (MHRA 2003, NPC 2007,</td>
</tr>
<tr>
<td>• Date and time expressed</td>
<td></td>
<td>FSAI 2012, ASPEN 2009)</td>
</tr>
<tr>
<td>• HCRN</td>
<td></td>
<td>To promote and enhance safer administration of EBM and prevent the misappropriation</td>
</tr>
<tr>
<td>• Ward name</td>
<td></td>
<td>of EBM, legible pre-printed EBM labels should be used (MHRA 2003, NPC 2007,</td>
</tr>
<tr>
<td>• if mother taking any medication</td>
<td></td>
<td>FSAI 2012, ASPEN 2009)</td>
</tr>
<tr>
<td>EBM transferred from another hospital (e.g. EBM expressed while the</td>
<td></td>
<td></td>
</tr>
<tr>
<td>infants mother was hospitalised in another hospital and the</td>
<td></td>
<td></td>
</tr>
<tr>
<td>infants was transferred to OLCHC):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Each bottle of EBM should be relabeled:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>o by the parents on its arrival to OLCHC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>with an OLCHC preprinted EBM labels</td>
<td></td>
<td></td>
</tr>
<tr>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>o in the parents absence, it should be relabeled with an</td>
<td></td>
<td></td>
</tr>
<tr>
<td>parent’s preprinted EBM label</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Appendix 5

Expressed Breast Milk (Infusion Use Only) (Enteral Administration Only)

<table>
<thead>
<tr>
<th>Baby’s Name:</th>
<th>Amount Added:</th>
<th>Time Added:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Date of Birth: __________________________

Fortified: Yes / No

Fortified with: __________________________

Do Not Use After:

Date: __________  Time: ______

Hospital Number: __________________________

Ward Name: __________________________

Nurse Initial: __________________________

Mother’s Name: __________________________

Mother’s Medication: __________________________

Checked by: __________________________

Appendix 5

Expressed Breast Milk (Infusion Use Only) (Enteral Administration Only)

<table>
<thead>
<tr>
<th>Baby’s Name:</th>
<th>Date of Birth:</th>
<th>Date:</th>
<th>Time:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Date:</td>
<td>Time:</td>
<td></td>
</tr>
</tbody>
</table>

Fortified: Yes / No

Fortified with: __________________________

Do Not Use After:

Date: __________  Time: ______

Hospital Number: __________________________

Ward Name: __________________________

Nurse Initial: __________________________

Mother’s Name: __________________________

Mother’s Medication: __________________________

Checked by: __________________________

Appendix 5

Expressed Breast Milk (Infusion Use Only) (Enteral Administration Only)

<table>
<thead>
<tr>
<th>Baby’s Name:</th>
<th>Date of Birth:</th>
<th>Date:</th>
<th>Time:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Date:</td>
<td>Time:</td>
<td></td>
</tr>
</tbody>
</table>

Fortified: Yes / No

Fortified with: __________________________

Do Not Use After:

Date: __________  Time: ______

Hospital Number: __________________________

Ward Name: __________________________

Nurse Initial: __________________________

Mother’s Name: __________________________

Mother’s Medication: __________________________

Checked by: __________________________

Appendix 5

Expressed Breast Milk (Infusion Use Only) (Enteral Administration Only)

<table>
<thead>
<tr>
<th>Baby’s Name:</th>
<th>Date of Birth:</th>
<th>Date:</th>
<th>Time:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Date:</td>
<td>Time:</td>
<td></td>
</tr>
</tbody>
</table>

Fortified: Yes / No

Fortified with: __________________________

Do Not Use After:

Date: __________  Time: ______

Hospital Number: __________________________

Ward Name: __________________________

Nurse Initial: __________________________

Mother’s Name: __________________________

Mother’s Medication: __________________________

Checked by: __________________________

Appendix 5

Expressed Breast Milk (Infusion Use Only) (Enteral Administration Only)

<table>
<thead>
<tr>
<th>Baby’s Name:</th>
<th>Date of Birth:</th>
<th>Date:</th>
<th>Time:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Date:</td>
<td>Time:</td>
<td></td>
</tr>
</tbody>
</table>

Fortified: Yes / No

Fortified with: __________________________

Do Not Use After:

Date: __________  Time: ______

Hospital Number: __________________________

Ward Name: __________________________

Nurse Initial: __________________________

Mother’s Name: __________________________

Mother’s Medication: __________________________

Checked by: __________________________

Appendix 5

Expressed Breast Milk (Infusion Use Only) (Enteral Administration Only)

<table>
<thead>
<tr>
<th>Baby’s Name:</th>
<th>Date of Birth:</th>
<th>Date:</th>
<th>Time:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Date:</td>
<td>Time:</td>
<td></td>
</tr>
</tbody>
</table>

Fortified: Yes / No

Fortified with: __________________________

Do Not Use After:

Date: __________  Time: ______

Hospital Number: __________________________

Ward Name: __________________________

Nurse Initial: __________________________

Mother’s Name: __________________________

Mother’s Medication: __________________________

Checked by: __________________________

Appendix 5

Expressed Breast Milk (Infusion Use Only) (Enteral Administration Only)

<table>
<thead>
<tr>
<th>Baby’s Name:</th>
<th>Date of Birth:</th>
<th>Date:</th>
<th>Time:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Date:</td>
<td>Time:</td>
<td></td>
</tr>
</tbody>
</table>

Fortified: Yes / No

Fortified with: __________________________

Do Not Use After:

Date: __________  Time: ______

Hospital Number: __________________________

Ward Name: __________________________

Nurse Initial: __________________________

Mother’s Name: __________________________

Mother’s Medication: __________________________

Checked by: __________________________
OLCHC preprinted EBM label by the OLCHC registered nurse receiving the care of the infant and in the presence of the transferring nurse from the hospital the infants transferred from

‘Tamper proof seal’ must be applied between the bottle and bottle cap.

Place the EBM in the appropriate storage area for use at a later date

or

Use the EBM straight away

EBM is then stored in dedicated containers labelled (Appendix 5) (with infants name, date of birth, HCRN) for individual infants (i.e. individual trays, containing only EBM bottles from one mother).

Labelling of EBM after decanting
Each EBM bottle or syringe is correctly and clearly labelled using the EBM labels with the:

A tamper proof seal is a pressure sensitive tape that is applied to EBM storage containers (bottle, syringe or bag) to provide adequate seal integrity (AORN 2007) and to reduce the risk of EBM tampering prior to its administration.

See Section 11.2: Storage of EBM

See Section 12: Feeding infants EBM (fresh and defrosted)

EBM storage space may be minimal in ward areas

To identify potential risks, ensure appropriate measures are taken and reduce the risk of misappropriation of EBM (Warner and Sapsford 2004)
11.2 Storage of expressed breast milk

<table>
<thead>
<tr>
<th>ACTION</th>
<th>RATIONALE &amp; REFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Place the EBM in the appropriate storage area for use at a later date or Use the EBM straight away</td>
<td>See Section 11.2: Storage of EBM</td>
</tr>
<tr>
<td>EBM is only collected in a: • sterile polypropylene (plastic) • Bisphenol A (BPA) free, • single use, • screw cap lid container</td>
<td>See Section 12: Feeding infants EBM (fresh and defrosted) Sterile bottles reduce risk of contamination, plastic containers freeze well and there is less loss of immunoglobulins when compared to other materials (ASPEN 2009) BPA can cause adverse effects as an endocrine disruptor (ABM 2010, O’Malley 2012) To avoid contamination (HMBANA 2011) Caps produce an airtight seal in order to avoid leakage or contamination (ASPEN 2009)</td>
</tr>
</tbody>
</table>
These EBM containers are supplied by OLCHC.

EBM is stored in a dedicated EBM fridge and freezer on the ward. There is no mixing of EBM with food, pathology specimens or medicines.

EBM is then stored in dedicated containers labelled for individual infants (i.e. individual trays, containing only EBM bottles from one mother).

Inform mothers if there are restrictions on storage space at ward level, surplus EBM may then be stored in the Formula Room in OLCHC or the mother’s home fridge/freezer as appropriate

**Transporting EBM from (to) home to (from) OLCHC:**
- upright in an insulated (easily cleaned) container
- with coolant blocks to maintain a cool temperature.
- double checked and signed out of the hospitals (by 2 nurses of which one is registered, and the parent may be the 3rd checker if available) to ensure it is the correct EBM for the correct infant

**Transporting EBM from hospital to hospital:**
- in rigid (easily cleaned) container and
- in tightly packet in bubble wrap, paper towel, or foam chips without ice, (and freezer gel packs may be used if available)
- double checked and signed out of the hospitals (by 2 nurses of which one is registered, and the parent may be the 3rd checker if available) to ensure it is the correct EBM for the correct infant

To prevent EBM spillages, cross contamination, misappropriation of EBM (Spatz 2004) and maintain the EBM temperature

EBM storage space may be minimal in ward areas

To prevent EBM spillages, cross contamination and maintain the EBM temperature as water freezes at a temperature higher than HBM and the ice is warmer than the frozen HBM and may thaw the frozen containers. Freezer gel packs are preferred over ice as they have a lower freezing temperature (ASPEN 2009)

**11.2.1 Table of EBM Storage (See Appendix 6 for shortened version)**

<table>
<thead>
<tr>
<th>EBM STATUS</th>
<th>WHERE AND TEMPERATURE</th>
<th>DURATION</th>
<th>RATIONALE &amp; REFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh EBM</td>
<td>Refrigerator (2-4°C) (not in fridge door)</td>
<td>Up to 48 hours</td>
<td>Bactericidal capacity of stored refrigerated EBM declines significantly by 48-72hours, and bacterial growth has not been shown to increase at room temperature for up to 6</td>
</tr>
</tbody>
</table>
Defrosted EBM (not warmed) | Refrigerator (2-4°C) (not in fridge door) | Up to 24 hours | When thawing frozen EBM, label as thawed when completely thawed (no ice crystals present) and use this time when completely thawed to base acceptable time limits for use rather than when it is taken from the freezer (HMBANA 2011). Freezing reduces the quantity of some valuable nutrients (e.g. folacin, vitamin C and triglycerides) and destroys some live cells. Once frozen EBM is brought to room temperature, its ability to inhibit bacterial growth is lessened, especially by 24 hours after thawing (ABM 2010).

Defrosted EBM (warmed to room temperature) (Bolus feeds) | Used immediately (Do not refreeze) | Discard immediately after use | EBM that has been previously frozen will have lost some of its antibacterial properties and should be discarded soon after feeding (LLL 2012, HMBANA 2011). EBM left at room temperature can be forgotten and the temperature rises above 4°C increasing the risk of bacterial growth (Balmer et al 2001, Department of Clinical Nutrition and Dietetics 2011).

Supplemented / fortified EBM (warmed to room temperature) (Bolus feeds) | Used immediately (Do not refreeze) | Discard immediately after use | EBM that has been previously frozen will have lost some of its antibacterial properties and should be discarded soon after feeding (LLL 2012, HMBANA 2011). EBM left at room temperature can be forgotten and temperature rises above 4°C increasing the risk of bacterial growth.
<table>
<thead>
<tr>
<th>Defrosted EBM (warmed to room temperature) (Continuous feeds)</th>
<th>Used immediately (Do not refreeze)</th>
<th>Discard 4 hours once infusion commenced</th>
<th>To prevent colonisation of EBM with bacteria that could cause gastro-intestinal illness of the child (Balmer et al, 2001) a continuous infusion of defrosted EBM should hang no longer than 4 hours (American Dietetic Association 2004, ASPEN 2009, Department of Clinical Nutrition and Dietetics 2011)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplemented / fortified EBM (warmed to room temperature) (Continuous feeds)</td>
<td>Used immediately (Do not refreeze)</td>
<td>Discard 4 hours once infusion commenced</td>
<td>To prevent colonisation of EBM with bacteria that could cause gastro-intestinal illness of the child (Balmer et al, 2001) a continuous infusion of supplemented/fortified EBM should be discarded within 4 hours of the feed commencing in a closed feeding system (American Dietetic Association 2004, ASPEN 2009, Department of Clinical Nutrition and Dietetics 2011)</td>
</tr>
<tr>
<td>Supplemented / fortified EBM in Formula Room Refrigerator (2-4°C) (not in fridge door)</td>
<td>Up to 24 hours</td>
<td>Contamination and osmolarity increase faster in fortified EBM (HMBANA 2011)</td>
<td></td>
</tr>
<tr>
<td>Supplemented / fortified EBM at Ward/Unit level Used immediately (Do not freeze)</td>
<td>Discard immediately after use</td>
<td>Fortified EBM osmolarity increases the longer it is added to EBM feed (HMBANA 2011)</td>
<td></td>
</tr>
<tr>
<td>Fresh EBM for freezing Freezer (-20°C)</td>
<td>Freeze within 24 hours of expressing for up to 3 months</td>
<td>Stored EBM may have an altered smell and taste due to lipidosis (the activity of lipase, an enzyme that breaks down fat into fatty acids). This breakdown of fat aids infant digestion of EBM, particularly for preterm infants, and is not harmful (ABM 2010) and doesn’t need to be discarded (ASPEN 2009)</td>
<td></td>
</tr>
</tbody>
</table>

### 11.3 Defrosting expressed breast milk

<table>
<thead>
<tr>
<th>ACTION</th>
<th>RATIONALE &amp; REFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decontaminate hands</td>
<td>Prevention of cross infection (HSE 2009a, CDC 2018, Infection Control Department 2017a, HMBANA 2011, NPC 2017c, OLCHC 2012a)</td>
</tr>
<tr>
<td>Remove a sufficient volume of the frozen EBM from the EBM Freezer to meet the dietary requirements of the infant</td>
<td>To ensure there is a sufficient volume of EBM available for the infant for this period of time and to avoid wastage</td>
</tr>
<tr>
<td>Place the frozen EBM in the infants labeled</td>
<td>If EBM was previously frozen it is</td>
</tr>
</tbody>
</table>
and dedicated EBM container in the EBM Fridge to defrost

EBM is defrosted when there are no crystals evident

Defrost in the following order:
- 1st 1-5 days of colostrum/transition milk
- Then the most recently expressed fresh EBM
- Then defrost EBM (if fresh EBM is not available)

Document on the EBM milk label the time and date of defrosting

Place it in the EBM fridge

Emergency Defrosting (ONLY), using either the following methods:
- Water Method Defrosting
  - Clean the bottle warmer (inside and outside) with an alcohol wipe such as azowipe and allow to dry
  - Fill as directed with Sterile Water and

best to thaw it in the refrigerator (LLL 2012)

When thawing frozen EBM, label as thawed when completely thawed (no ice crystals present) and use this time when completely thawed to base acceptable time limits for use rather than when it is taken from the freezer (HMBANA 2011) using only the unfrozen part of the EBM may result in unequal distribution of EBM components (ASPEN 2009)

Colostrum should be fed as soon as possible in early feeding, as it contain high concentration of anti-infective, anti-inflammatory and growth factors (O’Malley 2012)

To ensure the nutritional and immunological contents of the EBM is most suited to the infant (Spatz et al 2012)

Label EBM as thawed when completely thawed (no ice crystals present) and use this time when completely thawed to base acceptable time limits for use rather than when it is taken from the freezer (HMBANA 2011) To ensure the EBM is identified as ‘defrosted EBM’ and used within 24 hours of defrosting

To ensure the EBM is defrosted safely, as rapid heating can alter the heat labile vitamins (HMBANA 2011, Infection Control Department 2012b)

Clean as per the SOP on Maintaining and Cleaning Bottle Warmers in OLCHC (Infection Control Department 2012c)
use as per manufacturer's instructions.
- Insert the frozen bottle on EBM into the bottle warmer (taking care that the water does not touch the lid)
- Allow to defrost
- Remove from the EBM Bottle from the bottle warmer when the EBM is thawed (no ice crystals present) but while still chilled
- Dry the EBM bottle
- Refrigerate until required for use

**Dry Method Defrosting**
- Clean the device before use as per manufacturers instructions
- Place the Frozen EBM in the device
- Set the device with the volume of EBM to be defrosted (if required) Remove from the EBM Bottle from the bottle warmer when the EBM is thawed (no ice crystals present) but while still chilled
- Dry the EBM bottle
- Refrigerate until required for use

**Do not defrost EBM:**

- under running tap water
- in containers of water
- in the microwave

When defrosted,
- Do not re-freeze breast milk once it has been thawed.

EBM can be contaminated with non-sterile water seeping under the lid of the bottle (Brown et al 2000, Gras-Le Guen et al 2003)

To reduce the incidence of microorganism growth (Bankhead et al 2009, HMBANA 2011)

Circulates warm air in a customised bottle warming device around the EBM container to defrost EBM (O’Malley 2012)

To reduce the incidence of microorganism growth (Bankhead et al 2009, HMBANA 2011)

To reduce the incidence of microorganism growth (Infection Control Department 2012b, Regulation and Quality Improvement Authority 2012)

To reduce the incidence of microorganism growth

Microwaves can denature and destroy the nutrient quality of the EBM and can cause hot spots (CDC 2018, ABM 2010, HMBANA 2011)

To reduce the risk of contamination with multiple openings of the bottle (MacQueen et al 2012)

Bacterial growth and loss of antibacterial activity in thawed milk will vary depending on the technique of milk thawing, duration of the thaw, and the
EBM bottle should only be opened once and all the EBM decanted at this time

Frozen EBM expressed outside OLCHC:
- Should be labelled appropriately (with an OLCHC EBM label by the parent)
  - If it arrives in a frozen state to OLCHC it should be placed in the EBM freezer
  - If it arrives in a defrosted state to OLCHC it should be consumed with 24 hours of defrosting or discarded

Document any disposal of EBM due to breakage or loss due to expiration of storage

amount of bacteria in the milk at the time of expression (ABM 2010)

To reduce the risk of cross infection and to comply with Bankhead et al (2009) regulations (See Section 11.4)

To ensure appropriate measures are taken and reduce the risk of misappropriation of EBM (Warner and Sapsford 2004)

As per Storage Section 11.2

As per Storage Section 11.2

EBM must not be reused or reheated as this increases the risk of contamination by pathogenic organisms during the feed (Johnston et al 2003, WHO 2005, FSAI 2012, Department of Clinical Nutrition and Dietetics 2011)

11.4 Decanting EBM

EBM should not be decanted from one EBM container to another as it increases the risk of EBM contamination (HMBANA 2011). However, when infants are sick or premature and enteral feeding is being (re)establishing only very small volumes of EBM may be required. Mothers are advised to express as close to the volume the infant requires per feed into the EBM container, however, for some infants this volume may be very small initially. For this reason decanting may be performed.

As this is procedure should be performed in a clean and sterile surface, it is advisable to perform this procedure on a sterile prep towel placed on a sterile field (i.e. dressing trolley or prepared dressing pack or large plastic tray which has been washed with detergent and warm water, dried and disinfected with Chlorhexidine Gluconate 0.5% in 70% alcohol). This procedure should be performed by the infants bedside, firstly to facilitate the double checking of the infants EBM against the infants identification band. Secondly, the parents is encouraged to participate in this procedure (if available and trained to do so) and non-staff member (i.e. parents) are prohibited from entering the Ward/Unit Kitchen (in compliance with HIQA. Finally, this procedure will be performed by 2 nurses (one of which is a registered nurse) and the parent (if available and trained to do so).
### ACTION

If there is more EBM than required by the infant in the EBM container, it:
- must be decanted either:
  - immediately after expression (if the EBM volume requirement is known), or
  - immediately after defrosting the EBM container
- is performed preferably by the mother or 2 nurses (one of which must be a registered nurse) and the parent (if available)
- should be performed in an environment suitable to facilitate ANNT Level 2:-
  - sterile field (i.e. dressing trolley or prepared dressing pack or large plastic tray which has been washed with detergent and warm water, dried and disinfected with Chlorhexidine Gluconate 0.5% in 70% alcohol), clean a dressing trolley as per ANTT Guidelines
  - place a sterile prep towel on the sterile field
  - at the infant's bedside (not in the ward/unit Milk Kitchen)
- should only be opened/accessed once and all the EBM decanted at this time
- should be agitated gently prior to either decanting into the appropriate feeding container or equipment
- (the top of the bottle) should be cleaned with appropriate cleansing wipes (Sanicloth® contain 2% chlorhexidine

### RATIONALE & REFERENCE

Decanting straight after expressing reduces the number of people potentially handling EBM, thus reducing the possibility of contamination (Lang 2002, FSAI 2012)

Mothers should perform this procedure to reduce the risk of cross infection (Lang 2002)

As per ANTT Guidelines (NPC 2017)

To reduce the risk of cross infection and to comply with Bankhead et al (2009) regulations and FSAI (2012)

In compliance with HIQA regulations

EBM separates when expressed into a container and fat freezes and thaws at different rates than protein and water (HMBANA 2011)

To prevent cross contamination (Trigg and Mohammad 2010) and ensure the maximum
12.0 **Feeding infants expressed breast milk (fresh and defrosted)**

<table>
<thead>
<tr>
<th>ACTION</th>
<th>RATIONALE &amp; REFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decontaminate hand and put on a disposable apron and gloves</td>
<td>Prevention of cross infection (HSE 2009a, CDC 2018, Infection Control Department 2017a, HMBANA 2011, NPC 2017c)</td>
</tr>
<tr>
<td>Decontaminate the work surface to be used to prepare the feed</td>
<td>Prevention of cross infection (HSE 2009a, CDC 2018, Infection Control Department 2017a, 2011, HMBANA 2011, OLCHC 2012a)</td>
</tr>
<tr>
<td>Remove the fresh/defrosted EBM from the breast milk fridge</td>
<td>Once stored expressed milk has been warmed to room temperature or above, it must not be returned to either refrigerator or freezer temperatures (ABM 2010, LLL 2012)</td>
</tr>
</tbody>
</table>
| Consume in the following order:  
  - 1st 1-5 days of colostrum/transition milk (within 24-48 hours of commencing feeding) | Colostrum should be fed as soon as possible in early feeding, as it contain high concentration of... |
Then the most recently freshly expressed EBM

Then defrost EBM (if fresh EBM is not available)

2 nurses (one must be registered) and the parent (if available) must check the EBM label against the infant's ID band with to ensure the:
- Right milk
- Right Infants name
- Right Infants Date of birth
- Within date
- Right Infants HCRN
- Right Infants feeding sheet
- That the tamper proof seal is intact
And sign the relevant documentation (Appendix 7)

Agitate the EBM bottle gently prior to either decanting into the appropriate feeding container or equipment

Clean the top of the bottle with appropriate cleansing wipes (Sanicloth® contain 2% chlorhexidine gluconate in 70% isopropyl alcohol) and allow to dry for up to 40 seconds or until visibly dry before decanting EBM

Open the EBM bottle

**Addition to EBM if required**
- Add prescribed additive(s) as per dietitian prescription:
  - Breast Milk Fortifier - (Low Birth Weight or premature infants) (Cow and Gate Nutriprem Breast Milk Fortifier) (sachet) (used in OLCHC) (Added immediately before feeding at ward/unit level)

anti-infective, anti-inflammatory and growth factors (O'Malley 2012) and to prime the gut (Spatz 2004)

To ensure the nutritional and immunological contents of the EBM is most suited to the infant (Spatz et al 2012)

Appropriate labeling, handling and storage results in optimal feeding of the infant and decreases the risk of feeding the wrong feed to the wrong infant (Drenckpohl et al 2007, Zeilhofer et al 2009, Warner and Sapsford 2004)

EBM separates when expressed into a container and fat freezes and thaws at different rates than protein and water (HMBANA 2011)

To clean the top of bottles/cans before decanting, prevent cross contamination (Trigg and Mohammad 2010) and ensure the maximum efficacy of the cleansing wipe (Pratt et al 2007)

Additive/fortification may be required to ensure infants optimum nutritional needs are met with additional nutritional requirements (Sudha 2007)
This reduces the length of time the fortifier is added; therefore decreasing the risk of osmolarity levels which rises the longer the fortifier is added to EBM and to decrease the risk of infection control.

To ensure accurate amount of fortification is
Or

- Ensure the prescribed additive(s) is/are added:-
  - Infant Based Formula - (Term infants)/Carbohydrate/ Protein supplement (Added in Formula Room)
  - Add fortification at room temperature

Record all additives to EBM on the EBM label and intake and output sheet

Decant EBM into sterile individually capped and labelled (EBM label) enteral syringes if required (as per Section 11.4)

Store in individually labelled (Infant name and HCRN) container in the EBM fridge until required for use

2 nurses (one of which must be a registered nurse) and the parent (if available) must check the EBM label against the infants ID band at the bed side to ensure the:
- Right milk
- Right Infants name and
- Right Infants HCRN
- Date and time feed commenced and time to finish is documented on the label

Administer EBM via:
- NG Tube (see Nasogastric guidelines)
- Enteral feeding tubes (see enteral feeding guidelines)
- Bottle (see Bottle feeding guidelines)

added and due to sterility concerns about powdered additives, this preparation should taking place in a controlled environment (ASPEN 2009)

Warming EBM can also increase its osmolarity especially if glucose polymer or lactase enzyme are added (Fenton and Belik 2002, Srinivasan et al 2004, HMBANA 2011)

Anything added to EBM may alter infants feeding outcome (HMBANA 2011)

To ensure the EBM container is only accessed once and minimise the risk of EBM contamination (HMBANA 2011). Appropriate labelling, handling, and storing results in optimum feeding for infants and decreases the risk of EBM misappropriation (Warner et al 2004, ASPEN 2009)

To segregate individual mothers EBM from other mother EBM to reduce the risk of EBM misappropriation (Warner et al 2004, ASPEN 2009)

To reduce the risk of feeding the wrong feed to the wrong infant (Drenckpohl et al 2007, Zeilhofer et al 2009, Warner and Sapsford 2004)

To ensure syringe is labelled and discarded on the feed finishing and prevent colonisation of EBM with bacteria that could cause gastro-intestinal illness of the child (Balmer et al, 2001, Department of Clinical Nutrition and Dietetics 2011, ASPEN 2009) and to reduce the risk of misappropriation of EBM (Warner and Sapsford 2004)

As per (OLCHC 2011e)
As per (OLCHC 2011f)
As per (OLCHC 2015)

Dropper/spoon or syringe are not functional as a long term feeding methods and the use for larger
• Dropper, spoon or syringe

If administering EBM continuously via an enteral feeding tube EBM should be administered in a:
• 20 or 60ml enteral syringe and giving set

• then placed in a B Braun pump with the syringe positioned vertically (brackets available in Clinical Engineering Department)

• agitated 1-2 hourly

• Use the shortest length feeding tube possible

• Only prepare 4 hours worth of feed at a time

• Administer EBM feed in the shortest length of time tolerated by infants

• Minimise EBM feed exposure to sunlight and/or phototherapy

• Commence EBM feeds at required rate as per Dietitian prescription sheet

If administering EBM bolus via an enteral feeding tube, refer to Nasogastric guidelines or Enteral feeding tubes guidelines

volumes can be time consuming (Bagnall 2005b)

Due to the small volumes to be administered syringes should be used as this avoids the adherence of fat from EBM to the larger surface area of enteral feeding bags (ASPEN 2009)

To ensure the infant receives the fat content of the EBM and it does not stick to the sides of the equipment (HMBANA 2011)

To ensure the fat is evenly dispensed throughout the feed and the infant receives the fat content of the EBM and it does not stick to the sides of the equipment (HMBANA 2011)

To increase the fat content delivered per feed resulting in greater weight gain, less feed intolerance and reduced nutrient loss (HMBANA 2011)

To prevent colonisation of EBM with bacteria that could cause gastro-intestinal illness of the child (Balmer et al, 2001, Department of Clinical Nutrition and Dietetics 2011, ASPEN 2009)

To increase the fat content delivered per feed resulting in greater weight gain, less feed intolerance and reduced nutrient loss (HMBANA 2011)

Exposure to sunlight and phototherapy light can degrade riboflavin and Vitamin C (HMBANA 2011)

As per (OLCHC 2011e) and (OLCHC 2011f)

To prevent colonisation of the feed with bacteria that could cause GI illness of the child (Bankhead et al 2009, Department of Clinical Nutrition and Dietetics 2011)
Discard the enteral syringe/feeding set every 4 hours

Erase the patient details off the EBM label so they are illegible or peel off the EBM label from the EBM bottle and discard in the confidential waste bin

Discard any unconsumed EBM within 4 hours of removing it from the fridge in sluice as directed by Infection Control Department

If administering EBM via a bottle, dropper spoon or syringe, discard any unused EBM within 1-2 hours of commencing feed

Praise mothers throughout this process

Documented in feeding plan and intake and output sheet
- cues displayed prior to feeding
- the type and volume of feed taken
- how the infant fed
- evidence the feed was tolerated or not
- any vomits or dribbling

To prevent cross contamination (OLCHC 2012b)

To maintain patient confidentiality (OLCHC 2012b)

To prevent possible Pseudomonas aeruginosa contamination of sinks (The Regulation and Quality Improvement Authority 2012)

The duration of time EBM can be kept at room temperature once infants have partially fed from bottles/droppers/syringes/spoons depend on the initial bacterial load of EBM, how long EBM has been thawed and ambient temperature (ABM 2010)

To boost mother confidence (Spatz 2004)

To provide evidence that the feed was either tolerated or not (Lanese 2011). Good clinical records are essential to provide documentary evidence of the delivery of quality patient care (National Hospitals Office 2009, Nursing and Midwifery Board of Ireland (NMBI) 2015a)
13.0 How to maintain and increase mothers EBM supply?

Refer to the following web link for a video clip of maximizing your breast milk supply for visual footage: [https://globalhealthmedia.org/portfolio-items/is-your-baby-getting-enough-milk/?portfolioID=5623](https://globalhealthmedia.org/portfolio-items/is-your-baby-getting-enough-milk/?portfolioID=5623)

<table>
<thead>
<tr>
<th>ACTION</th>
<th>RATIONALE &amp; REFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Maintain:</strong> Mother should aim to express in a pattern similar to their infants typical breastfeeding rhythm. Encourage mothers to design a breastfeeding and expressing regimen that works for both mother and infant. By ensuring that breasts are emptied after each expression, milk production is more likely to be maintained.</td>
<td>To ensure that mothers are still producing sufficient milk to facilitate their infants demands (Meier et al 1998, LLL 2012) See Section 12 for further details.</td>
</tr>
<tr>
<td><strong>Useful techniques to increase mothers EBM supply:</strong> Use the techniques advised in Section 10.1 and 10.2. Express at infants bed space instead of another room or Lactation Room. Mothers should: • make time for meals, snack regularly • drink plenty of drinks Mothers should perform: • breast massage • Skin-to-Skin Contact (See below) Ensure mothers are double pumping using the hands on pumping technique with a hospital grade electric breast pumps.</td>
<td>To ensure that mothers are still producing sufficient milk to facilitate their infants demands (Meier et al 1998, LLL 2012) See Section 10.1 and 10.2 for further details. Refer to the following web link for a video clip of maximizing your breast milk supply for visual footage: <a href="https://globalhealthmedia.org/portfolio-items/is-your-baby-getting-enough-milk/?portfolioID=5623">https://globalhealthmedia.org/portfolio-items/is-your-baby-getting-enough-milk/?portfolioID=5623</a> See Section 10.2.3 See Section 10.2.3 See Section 10.1 Double pumping as opposed to single pumping is associated with more milk ejections, more efficient and effective milk removal resulting in higher fat content and improved drainage of the breast and is time saving (Prime et al 2010). Breast pump suction causes milk to be removed from the breast but does not completely empty the breast. Combining pumping and HOP (breast massage...</td>
</tr>
</tbody>
</table>
Ensure the flange is fitting correctly

Mothers should express more often than presently doing

Infants should be allowed to latch and suck at the pumped breast (once clinically stable and remains nil orally)

Express in short bursts for an 8 hour period either:
- every hour (15 minutes each session)
- every 2 hours (30 minutes each session)

and compression) has been shown to increase milk supply and help provide more of the fatty hind milk (Morton 2009).

See Section 10.4

To increase the amount of stimulation at the breast, therefore increasing the breast milk production (LLL 2004, Jones and Hartmann 2005)

To increase the amount of stimulation at the breast, therefore increasing the breast milk production (LLL 2004)

Increased frequency of feeding by breastfeeding infants increases mothers breast milk supply, increased frequency of pumping has similar effects (LLL 2004)

14.0 How to (partially) wean mothers EBM Supply and/or stop expressing?

The reasons mothers give for weaning their child within the first year have been shown to vary depending on the child’s age (Li et al 2008). Most mothers can overcome temporary breastfeeding problems without weaning or stopping expressing if they receive appropriate guidance and support and accurate breastfeeding information (Li et al 2008). However, some mothers who produce larger volumes of EBM than their infant requirements may want to wean their EBM production and balance their EBM volume with their infant’s milk needs especially if transitioning to breastfeeding directly (Dougherty and Luther 2008).

<table>
<thead>
<tr>
<th>ACTION</th>
<th>RATIONALE &amp; REFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensure the decision to (partially) wean and/or stop expressing is an informed decision</td>
<td>For mothers to make an informed choice they need to be able to access reliable, non-judgmental, problem-solving information (McGorrian et al 2010)</td>
</tr>
<tr>
<td>Weaning should be planned and gradual without excessive discomfort for mothers</td>
<td>Abrupt weaning can cause physical discomfort, as milk will continue to be produced and without sufficient removal mothers can become full and engorged which can lead to mastitis or breast abscesses (LLL 2004)</td>
</tr>
<tr>
<td>Mothers should consider the following if their breast milk production does not meet their total fluid/nutritional requirements:</td>
<td></td>
</tr>
<tr>
<td>- Choose a milk formula if under 1 year (if not</td>
<td></td>
</tr>
</tbody>
</table>
- Commence regular full fat milk if over 1 year
- Decide on the type of feeding bottle/cup to introduce

Mothers should be given written information about how to prepare bottles if they then choose to bottle feed: ‘How to prepare your baby’s bottle’ and is available at https://www.hse.ie/eng/services/publications/children/how-to-prepare-your-baby’s-bottle-feed.pdf

Mothers who are about to stop expressing EBM should wean gradually rather than suddenly stopping (reduce by one pumping session every 2-3 days) and express to comfort as needed

Bereaved mother who wish to wean:
Using their previous pumping schedule: shorten pumping session times and lengthen the time between pumping sessions without causing discomfort

To substitute alternative feeds and feeding devices to deliver same (LLL 2004)

Written information supports verbal information

When mothers stop expressing, EBM may not be removed in sufficient quantities by her infant leading to engorgement and, if it occurs continually, it can lead to a diminished milk supply and mastitis (LLL 2004)

To gradually wean milk production without excessive discomfort and remove enough milk to reduce the pressure in the breasts. This process can take one to two week depending on the frequency and duration of mothers breastfeeding/expressing schedule prior to their infant death (HMBANA 2012). For further information refer to the Guidelines on Lactation Support for Mothers who’s child has died in OLCHC (NPC 2013) and End of Life Care Folder
15.0 (Re)Establishing breastfeeding after expressing breast milk

The breastfeeding experience for mothers of sick/premature infants often involves the following steps:
- Initiating and maintaining breast milk supply
- Skin to Skin Contact (See Section10.1 above)
- Non-nutritive sucking (NNS) and oral stimulation
- Mouth Care with EBM
- Beginning breastfeeding (supplementary feedings given as needed)
  - Individualised nutritional assessment
  - Recognising feeding cues and that infants are feeding well
  - Full breastfeeding
- Discharge.

15.1 Individualised nutritional assessment

Some infants medical condition may affect their nutritional requirements making it necessary to fortify (infant formula powder, carbohydrate/protein supplementation or breast milk fortifier) EBM and other rare conditions may necessitate the discontinuation of breastfeeding and the use of an alternative feed (Shaw and Lawson 2001). Therefore, sick infant’s nutritional requirements should be assessed on an individual basis by the medical team, dietician, or the multidisciplinary team. The nutritional needs of infants and how they can be best met will be discussed with parents who can therefore make informed choices in consultation with health care professionals caring for their infant. The assessment and proposed feeding plan will be recorded in infant’s healthcare record to ensure clarity and continuity of care.

15.2 Recognising feeding cues

Infants may get overly distressed if left too long for feeds and sleepy infants may not get enough feeds. These problems are less likely to happen if mothers are taught how to recognise infant feeding cues (LLL 2012)

<table>
<thead>
<tr>
<th>Early Cues</th>
<th>Eyes moving behind eyelids before they even open</th>
<th>Hands coming towards face</th>
<th>Mouth movements</th>
<th>If fed at this time infants will probably feed gently and easily</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obvious Cues</td>
<td>Rooting to their side / chest if held</td>
<td>Whimpering</td>
<td>Squeaking</td>
<td>If fed at this time infants will probably feed gently and easily</td>
</tr>
<tr>
<td>Late Cues</td>
<td>Body and mouth tense</td>
<td>Breathes faster</td>
<td>Starts to cry</td>
<td>Need to calm the infant before trying to feed</td>
</tr>
</tbody>
</table>

Refer to the following web link for a video clip of ‘helping to identify feeding cue’ for visual footage: https://globalhealthmedia.org/portfolio-items/is-your-baby-getting-enough-milk/?portfolioID=5623

15.3 Recognising that infants are feeding well

When infants are feeding well (with EBM and/or breastfeeding) (in consultation with medical team and dietician as clinically indicated) they should:
<table>
<thead>
<tr>
<th>24 HOUR PERIOD</th>
<th>WET NAPPIES</th>
<th>DIRTY NAPPIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 1-2</td>
<td>1-2 or more</td>
<td>1 or more, meconium</td>
</tr>
<tr>
<td>Day 3-4</td>
<td>3 or more, heavier</td>
<td>2 or more, changing stool</td>
</tr>
<tr>
<td>Day 5</td>
<td>5-6 or more, heavy</td>
<td>2 or more, yellow and seedy</td>
</tr>
<tr>
<td>Day 7+</td>
<td>6 or more, heavy</td>
<td>2 or more, yellow and seedy</td>
</tr>
</tbody>
</table>

- **Infants Colour**: Centrally and peripherally pink
- **Infants Alertness**: Alert when awake
- **Infants Tone**: Good
- **Weight (post initial birth loss)**: No more than 10% of birth weight loss, otherwise gaining weight
- **Number of feeds**: At least 8-10 feeds in 24 hours (by Day 5)
- **Infants behaviour during feeds**: Generally calm and relaxed
- **Sucking pattern during feeds**: Start with short sucks then longer sucks, pausing now and again (by Day 5)
- **Swallowing**: Quiet
- **Length of feeds**: 5 - 30 minutes at most feeds
- **End of feeds**: Infant lets go spontaneously, or when breast is gently lifted
- **Offer 2\(^{nd}\) breast?**: Offered 2\(^{nd}\) breast but may or may not feed depending on appetite
- **Infants behaviour after feeds**: Content after most feeds

(Adapted from UNICEF UK Baby Friendly Initiative 2010)

When infants attach well, mothers should see that infants:
- have a large mouthful of breast in their mouth
- lips are turned outwards
- cheeks should look rounded when infants suck
- are able to breathe freely through their nose

mothers should hear:
- audible swallowing, not smacking sounds

Refer to the following web link for a video clip of help identify feeding cue for visual footage:
https://globalhealthmedia.org/portfolio-items/is-your-baby-getting-enough-milk/?portfolioID=5623
15.4 Non-Nutritive Suck (NNS) and oral stimulation

NNS is an organised series of short sucking bursts separated by brief pauses (2 sucks/second) and usually occurs when there is no nutrition flow (Bagnall 2005a). NNS can be introduced once infants are over 30 weeks gestation, medically stable and display a sucking reflex (Bagnall 2005a). The benefits of NNS include:

- may stimulate the gastric motor function and therefore facilitate the digestion of enteral feeds
- prior to a feed may alert infants to sucking and encourage tongue movement for feeding
- may facilitate the transition from tube to full suck feeds by accelerating the organisation and efficiency of sucking
- can build infants association between sucking and satisfaction
- has been shown to significantly decrease the length of hospital stays in preterm infants (Bagnall 2005b, Pinelli and Symington 2010)

NNS can be offered in the form of a soother or gloved finger or the empty breast during tube feeds to stimulate rooting, latching and swallowing reflexes. If infants are stable, a soother can be substituted by encouraging infants to suck a gloved finger or alternatively it can be offered during SSC by mothers offering the empty breast during tube feeds (Bagnall 2005a). As infants begin to take more oral feeds at around 33 weeks gestation, the use of NNS is no longer appropriate, unless infant's clinical condition indicates otherwise (Bagnall 2005a). The use of NNS at the breast has shown to improve the transition to breastfeeding and is associated with longer breastfeeding durations (Spatz 2004, Edwards and Spatz 2010). Under special conditions the need for NNS may be necessary, for example during a period of prolonged fasting, for procedural pain relief, or through parental choice (Pinelli and Symington 2010). Therefore, NNS use should be a very specific part of a feeding regime and not ad hoc or for long periods of time. The need for NNS will be discussed with parents prior to its commencement and must be recorded in healthcare records as appropriate. These infants may also require referral to a speech and language therapist to help stimulate and practice oro-motor skills and reduce oral hypersensitivity (Pinelli and Symington 2010).

WHO (1998) recommends that bottles, teats and soothers should be avoided whilst establishing breastfeeding, unless needed for medical reasons, or through parental choice. Research has shown that prolonged soother sucking and early introduction of bottles and teats can lead to ‘nipple teat confusion’ and may interfere with infants ability to display feeding cues, thus leading to reduced milk supply and early weaning (Bagnall 2005b, Briggs 2005, Begley et al 2008, Karabulut 2009). Staff in OLCHC will not promote or encourage the use of soothers or artificial teats, while establishing breastfeeding. Parents will be informed by staff of the possible confusion that can occur for infants if introduced to soothers, teats and bottles during the first few weeks of breastfeeding. If parents decide to use either for their breastfeeding infants it is recorded in healthcare records. For breastfeeding mothers who do choose to give their infant a soother, it should be offered after the neonatal period (after breastfeeding is established) and only for sleep periods.
15.4.1 Mouth Care and EBM

The use of EBM for mouth care has been shown to decrease the risk of infection and protect the gastric mucosa while infants are nil orally (Rodriguez 2009).

<table>
<thead>
<tr>
<th>ACTION</th>
<th>RATIONALE &amp; REFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perform mouth care as per local assessment tools</td>
<td>As per Oral Assessment Tool1: For Infants and Children in Ward Area (NPC 2014a) / Oral Assessment Tool 2: For Infants and Children in PICUs (NPC 2014b)</td>
</tr>
</tbody>
</table>

Perform mouth care with EBM:
- Double check EBM (2 nurses: one must be a registered nurse and a parent (if present))
- Decontaminate hands with water and appropriate soap suspension
- Dip a sterile cotton swab into the EBM
- Rub on the infant's lips and inside their mouth
- Discard the cotton swab
- Decontaminate hands

Document:
- Oral hygiene care in the nursing notes

As per Section 12, to maintain the safe administration of EBM and prevent errors.

Prevention of cross infection (HSE 2009a, CDC 2018, Infection Control Department 2017a, 2012a, HMBANA 2011, NPC 2017c)

To oral and nasal stimulation.

To prevent cross contamination (OLCHC 2011)

Prevention of cross infection (HSE 2009a, CDC 2018, Infection Control Department 2017a, 2012a, HMBANA 2011, NPC 2017c)

Good clinical records are essential to provide documentary evidence of the delivery of quality patient care (National Hospitals Office 2009, Nursing and Midwifery Board of Ireland (NMBI) 2015a).
15.5 Transitioning to breastfeeding

For some infants due to their prematurity or illness may not have been able to receive breast milk directly from the breast. Alternatively, these infants may have received breast milk via bottles or enteral tubes. Once clinically stable these infants can transition to receive breast milk directly from the breast. This transition can be safely facilitated by using the ‘Transition from Tube feeding to Breastfeeding Guide’ (OLCHC 20117b) (See Appendix 8). This transition may take a little time. During this time the infant progress should be monitored closely to ensure that the transition to breastfeeding directly runs smoothly and that the infants continues to receive adequate amounts of breast milk to maintain hydration and normal growth as per their centile chart.

Refer to the ‘Transitioning from tube feeding to breastfeeding Guide’ for more direction

<table>
<thead>
<tr>
<th>ACTION</th>
<th>RATIONALE &amp; REFERENCE</th>
</tr>
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<tbody>
<tr>
<td>Explain to mothers how infants progress from being enterally fed to directly breastfed</td>
<td>Explanations can gain co-operation and trust and allay fears (Trigg &amp; Mohammed 2010)</td>
</tr>
<tr>
<td>Support mothers who choose to bottle feed their EBM</td>
<td>Infants get comfort as well as their nutritive needs being satisfied.</td>
</tr>
<tr>
<td>Establish realistic expectations</td>
<td>Breastfeeding can commence as soon as infants are clinically able to feed (able to coordinate sucking, swallowing and breathing with minimal changes in cardiovascular responses) which begins between 32 – 35 weeks gestation and older (Kuehl 1997), while also showing signs of stability (Jones 2012), and appropriate feeding cues. To identify when it is safe to commence feeding (Crowe et al 2016)</td>
</tr>
<tr>
<td>Provide reassurance and an optimal environment</td>
<td>Pre-term or sick babies may require additional nutritional support. Gut flora may be altered if supplemental feeds are given; there is an increased risk of sensitising a vulnerable infant to cows' milk protein (Jarvinen and Suomalainen 2001). Formula has a slower gastric emptying time and may reduce infant’s interest in breast feeds (Van Den Driessche et al 1999).</td>
</tr>
<tr>
<td>Perform mouth care with EBM as per Section 15.4.1</td>
<td></td>
</tr>
<tr>
<td>Assess infants readiness to feed prior to considering the commencement of breastfeeding</td>
<td></td>
</tr>
</tbody>
</table>
Maximise mothers milk production
- As per Section 13)

Prior to feeding, with a gloved finger assess initiation, strength and rhythm of NNS

Teach infants to associate mother with breastfeeding by:
- Practicing the principles of SCC as per Section 10.1 above.
- Use optimal feeding positions to support the airway
- If mothers breasts are full of milk, or mothers have a strong milk ejection reflex, encourage mothers to express for first 2-3 minutes (before putting infants to the breast)
- Tease infant’s mouth and lips
- Express milk on to infant’s lips
- Stimulate the MER
- Offer a few drops of EBM orally
- Monitor infant progress
- Offer Non-Nutritive Suck (NNS) using:

Supplemental feeds may cause mothers to feel that their milk is inadequate or inappropriate for their infant (Marques et al 2001, Kramer et al 2001, Jones 2005) To adhere to the OLCHC Breastfeeding Policy Statement (NPC 2013) and the ten steps to successful breastfeeding outlines by WHO/UNICEF (1998)

During this early period, before oral feeding is established, maternal lactation must be sustained by expressing EBM (Bagnall 2005a)

In order to feel the tongue compression or stripping and the suction efficiency (Bagnall 2005b)

Skin to skin contact has been shown to help establish and maintain a milk supply (Kramer et al 2001)

To trigger the MER and elongate the nipple and reduce the rate of flow (Jones 2005)

To stimulate the rooting reflex (Bagnall 2005b)

To stimulate the rooting and latching (Bagnall 2005b)

As per Section 10.1

Sweet tastes stimulate sucking therefore, dripping EBM on the lips before a feed may encourage the initiation of sucking (Bagnall 2005b) and stimulate swallowing

To assess infant stability and tolerance of the transition process
• a soother or (adhere to soother guidelines) or
• gloved finger or
• offering the empty breast during tube feeds

• NSS at the breast should only be preformed after mothers have completely emptied their breasts using a breast pump,

Allow infants to smell EBM during feeds

Breastfeeding should be assessed at least every 12 hours using the Breastfeeding Assessment Tool (Appendix 9)

Use supplementary feeding techniques:
• Supplementary Nursing System (available to Medela) – (See Appendix 2 for diagram)

If the infant is starting to breastfeed after receiving EBM milk for a while, mothers may need to continue expressing breast milk until infants are fully established with breastfeeds

 Mothers are encouraged to breastfeed their infants on demand

 Mothers should be shown how to confidently sooth their infants by:
• encouraging ‘skin to skin’ contact,
• helping mothers to cope with a fretful or upset infant by rocking, stroking, or making

To stimulate the rooting, latching and swallowing reflexes, to improve the transition to breastfeeding and is associated with longer breastfeeding durations (Spatz 2004, Edwards and Spatz 2010, Spatz et al 2012)

To reduce the risk of infants receiving breast milk, especially if infants are nil orally (Edwards and Spatz 2010)

Breast milk odour stimulus in gavage-fed premature infants increases NNS, leading to a shorter time for transition to oral feeding (Bingham et al 2007, Yildiz et al 2011) leading to shorter lengths of hospitalisation (Raimbault et al 2007)

To ensure there is an effective transfer of breast milk (Lennon 2012)

To provide infants with a steady flow of a supplemented (fortified) feed (if additional fluid/nutritional requirements are required) while sucking and to provide nipple and breast compression (Jones 2005). Rewards infants for sucking efforts, helps promote further breastfeeding (Lennon 2012)

To maintain the breast milk supply

 Infants may be tried at the breast as often as possible, in order to establish breast feeding and prevent infants developing a preference to other feeding techniques (Lang 1994, Fallon 2016)

Parents will gain necessary skills to cope with their fretful infant which are necessary for successful parenting (Kramer et al 2001)
environmental changes.

Document:
• cues displayed prior to attempting breastfeeding
• how the infant fed
• evidence as to whether the breastfeed was tolerated or not
• any vomits or dribbling.

Good clinical records are essential to provide documentary evidence of the delivery of quality patient care (National Hospitals Office 2009, Nursing and Midwifery Board of Ireland (NMBI) 2015a).

15.6 Discharge Support and Information

<table>
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<tr>
<th>ACTION</th>
<th>RATIONALE &amp; REFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inform the Public health nurse prior to discharge of all infants receiving EBM/being breastfed.</td>
<td>Mothers who are breastfeeding may require extra support following their discharge from hospital to enable the continuation of lactation.</td>
</tr>
</tbody>
</table>

Inform all breastfeeding mothers prior to discharge of the breastfeeding support network (PHN or Voluntary) in their local area. Leaflets are available and the following web sites may be accessed and information printed.

Voluntary Breastfeeding supports in their local area:
https://www.breastfeeding.ie/Support-search/

Private Lactation Consultant Supports are also available: www.alcireland.ie/

Inform mothers who also wish to express how to access expressing equipment (to buy/rent) prior to discharge:
• Local pharmacy (to buy)

Mothers will have easy access to practical accurate support from appropriately trained breastfeeding personnel to provide comprehensive breastfeeding support (Begley et al 2008, McGorrian et al 2010, CDC 2014, LLL 2012) The breastfeeding support in the succeeding days and weeks after discharge will be crucial in identifying and addressing early breastfeeding challenges that occur (da Silva Lopez et al 2016, WHO 2017)

Provide contact details for local voluntary organisations offering ongoing support to complement local community public health services (NICE 2006, HSE 2009b, Mulcahy et al 2012, HSE 2018)

International Board Certified Lactation Consultants (IBCLC) are health professionals who specialise in the clinical management of breastfeeding to assist the mother-infant breastfeeding dyad (CDC 2014)
or

- Medela (to buy and/or rent)(available along with many other types of Medela pumps from “Medicare Health and Living”, Glencormack Business Park, Kilmacanogue, Co. Wicklow. Phone: (01) 2014900, www.medicare.ie

Check the hospital EBM Fridges or freezers for stored EBM prior to infants discharge home and return same to mothers prior to discharge

### 16.0 Cleaning and Pump/Set Cleansing and Maintenance

<table>
<thead>
<tr>
<th><strong>ACTION</strong></th>
<th><strong>RATIONALE &amp; REFERENCE</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pumps</strong></td>
<td><strong>As per hospital guidelines (Infection Control Department 2012a). As improper cleaning can lead to increased risk of EBM contamination (ASPEN 2009, HMBANA 2011, Medela 2011, Rhodes 2012)</strong></td>
</tr>
<tr>
<td>For pumps used by more than one woman the outer surface of the pump should be cleaned before and after each using detergent and water by the user and daily by the healthcare assistant</td>
<td><strong>As per OLCHC guidelines and SOP’s (OLCHC 2008a, 2008b, 2008c). Improper cleaning can lead to increased risk of EBM contamination (HMBANA 2011, Becker et al 2016)</strong></td>
</tr>
<tr>
<td>Deep clean weekly with detergent and water followed by disinfection with actichlor by the healthcare assistant</td>
<td><strong>As per manufacturer’s instructions (ASPEN 2009)</strong></td>
</tr>
<tr>
<td>Should be serviced annually or whenever EBM enters the pump or when not working properly by the pump manufacturer</td>
<td>(As per Medela 2010)</td>
</tr>
<tr>
<td>Use only pump equipment with a mechanism to prevent backflow or aerosols into the pump</td>
<td>Inadequate cleansing and sterilising between users may increase the risk of EBM contamination (Medela 2010, HMBANA 2011)</td>
</tr>
<tr>
<td><strong>Breast Expression Kit (including membrane cap)</strong></td>
<td><strong>(As per Medela 2010)</strong></td>
</tr>
<tr>
<td>Single Person Use ONLY</td>
<td>(As per Medela 2010)</td>
</tr>
<tr>
<td>Change the whole breast expression kit from Medela (including the membrane cap (See Appendix 2 for diagram) inside the lid of the Symphony pump monthly</td>
<td></td>
</tr>
</tbody>
</table>
### Cleaning (New) Breast Expression Kit:

Ensure the (new) breast expressing sets or bowl/container (if hand expressing) is:

- Cleanse before and after use
- Rinsed with cool water
- Washed in a bowl of detergent and water
- Patient specific bottle brushes can be used to clean parts, especially tight crevices
- Rinsed thoroughly with cool water
- Sterilised in either :-
  - an electric steam steriliser
  - allowed to drip dry on a clean paper towel
  - stored in a dry sealed labeled container with a lid until required for use
  - a sterilising unit containing water and a sterilising tablet ‘acticlor’ (140ppm av chlorine)
  - Keep the kit submerged until required for use again

As per hospital guidelines (Infection Control Department 2012a)

To remove any milk residue and reduce the risk of EBM contamination (HMBANA 2011)

To remove any milk protein residue (HMBANA 2011, Medela 2011)

To clean the equipment and reduce risk of equipment contamination in a sink (HMBANA 2011, Medela 2011)

To clean any tight crevices in the kit (Rhodes 2012)

To remove any soap residue (Medela 2011)

To sterile the equipment (Infection Control Department 2012a)

Moisture in the connection tubing is a potential source of contamination for milk (HMBANA 2011)

To sterilise the equipment (Infection Control Department 2012b)

Moisture in the pump tubing is a potential source of contamination for milk (Medela 2010, HMBANA 2011, Rhodes 2007, Chui 2012)

As per Infection Control Department (2012b) as improper cleaning can lead to increased risk of EBM contamination (ASPEN 2009)

As per hospital guidelines (Infection Control Department 2012b).

---

### EBM storage boxes

EBM storage boxes can be reused after washing thoroughly with detergent and water.

Deep cleaning weekly with detergent and water followed by disinfection with actichlor by the
healthcare assistant

**EBM freezer and refrigerator**

Temperature should be monitored daily

To provide an audit trial and ensure safe temperature control (FSAI 2012, HMBANA 2011) as per SOP for recording temperatures of refrigerators and freezers (OLCHC 2008a, 2008b)

### 17.0 Management of EBM left in OLCHC after an infant is no longer an inpatient

Parents are advised to sign document entitled ‘Conditions for mother breastfeeding in OLCHC’ (Appendix 10) on admission accepting that any EBM left in OLCHC by parents on departure from OLCHC. However in the event that this form is not signed and filed in the infants nursing notes the following action must be followed:

<table>
<thead>
<tr>
<th>ACTION</th>
<th>RATIONALE &amp; REFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact the parent via phone</td>
<td>To inform the infants parents of the EBM in OLCHC</td>
</tr>
<tr>
<td>Inform them of their options:</td>
<td>To inform the infants parents of the EBM in OLCHC</td>
</tr>
<tr>
<td><strong>(a)Parent to return to OLCHC to collect the EBM:</strong></td>
<td>To ensure that the Frozen EBM is ready for collection by the infants parents on their arrival to OLCHC</td>
</tr>
<tr>
<td>o Schedule a date and a time for collection (as EBM may be located in the EBM Freezers in either the Ward / Unit or Formula Room)</td>
<td>Good clinical records are essential to provide documentary evidence of the delivery of quality patient care (National Hospitals Office 2009, Nursing and Midwifery Board of Ireland (NMBI) 2015a)</td>
</tr>
<tr>
<td>o Document the correspondence and the infants parents decision to collect their EBM and that the EBM was collected by the parents in the infant nursing notes</td>
<td></td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td><strong>(b)Parent consent for the EBM to be discarded by OLCHC:</strong></td>
<td>To provide written confirmation of their decision for OLCHC to discard their EBM</td>
</tr>
<tr>
<td>o Send the ‘Permission Letter for OLCHC to discard Expressed Breast Milk’ (Appendix 11) to their home address</td>
<td>To facilitate defrosting of EBM and its safe disposal</td>
</tr>
<tr>
<td>o On this Letters return to OLCHC (and completed)</td>
<td></td>
</tr>
<tr>
<td>o Remove the frozen EBM from the EBM Freezer</td>
<td></td>
</tr>
<tr>
<td>o Allow the EBM to defrost in the Sluice</td>
<td></td>
</tr>
</tbody>
</table>
Room

- Erase the patient details off the EBM label so they are illegible or peel off the EBM label from the EBM Bottle and discard the label in the confidential waste bin

- Discard the defrosted EBM in sluice as directed by Infection Control Department

Nursing Notes:
- File original letter in the infant's nursing notes and a copy is returned to the infant's parents

And

- Document the disposal of this EBM (along with the original completed ‘Permission Letter for OLCHC to discard Expressed Breast Milk’ and any other correspondence related to this) in the infant nursing notes

( c) Donate the EBM (See Section 18.0)

To maintain patient confidentiality (OLCHC 2012b)

To prevent possible *Pseudomonas aeruginosa* contamination of sinks (The Regulation and Quality Improvement Authority 2012)

Good clinical records are essential to provide documentary evidence of the delivery of quality patient care (National Hospitals Office 2009, Nursing and Midwifery Board of Ireland (NMBI) 2015a)

Good clinical records are essential to provide documentary evidence of the delivery of quality patient care (National Hospitals Office 2009, Nursing and Midwifery Board of Ireland (NMBI) 2015a)

### 18.0 If the wrong EBM is given to the wrong infant

<table>
<thead>
<tr>
<th>ACTION</th>
<th>RATIONALE &amp; REFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stop the feed immediately if the feed is in progress</td>
<td>To prevent the infant receiving any additional EBM in error</td>
</tr>
<tr>
<td>Aspirate the enteral feeding tube if present</td>
<td>To remove as much EBM as possible</td>
</tr>
</tbody>
</table>
| Notify parent/guardian of the infant  
  - who received the EBM in Error (Recipient)  
  - whose EBM was administered in error (Donor) | To ensure the parent/guardian is aware of the risk of infection agents being transmitted via EBM and the potential consequences of same |

To work within OLCHC’s ‘Guidelines for the management of Occupational Blood Exposure’
Follow the Occupation Blood Exposure Guidelines

Arrange in conjunction with the medical team the blood screening for both mothers and infant that received the EBM

Complete an Incident/Near miss Report Form

18.0 Donating EBM

In the event of mothers having (excess) EBM stored within OLCHC and wishing to donate it, it is the responsibility of ward staff to:

- Inform mothers that it is their (mothers) responsibility to contact the Donor Milk Bank (DBM) (Western Trust Milk Bank, Sperrin Milk Bank) (Phone Number (00448) 68628333), [http://www.westernttrust.hscni.net/2026.html](http://www.westernttrust.hscni.net/2026.html)
- Inform mothers that the DBM Coordinator within the Milk Bank will support and advise in this matter.
- Inform mothers that blood sampling and check-ups are performed independently of OLCHC (advised to attend family GP)
- Provide information leaflets and DBM contact details (available on the OLCHC Intranet and in the Breastfeeding Folder (lilac) at ward/unit level)
- For mothers who wish to donate breast milk following the death of their child refer to the Guidelines on Lactation Support for Mothers who’s child has died in OLCHC (NPC 2013b) for more information.
- Document the verbal interaction between the nurse and the mother in the infant's nursing notes.

19.0 References


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20.0 Appendices

20.1.1 Appendix 1a: Log Book for Mother’s Expressing Breast Milk

<table>
<thead>
<tr>
<th>DATE</th>
<th>Number of times Pumped in 24 hours (6am-6am)</th>
<th>Total volume of milk Expressed in 24 hours (mls)</th>
<th>Type of Pump used</th>
<th>DATE</th>
<th>Number of times Pumped in 24 hours (6am-6am)</th>
<th>Total volume of milk Expressed in 24 hours (mls)</th>
<th>Type of Pump used</th>
</tr>
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<tbody>
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Record the volume of Milk you express every day and record below.
20.1.2 Appendix 1b: Log Book for Mother’s Breastfeeding / Expressing Breast Milk

<table>
<thead>
<tr>
<th>Date of E/E</th>
<th>Time of E/E</th>
<th>Type of E</th>
<th>Volume per E</th>
<th>Total Daily Volume</th>
<th>Nipple Condition</th>
<th>Comments</th>
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<tbody>
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B=Breastfeeding  E=Expressing
Type of Expressing: HE = Hand Expression / MHH = Manual Hand Held / EH = Electric (Hospital Grade) / EHH = Electric Hand Held
20.2 Appendix 2: Medela Equipment

20.3.1 Appendix 3a: Breast Shield Assessment

<table>
<thead>
<tr>
<th>Breast Shield Assessment Tool (Adapted from Zoppi 2012)</th>
<th>Correctly Fitting Breast Shield</th>
</tr>
</thead>
<tbody>
<tr>
<td>The nipple: is <strong>centred</strong> and pointing in the direction of the funnel</td>
<td>![Correctly Fitting Breast Shield]</td>
</tr>
<tr>
<td>moves <strong>freely</strong> in the tunnel</td>
<td></td>
</tr>
<tr>
<td>is <strong>gently pulled</strong> into the tunnel</td>
<td></td>
</tr>
<tr>
<td>does not rub against the sides of the breast shield</td>
<td></td>
</tr>
<tr>
<td>Areolar tissue: Little or none is <strong>pulled</strong> into the tunnel</td>
<td></td>
</tr>
<tr>
<td>No white rings after pumping</td>
<td></td>
</tr>
<tr>
<td>The breast: moves <strong>gently</strong> and rhythmic</td>
<td></td>
</tr>
<tr>
<td>is completely <strong>empty</strong> with no lumps after pumping</td>
<td></td>
</tr>
<tr>
<td><strong>No pain or discomfort</strong> is experienced while pumping</td>
<td></td>
</tr>
</tbody>
</table>
20.3.2 Appendix 3b: Choosing your correct size Medela Breast Shield Size
### 20.4.1 Expressing Assessment Tool (EAT)

This assessment is performed on admission (when the infant’s mother arrives on the ward/unit expressing breast milk) and once per 24 hours when a mother is expressing breast milk thereafter. Document the assessment outcome in the Infant Expressing Care Plan/Nursing Notes. If any responses in the pink columns are ticked, watch an expressing session, develop an Expressing Care Plan/Nursing Notes and/or refer to Breastfeeding Champion if required. Any additional concerns should be followed up as needed.

<table>
<thead>
<tr>
<th>Indication of effective pumping (Green Indicators)</th>
<th>Answer suggests a problem (Pink Indicators)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency of expression</td>
<td></td>
</tr>
<tr>
<td>at least 6 times or 24 hours including once during the night</td>
<td>Framer than 6 times, leaving out the night expression</td>
</tr>
<tr>
<td>Timings of expressions</td>
<td></td>
</tr>
<tr>
<td>Timings work around her lifestyle with no gaps of longer than 4 hours (daytime) and 0 hours (night time)</td>
<td>Frequent long gaps between expressions. Difficulty fitting in 8 expressions in 24 hours</td>
</tr>
<tr>
<td>Stimulating milk ejection</td>
<td></td>
</tr>
<tr>
<td>Does breast massage, relaxation, skin contact and being close to infant. Photos or items of baby clothing to help stimulate oxytocin.</td>
<td>Difficulty eliciting a milk ejection reflex. Stressed and anxious.</td>
</tr>
<tr>
<td>Milk flow</td>
<td></td>
</tr>
<tr>
<td>Good milk flow. Breasts feel soft after expression</td>
<td>Milk flow delayed and slow. Breasts remain full after expression.</td>
</tr>
<tr>
<td>Milk volumes</td>
<td></td>
</tr>
<tr>
<td>Gradual increases in 24 hr volume at each assessment. 500-1000 ml by 2 weeks</td>
<td>Milk volumes slow to increase or are decreasing at each assessment. Volume expressed &lt; than 750 ml/day at 2 weeks</td>
</tr>
<tr>
<td>Breast condition</td>
<td></td>
</tr>
<tr>
<td>Mother reports breast is less full and softer after expressing</td>
<td>Breasts hard and painful to touch.</td>
</tr>
<tr>
<td>No red areas on breasts</td>
<td></td>
</tr>
<tr>
<td>Nodules and hard lumps in breasts</td>
<td></td>
</tr>
<tr>
<td>Hand expression</td>
<td></td>
</tr>
<tr>
<td>Inefficient technique. Inappropriate tools provided &amp; video viewed</td>
<td>Inefficient technique. Mother not confident.</td>
</tr>
<tr>
<td>Using a breast pump</td>
<td></td>
</tr>
<tr>
<td>Access to hospital grade electric pump. Effective technique including suction settings. Switching breasts or double pumping to ensure good breast drainage</td>
<td>Concern about technique.</td>
</tr>
<tr>
<td>Expressing set provided</td>
<td></td>
</tr>
<tr>
<td>Effective Pumping Technique</td>
<td></td>
</tr>
<tr>
<td>Can assemble expressing set</td>
<td>Cannot assemble expressing set</td>
</tr>
<tr>
<td>Knows technique for washing and sterilising equipment</td>
<td>Does not know technique for sterilising equipment</td>
</tr>
<tr>
<td>Hands on Pumping Technique used. Standard Sterling University advise.</td>
<td>Using pump only, without combining with hand expression</td>
</tr>
<tr>
<td>Uses massage and/or breast compression to increase flow</td>
<td>No breast massage and/or breast compression</td>
</tr>
<tr>
<td>Suction setting correct. Maximum comfortable pressure used</td>
<td>Suction setting too high flow</td>
</tr>
<tr>
<td>Breast shield fit correctly, no nipple soreness.</td>
<td>Breast shield too small/large, nipples sore</td>
</tr>
<tr>
<td>Expresses until flow slows down, massages and expresses again until flow decreases</td>
<td>Nasturing expression length</td>
</tr>
</tbody>
</table>

Adapted from UNICEF UK Baby Friendly Initiative 2013 and Guidelines for mothers HSE 2010
20.4.2 Expressing Assessment Tool (EAT) Mothers Version

<table>
<thead>
<tr>
<th>24-hour period</th>
<th>Amount of breast milk expected (24 hours period)</th>
<th>Amount of breast milk expected per pumping session</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 1</td>
<td>7.725mL</td>
<td>From a few drops to 7mL</td>
</tr>
<tr>
<td>Day 2</td>
<td>8.4-13mL</td>
<td>From 8.4-13mL</td>
</tr>
<tr>
<td>Day 3</td>
<td>9.775mL</td>
<td>From 9.775mL</td>
</tr>
<tr>
<td>Day 4-14</td>
<td>75-100mL</td>
<td></td>
</tr>
</tbody>
</table>

Yes = 1  No = X

<table>
<thead>
<tr>
<th>20.5 Appendix 5: Expressed Breast Milk Labels</th>
</tr>
</thead>
</table>

**Expressed Breast Milk (Infusion Use Only)(Enteral Administration Only)**

<table>
<thead>
<tr>
<th>Baby’s Name:</th>
<th>Express Breast Milk Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of Birth:</td>
<td>Date: Date: Time:</td>
</tr>
<tr>
<td>HCR Number:</td>
<td>Frozen: Date: Time:</td>
</tr>
<tr>
<td>Ward Name:</td>
<td>Fortified: Y/N</td>
</tr>
<tr>
<td>Mother’s Name:</td>
<td>Mother’s Medication:</td>
</tr>
</tbody>
</table>

Expressed Breast Milk Label for EBM Bottle

Expressed Breast Milk Label for Infusion Use Only
### 20.6 Appendix 6: Storage Guidelines for EBM

<table>
<thead>
<tr>
<th>EBM Status</th>
<th>Where and temperature</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh EBM</td>
<td>Refrigerator (2-4oC)</td>
<td>Up to 48hrs</td>
</tr>
<tr>
<td></td>
<td>(not in fridge door)</td>
<td></td>
</tr>
<tr>
<td>Defrosted EBM (not warmed)</td>
<td>Refrigerator (2-4oC)</td>
<td>Up to 24hrs</td>
</tr>
<tr>
<td></td>
<td>(not in fridge door)</td>
<td></td>
</tr>
<tr>
<td>Defrosted EBM (warmed to room temperature)</td>
<td>Used immediately</td>
<td>Discard immediately after use</td>
</tr>
<tr>
<td></td>
<td>(Do not freeze)</td>
<td></td>
</tr>
<tr>
<td>Defrosted EBM (warmed to room temperature) (Bolus feeds)</td>
<td>Used immediately (Do not refreeze)</td>
<td>Discard immediately after use</td>
</tr>
<tr>
<td>Supplemented / fortified EBM (warmed to room temperature) (Bolus feeds)</td>
<td>Used immediately (Do not refreeze)</td>
<td>Discard immediately after use</td>
</tr>
<tr>
<td>Defrosted EBM (warmed to room temperature) (Continuous feeds)</td>
<td>Used immediately (Do not refreeze)</td>
<td>Discard 4 hours once infusion commenced</td>
</tr>
<tr>
<td>Supplemented / fortified EBM (warmed to room temperature) (Continuous feeds)</td>
<td>Used immediately (Do not refreeze)</td>
<td>Discard 4 hours once infusion commenced</td>
</tr>
<tr>
<td>Supplemented/fortified EBM</td>
<td>Used immediately (Do not freeze)</td>
<td>Discard immediately after use</td>
</tr>
<tr>
<td>Fresh EBM for freezing</td>
<td>Freezer (-20oC)</td>
<td>Freeze within 24hrs of expressing for up to 3 months</td>
</tr>
</tbody>
</table>

20.7 Appendix 7: Expressed Breast Milk Sign Out Sheet

Expressing Breast Milk Sign Out Sheet

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Volume (mls) decanted from bottle</th>
<th>Volume (mls) remaining in bottle</th>
<th>ID Band</th>
<th>Nurses Signature (Grade)</th>
<th>Nurses Signature (Grade)</th>
<th>Parent Signature (if available)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>
# Appendix 8: Transitioning from Tube Feeding to Breastfeeding Guide

## Assessment criteria for infants readiness to start/continue this guide

<table>
<thead>
<tr>
<th>Score</th>
<th>Observed</th>
<th>Action</th>
<th>Score</th>
<th>Observed</th>
<th>Action</th>
<th>Score</th>
<th>Observed</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Offered the breast, not interested, remained sleepy</td>
<td>Infants: Full top up (preferably EBM)</td>
<td>Mother:</td>
<td>Offers Non-Nutritive Sucking at her breast</td>
<td>Continues Skin to Skin Contact at her breast during the tube feed</td>
<td>Advised to express at this time to maintain her full milk supply</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Interested in breast/feeding (kicking / mouth opening / suckling / head turning however does not latch)</td>
<td>Infants: Full top up (preferably EBM)</td>
<td>Mother:</td>
<td>Offers Non-Nutritive Sucking at her breast</td>
<td>Continues Skin to Skin Contact at her breast during the tube feed</td>
<td>Advised to express at this time to maintain her full milk supply</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Latched onto the breast, had a few sucks however:</td>
<td>Infants: Full top up (preferably EBM)</td>
<td>Mother:</td>
<td>Offers Non-Nutritive Sucking at her breast</td>
<td>Continues Skin to Skin Contact at her breast during the tube feed</td>
<td>Advised to express at this time to maintain her full milk supply</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>On and off or falls off the breast.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Repeated this pattern for several minutes or</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fell asleep within just a few minutes of latching on</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>Latched and started to suck and swallow, however:</td>
<td>Infants: Half top up (preferably EBM)</td>
<td>Mother:</td>
<td>Offers Non-Nutritive Sucking at her breast</td>
<td>Continues Skin to Skin Contact at her breast during the tube feed</td>
<td>May need to express for comfort</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Slow/slow suck</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pauses for long periods between suck / swallow bursts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Uncoordinated with breathing and swallowing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>Latched well with:</td>
<td>Infants: Half top up (preferably EBM)</td>
<td>Mother:</td>
<td>Offers Non-Nutritive Sucking at her breast</td>
<td>Continues Skin to Skin Contact at her breast during the tube feed</td>
<td>May need to express for comfort</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Regular burst of long slow rhythmic suckling and swallowing (1 suck / second) interspersed with 3 short pauses / short feeds less than 10mins</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>Latched well with:</td>
<td>No top up is required</td>
<td>Mother:</td>
<td>Offers the 2nd breast</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Long slow rhythmic suckling and swallowing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Long feeds more than 15min</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Maternal Education

<table>
<thead>
<tr>
<th>Date</th>
<th>Mother observed</th>
<th>Mother given Information</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Videos Yes</td>
<td>Information Yes</td>
</tr>
</tbody>
</table>
### 20.9 Appendix 9: Breastfeeding Assessment Tool (BAT)

<table>
<thead>
<tr>
<th>Day</th>
<th>Red Indicators</th>
<th>Pink Indicators</th>
<th>Green Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td>Infants Urinary Stool Output: Anuria / oliguria or abnormally increased (normal for infants)</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td>Infants Colour: Cephalic and peripherally pink (normal for infants)</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td>Infants Aæstheza: Alert when awake, natures to feed, engages in the feeding process</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td>Infants Tone: Good</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td>Weight gain: More than 7-10% of birth weight loss, regained birth weight by 2 weeks, otherwise gaining weight 50-60 g per day</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td>Number of Feeds: At least 10 feeds in 24 hours (6-8 feeds)</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td>Infants behaviour during feeds: Crying and restless</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td>Infants Latex: Correct - full cheeks, lips flung out, if any areola visible, visible on top of tongue</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td>Infants Position: Head, neck and body in alignment, &quot;tummy to mommy&quot;</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td>Sucking/Swallowing Pattern during feeds: Starts with short sucks then longer sucks, progressing more and again (by day 5)</td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
<td>Length of feeds: 30-40 minutes at most feeds</td>
</tr>
<tr>
<td>12</td>
<td></td>
<td></td>
<td>End of feeds: Infant totally asleep, or when breast is soft and empty</td>
</tr>
<tr>
<td>13</td>
<td></td>
<td></td>
<td>Offered 2nd Breast: Offered 2nd breast but may or may not feed depending on appetite</td>
</tr>
<tr>
<td>14</td>
<td></td>
<td></td>
<td>Infants behaviour after feeds: Content after most feeds</td>
</tr>
<tr>
<td>15</td>
<td></td>
<td></td>
<td>Shape of nipples at the end of the feed: Same shape when feed began or slightly elongated</td>
</tr>
<tr>
<td>16</td>
<td></td>
<td></td>
<td>Moothers record of her breasts &amp; nipples: Breast and nipple comfortable</td>
</tr>
<tr>
<td>17</td>
<td></td>
<td></td>
<td>Use of soothing/nipple shield/formula: None used</td>
</tr>
</tbody>
</table>

### Indication of effective feed (Green Indicators)

- **Day 1**: At least 1 feed, a light yellow discharge *Milk can be collected* (Day 2: least 1), a light brown discharge *Milk can be collected* (Day 3: least 2), a dark green discharge *Milk can be collected* (Day 4: least 3), a green changing to yellow discharge *Milk can be collected* (Day 5: least 4), a yellow discharge *Milk can be collected* (Day 6: at least 5), a light yellow discharge *Milk can be collected* (Day 7: at least 6).

### Breastfeeding Assessment Tool (BAT)

This tool assesses the health of the baby and the mother's response to breastfeeding. It includes various indicators to monitor the baby's development and the mother's ability to breastfeed. The tool is divided into red, pink, and green indicators. The red indicators indicate potential problems, the pink indicators indicate possible issues, and the green indicators indicate the baby is doing well. The tool is designed to be used daily and is divided into seven days, with specific indicators for each day. The tool is a valuable resource for healthcare professionals to monitor the progress of breastfeeding and identify any issues that may arise.
20.10 Appendix 10: Conditions for Mothers Breastfeeding in OLCHC

Addressograph Label:

Conditions for Mothers Breastfeeding in Our Lady’s Children’s Hospital, Crumlin (OLCHC)

OLCHC believe that breastfeeding is the healthiest way for a woman to feed her baby. OLCHC supports mothers who choose to do so subject to the following conditions and asks that you accept these conditions by signing your name to this form. Should you have any queries whatsoever in relation to the form please contact a staff member.

1. The hospital accepts no responsibility for the condition and subsequent use of any expressed milk taken by me on my departure from the hospital;
2. Any expressed milk left by me on departure from the hospital shall be disposed of by the hospital at its sole discretion;
3. The health and safety of breastfed siblings shall be my sole responsibility during my time of residence in the hospital.
4. There are risks associated with breastfeeding by resident mothers of the siblings of patients in the hospital. These are mainly of infection. The hospital takes every precaution to minimise such risks. However, resident mothers choosing to breastfeed siblings of patients do so of their own choice and awareness of the risks. I understand the risks of (insert child’s name) being resident in the hospital, which have been fully explained to me.

I acknowledge and agree to the above conditions for breastfeeding in OLCHC.

Note:
This completed form will be filed in your child’s healthcare records

Mother’s Name (Block Capitals):_________________ Mother’s Signature:_________________

Nursing Staff
Name/Title: (Block Capitals):_________________ Nursing Staff Signature:_________________

Date: ___________________

Copy given to parents □
Appendix 11: Permission Letter for OLCHC to discard Expressed Breast Milk

Appendix A:
OUR LADY'S CHILDREN'S HOSPITAL CRUMLIN
Dublin 12
Tel: 01 409 6100
Fax: 01 409 8873
Website: www.olchc.ie

Permission Letter for OLCHC to discard Expressed Breast Milk

I ___________________________ (mother of ___________________________, HCR No: ____________) give permission to OLCHC to discard my expressed breast milk in a fresh, frozen or defrosted state.

I have received a copy of this completed permission letter.

Note:
This completed form will be stored in your child's healthcare records

Mothers Name (Block Capitals): ___________________________
Mothers (Signature): ___________________________
Nursing Staff Name (Block Capitals): ___________________________
Nursing Staff (Signature/Grade): ___________________________
Nursing Staff (Title): ___________________________
Date: ___________________________