

Fortification of expressed breast milk in Newborn Intensive Care Unit (NICU)

Procedure Responsibilities and Authorisation

Department Responsible for Procedure	NICU
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Target Audience	Nurses, Nurse practitioners, Clinical Nurse Specialist, Registrars, Senior medical officers
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Procedure Review History

Version	Updated by	Date Updated	Summary of Changes
3	Maggie Rainbow	Nov 2012	3 yearly review
4	Robyn Hills	Jul 2015	
5	Robyn Hills	Oct 2015	3 yearly review & Product change
6	Robyn Hills	Nov 2016	Product change
7	Robyn Hills	Sep 2019	Changes in duration of storage, terminology of artificial milk formula
8	Alana Cumberpatch	Jul 2022	3 yearly review and updating of references

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1 Overview

1.1 Purpose

To outline the steps to prepare and give Human Milk Fortifier and expressed breast milk

Note: Human milk is considered to be the best for infants because it provides antibodies, enzymes, hormones and growth factors.

1.2 Scope

Te Whatu Ora Waikato staff working in the Neonatal Intensive Care Unit (NICU)

1.3 Patient group

Babies in NICU

1.4 Indications:

- Human Milk Fortifier (HMF) may be required to provide extra nutrition needed to achieve growth because preterm breast milk may contain insufficient nutrients to achieve growth rates in rapidly growing premature infants.

Provides trace elements for premature infants. Some babies may have difficulty tolerating the high mineral content of the fortifier. Occasionally we will stop the fortifier or use it at half strength for a short period of time. Usually tolerance improves after a few days and full fortifier can be introduced again.

- HMF provides extra nutrition to achieve growth in premature infants who have insufficient growth rates. If a baby is born <32 weeks or birthweight <1800g and is tolerating at least 8ml of feed volume q2h, HMF may be introduced, and will continue until breastfeeding established. Follow [Fluid Orders for Neonates](#) protocol (5439) and [Necrotising Enterocolitis Care Bundle in Newborn Intensive Care Unit...](#) protocol (6171)

1.5 Contraindications

- Suspected Necrotising Enterocolitis (NEC)
- Trans-pyloric feeding

1.6 Exceptions

Parents reserve the right to decline the administration of HMF

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1.7 Definitions

EBM	Expressed breast milk
Human Milk Fortifier (HMF)	Breast milk fortifiers are made from processed cows' milk protein with added nutritional supplements. The protein from the cows' milk is broken down (hydrolysed) into small fragments. This makes it easy to dissolve and also means that the fortifier does not contain whole proteins, which makes it extremely unlikely that the baby will develop cows' milk allergy.

2 Clinical Management

2.1 Competency required

- Registered nurse who has completed LII orientation.
- Enrolled nurse who has completed LII orientation and is under the direction and delegation of a registered nurse.

2.2 Equipment

- **1g sachet** of HMF per 25mL breast milk (i.e. standard preparation is 4g + 100mL EBM)

2.3 Procedure

1. Obtain parental consent

- Prior to HMF supplementation being commenced, consent from parents is required because HMF is a cow's milk based product.
- Give parents the pamphlet *Human Milk Fortification: Information for parents* (C1254HWF).
- Document on **Admission/Discharge form (A177OHWF)** to indicate parent's consent has been obtained.
- Please approach parents early in their stay in NICU, consent for HMF can be obtained before feeding is established/tolerated. This will encourage a timely start of HMF.

2. HMF prescribed by authorised/delegated prescriber

- Check that HMF has been prescribed by an authorised/delegated prescriber because HMF has high osmolality and contains nutritional supplements that may impact on electrolyte balance.

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3. Adding HMF

- Perform hand hygiene.
- Collect the correct breast milk and check to ensure correct EBM is administered to the correct baby according to [Labelling, handling, storage, transport and administration of human milk...](#)procedure (2771)
- Measure required volume EBM into appropriate container.
- Collect appropriate number of fortifier sachet(s) – **1g sachets**.
- Add **1g** sachet per 25mL into container of measured EBM.
- Secure lid and shake vigorously to ensure fortifier powder is mixed thoroughly.
- Label with medication additive label – date, time and amount of HMF added to the volume of EBM to prevent the administration of fortified milk made up >4 hours prior. EBM with added HMF can only be use for up to 4 hours.

4. Storage of fortified milk

- Ideally only make up the volume of breastmilk and HMF required for each feed.
- If continuous feeding only make up the 4hrly volume.
- If there is any Expressed Breastmilk and HMF remaining after a feed, keep in the fridge for a maximum of 4 hours to provide an optimal storage environment.
- Ensure [Enteral Feeding in Newborn Intensive Care Unit \(NICU\)](#) procedure (4945) is adhered to when giving continuous or compressed feed.

5. When Formula is required

- Formula is not to be given at the same time as Expressed Breastmilk and HMF due to the impact on osmolality.
- If there is sufficient EBM for all feeds give HMF and EBM at every feed.
- If there is not enough EBM available for full feeds collect enough EBM for a full feed then give only EBM and HMF at a feed. Use formula at other feeds until there is enough EBM available for another EBM and HMF feed.

2.4 Documentation

After administration of feed, please document volume of EBM+HMF given in the observation chart and clinical notes.

2.5 Potential complications

- Intolerance of feed

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3 Patient information

Pamphlet: Human Milk Fortifier (HMF): Information for parents

4 Audit

4.1 Indicators

- No HMF is administered without a valid prescription
- No HMF is administered without a signed consent – document consent in clinical records.
- The dilution of HMF aligns with this procedure.

5 Evidence base

5.1 References

- Arslanoglu S, Boquien CY, King C, Lamireau D, Tonetto P, Barnett D, Bertino E, Gaya A, Gebauer C, Grovslien A, Moro GE, Weaver G, Wesolowska AM, Picaud JC. Fortification of Human Milk for Preterm Infants: Update and Recommendations of the European Milk Bank Association (EMBA) Working Group on Human Milk Fortification. *Front Pediatr.* 2019 Mar 22;7:76. doi: 10.3389/fped.2019.00076. PMID: 30968003; PMCID: PMC6439523.
- Cormack BE, Bloomfield FH. Increased protein intake decreases postnatal growth faltering in ELBW babies. *Archives of Disease in Childhood - Fetal and Neonatal Edition* 2013;98:F399-F404.
- Cormack, Barbara (17 December 2019). Feeding - handling powdered formula and breast milk with additives. Retrieved 12 July 2022 from: <https://starship.org.nz/guidelines/feeding-handling-powdered-formula-and-breast-milk-with-additives>
- Cormack, Barbara Bellhouse, Sarah (7 May 2021) Nutrition - neonatal nutrition guideline. Retrieved 12 July 2022 from: <https://starship.org.nz/guidelines/nutrition-neonatal-nutrition-guideline/>
- Herranz Barbero A, Rico N, Oller-Salvia B, Aldecoa-Bilbao V, Macías-Muñoz L, Wijngaard R, Figueras-Aloy J, Salvia-Roigés M. Fortifier selection and dosage enables control of breast milk osmolarity. *PLoS One.* 2020 Jun 1;15(6):e0233924. doi: 10.1371/journal.pone.0233924. PMID: 32479524; PMCID: PMC7263599.
- Miller J. et al (2012). Effect of increasing protein content of human milk fortifier on growth in preterm infants born at c. 31 week gestation: a randomised controlled trial. *American Journal of Clinical Nutrition*, 95: 648-55.
- Tillman S., Brendon D.H., Silva S. G (2012). Evaluation of human milk fortification from the time of the first feeding: effects on infants less than 31 weeks gestational age. *Journal of Perinatology*, 32:525-531.

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- Starship Clinical Guidelines. Storing and using breast milk. Retrieved 12 July 2022 from: <https://starship.org.nz/storing-and-using-breast-milk/>
- Starship Clinical Guidelines. What is breast milk fortifier? Retrieved 12 July 2022 from: <https://starship.org.nz/what-is-breast-milk-fortifier/>

5.2 Associated Te Whatu Ora Waikato Documents

- [Artificial Milk Formula Feeding for Infants](#) policy (1901)
- [Enteral Nutrition](#) guideline (1196)
- [Labelling, handling, storage, transport and administration of human milk](#) procedure (2771)
- [Ukaipo-Breastfeeding](#) policy (0132)

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