Enteral Feeding Care Pathway

For staff use only:
Hospital number:
Surname:
First name:
Date of birth:
NHS no: _ _ _ / _ _ _ / _ _ _ _

Algorithm 1: Initiating and advancing enteral feeds

Advancing feeding on NICU

Infants can start trophic feeding as soon as possible when mother's own milk (MOM) is available, followed by advancement at 30 ml/kg/day, once tolerating trophic feeds for at least 24 hours. Some units may choose to use donor breast milk (DBM) whilst waiting for, or in the absence of MOM. This feeding plan will be appropriate for most infants including;

Re-establishment of feeds following NEC
Perinatal hypoxic-ischaemia with significant organ dysfunction, post cooling
Corticosteroid treatment
Infants with significant polycythaemia
Preterm SGA infant (<2nd centile and <34 weeks gestation at birth)
Pharmacological treatment for PDA

Preterm infants with IUGR (<2nd centile and >34+0 weeks gestation at birth)
<28 weeks gestation at birth or <1000g at birth
Absent/reversed end-diastolic flow in infants born <34 gestation
Term infants with severe IUGR (<0.4th centile and >34+0 weeks gestation at birth)
Complex congenital cardiac disease

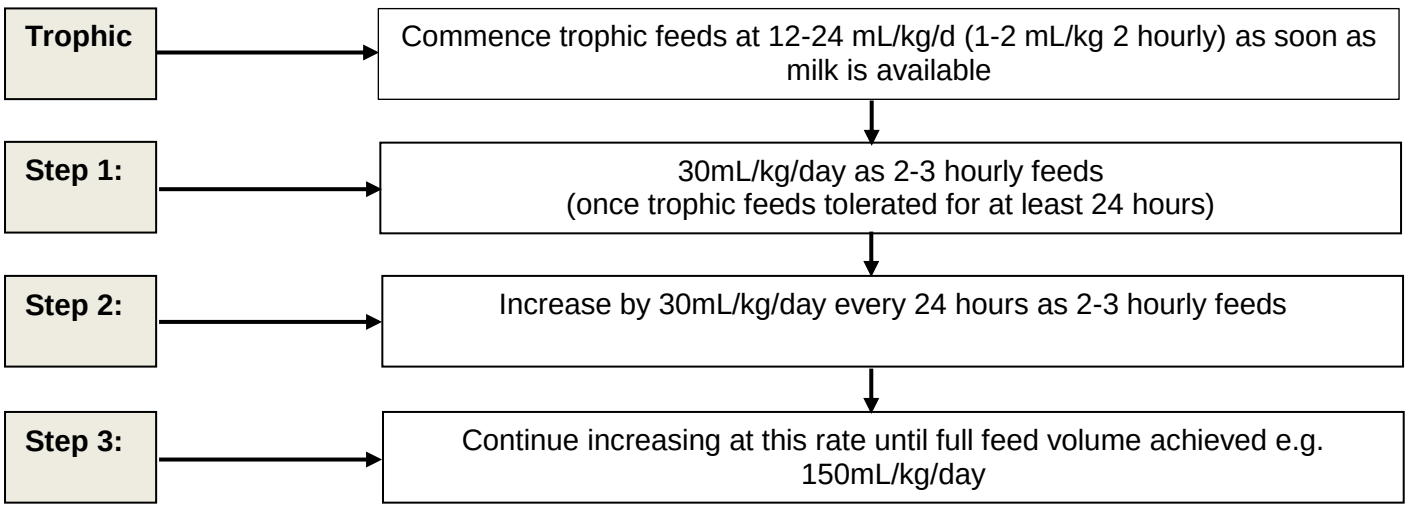
There are some infants that may **not tolerate** feeding at a rate of 30mL/kg e.g.

Infants undergoing cooling
Unstable/hypotensive ventilated infants
Infants with serious gut malformations

For infants with gut malformations, feeding will be managed in conjunction with surgical colleagues.

Rate of Feeding

- Commence buccal colostrum as soon as possible after birth, e.g. give 0.2mL every 3 hours, this can be given in addition to trophic feeds or when not feeding yet started
- Give trophic feeds, 2-3 hourly at rate of 12-24mL/kg/day as tolerated as soon as possible following birth
- Once infants are tolerating trophic feeds, commence Step 1of feeding pathway and proceed through the steps as tolerated
- For infants with poor tolerance, trophic feeds may be continued longer, then proceed to Step 1 of feeding pathway.



This algorithm is to be used in conjunction with Algorithm 2

For infants with feed intolerance: delay increasing feed volume or consider reducing volume but continue to feed unless signs and symptoms of NEC or obstruction are present.

>180mL/kg/day should rarely be required in infants receiving preterm formula or fortified EBM. Alternative reasons for poor growth should be examined before volumes >180mL/kg/day are implemented (Refer to All Wales Enteral Feeding for Preterm Infants: guidance document Appendix 1).

For staff use only:
Hospital number:
Surname:
First name:
Date of birth:
NHS no: _ _ _ / _ _ _ / _ _ _ _

Birth weight	Gestation	Date and time of first feed	Trophic volume (if applicable)	Starting volume (mL/kg/day)	Frequency of feeds	Date 150mL/kg/day is achieved

Milk to be used:

EBM / DBM……

Preterm formula ……..

Other formula……

Guide to reducing the risks of infections associated with milk feed preparations
The 'Non-Touch Technique' must be used every time a milk feed is to be prepared
EBM/DBM must be used within 24 hours from the start of the defrosting process
Fresh EBM can be used for up to 48 hours from being expressed, if kept refrigerated
Breast milk should be used within 4 hours if kept at room temperature

The gold standard is to calculate feeds according to each infant's weight

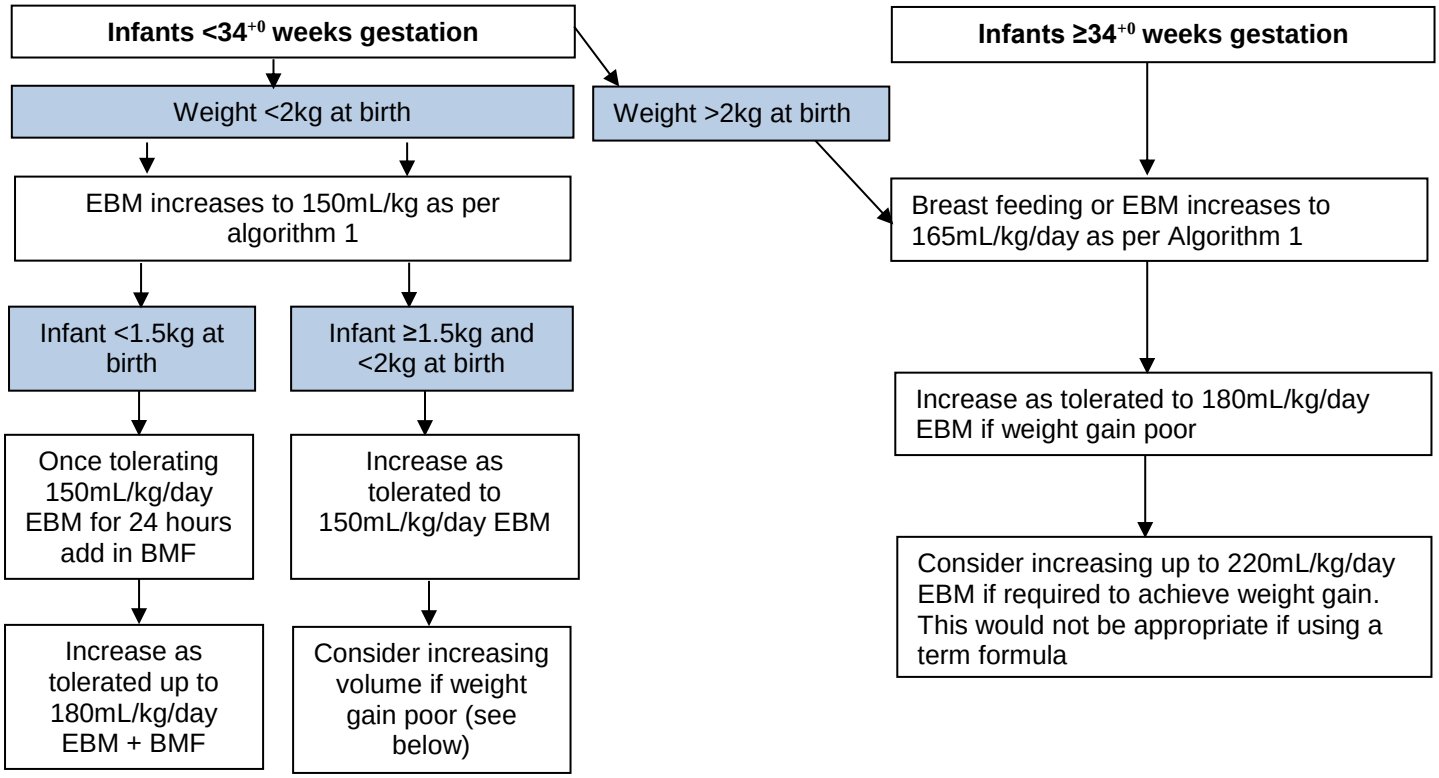
Date of change					
Reason for change					
Volume (mL/kg/day)					
Frequency of feeds					
Type of milk					
Staff initial recording change					

Date of change					
Reason for change					
Volume (mL/kg/day)					
Frequency of feeds					
Type of milk					
Staff initial recording change					

Algorithm 2: Choice of Milk

For staff use only:
Hospital number:
Surname:
First name:
Date of birth:
NHS no: _ _ _ / _ _ _ / _ _ _ _

Fresh maternal breast milk is the first milk of choice for all infants unless clearly contraindicated. If insufficient or no MOM available, consider DBM or preterm formula



For fluid restricted infants <1.5kg BW, consider BMF at ½ strength with feeds at 120mL/kg then ↑ to full strength BMF.

For infants >1.5kg but <2.0kg BW consider BMF if there is:

- poor tolerance of volume
- poor weight gain persists
- serum urea <4mmol/l and falling
- IUGR < 9th centile

If growth remains poor, consider:

- adding BMF
- changing some of the milk to a term high energy milk.

In the absence of MOM use a term formula for infants born ≥34 weeks gestation.

To improve breast milk production, ensure skin to skin contact is undertaken daily and breast milk expressing techniques are optimised. In the absence of any maternal breast milk use DBM where available, or preterm formula.

>180mL/kg/day should rarely be required in infants receiving preterm formula or fortified EBM. Alternative reasons for poor growth should be examined before volumes >180mL/kg/day are implemented (Refer to All Wales Enteral Feeding for Preterm Infants: reference document Appendix 1).

For staff use only:
Hospital number:
Surname:
First name:
Date of birth:
NHS no: _ _ _ / _ _ _ / _ _ _ _

Breast Feeding

CARE PLAN TO SUPPORT EARLY EXPRESSING OF BREAST MILK				
	Action	**√**	**Date**	**Signature**
1	Benefits of breast milk discussed in relation to: • Reducing the incidence of bowel infections (NEC) • Protective qualities help to reduce the risk of infections • Better tolerance when compared with formula feeds • Improved neuro-developmental outcomes for babies • Maternal benefits including reducing the risk of ovarian cancer and osteoporosis • Future health benefits for infants through life into adulthood			
2	Call to postnatal ward within 3 hours post-delivery to ensure Mother has hand expressed within first 2 hours and commenced starting programme on breast pump **Time of birth**: **Time hand expression started:** **Name of Midwife discussed with:**			
3	The following information has been given: • Local breastfeeding information sheet • BLISS booklet "The best start – a guide to expressing and breastfeeding" • BLISS booklet "Skin to skin" with your premature baby			
4	Importance of skin to skin contact with baby (when appropriate) explained the importance of good personal hygiene in relation to risk of infection			
5	Administer buccal colostrum for 1st 48 hours (see guidance document) - consider using breast milk for mouth care when oral feeds are not tolerated			
6	Discuss the importance of frequent milk expressions: 8-10 in 24 hours including at least one night expression and massage to help with milk production			
7	Expressing log/passport has been offered to Mum for use? **Document if declined.**			
8	Has using a breast pump and double pumping been discussed and demonstrated to Mum? Initiate and maintenance programmes			
9	Has the use of a breast pump been arranged?			
10	Have maternal medications been checked and assessed as safe for use when breastfeeding? *(include prescribed, non-prescribed and herbal)*			
11	Discuss the benefits of Non-Nutritive sucking and obtain dummy consent.			
12	Discuss with Mum that if breast feeding, they can have occasional, small amounts of alcohol but should not drink regularly or heavily.			
13	Explain to Mum that smoking whilst breast feeding is not advised, however the benefits of breast feeding, and smoking are greater than formula feeding.			
14	Carry out a formal review of expressing and milk production with Mum as a minimum of 4 times within the first 2 weeks of life.			
15	Consent to offer bottles has been obtained			

FOR STAFF AWARENESS ONLY
Day 10: If Mum is expressing <350mL milk/day – refer urgently to breastfeeding advisor and review expressing log. Mum should be aiming for a minimum of 750mL/day by day 10 in order to maximise potential for sufficient milk volumes at discharge. This is a guide and should not be used to pressurise Mum.

For staff use only:
Hospital number:
Surname:
First name:
Date of birth:
NHS no: _ _ _ / _ _ _ / _ _ _ _

Breast milk expression

Top Tips for expressing:

- ✓ Expressing is best started within the first hour after delivery
- ✓ Hand expressing is the most effective way of collecting colostrum
- ✓ Early breast pump programme, alongside hand expression in first hours improves breast milk production
- ✓ Early and frequent expressing leads to greater long-term milk production
- ✓ Mums of preterm and sick babies should express 8-10 times in a 24-hour period until milk supply has been established
- ✓ Essential to express at least once between midnight and 06:00 hours. Do not suggest skipping this expression to encourage a good night's sleep
- ✓ Mums may find it easier to 'cluster express' but should avoid gaps of more than 6 hours between expressions

Expressing volumes

Expressing reviewed on:	**Day 1**	**Day 3**	**Day 5**	**Day 7**	**Day 10**
Volume expressed/24hrs (mL)					
Advice given					
Signature					

Referral to breastfeeding advisor:	Yes / No	Date:	Name of advisor:	Location:

Fortification of small breast milk volumes

If using **SMA® BMF**: standard addition is 1 x 1g sachet SMA® BMF added to 25mL breast milk. To calculate individually see below:

- 1g ÷ 25 = 0.04g SMA® BMF per mL of breast milk
- Multiply 0.04g by the volume of breast milk required (mL) = grams of SMA® BMF to add to required volume of breast milk

If using **Nutriprem®** BMF when standard addition is 1 x 2.2g sachet Nutriprem® BMF added to 50mL breast milk:

- 2.2 ÷ 50 = 0.044g Nutriprem® BMF per mL of breast milk
- Multiply 0.044g by volume of breast milk required (mL) = grams of Nutriprem® BMF to add to required volume of breast milk

NB: Class III scales must be used within the hospital setting to weigh the BMF

For staff use only:
Hospital number:
Surname:
First name:
Date of birth:
NHS no: _ _ _ / _ _ _ / _ _ _ _

ONGOING SUPPORT FOR FEEDING				
	Action	√	**Date**	**Signature**
1	Discuss with Mum about feeding cues and responsive feeding			
2	Breast Milk Fortifier has been discussed, if required			
3	Collection and safe storage of breast milk has been discussed after discharge			
4	Mum is shown how to make a bottle using powdered formula according to D o H guidelines			

Management of gastric residual volume (GRV)

Gastric aspirates should **not** be checked routinely. Small amounts of gastric aspirate are used to check the pH before giving a NG feed. If aspirates are checked use the following as a guide to replacing partially digested gastric aspirates as this will replenish acid and enzymes that aid the digestive process:

- If GRV ≤5mL/kg or ≤50% of the previous feed volume (whichever is higher), replace all GRV and feed. If this recurs, subtract the residual volume from the current feed, replace the GRV and give the calculated remaining feed volume
- If the gastric aspirate is >5mL/kg or >50% of the previous feed volume, replace up to 50% of the feed volume with GRV, do not give the current feed and consider medical review. Consider changing to slow bolus feeds or withholding feeds, depending on clinical condition
- If gastric residuals are increasing or bile stained, seek senior medical review.

For staff use only:
Hospital number:
Surname:
First name:
Date of birth:
NHS no: _ _ _ / _ _ _ / _ _ _ _

Notes

Date & Time		Signature


Wales
Neonatal
Network