

# FEEDING THE HIGH-RISK NEONATE - GCNIC - CHW

## PRACTICE GUIDELINE ®

### DOCUMENT SUMMARY/KEY POINTS

- This guideline is used for initiating and administering feeds in sick and preterm hospitalised infants
- Consideration for feeding is given to parental choices and the infant's stage of development. The mother's intention to breastfeed (or not) is to be documented on admission for all infants
- Information on expressing and storage of breast milk is explained to all mothers
- All gastric tubes are to be confirmed as appropriately positioned in the stomach prior to giving each feed
- Gastric tubes are aspirated very gently using a 10mL syringe
- If a baby who is normally breastfed requires supplementary feeds of infant formula, written consent should be sought from the breastfeeding mother, recorded on the 'Consent for Formula/Complementary, Supplementary Feeds Form' which is then placed in the infant's medical record - [http://intranet.schn.health.nsw.gov.au/files/scn020050\\_0.pdf](http://intranet.schn.health.nsw.gov.au/files/scn020050_0.pdf)
- Specific enteral syringes are used for all milk feeds
- This document must be read in conjunction with NSW Health Policy Directive Maternity - Breast Milk: Safe Management ([PD2010\\_019](#)) which outlines the safe management of breast milk and managing a neonatal/infant exposure to breast milk from a non-biological mother
- This document must be read in conjunction with NSW Health PDHM Guideline which outlines the safe use of Pasteurised Donor Human Milk (PDHM)

This document reflects what is currently regarded as safe practice. However, as in any clinical situation, there may be factors which cannot be covered by a single set of guidelines. This document does not replace the need for the application of clinical judgement to each individual presentation.

<b>Approved by:</b>	SCHN Policy, Procedure and Guideline Committee	
<b>Date Effective:</b>	1 <sup>st</sup> October 2023	<b>Review Period:</b> 3 years
<b>Team Leader:</b>	Clinical Nurse Consultant	<b>Area/Dept:</b> GCNC - CHW

**Key performance indicators**

1. An audit of practice shows that the position of the tube is tested and documented prior to the administration of a feed.
2. Breast milk or sucrose is used prior to inserting intragastric tubes.

**CHANGE SUMMARY**

- The list of pacifiers and teats used has been updated to reflect current practices (see Appendix 2).
- Information on [Pasteurised Donor Human Milk For Vulnerable Infants](#) has been included
- List of Formulas updated
- References updated

**READ ACKNOWLEDGEMENT**

- To be read and acknowledged by all nursing and medical staff working in Grace Centre for Newborn Intensive Care.

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## Enteral Feeding

These guidelines are intended for use with high-risk newborn infants who require intensive care. They have been developed to help inform clinicians in their decision making regarding enteral feeds. It is an underlying premise that each infant has individual needs, and these guidelines support best practice. Breastfeeding is the preferred method for initiating sucking feeds for all infants when it is the mothers' intention to breastfeed.

Preterm or sick newborn infants may have feeding or medical problems that delay the introduction of oral feeding. There are many underlying medical conditions that are likely to be associated with significant feeding difficulties and feeding performance has been linked to neurodevelopmental outcome <sup>[1]</sup>.

Infants receiving non-oral feeds may benefit from non-nutritional sucking (NNS) which is facilitated in response to the infant's active searching for something to suck on for comfort or encourage when awake during a tube feed. Preterm infants are assessed for oral feeding readiness at approximately 32-34 weeks gestational age, when sucking, swallowing, and breathing are adequately coordinated <sup>[2]</sup>.

All enteral feeds, whether oral or non-oral, are ideally given when an infant indicates that they are hungry and paced according to the infant's behavioural cues. Feed tolerance, parental participation, infants' behavioural cues and medical instructions are all considered when commencing enteral feeds. Nursing Staff have a key role to play in feeding infants on the unit, and specialised support is available from Lactation Consultants, Dieticians and Speech Pathologists.

### Affiliated Links

- [Barr, P. \(2015\) Chapter 15 – Feeding. Neonatal Intensive Care: A Handbook for Staff. 4th Ed. The Children's Hospital at Westmead](#)
- SCHN Practice Guideline: [Infant Feeding 0-12 months](#).
- SCHN Practice Guideline: [Infant Feeding 0-12 months](#) -Breastfeeding
- SCHN Practice Guideline: [Enteral Feeding Tubes and the Administration of Enteral Nutrition](#).
- [Breast Milk: Safe Management \(GL2023\\_021\)](#) outlines the safe management of breast milk and managing a neonatal/infant exposure to breast milk from a non-biological mother.
- [Pasteurised Donor Human Milk For Vulnerable Infants \(PD2018\\_043\)](#) – Policy Directive NSW Health PD2018\_043
- SCHN Practice Guideline: [Lactation Promotion using Galactagogues to Increase Supply and Sustain Breastfeeding](#)
- SCHN Practice Guideline: [Immune Supportive Oral Care in Intensive Care Settings](#)

## Tube Insertion and Tube feeding

### 1.1 Developmental and Family Considerations

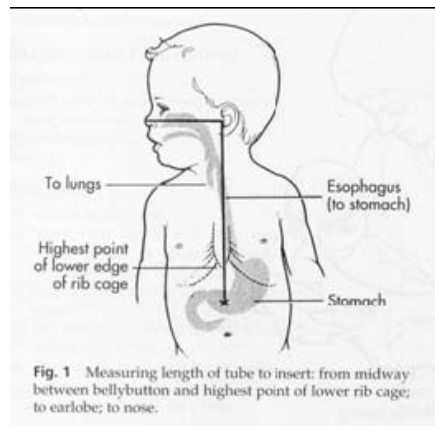
- A gentle and unhurried approach is used to minimise discomfort for the infant and family.
- Ensure that you explain the purpose of the feeding tube to parents as the insertion of a gastric tube in their infant can be a traumatic experience for both baby and parents.
- Parents can participate in the feeding routines for their infant when being fed by tube.
- Where possible, encourage parents to hold their infant during the tube feeding process otherwise nursing staff should hold the infant if they are awake.
- Offering a dummy, a clean finger of a parent, or mother's nipple to suck on during tube feeds provides infants with the taste of milk; an added advantage is smell which can help build positive associations between sensory inputs and feeding<sup>[3, 4]</sup>.

### 1.2 Use of Intra-gastric Tubes

- Sick or immature infants who are unable to take oral feeds require nasal or oral intra-gastric tube feeds. Tube feeds may be given continuously or as intermittent bolus feeds.

### 1.3 Insertion of Intra-gastric Tubes

- Refer to SCHN Practice Guideline for insertion technique: [Enteral Feeding Tubes and the Administration of Enteral Nutrition](#)
- The insertion of a nasogastric tube is a potentially dangerous and painful procedure for the infant, this may be minimised by administering prescribed oral sucrose or breast milk two minutes prior to insertion, containing the infant by swaddling during the procedure and using a gentle technique, or by parents holding their infant in skin to skin during the procedure.
- Intra-gastric tubes are measured from the corner of the mouth or nose to the tragus of the ear and then to the midpoint between the end of the xiphoid process and the umbilicus (see diagram). This length of tube is inserted into the stomach using either the nasal or oral route<sup>[5-7]</sup>.



- Nasogastric tube placement is the preferred intragastric tube insertion method as the tube is more secure and leaves the mouth free for non-nutritive sucking. Tubes with markings to enable accurate measurement of depth and length are used [6-7].
- Check the position of the tube by aspirating a small amount of gastric fluid using a 10mL syringe and testing for an acid result [7-9].
- If no aspirate is obtained prior to the feed, the tube may be re-positioned and/or flushed with 1mL air using a syringe.
- If no aspirate is obtained after this manipulation, inform the nurse-in-charge.
- The tube may be replaced.
- Radiography should not be used 'routinely' to check the position of the tube; however it can be used if the baby is being x-rayed for another reason.
- Standard silastic intragastric tubes are replaced every 30 days, however long-term feeding tubes (which have a guidewire) are replaced every 3 months.
- The tube should be labelled with the neonate's MRN sticker with the date of insertion and depth of insertion in centimetres documented clearly on this label.

**Please note:** If a baby becomes aphonic the nasogastric tube should be immediately removed and notified to the medical team for immediate review and management.

## 1.4 Procedure for Aspirating a Gastric Tube

The syringe size used for aspirating a gastric tube can result in varying degrees of negative pressure depending on the substance being aspirated, for example air or fluid [9].

As a general principle, when aspirating from the feeding tube, smaller syringes are used as higher negative pressures can be created with larger syringes.

Therefore, in GCNIC, 10mL syringes are recommended to avoid high negative pressures during aspiration.

General principles are:

- Aspirate gently and never use excessive pull on the syringe
- If no aspirate is obtained, manipulate the tube slightly or insert a small volume of air (1-2mL)

## 1.5 Limitations of pH Testing

There are many factors in neonates that affect the results from pH indicator strips or paper including <sup>[10-11]</sup>:

- Gestation
- Postnatal age
- Small volumes of aspirates
- Medications that affect gastric pH (e.g. Omeprazole)
- Continuous and frequent feeding
- Additionally, gaining aspirate from the feeding tube can be difficult, particularly when using smaller bore tubes.

## 1.6 Risk Assessment

Staff should consider the factors for each baby that may contribute to a high gastric pH (pH 6 or above). Possible factors include <sup>[10]</sup>:

- The presence of amniotic fluid in a baby less than 48 hours of age.
- Milk in the baby's stomach, particularly if having continuous feeds or feeds administered at one or two hourly intervals.
- The use of medications to reduce stomach acid (e.g. omeprazole).
- Aspirates testing pH of less or equal to 5 indicate correct placement in most babies, including those on acid suppressants, however some babies will consistently have pH values of 6 and above <sup>[10]</sup>. Some medications and formulas may affect the pH reading. If the patient is receiving a medication which is known to alter pH readings notify medical team and senior nursing staff, a clear plan for confirming the tubes position should be documented in the patient's notes.
- If the pH is not 5 or more than 5, radiography (AXR) is the gold standard and must be undertaken in the first instance to confirm the tube position. If a baby is persistently having a high pH, then the multidisciplinary team including the neonatologist should discuss possible actions and document how they reached their decision. The decision must be based on balancing the risks between not feeding the baby in the short term, and the risk of feeding when there is a possibility of the tube being in the airway.

## 1.7 Gastric Tube Sizes

Tube Size	Use
6Fg	Infants weighing more than 1500g
8Fg	Used for free drainage of the stomach, for babies on CPAP or occasionally for thickened feeds



All tubes are passed nasally unless the infant has respiratory compromise, increased work of breathing, or structural anomalies such as Choanal Atresia.

## 1.8 Checking the Tube Position

The tube position should be checked <sup>[10-11]</sup>:

- Following initial insertion.
- Before administering each feed.
- Before giving medications.
- Following vomiting, retching, or coughing. However, the absence of coughing does not rule out misplacement or migration.
- If there is evidence of tube displacement, e.g., if tape is loose or the visible tube appears longer or kinked.
- If the baby is on continuous feeds, tube pH checks should be synchronised with syringe changes. When continuous feeding has stopped, wait 15-30 minutes to allow the stomach to empty of milk and the pH level to fall before testing the pH before connecting and administering the next continuous feed syringe.

## 1.9 Decision making chart for tube placement

Action	Rationale
Confirm mark or documented measurement on the tube is at the point it exits the nares or mouth	Remove and replace tube if it is not marked or measurement documented
Check for signs of tube displacement	Tube may have coiled up in mouth or migrated out. Loose tape may indicate movement. If displaced will need to be replaced
Aspirate 0.2-1mL gastric fluid and allow 10-15 seconds for colour change	0.2 to 1mL of aspirate will cover an adequate area of pH strips
Aspirate is pH 5 or below <b>PROCEED TO FEED</b>	This should indicate correct placement in most neonates (including the majority using acid suppressants) and rule out the possibility of respiratory tract placement. Always match the pH indicator strip to the colour chart on the packet. If there is ANY doubt about the position and/or clarity of the colour change on the pH strip, particularly between 5 and 6, DO NOT commence feeds.
Aspirate is pH 6 or above <b>CAUTION – STOP FEED:</b> If clinically safe, consider waiting 15–30 minutes before aspirating again. Consider replacing and/or re-passing the tube and re-aspirating. If still pH 6 or above, seek advice. IT IS IMPORTANT THAT STAFF FOLLOW THE FLOWCHART, RECORD THE OUTCOMES AND MAKE DECISIONS BASED ON THIS INFORMATION	The most likely reason for failure to obtain gastric aspirate pH 5 or below is the dilution of gastric acid by enteral feeds. Waiting gives time for the stomach to empty and the pH value to fall. If pH is still 6 and above after waiting and replacing or re-passing the tube, seek advice and consider the following questions: <ul style="list-style-type: none"> <li>• is the baby on medication?</li> <li>• is the baby only 24 to 48 hours old?</li> <li>• is the tube in the same position as previously documented on an x-ray?</li> </ul>

	<ul style="list-style-type: none"> <li>• is the visible length of the tube the same as previously documented?</li> <li>• What is the trend in pH values?</li> <li>• • What is the volume of aspirate?</li> </ul> <p>It is important that you reassess, and actions and their rationale are documented. Clinical staff should balance the risks of not feeding a baby, in the short term, with feeding when there is the possibility of the tube being in the airway. Consider x-ray if timely, e.g. if the baby is due for an x-ray for other reasons, and/or it is clinically safe to do so. If an x-ray is done, the radiographer should know this advice has been followed and the reason for the request should be documented. If it is safe to do so and the child can tolerate oral intake consider providing them with a bottle, and attempt aspirate in 15-30minutes. If aspirate not obtained discuss with senior nursing staff or medical staff and consider removing the tube or checking position by x-ray.</p>
Document all information	Documenting helps the clinical decision-making process. The tube type, size and length should be recorded each time the tube is passed. A record should also be made each time measurements of the pH level of the aspirate and the length of the tube's advancement or retraction, are done.
Problems obtaining aspirate? Suggest turning baby onto his/her right side	This may facilitate the tip of the nasogastric tube entering the gastric fluid pool.
Gently insert 1mL air using a 10mL syringe <b>This is NOT a testing procedure</b>	Injecting air through the tube may dislodge the exit-port of the feeding tube from the gastric mucosa and try to aspirate after 15-30minutes and reassess. Care must be taken when using large syringes on neonates to ensure that the correct amount of air is inserted, i.e., no more than 1mL.
Advance or retract the tube by 1-2 cm. Stop if there is any resistance or obstruction	If the tube is in the oesophagus, advancing it may allow it to pass into the stomach. If the tube has been inserted too far, it may be in the duodenum. Consider withdrawing a few centimetres and re-aspirating. The position of the tube at the nose should already have been recorded if the tube is in situ. If the mark has not moved, then advancing or retracting may not make a difference. Document the length of tube if it has moved.
If you are still unable to obtain aspirate	If this is an initial insertion, then consider replacing or reinserting the tube. If the tube has been in situ already, seek advice. Consider whether the length of the tube has changed and discuss options as outlined under the action point on aspirate of pH 6 and above. Record all decisions and their rationale.
Reference: NHS National Patient Safety Agency - Patient Safety Alert. Reducing the harm caused by misplaced naso and orogastric feeding tubes in babies under the care of neonatal units. NPSA/2005/9	

## 1.10 Documentation of Intra-gastric Tube Placement

- The tube type (short-term or long-term), Fg size and inserted depth are documented in the clinical progress notes <sup>[7]</sup>.
- The time and date of tube insertion.
- The type of tape used, e.g. Hypafix fixed to left or right cheek. Make a statement about the skin integrity. Coloplast Comfeel should be used to protect the skin in all patients with a NSRAS >8.

## 2 Feeding Via an Intra-gastric Tube

### 2.1 Basic Principles

- Provide the opportunity for positive feeding experiences if awake by offering non-nutritive sucking with a pacifier or on an empty breast during the tube feed, <sup>[12]</sup> and cuddle the baby when possible.
- Feeds should be given via gravity flow and not pushed with a plunger.
- Never hang feeds or leave infant unattended during tube feeding.
- Short-term silastic intra-gastric tubes are changed every 30 days and long-term intra-gastric tubes are changed every 3 months.
- On tube insertion label date inserted on tube), the measurement at nares and tube size are documented in the electronic medical record and the tube is labelled with MRN label sticker with the insertion depth and insertion date clearly documented.
- If vomiting occurs, stop the feeds
- If there is bile (green) stained and/or large volumes of aspirates (greater than half the total of the previous feed), the Medical Officer and notify the nurse-in-charge so a decision can be made regarding continuing the feeds.
- If the infant's abdomen becomes distended, ropey, or there are loose and/or bloody stools present, inform the Medical Officer and a decision will be made regarding continuing the feeds.
- All feeds are administered using EnFit luer-lock enteral feeding syringes. These are available in both purple and orange colours.
- Continuous feeds may be used when bolus volumes are not tolerated, or if there is delay in gastric emptying <sup>[13]</sup>.

## 2.2 Technique

- Whenever possible, hold the baby as you would when oral feeding and provide positive feeding associated experiences (e.g., non-nutritive sucking on the dummy).
- Warm the milk using lukewarm water in a jug prior to administration. Once heated, this milk must be used within the hour.
- When IV fluids are being administered, the tolerated enteral feed volume (unless trophic) is deducted from the total fluid requirements and the IV fluid volume is decreased as the enteral feed volume is increased.
- The IV fluids are not decreased until the infant is tolerating enteral feeds as described above approximately 4 hours after the feed volume was increased to protect the infant's blood glucose levels in the event of vomiting.
- A size 8FG tube may be used when feeds need to be thickened. In these circumstances, the feed may be given using the plunger to push the milk down the tube slowly taking around 20 minutes or given via syringe pump delivered over one hour.
- Large volumes of feed can also be given slowly using a *Kangaroo* feeding pump.
- When feeds are given via syringe or kangaroo pump the nurse does not need to stay with the infant throughout the feed but should observe the infant frequently, and these babies are on continuous monitoring.
- When non-nutritive, enteral priming feeds or trophic feeds are given, these small volumes are not deducted from the total fluid requirements unless requested by the Neonatologist for very small infants.

## 2.3 Continuous Tube Feeding

- Some enteral feeds may be given by slow continuous administration using an enteral syringe pump or *Kangaroo* pump<sup>[13]</sup>.
- The pump tubing and syringe or bag is changed every 24 hours and the date of change marked.
- The volume of milk in the pump chamber should not contain milk for more than 4 hours and the container is labelled with the time and date. If expressed breast milk is given using a *Kangaroo* feeding pump caution is required to ensure the full volume is given and residuals are not retained in the chamber.
- Syringe pumps maybe tilted to ensure the fat content of the breast milk is delivered into the tube.
- Feeds administered via a kangaroo pump are not warmed prior to administration due to an increased risk of bacterial formation.
- All continuous feeds are labelled with date, time, and volume and two signatures when checked.

## 3 Gastrostomy Tube Feeds

### 3.1 Defining Statement

Gastrostomy tube feeds may be used for infants without an intact oesophagus or for infant's who require long term gastric tube feeds and are unable to take feeds via the normal route. For infant's who require long term gastrostomy feeding, a skin-level device (button) may be placed.

[Refer to the hospital policy on gastrostomy feeding and management](#)

## 4 Transpyloric Tube Feeds

### 4.1 Defining Statement

- Transpyloric tubes can be used for infants who have marked gastro-oesophageal reflux or protracted vomiting when milk is given into the stomach. The placement of a transpyloric tube is authorised by the senior medical staff and discussed with the family.

### 4.2 Patient Safety

- Bolus amounts of milk should never be used as there is a risk of duodenal perforation<sup>[14]</sup> and some patients who are fed post-pyloric may develop symptoms similar to dumping syndrome, i.e., sweating, tachycardia, rebound hypoglycaemia and diarrhoea. Therefore, transpyloric feeding should always be carried out continuously by pump<sup>[14-15]</sup>.
- The tube needs to be securely taped at the nostril (or abdomen if placed through a gastrostomy) and the position documented clearly on the securing tape and in the infant's medical records, so that migration of the tube through the gastro-intestinal tract can be detected.
- Transpyloric feeding should not be used as the routine method for tube feeding small preterm infants<sup>[16]</sup>.
- Refer to the hospital policy on enteral feeding in the Transpyloric Tube

## 5 Parent Education for home Tube Feeds

### 5.1 Defining Statement

- Some infants will be discharged home on tube feeds. When it becomes clear that the infant will require tube feeds at discharge, families should be taught as early as possible how to give tube feeds. It is parental preference if they would like to learn how to insert the tube with this education commencing in the unit prior to discharge. All infants being discharged home on tube feeds need to be linked in with local services to support the management of the tube feeds, growth of the infant and transition to oral feeding if appropriate or possible. In consultation with the Nurse Practitioner and Dietitian, a referral to Kids GPS at CHW could be appropriate.

### 5.2 Patient safety

- Parents are informed of the potential complications of incorrect tube placement and the potential for aspiration. This is done in a gentle, non-alarming way to support the parent's achievement of confidence in their ability to undertake tube feeds in the home.
- Parents are instructed to notify their support nurse if any of the following occur: vomiting, change in colour of stomach contents, increased volume of stomach contents before feeds, increased bowel movements, if unable to pass the tube, if the infant becomes irritable.

Refer to the [CHW Homecare Guideline Insertion and Care of a Feeding Tube at Home](#)

## 6 Preparing Readiness for Suck Feeding

### 6.1 Purpose

Newborn infants have a natural instinct for sucking feeds, however when they are premature or have had a serious illness which necessitates delayed introduction or a period of time without suck feeding, they require support in their attempts to suck.

The aim is to create positive feeding experiences while assisting infants to achieve full suck feeds safely and sustainably and to attempt to prevent the development of oral aversive behaviours.

### 6.2 Underlying Principles

- Feeding is an active social interaction between caregiver and infant.
- Development of sucking feeds follows stages that can be identified <sup>[17-18]</sup>.
- Stages are used to plan physiologically appropriate feeding experiences <sup>[18]</sup>.
- Movement within and between stages may be bi-directional.

## 6.3 Stages of Feeding Readiness

Continuous assessment of infant state, autonomic and motor systems, and behavioural cues before, during and after non-nutritive sucking (NNS) as well as nutritive sucking (NS) is essential [12,19, 20, 21].

Providing interventions that are contingent to infant cues are needed to achieve specific goals within each stage [19, 22-23].

Refer to [Appendix 1](#) for the stages of feeding.

### **Points of Emphasis**

- Gestational age, severity of illness and feeding history may play a role in how long an individual infant remains in any one stage.
- There is a wide range in ability at various gestational ages. For example, a healthy preterm infant at 33 weeks adjusted age may be able to achieve total sucking feeds while a 44-week adjusted age infant with chronic lung disease may not.
- Infants with congenital heart disease may take longer to establish full suck feeds and require smaller volumes more frequently [23].
- Some infants (such as those who have had gastrointestinal surgery) may require a prolonged period for the introduction of enteral feeds and the subsequent gradual change to sucking feeds.
- Infants with a neurological problem are likely to experience difficulties producing an effective suck and coordinated suck-swallow-breathe pattern, placing them at higher risk of aspiration during feeding. These infants often need longer term tube or supplementary tube feeding.
- Infants with airway anomalies (e.g. laryngeal cleft, laryngomalacia, vocal cord palsy and tracheal stenosis) are at risk of aspiration and require assessment from Speech pathologist and possibly VFSS.

## 7 Initiation of suck feeding

### 7.1 Defining statement

Breastfeeding is encouraged and supported as the preferred method of oral feeding as babies generally demonstrate better physiological stability during breastfeeds. The introduction of breastfeeding can be enhanced with skin-to-skin cuddles so the baby can nuzzle or attach to the breast. Cue-based feeding involves feeding the infant based on interpretations of infant hunger, fatigue, and safety signals [24-25]. The infant should be able to sustain a quiet, alert state and physiological stability for short periods of time and be exhibiting non-nutritive sucking. The mother can hold the baby and offer an empty breast to nuzzle or to suck during intragastric tube feeds or dummy dips can be given.

- Before offering suck feeds, the infant should be greater than 32 to 34 weeks gestational age, medically stable, tolerating tube feeds, having periods of sustained wakefulness, and displaying cues of feeding readiness.
- If the infant is not able to coordinate sucking, swallowing, and breathing when feeding orally, referral for formal feeding assessment with the speech pathologist and/or lactation specialist should be considered.
- Breastfeeds should be offered initially (if the mother wishes to breastfeed), as infants are generally safer when being breastfed. A bottle feed with a slow-flow teat is used if the mother does not wish to breastfeed. Vulnerable infants should be positioned in an elevated side lying position to minimise the risk of aspiration.
- All attempts are assessed according to the baby's experience and cues so that the baby has a positive experience that helps establish a foundation for long term oral feeding success.
- If an infant's medical condition places them at risk of feeding difficulties and/or aspiration events, they must be referred to and assessed by a speech pathologist to determine the safety of oral feeding.

## 7.2 Breastfeeding Technique

- Observe the infant's breathing pattern and heart rate as they make more effort in sucking and swallowing milk feeds during the transition stage. Allow recovery time between bursts of sucking.
- Decrease environmental stimulation during suck feeding as over stimulation can be counterproductive for some infants, and to provide privacy for mothers.
- Avoid stressful handling, such as bathing or nappy changes immediately prior to feeding.
- Help the baby to become alert, if showing signs of spontaneous waking and focussed for feeding by wrapping, picking them up slowly, speaking quietly and engagingly to the infant to assist them in initiating sucking.
- Decisions about commencement of suck feeds are made with the baby's mother, to ensure that her plans regarding breastfeeding are supported.
- Encourage parents to be present and responsive to their infant's hunger cues and to give the feed.

## 7.3 Offering a Breastfeed

- Readiness for the first breastfeed includes waking spontaneously and maintaining a quiet alert state, rooting with his/her fist in the mouth, and the presence of feeding cues, for e.g., hand to mouth, sucking on the dummy, feeding tube, or fingers, rooting (moving head from side with an open mouth, looking for a nipple), swallowing saliva, open eyes, alert and looking for feeds, active movements of limbs, fussing, and crying.



- Preparation for the first breastfeed includes ensuring privacy for the mother by using a privacy screen, providing a comfortable chair and a pillow to help the mother position her baby.
- When positioning the baby for a breastfeed the baby's body should be in one line, held chest-to-chest by the mother with the head higher than the bottom with the baby's nose/upper lip opposite the nipple.
- The baby should be supported behind the neck and shoulders. The head should be slightly extended with the chin being closer to the breast than the nose and the body flexed around the mother's body.
- The baby opens their mouth wide with the tongue moving over the lower lip to 'lap up' the nipple and surrounding areola. If the mouth is not open this can be encouraged by stimulation of the rooting reflex by directing the nipple from the baby's cheek towards the mouth.
- Bring the baby to the breast with the wide gape, whilst aiming the nipple towards the roof of the mouth and the chin contacting with the breast with slight extension of the head. The baby latches on to the breast not just the nipple.
- When positioned correctly, it is not necessary to hold the breast away from the baby's nose [26-27]. The chin should be in contact with the breast.

### **Caveat to guidelines**

- Infants with congenital heart disease may have lower saturation levels. Refer to the infant's medical notes or medical officer for clarification.

## **8 Effective Sucking at the Breast**

- Initial short bursts of sucking at a rate of two sucks per second occur, and then are followed by a slow and even rhythm with deep jaw movements at a rate of about one suck per second. Effective transfer of milk should occur at this time. Pauses may be taken which become more frequent towards the end of the feed.
- Newborns may take longer to feed, but as the infant matures, the feeding pattern is quicker and more efficient, and they should not require more than 20 minutes per breast.
- The mother should allow the infant to finish feeding from the first breast ensuring that the breast is well drained before offering the second. The infant may feed from one or both breasts according to appetite, [25] and mother's level of milk production.
- The infant should finish the feed of his own accord by coming off the breast. The nipple may appear slightly elongated but without evidence of trauma, blanching or compression which indicates poor attachment.
- Effective breastfeeding is evident when the infant looks content at the end of a feed and is gaining weight. The infant should have 4-6 wet nappies in 24 hours.

## 8.1 Incorrect Attachment and Sucking

Signs indicating poor attachment and sucking may include:

- Cheeks that are sucked in (dimpling)
- Audible (clicking) noises
- Frantic sucking
- Mother experiencing discomfort or nipple pain
- Distortion or stretching of the breast with sucking
- The mother's nipple may appear blanched, compressed or striped after the feed [25-30].

## 8.2 Frequency and Duration Breastfeeding

- Infants show many variations with frequency of feeds. Some infants may feed 1½-2 hour intervals, while others may feed 3-4 hours apart. Around 8-12 feeds per day
- Regular feeds less than one hour apart may indicate poor attachment, poor feeding technique or low milk supply and may need review by the Lactation Team [26-27].
- If an infant is feeding non-nutritively (irregular, frantic or rapid sucking) for long periods on the breast or making clicking noises this may indicate his need for comfort sucking or a feeding problem.
- Observing a feed is useful. Check for correct positioning, attachment, effective suckling, and drainage of the breast. This will determine whether the provision of education or further assessment is required.
- When the infant is correctly positioned and feeding effectively, the mother should not experience nipple pain.
- Demonstration of practical skills and strategies for problem solving factual and concise information and support are all beneficial in establishing confidence of the mother.
- It is important to acknowledge mothers' suggestions, concerns, and cultural background.

**If the mother is experiencing difficulty or pain, contact the Lactation Specialist**

## 9 Expressed Breast Milk

### 9.1 Assisting Mothers to Express

- Expressing should occur on a regular basis of at least 6-8 times a day for 15 minutes on each breast and should continue until the infant is on full breast feeds.
- Hand expression is recommended from birth to the first 2-3 days postpartum.
- Electric or manual breast pumps may be used when the breast milk starts flowing freely.

- Instruct mothers to wash their hands prior to expressing and collection of equipment to reduce the risk of cross-contamination.
- Use sterile syringes, to collect the milk when hand expressing. Syringes are to be capped.
- Instruct mothers in labelling and storing of expressed breast milk:
  - MRN labels are available from nursing staff
  - Each syringe is labelled with the date and time of expressing.
- To prepare the electric breast pump:
  - Collect a sterile breast pump set, toothbrush, tubing, and a clean plastic container from utility room. Sterile bottles are obtained from the feed room
  - Fill the plastic container with Milton and label with baby's full name (yellow label), this is used to store and disinfect the breast pump equipment between use
- Guide the mother on how to use the electric breast pump:
  - Prepare equipment with mother
  - Guide the mother to hand express prior to or following pumping. Suggest the use of massage and breast compression during expressing, to ensure adequate milk drainage and the absence of lumpy, tender areas.
  - Recommend frequent 3 hourly expressing, minimum 6 times per day, for 15 minutes on each breast or until the breast is empty.
  - Encourage self-care of good nutrition, hydration, and rest.
- Instruct mothers to thoroughly wash breast pump equipment after each use:
  - Rinse in water, then wash with detergent and brush. Rinse well under warm water
  - Place the equipment into a labelled Milton container. Place tubing in sealed bag provided. Mum should be encouraged to keep the tubing with her between use
  - Equipment is sterilised after 15 minutes
  - Milton is changed every 24 hours by ward cleaning staff
- Mothers should be encouraged to express during the night to reduce the incidence of engorgement and to help increase milk supply. They may have a 4–5-hour break to get some sleep if expressing frequently around this time or breasts are not feeling too full.

### ***Caveats to Guidelines***

- If difficulty is encountered with breast engorgement or there is a delay in milk supply, encourage mothers to discuss these issues with the nurse caring for her infant and/or with the lactation specialist.
- If mum has any concerns about her milk supply refer to Lactation Specialist

**Affiliated links**

SCHN Practice Guidelines:

[Lactation Promotion using Galactagogues to improve Supply and Sustain Breastfeeding](#)

[Enteral Feeding Tubes and the Administration of Enteral Nutrition](#)

[Breast Milk: Safe Management \(GL2023\\_021\)](#)

## 9.2 Storage of Expressed Breast Milk (EBM)

- If possible, ask mothers to measure the required/smaller volumes for feeds in bottle, syringe, or bags. Ensure that she places enough to allow for feed volume, plus an extra 3-4 mL for priming of feeding tubes if they are present.
- Label the syringe, bottle or milk bag with an EBM label including the MRN label, date and time of expressing.
- If the expressed breast milk EBM is to be used within 48 hours, place the labelled bottle of expressed breast milk into the baby's container and designated place in the refrigerator.
- If expressed milk is not likely to be used within 48 hours of expressing it should be placed in a an EBM bag, labelled and placed in the infants' milk basket, which is then stored in the freezer.
- Bottles and bags should be only  $\frac{3}{4}$  full if being stored in a freezer as milk expands during the process of freezing.
- Fresh breast milk can be stored in the fridge for 48 hours in hospital and for 3-5 days (at the back of the fridge) at home.

## 9.3 Defrosting and Dispensing Expressed Breast Milk

- The EBM containers should only be entered twice per day, so all the feeds should be decanted on these two occasions.
- Wash hands thoroughly, ensure the bench is clean, and use only sterile equipment.
- For personal protection, gloves and goggles should be worn when handling expressed breast milk.
- Choose a container with the required amount for the feed to reduce wastage.
- Defrost frozen breast milk in the milk warmer and swirl gently before using.
- Heated breast milk should be used immediately, and any leftover milk discarded.
- Microwaves are not to be used to warm or thaw breast milk.
- Do not refreeze thawed milk.
- Two staff members are required to check and sign for each prepared feed:
  - Wash hands
  - Identify the container of EBM

- Check MRN label and date of expressing/defrosting to ensure it is the correct EBM and has not expired

Note: Fresh EBM is to be used within 48 hours of expressing.

Defrosted EBM is to be used within 24 hours from when it is fully defrosted. Write the date and time it is removed from the milk warming machine after thawing in the yellow boxes on the milk label.

## 9.4 Identification of expressed breast milk at the bedside

- Two staff members are to check the EBM prior to each feed. At the bedside:
  - Check MRN label on the EBM container with the baby's identification band
  - Check Name, MRN and DOB on container and baby
  - Check time of expiry of EBM
  - If a feed is delayed, EBM should never be left at the bedside.
  - Two staff to sign Medical Records when EBM is given.

## 9.5 Transporting of expressed breast milk

- Transport milk in an insulated container such as an esky, using a freezer brick (not ice cubes) to maintain cold state of milk.
- If the parents visit daily EBM can be transported fresh and then frozen if the baby is not currently having feeds.
- Note: If frozen EBM has thawed during transport, the milk must be used within 24 hours. Do not refreeze.

## 9.6 Supplementary Feeds

A supplementary feed is a formula feed given to replace a breastfeed. This may be due to any of the following reasons:

- no expressed breast milk available
- mother is unwell and unable to feed
- mother has been prescribed a medication not compatible with breast feeding
- mother not available at the hospital to breastfeed or express
- mother returning to work and unable to feed
- mother is weaning
- perceived convenience of bottle feeding
- infant illness requiring specific formula

If a baby who is normally breast fed requires infant formula, written permission should be sought from the breastfeeding mother, recorded on the Consent for

Formula/Complementary, Supplementary feeds, and placed in the infant's medical record. The commencement of formula should be written in the progress notes.

If there is no expressed breast milk available, it may be necessary to check mother's milk supply, and encourage her to express frequently to provide milk.

Refer to the Grace lactation specialist for advice or if assistance is required.

## 9.7 Complementary Feeds

A complementary feed is given in addition to the breastfeed. Complementary feeding can lead to decreased stimulation of the breast and is contraindicated in the early establishment of successful breast feeding, or, unless essential, when trying to increase supply.

Complementary feeds may be used for many reasons:

- Failure to lactate or inadequate maternal supply.
- Damaged nipples, and painful breastfeeding.
- Poor weight gain in an infant.
- Diminished sucking and/or poor attachment by the infant at the breast.
- Infant's inability to suckle efficiently.
- Illness of the infant.

If a baby who is normally breast fed requires infant formula, written permission should be sought from the breastfeeding mother, recorded on the Consent for Formula/Complementary, Supplementary feeds, and placed in the infant's medical record. The commencement of formula must be documented in the clinical progress notes to alert staff. If a formula other than a standard infant formula is required, this is to be approved or recommended by a Medical Officer or Dietitian.

## 9.8 Formula consent form

If a baby who is normally breast fed requires infant formula or calories to be added to EBM, written permission should be sought from the breastfeeding mother and recorded on the Consent for Formula/Complementary, Supplementary feeds and placed in the infant's medical record. - [http://intranet.schn.health.nsw.gov.au/files/scn020050\\_0.pdf](http://intranet.schn.health.nsw.gov.au/files/scn020050_0.pdf)

## 9.9 Pasteurised Donor Human Milk (PDHM)

- PDHM is available for infants in GCNIC who meet the eligibility criteria
- PDHM is ordered and received from the Lifeblood Milk Bank by Lactation Team or NUM 1's.
- Consent is gained by Lactation Consultant's, Nurse practitioners, Fellows, or Neonatologists
- When PDHM is being dispensed, it must be checked out of the freezer and written up in the PDHM milk register which needs to be checked and signed by 2 nurses.
- PDHM is thawed in the Calesca milk warmer, and an orange label must be filled in and put onto the bottle

- Once defrosted the PDHM bottle is stored in the baby's container in the fridge to be used throughout the shift (up to 24hours)
- The fridge container should have an orange sticker on it to alert staff that the baby is on PDHM
- The process of identification and dispensing of PDHM is the same as expressed breast milk.

## 9.10 Incident Management for infants who have received incorrect Breastmilk.

**As per NSW Ministry of Health Policy Directive - Breast Milk: Safe Management, all incidents must be reported to the Nursing Team Leader and Medical Officer and recorded as an IMS+ following the potential exposure of a baby to the breast milk from a non-birth mother.**

There is a small but possible risk of transmission of infectious agents from the ingestion of breast milk. The exposure of a baby or neonate to breast milk from a non-birth mother may arise if the wrong EBM is given to another mother's baby in error.

### **Immediate response (treatment of the exposed baby):**

- If the baby is being fed EBM via a nasogastric or orogastric tube and the incident is identified at the time of feeding, aspirate the stomach contents immediately. The feed can be aspirated up to 30 minutes after feeding but only if the nasogastric or orogastric tube is still in situ. If the baby is not being fed EBM via a nasogastric or orogastric tube, proceed to a risk assessment of the source (non-birth) mother. Nasogastric or orogastric tubes must not be inserted for the Purpose of aspirating EBM.

The Incident Management Flowchart should be followed, and the checklist completed (see [Appendix 3](#)).

In addition, the document must be read in conjunction with [NSW MoH Policy Directive Open Disclosure](#) [PD2014\_028] and related documents.

## 10 Facilitating bottle-feeding

- Babies who have had non-nutritive sucking experiences with a pacifier have shown better bottle-feeding performance <sup>[12]</sup>.
- There are a number of reasons why babies on the unit need to be offered bottle feeds rather than the preferred method of breastfeeding. These include the baby is required to have a specialised formula or the mother has inadequate supply.
- It is important to note that it is more difficult for a baby to regulate the flow of fluid from a teat when compared to the breast. For this reason, we use a slow flow teat and other supportive strategies such as elevated side lying and external pacing.
- Refer to [Appendix 1](#)

## 10.1 Guideline for the choice of teat

The **Pigeon Peristaltic slow flow teat** is the standard teat available in GCNIC and is suitable for most babies. Other teats are available from the Speech Pathologists if required.



**Some babies have special needs with feeding and require specialised equipment**



The **Pigeon Cleft Palate teat and bottle** is used for babies with a cleft lip or palate. There is a one-way valve in the teat and the soft bottle can be squeezed as the baby sucks to facilitate fluid transfer.



The **Medela Special Needs Feeder** is also used for babies with cleft lip and palate

The teat chamber can be squeezed to assist the baby, three flow rates are available.



## 10.2 Current formulas used in Grace Centre for Newborn Care

### Formula Room

- When additives are required to fortify breast milk feeds, written consent is required. The Consent for Formula/Complementary, Supplementary feeds form should be filled in and signed and stored in the infant's medical records.
- If calories are to be added to EBM it should be prepared in the Formula Room. The Dietitian or Dietary Supervisor will collect the volume of frozen milk required for the following 24 hours. The amount of EBM collected, amount sent to ward and amount left over for next day is documented. Only the minimum amount of breast milk required is thawed, any extra is kept frozen in the Formula Room. Any thawed EBM that is not sent to the ward must be labelled with the patient's name, and time and date of thawing. If not required, thawed EBM must be discarded after 24 hours.
- In the Formula Room EBM is thawed in a safe, sterile environment as documented in the Food Safety Plan.
- On discharge, ensure parents take home the EBM which is stored in the freezer. If parents do not want to take the milk home, it could be donated to RedCross. Refer to a lactation consultant for information about donating milk to RedCross.
- If calories are to be added to PDHM it should be prepared in a clean area at the patient's bedside
  - Nan Option ready to feed - suitable from birth (ward stock)
  - Preterm formula: S26 LBW ready to feed – suitable for low-birth-weight pre-term infants (ward stock)
  - S26 Original Newborn, powdered formula – made in formula room, ordered by the Dietician.
  - Specialised formulas are available for specific conditions such as malabsorption and allergies. These formulas are prescribed by a doctor and orders are made through the formula room in consultation with a dietician.
  - Other formula brands can be used during an infant's stay. Parents will need to supply tins to the formula room
- Additives may be added to expressed breast milk or formula to increase energy intake, these include:
  - Carbohydrate: Polyjoule (maltodextrin)
  - Fat: Calogen (Long chain fat emulsion), Liquigen (medium chain fat emulsion)
  - Human milk fortifier (Pre Nan, FM85) to increase energy, protein, vitamins, and minerals. This is added to expressed breast milk.

## Reference List

1. Mizuno, K & Ueda, A 2005, 'Neonatal feeding performance as a predictor of neurodevelopmental outcome at 18 months.' *Developmental Medicine & Child Neurology*, vol. 47, pp. 299-304.
2. Dodrill, P, McMahon, S, Ward, E, Weir, K, Donovan, T, & Riddle, B 2004, 'Long-term oral sensitivity and feeding skills of low-risk pre-term infants', *Early Human Development*, vol. 76, no. 1, pp. 23-37.
3. Fucile, S, Gisel, E, & Lau, C 2002, 'Oral stimulation accelerates the transition from tube to oral feeding in preterm infants', *Journal of Pediatrics*, vol. 141, no. 2, pp. 230-6.
4. Mizuno, K & Ueda, A 2001, 'Development of sucking behavior in infants with Down's syndrome', *Acta Paediatrica* vol. 90, no.12, pp. 1384-8.
5. New South Wales Health Agency for Clinical Innovation 2016, 'Infants and Children Insertion and Confirmation of Placement of Nasogastric and Orogastic Tubes 1st Edition: Guideline', GL2016\_006, file no. 14/5257
6. Watson, J & McGuire, W 2013, 'Nasal versus oral route for placing feeding tubes in preterm or low birth weight infants', *Cochrane Database of Systematic Reviews*, issue 2, art. no. CD003952.
7. Dias, FDSB, Emidio, SCD, Lopes, MHBDM, Shimo, AKK, Beck, ARM & Carmona, EV, 2017, 'Procedures for measuring and verifying gastric tube placement in newborns: an integrative review', *Revista latino-americana de enfermagem*, vol. 25.
8. Farrington, M, Cullen, L, Lang, S, & Stewart, S 2009, 'Nasogastric tube placement verification in pediatric and neonatal patients', *Pediatric Nursing*, vol. 35, no. 1, pp.17-24.
9. Knox T, Davie J. (2009) Nasogastric tube feeding - which syringe size produces lower pressure and is safest to use? *Nursing Times*; 105: 27):
10. NHS National Patient Safety Agency 2005, 'Patient Safety Alert. Reducing the harm caused by misplaced naso and orogastric feeding tubes in babies under the care of neonatal units', NPSA/2005/9
11. Nyqvist, KH, Sorell, A, & Ewald, U 2005, 'Litmus tests for verification of feeding tube location in infants: evaluation of their clinical use', *Journal of Clinical Nursing*, vol. 14, no. 4, pp. 486-95.
12. Pinelli, J & Symington, AJ 2005, 'Non-nutritive sucking for promoting physiologic stability and nutrition in preterm infants', *Cochrane Database of Systematic Reviews*, Issue 4, art. no. CD001071.
13. Premji, S & Chessell, L 2011, 'Continuous nasogastric milk feeding versus intermittent bolus milk feeding for premature infants less than 1500 grams', *The Cochrane Database of Systematic Reviews*, vol. 11.
14. Niv, E, Fireman, Z, & Vaisman, N 2009, 'Post-pyloric feeding', *World Journal of Gastroenterology: WJG*, vol. 15, no. 11, pp. 1281-8.
15. Kirby, DF, Delegege, MH, & Fleming, CR 1995, 'American Gastroenterological Association technical review on tube feeding for enteral nutrition', *Gastroenterology*, vol. 108, no.4, pp. 1282-301.
16. McGuire W, McEwan P, 2004, 'Systematic review of transpyloric versus gastric tube feeding for preterm infants', *Archives of Disease in Childhood Fetal and Neonatal Edition* 2004 May; vol. 89, no. 3, pp. F245-8.
17. White-Traut, R, Berbaum, M, Lessen, B, McFarlin, B, & Cardenas, L 2005, 'Feeding readiness in preterm infants', *Maternal Child Health Nursing*, vol. 30, no. 1, pp. 52-60.
18. Burklow, K, McGrath, A, & Kaul, A 2002, 'Management and prevention of feeding problems in young children with prematurity and very low birthweight', *Infants & Young Children*, vol. 14, no. 4, pp.19-30.
19. Chatoor, I, Ganiban, J, Harrison, J, Hirsch, R 2001, 'Observation of feeding in the diagnosis of posttraumatic feeding disorder of infancy', *Journal of the American Academy of Child & Adolescent Psychiatry* vol. 40, no. 5, pp.595-602.
20. McGrath, JM & Braescu, AV 2004, 'State of the Science: Feeding Readiness in the Preterm Infant', *The Journal of Perinatal & Neonatal Nursing*, vol. 18, no. 4, pp. 353-68.
21. Dunitz-Scheer, M, Wilken, M, Walch, G, Schein, A, Scheer, P 2000, 'How do we get rid of the tube? Diagnostic considerations and therapeutic approaches to the interdisciplinary weaning of infants and toddlers from the tube (in German)', *Die Kinderkrankenschwester*, vol. 19, no. 11, pp. 448-56.
22. Tanberg, BS, Ystrom, E, Vollrath, ME, Holmstrom, H 2010, 'Feeding infants with CHD with breast milk: Norwegian mother and child cohort study', *Acta Paediatrica* vol. 99, pp. 373-8.
23. Clemente, C, Barnes, J, Shinebourne, E, Stein, A 2001, 'Are infant behavioural feeding difficulties associated with congenital heart disease?', *Child: Care, Health and Development*, vol. 27, no.10, pp. 47-59.
24. Imms, C 2001, 'Feeding the infant with congenital heart disease: an occupational performance challenge', *American Journal of Occupational Therapy*, vol. 55, no. 3, pp. 277-84.
25. McCain, GC, Gartside, PS, Greenberg, JM, Lott, JW 2001, 'A feeding protocol for healthy preterm infants that shortens time to oral feeding', *Journal of Pediatrics* vol. 139, no. 3, pp. 374-9.

26. NSW Department of Health 2018, *Breastfeeding in NSW: Promotion, Protection and Support*, cat. no. PD2018\_034, NSW Department of Health, Sydney.
27. Australian Breastfeeding Association 2019, <https://www.breastfeeding.asn.au/bf-info/general-breastfeeding-information>. Accessed 28<sup>th</sup> September 2019.
28. Lawrence, RA & Lawrence, RM 1999, *Breastfeeding: A guide for the medical profession*, Mosby. St Louis, MO.
29. National Health and Medical Research Council 2003, *Dietary Guidelines for Children and Adolescents in Australia: incorporating the Infant Feeding Guidelines for Health Workers*, Commonwealth of Australia, Canberra.
30. Hale, T & Berens, P 2011, *Clinical Therapy in Breastfeeding Patients*, Hale Publishing, Amarillo, TX.
31. Wolf, LS & Glass, RP 1992, *Feeding and Swallowing Disorders in Infancy: Assessment and Management*, The Psychological Corporation, United Kingdom.
32. Comrie, JD & Helm, JM 1997, 'Common Feeding Problems in the Intensive Care Nursery: Maturation, Organization, Evaluation, and Management Strategies', *Seminars in Speech and Language*, vol. 18, no. 3, pp. 239-61.
33. Pickler, RH 2005, 'A model of feeding readiness for preterm infants' *Neonatal Intensive Care*, 18(4), p. 17-22.
34. Meyer-Palmer, M & Heyman, MB 1993, 'Assessment and treatment of sensory-versus motor-based feeding problems in very young children. *Infant and Young Children*, vol. 6, no. 2, pp. 67-73.
35. Meyer-Palmer, M 1998, 'Weaning from Gastrostomy Tube Feeding: Commentary on Oral Aversion. *Pediatric Nursing*, vol. 23, no. 5.
36. Daley, HK & Kennedy, CM 2000, 'Meta analysis: effects of interventions on premature infants feeding', *Journal of Perinatal and Neonatal Nursing*, vol. 14, no. 3, pp. 62-77.
37. Buehler, DM, Als, H, Duffy, F, McAnulty, G, & Liederman, J 1995, 'Effectiveness of individualized developmental care for low-risk preterm infants: Behavioral and electrophysiologic evidence', *Pediatrics*, 96(5), vol. 96, no. 5, pp. 923-32.
38. Gaebler, CP & Redditi Hanzlik, J 1996, 'The effects of a pre-feeding stimulation program on preterm infants', *American Journal of Occupational Health*, vol. 50, no. 3, pp. 184-92.
39. Nyqvist, KH, Rubertsson, C, Ewald, U, & Sjoden, P 1996, 'Development of the preterm breastfeeding behavior scale (PIBBS): A study of nurse-mother agreement', *Journal of Human Lactation*, vol. 12, no. 3, pp. 207-15.
40. Boiron, M, Nobrega, L, Roux, S, Henrot, A, & Saliba, E 2007, Effects of oral stimulation and oral support on non-nutritive sucking and feeding performance in preterm infants. *Developmental Medicine & Child Neurology*, 49, vol. 49, pp. 439-44.
41. Nowak, AJ, Smith, WL, & Erenberg, A 1994, 'Imaging evaluation of artificial nipples during bottle feeding', *Archives of Pediatrics & Adolescent Medicine*, vol. 148, no. 40-2
42. VandenBerg, KA 1990, 'Nippling Management of the Sick Neonate in the NICU: The Disorganized Feeder,' *Neonatal Network*, vol. 9, no. 1, 9-16.
43. Glass, RP & Wolf, LS 1994, 'A global perspective on feeding assessment in the neonatal intensive care unit', *The American Journal of Occupational Therapy*, vol. 48, no. 6, pp. 514-526.
44. Meyer-Palmer, M 1993, 'Identification and management of the transitional suck pattern in premature infants', *Journal of Perinatal & Neonatal Nursing*, vol. 7, no. 1, 66-75.
45. Chen, C, Wang, T, Chang, H & Chi, C 2000, 'The effect of breast-and bottle-feeding on oxygen saturation and body temperature in preterm infants', *Journal of Human Lactation*, vol. 16, no. 21, pp. 21-7
46. Lau, C, Alagugurusamy, R, Schanler, RJ, Smith, EO, & Shulman, RJ 2000, 'Characterization of the developmental stages of sucking in preterm infants during bottle feeding', *Acta Paediatrica*, vol. 89, pp. 846-54.
47. Gewolb, IH, Vice, FL, Schweitzer-Kenney, EL, Taciak, VL, & Bosma, JF 2001, 'Developmental patterns of rhythmic suck and swallow in preterm infants', *Developmental Medicine and Child Neurology*, vol. 43, no. 1, pp. 22-7.
48. Amaizu, N, Shulman, RJ, Schanler, RJ, & Lau, C 2008, 'Maturation of oral feeding skills in preterm infants', *Acta Paediatrica*, vol. 97, no. 1, pp. 61-7.
49. Mizuno, K & Ueda, A 2003, 'The maturation and coordination of sucking, swallowing, and respiration in preterm infants' *The Journal of Pediatrics*, vol. 142, no. 1, pp.36-40.
50. Bromiker, R, Arad, I, Loughran, B, Netzer, D, Kaplan, M, & Medhoff-Cooper, B 2005, 'Comparison of sucking patterns at introduction of oral feeding and at term in Israeli and American born preterm infants. *Acta Paediatrica*, 94, 201-204.

51. Medoff-Cooper, B, McGrath, JM, & Bilker, W 2000, 'Nutritive sucking and neurobehavioral development in preterm infants from 34 weeks PCA to term', *MCN: The American Journal of Maternal/Child Nursing*, vol. 25, no. 2, pp. 64-70.
52. McGrath, JM & Medoff-Cooper, B 2003, 'Alertness and feeding competence in extremely early born preterm infants', *Newborn and infant nursing reviews*, vol. 9, no. 3, pp. 174-86.
53. McGrath, JM & Braescu, AVB 2004, 'State of the science: Feeding readiness in the preterm infant', *Journal of Perinatal & Neonatal Nursing*, vol. 18, no. 4, pp. 353-68.
54. Koenig, JS, Davies, AM, & Thach, BT 1990, 'Coordination of breathing, sucking and swallowing during bottle feedings in human infants', *Journal of Applied Physiology*, vol. 69, no. 5, pp. 1623-9.
55. Lau, C & Schanler, RJ 2000, 'Oral feeding in premature infants: advantages of a self-paced milk flow', *Acta Paediatrica*, vol. 89, pp. 453-9.
56. Ludwig, SM 2007, 'Oral feeding and the late preterm infant', *Newborn & Infant Nursing Reviews*, vol. 7, no. 2, pp. 72-5.
57. Medhoff-Cooper, B 2005, 'Nutritive sucking research from clinical questions to research answers', *Journal of Perinatal & Neonatal Nursing*, vol. 19, no. 3, pp. 265-72.
58. Meier, P & Brown, LP 1996, 'State of science: Breastfeeding for mothers and low birth weight infants', *Nursing Clinics of North America*, vol. 31, no. 2, pp. 351-65.
59. Clark, L, Kennedy, G, Pring, T, & Hird, M 2007, 'Improving bottle feeding in preterm infants: Investigating the elevated side-lying position', *Infant*, vol. 3, no. 4, pp. 154-8.
60. Pickler, RH, Higgins, KE, & Crummette, BD 1993, 'The effect of nonnutritive sucking on bottle-feeding stress in preterm infants', *Journal of Obstetric, Gynecologic, & Neonatal Nursing*, vol. 22, no. 3, pp. 230-4.
61. Chang, Y, Lin, C, Lin, Y, & Lin, C 2007, 'Effects of single-hole and cross-cut nipple units on feeding efficiency and physiological parameters in premature infants', *Journal of Nursing Research*, vol. 15, no. 3, pp. 215-22.
62. Ross, E & Browne, J 2002, 'Developmental progression of feeding skills: an approach to supporting feeding in preterm infants', *Seminars in Neonatology*, vol. 7, pp. 469-75.
63. McCain, G 1997, 'Behavioral state activity during nipple feedings for preterm infants', *Neonatal Network*, vol. 16, no. 5, pp. 43-4.
64. McCain, GC, Gartside, PS, Greenberg, JM, & Lott, JW 2001, 'A feeding protocol for healthy preterm infants that shortens time to oral feeding', *The Journal of Pediatrics* vol. 139, no. 3, pp. 374-9.
65. Pridham, KF, Kosorok, MR, Greer, F, Kayata, S, Bhattacharya, A, & Grunwald, P 2001, 'Comparison of caloric intake and weight outcomes of an ad lib feeding regime for preterm infants in two nurseries', *Journal of Advanced Nursing*, vol. 35, no. 5, pp. 751-9.
66. Pridham, KF, Schroeder, M, Brown, R, & Clark, R 2001, 'The relationship of a mother's working model of feeding to her feeding behaviour', *Journal of Advanced Nursing*, vol. 35, no. 5, pp. 741-50.
67. Kirk, AT, Alder, SC, & King, JD 2007, 'Cue-based oral feeding clinical pathway results in earlier attainment of full oral feeding in premature infants', *Journal of Perinatology*, vol. 27, pp. 572-8.
68. Shiao, SP, Brooker, J, & DiFiore, T 1996, 'Desaturation events during oral feedings with and without a nasogastric tube in very low birth weight infants', *Heart & Lung*, vol. 25, no. 3, pp. 236-45.
69. Hawdon, JM, Beauregard, N, Slattery, J, & Kennedy, G 2000, 'Identification of neonates at risk of developing feeding problems in infancy', *Developmental Medicine & Child Neurology*, vol. 42, pp. 235-9.
70. Ross, ES & Philbin, MK, 2011, 'Soffi: an evidence-based method for quality bottle-feedings of preterm, ill, and fragile infants', *The Journal of Perinatal & Neonatal Nursing*, vol. 25, no. 4, p. 349.
71. Shaker, CS, 2013, 'Cue-based feeding in the NICU: using the infant's communication as a guide', *Neonatal Network*, vol. 32, pp. 404-8.
72. Thoyre, S, Park, J, Pados, B, & Hubbard, C 2013, 'Developing a co-regulated, cue-based feeding practice: The critical role of assessment and reflection', *Journal of Neonatal Nursing*, vol. 19, no.4, pp.139-48.
73. Systematic Review: What is the Evidence for the Side-Lying position for Feeding Preterm infants Park, J, Frisk Pados, B and Thoyre, SM [www.advancesinneonatalcare.org](http://www.advancesinneonatalcare.org)
74. Improving bottle feeding in preterm infants: Investigating the elevated side-lying position. (2007) Clark L, Kennedy G, Pring T and Hird M

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## Appendix 1: Stages of Feeding High-risk Infants

<b>Stages 1 to 5</b>				
<b>Stage 1:</b> <b>Nil by Mouth / Pre-Oral</b> (Stimulation Stage)	<b>Stage 2:</b> <b>Tube Feeding / Non-Nutritive Sucking Stage</b>	<b>Stage 3:</b> <b>Nutritive Sucking: Minimal Oral Intake – Critical Stage</b> (<10% oral intake within a 24 hour period)	<b>Stage 4:</b> <b>Nutritive Sucking: Moderate Oral Intake</b> (10% to <80% of oral feedings in a 24 hour period)	<b>Stage 5:</b> <b>Nutritive Sucking: Full oral Intake</b> (>80% of oral feedings in a 24 hour period)
<b>Goals</b>				
Minimise negative oral stimulation <sup>[31-32]</sup>  Promote behavioural organisation  Establish and maintain mother's milk supply	Promote positive oral stimulation and NNS <sup>[31]</sup>  Support the establishment and maintenance of mother's milk supply  Enteral milk feeds tolerated by tube feeding	Sucking practice only  Quality and ambiance are more important than quantity taken  Experience is positive for infant and caregiver Infant is able to take small amounts of sucking feeds in a controlled setting <sup>[31-32, 42-44]</sup>	To ease the transition to full sucking feeds by supporting endurance, skills, and physiologic stability  Quality and ambiance are still more important than quantity taken	Full oral feeding that supports growth  Feeding experience is positive to infant and caregiver
<b>Infant Characteristics</b>				
Specific problems resulting in ability to have enteral feeds	Enteral milk feeds tolerated with minimal gastric residuals	Infants who are breastfed may exhibit better O <sub>2</sub>	Identifiable readiness cues: <ul style="list-style-type: none"> <li>• Hand to mouth, rooting</li> </ul>	Sustains SSB throughout the feeding <sup>[31, 43-44]</sup>

<p>Responds adversely to handling</p> <p>Poor physiologic, motor &amp; state regulation with or without stimulation <sup>[33]</sup></p> <p>None to very weak oral reflexes (transient) <sup>[31]</sup></p> <p>None to very weak non-nutritive skills <sup>[31-32,33-35]</sup></p> <p>Not managing secretions (Neurological infants) <sup>[31]</sup></p>	<p>Stable with handling and able to maintain physiologic, motor and state stability with NNS interventions<sup>[33]</sup></p> <p>Oral reflexes present or emerging</p> <p>Demonstrates licking and rooting</p> <p>By the end of this stage the infant will be able to demonstrate NNS by:</p> <ul style="list-style-type: none"> <li>○ Establishing and maintaining latch</li> <li>○ Rhythmical sucking bursts</li> <li>○ Coordinating sucking and breathing</li> </ul>	<p>saturation than infants who are bottle fed<sup>[45]</sup></p> <p>Infants ~32 weeks adjusted age may begin to demonstrate readiness cues and be able to achieve this stage of nutritive sucking <sup>[46-50]</sup></p> <p>Good NNS; emergent but no sustained SSB coordination</p> <p>Infants with CHD may tire easily</p> <p>Oral Intake &lt; 10% daily volume</p> <p><u>Positive Readiness Cues:</u></p> <ul style="list-style-type: none"> <li>• Manages secretions <sup>[31,43]</sup></li> <li>• Maintains a quiet/alert state <sup>[17,51]</sup></li> <li>• Emergent but not sustained coordination of SSB</li> <li>• Beginning to self-pace</li> <li>• Licking/ Rooting/ Mouthing</li> <li>• Resting RR &lt;80 with no respiratory distress cues <sup>[43]</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Increased motor activity prior to feeding</li> <li>• The infant may demonstrate readiness to feed at some feedings throughout the day, but not necessarily all the feedings</li> <li>• Functional to good SSB <sup>[31,44,49]</sup></li> <li>• Improved endurance but not enough to maintain full oral feeding</li> <li>• Immature state control – unable to maintain quiet alert state throughout entire feeding <sup>[63]</sup></li> <li>• Consistent self- pacing may or may not be present</li> <li>• A positive breastfeeding experience is defined as: an infant who demonstrates a good latch, sustained bursts of</li> </ul>	<p>Endurance to maintain nutritional intake to support growth</p> <p>Demonstrates clear hunger cues:</p> <ul style="list-style-type: none"> <li>• Hand to mouth, rooting</li> <li>• Increased motor activity</li> </ul> <p>Wakes to feed Demonstrates satiation cues:</p> <ul style="list-style-type: none"> <li>• Slips off nipple at end of feeding</li> <li>• Falls asleep at end of feeding</li> <li>• Most infants by 37-42 weeks adjusted age should be able to achieve Stage III of nutritive sucking <sup>[46-47, 49]</sup></li> <li>• Consistent self-pacing</li> </ul>
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		<p><u>Disengagement/ Distress Cues:</u></p> <ul style="list-style-type: none"> <li>• Easily becomes physiological unstable</li> <li>• Pooling of bolus</li> <li>• Aspiration</li> <li>• SSB becomes disorganized</li> <li>• Fatigues easily (falls asleep)</li> <li>• Difficulty initiating feeding</li> <li>• Head bobbing</li> <li>• Loss of postural tone</li> <li>• Loss of state</li> </ul>	<p>nutritive sucking, and audible swallowing for several minutes <sup>[39]</sup></p> <p><i>Note: Infants may develop physiological instability if pushed at this stage and require ongoing monitoring of saturation and heart rate</i></p>	
<h2>Interventions</h2>				
<p>Use developmental care interventions to facilitate midline position and flexion which promotes hand to mouth experience and behavioural organisation <sup>[36-37]</sup></p> <p>Skin-to-skin care (Kangaroo care©)</p>	<p><u>Provide positive feeding experiences and NNS:</u></p> <p>Infant's fingers: position to support hand to mouth contact to allow the infant to suck when needed<sup>[40]</sup></p> <p>Expressed breast: allows infant to nuzzle and practice sucking</p>	<p>Minimise distracting stimuli</p> <p>Aid infant to awake state before feeds <sup>[33,40,52]</sup></p> <p>Skin-to-skin care (Kangaroo care©) a.c.<sup>[53]</sup></p> <p>Intervene to prevent distress</p> <p>Feeds should not be pushed <sup>[46,</sup></p>	<p>Aid infant to awake state before feeds <sup>[52,62]</sup></p> <p>NNS may help with state control and SSB coordination <sup>[33]</sup></p> <p>Feedings should not be rushed.</p>	<p>Continue side lying and external pacing as required</p> <p>Transition to cue base feeding before discharge; intervals between feedings may vary greatly throughout day <sup>[53,56,64-67]</sup></p> <p>If infant demonstrates disengagement cues, delay</p>



<p>Positive experiences to the facial area as tolerated by infant <sup>[38]</sup></p> <p>Sustained touch</p> <p>Support the mother in initiating and maintaining lactation <sup>[39]</sup></p> <p>Discuss with parents realistic expectations for initiation and progression of feeding</p> <p>Use breast milk to clean the mouth to facilitate taste and smell.</p>	<p>Skin-to-skin care (Kangaroo care©)</p> <p>Soother/ pacifier: standard shaped nipples are recommended <sup>[31,40-42]</sup> (no orthodontic, flat or bulb shaped pacifiers); never force a nipple into the infant's mouth</p> <p><b>Note:</b> If baby has difficulty sucking and breathing, attempt to provide external pacing</p> <p><u>Transition to Pairing NNS and Tube Feeding:</u> Consider placing a warmed drop of milk on the infant's lip to promote the infant to bring their tongue forward to lick the milk</p> <p>Once infant demonstrates coordination of NNS (breathing and sucking), all above methods of NNS can be combined with tube feeding (e.g., gavage feeding while nuzzling at breast)</p>	<p><u>Therapeutic tasting</u> Drop milk onto dummy from 1 ml syringe 1 drop at a time.</p> <p><u>External pacing</u> – to aid or prevent disorganized SSB <sup>[44,54-57]</sup></p> <p>Infants capable of limited self-pacing:</p> <ul style="list-style-type: none"> <li>gently roll infant forward (bottle in the mouth) until milk is out of nipple;</li> <li>allow infant to breath, reorganize, and cue for readiness</li> </ul> <p>Infant not able to self-pace:</p> <ul style="list-style-type: none"> <li>Allow the infant to suck 3-4 times on the milk filled nipple, break suction, remove nipple from mouth.</li> <li>Allow infant to breath, reorganize, and cue for readiness.</li> <li>If infant does not open mouth spontaneously, elicit rooting reflex</li> </ul>	<p>Watch for distress/ disengagement cues closely and assess infant's readiness to continue feeding; the infant should be alert, actively sucking, pacing, and coordinating their SSB; if infant does not demonstrate readiness to continue feeding or the infant demonstrates disengagement cues, remainder of feeding should be tube fed <sup>[31,32,43]</sup>.</p> <p>Watch O<sub>2</sub> and if the infant has increased work of breathing consider the size of the tube and the placement.</p> <p>If tube in place, and infant tires easily consider giving the remainder of the feed down the tube.</p> <p><b>Stage 4B: 25% to &lt;50% oral vs. tube</b> Typically &gt;10 minute oral feeding time Breastfeed or Bottle feed opportunities dependent on infant cues; aid to awake state before feeds.</p>	<p>feeding until infant cues again</p> <p>Consider no top-up if infant consumes &gt;80% of feed</p> <p>Consider oxygen saturation monitoring for 24 hours during all states including feeding (especially infants with chronic lung disease) <sup>[68]</sup></p> <p>Encourage breastfeeding mothers to spend long blocks of time in nursery to facilitate cue-base feeding, and to room in for 48 hours before discharge <sup>[39]</sup></p> <p>Before discharge, the infant should be transitioned to the sucking feeding regime that parents are planning to use at home. This will enable matching of the infant's skills to the teat if bottle feeding is used. A commercial single hole, straight teat is recommended. If the infant does not tolerate this teat, then the hospital supplied low flow</p>
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		<p>Begin all feedings with 1-2 minutes NNS to help organise infant state and skills<sup>[60]</sup></p> <p>Use low flow single-hole teat <sup>[18, 55, 61]</sup> (losing liquid is OK to allow the infant to adjust volume).</p> <p>Do not allow the infant to become distressed.</p> <p>Do not jiggle or turn teat to stimulate NS; <b>this practice is contraindicated</b> <sup>[53, 62]</sup></p>	<p>Oral practice only when cueing; likely 1-2 times/day</p> <p>Assess whether baby needs non-expressed or expressed breast for breastfeeding NNS &amp;/or therapeutic tasting with tube feeds</p>	
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## Referral

<p><b><u>Refer to Lactation Specialist (LS) when mother:</u></b> Has difficulty establishing/maintaining lactation</p> <p>Experiences complications as a result of pumping her milk</p> <p><b><u>Refer to Speech Pathologist when infant:</u></b> Fails to progress or has extreme hypersensitivity to</p>	<p><b><u>Refer to LC if required when:</u></b> There is a concern with mother's milk supply</p> <p><b><u>Refer to Speech Pathologist:</u></b> After first considering gestational age and severity</p>	<p><b><u>Refer to LC when:</u></b> Mother's milk supply is a concern</p> <p>Unable to achieve latch Infant is consistently frustrated at breast</p> <p>Complications present (e.g. cracked nipples, mastitis)</p> <p><b><u>Refer to Speech Pathologist when:</u></b> (NB: first consider gestational age and severity of illness)</p>	<p><b><u>Refer to LC when:</u></b> Poor latch evident Infant falls <i>asleep at breast</i></p> <p><i>Poor milk transfer suspected</i></p> <p><i>Considering use of nipple shield</i></p> <p><b><u>Refer to Speech Pathologist when:</u></b> <i>NB: first consider gestational age and severity of illness</i><sup>[69]</sup></p>	<p><b><u>Refer to LC when:</u></b> Poor latch evident Poor milk transfer suspected Poor weight gain – include Dietician Poor milk supply</p> <p><b><u>Refer to Speech Pathologist when:</u></b></p>
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<p>oral touching <b>NB: first consider gestational age and severity of illness</b></p>	<p>of illness, refer to SP when infant: Is evasive or refusing NNS, or having difficulty coordinating sucking and breathing (e.g. chronic lung disease, neurological impairment) Fails to progress from this stage</p> <p><b><u>Refer to Discharge Liaison:</u></b></p>	<p>Infant is at high risk for dysphagia (e.g. neurological impairment); symptoms include:</p> <ul style="list-style-type: none"> <li>Gurgling sounds in pharynx.</li> <li>Apnoea, bradycardia, multiple poorly coordinated swallows or choking doing feeding.</li> <li>Congestion or noisy breathing during feeding</li> </ul> <p>Good NNS but refuses NS- Difficulty managing secretions (Aspiration is likely to be silent)</p> <p>Persistent feeding induced apnoea and bradycardia Poor or unsustained latch i.e. an excessive wide jaw excursion</p> <p>Failure to progress from this stage</p> <p><b><u>Refer to Discharge Liaison:</u></b> Infant is to be discharged home on any volume of tube feeding</p>	<ul style="list-style-type: none"> <li>Poor unsustained latch evident</li> <li>Flooding present</li> <li>Good NNS but poor NS</li> <li>Signs of dysphagia</li> <li>Persistent feeding induced apnoea and Bradycardia</li> <li>Failure to progress from this stage</li> </ul> <p><b><u>Refer to Discharge Liaison:</u></b> Infant is to be discharged home on any amount of tube feeding</p>	<p>Infant discharged on total sucking feeds but feeding skills are suspect <sup>[69-74]</sup>: SSB incoordination Poor endurance</p> <p>Prolonged feedings &gt; 45 minutes</p> <p>Neurological impairment</p>
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	Infant is to be discharged home on any amount of tube feeding for parent teaching			
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## Appendix 2: Choice of Pacifiers (dummies)

	Type	Premature	Ventilated	Full Term
 <p>Full-Term - Mango Orange</p>	<b>Gum Drop</b> <b>Silicone</b> <b>Full term</b> (mango orange)		Yes	Yes
 <p>Preemie Size - Lime Green</p>	<b>Gum Drop</b> <b>Silicone</b> <b>Premmie</b> (Lime green)	Yes	Yes	
	<b>Philips Wee-Thumbie</b>	Yes	Yes	

### Appendix 3: Incident Management Flowchart

