GUIDELINE

Gastric Tube Feeding in the NICU

Scope (Staff):	Nursing and Medical Staff
Scope (Area):	NICU KEMH, NICU PCH, NETS WA

Child Safe Organisation Statement of Commitment

CAHS commits to being a child safe organisation by applying the National Principles for Child Safe Organisations. This is a commitment to a strong culture supported by robust policies and procedures to reduce the likelihood of harm to children and young people.

This document should be read in conjunction with this disclaimer

Contents

Aim

Outline the indications and process of gastric tube feeding in the neonatal unit.

Risk

This is a common procedure with potential high risk complications. Non-compliance with this guideline may result in risk of injury.

Background

Provide enteral nutrition to stable neonates that are:

- Too immature to suck feeds.
- Unable to take adequate nutrition to grow.
- Intermittent feeds have been shown to induce cyclical bursts of enteroinsular hormones. These hormones stimulate gut growth, mucosal development, increase gut motility, and influence pancreatic endocrine secretion and hepatic metabolism.
- Feed 2, 3 or 4 hourly depending on diagnosis, weight, gestational age.

Key points

- Whilst the incidence of incorrect tube placement into the respiratory or cranial systems is low, the consequences can be catastrophic. **Therefore, confirming the correct tube position prior to use is mandatory.**
- Use of a dedicated enteral feeding system should be used that does not contain ports or connectors that can be connected to intravenous systems.
- Position yourself so the infant is facing towards you during the feed so you can act promptly in the event of vomiting or distress.
- Observe the infant for colour changes throughout the tube insertion procedure. Passing an oral/nasal tube can stimulate a vagal response. Resuscitation equipment must be readily accessible.

- If there are any signs of respiratory distress or the neonate is on ventilator support or CPAP an OGT, not NGT must be inserted.
- Infants <1500gms are to have an orogastric tube. A nasogastric tube can be used in infants >1500gms unless otherwise indicated.
- When suck feeds are being introduced it is better for the infant to have a nasal tube instead of an oral tube as this will be less obstructive for infants that are beginning to suck.
- If infant is <1500gm when commencing suck feeds, discuss the use of nasogastric tube with CNC.
- Weighted silastic tubes differ in that they need to be measured from the end of the weight not the tip. They can stay in for 4 weeks.
- If reinserting a tube that has dislodged, it is preferable to wait 1 hour after a feed or ideally wait and insert prior to the next feed.
- Infants ≤ 35 weeks gestation should be fed in a side-lying or prone position.
- Infants > 35 weeks gestation should be fed in a side-lying position unless prone positioning is indicated for medical reasons

Indications

1. Enteral Feeding:

- Preterm: immature suck/swallow reflex.
- Neurological disease: impaired sucking reflex.
- Tachypnoea with risk of aspiration.

2. Gastric Decompression:

- Continuous Positive Airway Pressure.
- Necrotising Enterocolitis.
- Paralytic Ileus.
- Abdominal surgery.

3. Administration of Medication.

Insertion of a Gastric Tube

Equipment

- Lubricant (if necessary)
- 10 mL enteral syringe
- pH testing strips (3B) or Litmus* paper (KEMH)
- Tape for securing

- Specimen pot for free drainage if required
- Sucrose if appropriate
- Appropriately sized tube:

5G (polyurethane)	≤ 850g only
5G	> 850g to ≤1500g feeding only
6G	> 1500g feeding and/or free drainage
8G	Surgical cases and/or free drainage
6G / 8G	Long term silastic feeding tube

Procedure

- Perform hand hygiene and don PPE as per IPM clinical guidelines
- Measure from the bridge of the nose to the ear lobe and then to the xiphoid sternum. This measurement is also known as the acronym “NES” (Nose Ear Sternum).
- Measurements are most accurate if taken with the infant in the supine position.
- Swaddling in a side-lying or supine position reduces the stress of the procedure
- If clinically indicated, sucrose should be given prior to the procedure
- It may be necessary to add another 1 cm if no aspirate is obtained
- Gastric tubes should be changed every five days.
- Complete documentation of insertion procedure in progress notes and observation chart noting date, size of tube, cm tube inserted to, aspirate result and date when tube is due to be changed.

Orogastric

1. Insert the tube orally and secure centrally.
2. Tape the tube to the top lip where possible to prevent interference to the tongue.
3. If resistance is met during insertion, stop advancement and adjust direction of tube slightly before reattempting.
4. Note colour and appearance of aspirate. If blood and/or bile present alert medical staff and/or senior nursing staff

Nasogastric

1. Insert nasally in a backward direction.
2. If resistance persists after a reattempt, then try the other nostril.
3. Secure the tube across the cheek

4. Note colour and appearance of aspirate. If blood and/or bile present alert medical staff and/or senior nursing staff.

Testing the position of a Gastric Tube

The position of the tube should be verified by checking pH or Litmus paper **and** carrying out a risk assessment in the following situations:

- Initial insertion.
- Prior to bolus feeds, medications.
- 4 hourly for CMF, synchronise with syringe changes. It may be necessary to wait 15 minutes for the stomach to empty and the pH to fall.
- Following episodes of coughing, vomiting and retching.
- If displacement is suspected i.e. loose tape.

Recommended tests for assessing placement

- pH indicator strip of pH 5.5 or below within 10-15 seconds.
- Litmus paper will turn from blue to pink.
- X-ray - although this is the gold standard it is not to be used routinely due to cost and radiation exposure. It can be used if the infant is being x-rayed for other reasons.

Limitations of pH Testing in Neonates

Factors that may contribute to a high gastric pH (pH 6 or above).

- The presence of amniotic fluid in an infant < 48 hours of age.
- Infants on CMF and 2 hourly feeds.
- Medications that reduce or alter stomach acid.
- Presence of medication or milk left in the feeding tube.

Some infants with none of the above will consistently have pH values of 6 and above. Senior medical advice should be sought and a decision made and documented on possible actions to take.

No longer recommended tests

- The ‘whoosh’ test (injecting air down the tube and listening) is not to be used as a primary method of testing
    - This method can be used to dislodge the exit-port of the feeding tube from the gastric mucosa. Use no more than 2 mL.
- The presence of aspirate obtained from the gastric tube does not rule out misplacement.

Syringe Holding During Tube Feeds by Parents in the NICU

In line with our FiCare model, parents are encouraged to participate in feed times. Parents can hold the syringe whilst their infant is receiving a tube feed, provided the following criteria are met:

1. The infant can be in an incubator or open cot, or the parent maybe holding the infant.
2. The infant has been on full 2 hourly feeds for more than 24 hours OR has been on full 3 hourly feeds for more than 24 hours. With the exception of surgical babies. This could be considered when medically stable on **some** feeds.
3. Syringe holding by a parent must be performed in the presence of nursing staff.
4. The nurse has instructed the parent on how to hold the syringe and how to kink the tube if:
    - The infant is vomiting or distressed, has trouble breathing or coughs excessively during the feed
    - Tape lifting or not securing the tube adequately.
    - Baby has a colour change.
    - Monitor alarming.
    - The competency package is completed and signed.
5. Parent competency package for syringe holding can be located here and signed by the nurse

Gastric Tube Feeding by Parents in the NICU

Parents can be offered the option to tube feed their infant while they are in the Neonatal Unit. The following criteria must be met:

1. Approval has been obtained from Medical staff, CNC, CN or NNT and documented on the infant's 'Tube Feeding Pack'.
2. Infant is **not** ventilated (including nasal CPAP, stable infants on HHF may be considered)
3. Infant is tolerating **full** enteral feeds and medically stable. Normally this will not occur before the infant reaches 1200 grams. With the exception of surgical babies. This could be considered when medically stable on **some** feeds.
4. The parent has expressed a willingness to take on the procedure, has received education as per the Gastric Tubes: Learning Package for Parents NGT Feeding and is assessed as safe (competent) in performing a tube feed for their infant.
5. The infant is due a tube feed.
6. If a top up tube feed is required after a breastfeed.
7. Infants must be returned to the incubator/cot for tube feeds by parents.

Infants discharged home on continuous milk feeds are excluded from the above criteria. Refer to Gastric Tube Feeding – Going Home guideline

Determining Readiness for Transition from Tube to Oral Feeding

- Feeding maturity depends on neurological maturity, which can be accelerated by starting milk feeds immediately after birth and allowing skin-to-skin care even in ventilated infants.
- Some **indicators for feeding readiness** include: sucking well on a finger, fist, pacifier or expressed breast, showing mouthing activity and handling own secretions well.
- Gestational age older than 28-32 weeks when able to co-ordinate suck, swallow and breathing and able to maintain temperature outside incubator and during skin-to-skin. Demonstrate rooting and sucking reflexes.
- Infant should be able to maintain a quiet alert state, able to relax and shows cues for engagement such as making a mouthing 'ooh' configuration, making eye contact and moving hands to mouth while mouthing.
- Infant should be medically stable, may continue to receive oxygen supplementation. Infant should have stable breathing (respiratory rate <60-70 breaths/minute) and with FiO2 requirement (preferably <40%). Heart rate should be stable (120-160 beats/minute) during caregiving and holding.
- Infant should be tolerating 2-3 hourly feeds well and gaining 15g/kg/day on normal caloric.
- Ensure that the mother is familiar with signs of nutritive and non-nutritive sucking and involve her in the assessment of breastfeeds. Observe the infant breastfeeding to assess how long and how effectively he/she has sucked; this will determine if a gastric tube top-up is needed and how much to give.

Non-Nutritive Sucking (NNS)

Infants change the way they suck at the breast during a breast feed. Initially they suck rapidly (short sucking bursts) to stimulate the milk ejection reflex. This is termed Non-Nutritive Sucking (NNS). The infant receives only small volumes of breast milk with NNS. NNS on the expressed breast (mother pumps first and then places baby to the breast) can be attempted as soon as baby is stable with success noted as early as at 28 weeks corrected gestational age (*Underwood et al, PCNA 2013*).

Advantages of NNS

Improved physiological stability, protection against aspiration, increased absorption of feeds, facilitation of nutritive sucking, faster transition from tube to oral feeds, better weight gain and earlier discharge, pain relief, soothing and self-consoling infants and promotion of awake behaviour before oral feeding.

Nutritive Sucking

After NNS the infant then changes to a slower, more rhythmical pattern once the milk starts flowing. This is termed Nutritive Sucking (NS).

Infants display two distinct phases of feeding; an initial run of continuous sucking/ swallowing followed by intermittent bursts of sucking/swallowing separated by a rest period. The rest periods are particularly important as preterm infants have been found to compromise their breathing by up to 35% in both the continuous and intermittent runs. Therefore, there is no benefit in stimulating the infant to continue to suck during these rest periods.

Signs of Nutritive Sucking

- Movement of the whole jaw.
- The breast being drawn into infant's mouth.
- Swallowing seen (and sometimes heard if let-down has occurred).
- Tugging, but no pain felt by the mother.

Transition from Tube Feeds to Oral Feeds

- Correct positioning: to support flexed orientation of the infant around his/her midline; cross-cradle and football holds seem to be most suitable
- Select time of the day when infant most awake, provide NNS for 10 minutes before planned oral feed, if infant enters wakeful state try to breastfeed only once. If unsuccessful, can try again the following day until infant can manage the feed.
- Continue with two oral feeds per day in a sequence of 1 oral feed followed by 2 tube feeds to allow infant to rest in between.
- When infant is able to manage this, continue alternate breast and tube feeds transitioning to breast feeding for every feed.
- Most preterm infants can begin nutritive sucking at 32 weeks gestation
- Consider early use of nipple shields to aid initial latching.
- Continue frequent observation and assessment of feeding during this crucial transition phase.
- Consider involving lactation consultant (LC)

Semi-demand feeding

More suitable for preterm infants. Assess the infant every 3 hours for behavioural signs of hunger. If infant is asleep, reassess 30 minutes later and offer tube feed if sleepy. If an infant wakes up and demonstrates hunger before the 3 hourly feed, provide feed earlier.

Assessment during the feed

Assess the infant's ability to sustain attention and energy throughout the duration of the feed, control and organisation of oral-motor functioning, co-ordination of swallowing and maintaining physiologic stability (Thoyre et al 2013). Stop feeding when infant falls asleep and do not resume sucking if infant has an apnoea and bradycardia. Increase in eye flutter is a precursor for apnoeic events prior to desaturation and infants typically relax their arms and hands and stop sucking during a desaturation event.

Preterm Breastfeeding Assessment Tool (Carol Bartle 2007)	Score	Top Up
Offered breast but not showing interest	1	Full
Offered breast, mouthing, rooting and showing interest without a latch	2	Full
More sustained latching and suckling attempts but latch not achieved (baby or mother issues)	3	Full
Latch maintained with rhythmical sucking and audible swallows but baby releases breast with a loss of stability (state, motor or physiological)	4	Partial
Latch maintained with a few bursts of rhythmical sucking, some audible swallows and baby copes well with the feed. May be short or long, will need top up.	5	Partial
Latch maintained with multiple bursts of rhythmical sucking, multiple audible swallows and baby copes well with the feed. May be short or long. Effective milk transfer noted.	6	Nil

Additional Considerations

- Whether the mother feels a difference in breast fullness after the feed.
- The mother's milk supply and time since she last expressed.
- The infant's maturity and weight.
- The amount of nutritive sucking time
- The infant's urinary output; ideally > 5 wet nappies of pale clear urine a day.

Our aim is to maximise breastfeeding outcomes by promoting consistency in care and information for mothers who intend to breastfeed their infants, both preterm and term.
All staff should complete BFHI eLearning Packages: Module 1-4

Baby Friendly Health Initiative (BFHI) Educational Tools

Related CAHS internal policies, procedures and guidelines
Breastfeeding
Bottle Feeding a Breastfeeding Infant

References and related external legislation, policies, and guidelines

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5. Kenner C, Wright Lott J, eds. Comprehensive neonatal nursing care. 5th Edition. Springer publishing company, NY. 2014
6. Lubbe W. Clinicians guide for cue-based transition to oral feeding in preterm infants: An easy-to-useclinical guide. J Eval Clin Pract. 2018 Feb; 24(1):80-88.
7. R. Mannel, P.J. Martens, M. Walker (Eds). Core Curriculum for Lactation Consultant Practice. 3rd Edition 2012
8. Reducing harm caused by the misplacement of nasogastric feeding tubes - http://www.nrls.npsa.nhs.uk/resources/?EntryId45=59794
9. W. Brodribb (Ed). Breastfeeding Management, 4th Edition 2012.

Useful resources

Baby Friendly Health Initiative (BFHI) Educational Tools
Gastric Tube Feeding – Parent Learning Package
Gastric Tube Feeding – Parent Holding Syringe Learning Package
Gastric Tube Feeding – Going Home

This document can be made available in alternative formats on request.

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