NICU: Enteral (Tube) Feeding

Site Applicability

St. Paul's Hospital, Neonatal Intensive Care Unit (NICU)

Practice Level

Specialized

- NICU Registered Nurse (RN)
- Perinatal RN who meets the following criteria (See Appendix B)
    - Minimum 1 year experience in SPH Maternity Centre
    - Completed the required education
    - Completed two return demonstrations of skill under supervision of NICU RN

Policy Statements

A physician's written order for enteral feeding must specify the type of feed, amount, interval and volume increases of feeding.

A physician's written order is required to change the frequency of enteral feeding.

Need to Know

At the discretion of the RN, an infant of any gestation may be assessed as requiring enteral feeding through a nasogastric tube.

Enteral feeding may be given routinely as an intermittent bolus feed via gravity, via pump over an indicated time, or continuously via pump. Clinical indications may suggest a trial for feeding to be delivered over a longer period of time or a trial of bolus feeding from continuous feeding. Changes should be discussed with a physician.

Some infants may require venting should they show symptoms such as distension or discomfort from bloating. Venting allows air bubbles and excess fluid to be drained from the stomach, therefore promoting infant comfort

Equipment and Supplies

- Labeled feed
- Verify correct infant and EBM with another nurse or family member

- NG/OG Tube
- Extension tubing as required
- Feeding Pump (if necessary)
- 3 or 5 mL syringe

Practice Guideline

Assessment

During Feeds:

- Each intermittent or slow bolus infusion is to be attended by the RN
- Ensure feeding tubes is correctly positioned.
- Non-nutritive sucking is offered routinely during enteral tube feeding

Post Feeds:

- Monitor for signs of feeling intolerance. Report and document any of the following:
  - Apnea
  - Bradycardia
  - Desaturation
  - Cyanosis
  - Emesis
  - Frank blood in the stool
  - Abdominal distension
- Monitor skin for breakdown where nasogastric/ orogastric tube is secured.
- Provide mouth care at regular intervals.
- Prone or left lateral positioning may reduce the severity, duration and number of gastroesophageal reflux (GER) episodes preterm infant's experience.

Interventions

What do you do in the event of abnormal findings or untoward events?

- Do not start feed **OR** Stop feed if already started
- Consult peers
- Call MRP (Pediatrician)

Steps

Part A: Feeding

Procedure	Notes
1. Check chart for physician's order.	
2. Collect labelled feed	Double check name on feeding label with nurse or parent

3. Wash hands. Glove. Assemble equipment at patient's bedside.	Aseptic technique and universal precautions are used when preparing milk feeding and adding supplements.
4. Warm refrigerated feed.	1. Milk Warmer OR 2. Fill patient-labelled plastic container with warm water (not hot water). Place syringe/bottle of feed in small plastic bag and set in water. Be sure that the water level is not above the syringe/bottle to avoid contaminating the feed. Warming time should be limited to 15 minutes.
5. Place all feeds and feeding supplies at the head of the bed.	Designated as clean area.
6. **Assess for signs of feeding intolerance:** a. Assess readiness for feeding prior to bolus gravity feed or prior to a bolus pump infusion b. Assess by measuring girth, presence of bowel sounds and overall condition of abdomen. 7. **NORMAL** assessment: Feed full volume feed 8. **ABNORMAL** assessment: Hold feed and request physician assessment	**Measure girth:** - Prior to feeds as indicated based on clinical assessment or as ordered by physician - Q4 to 6hwith continuous feeds unless ordered otherwise by physician - Discontinued when infant feeds are tolerated or ordered by physician **Gastric Residuals:** - The colour of gastric residuals does not predict feeding tolerance. - Gastric residual volumes should not be measured in the absence of signs of feeding intolerance. **Clinical Assessment:** - Abdominal distension or discoloration, visible bowel loops, apnea, bradycardia, unstable monitoring or decreased or absent bowel sounds
9. **Check** Feeding tube placement	See B-00-07-10028: Nasogastric/ Orogastric Tube Placement
10. **Prime** extension tubing and **Attach** pre-warmed feeding syringe	**Bolus feed:** - Pull plunger of syringe to top of syringe barrel without detaching barrel. Connect flushed connection tube to end of feeding tube. Remove syringe plunger and give initial push to start milk flow. Raise or lower barrel to adjust rate of flow.

11. **Give** enteral feeding routinely as an intermittent bolus feed via gravity, via pump over indicated time or continuously via pump	**Bolus via gravity:** - Position syringe at a distance to allow gravity to slowly administer feed over approximately 20 to 30 minutes. **Bolus/Continuous via infusion pump (See Appendix C):** Program infusion pump as ordered A. Press the power button B. Select 1 to program a new feed. o Select 1 or 2 depending on how the feed should be delivered (mL/hr or volume to infuse over delivery time) o Confirm settings chosen o Load syringe and press enter when ready o Enter rate (mL/hr) or volume over time and press enter C. Select 2 to recall a previous feed o Press restart to start a new feed o Press continue to restart a feed that was stopped o Confirm volume and delivery time
12. Remove and discard equipment appropriately	**Change** enteral feeding tubing for syringe pump - With each bolus feed All components of the enteral feeding set that come in contact with the enteral feeds should be changed Q4H
13. Vent feeding tubes by using open barrel between feeds **if indicated**	Change venting syringe and tubing with each feed or Q4h

Part B: Changing from Q2H to Q3H, Q4 Enteral Feeds

The transition in feeding volume and frequency occurs over 6 to 12 hours. Increments may be made smaller or slower as the infant's tolerance warrants. See Appendix A.

1. Delay giving Q2H feeding volume for 15 minutes.
2. Give bolus Q2H feed volume plus further ¼ of hourly volume.
3. Next feeding, give feed at 2 hours and 30 minutes plus further ¼ of hourly volume.
4. Next feeding, give feed at 2 hours and 30 minutes at same volume as previous feed
5. Next feeding, give feed at 2 hours and 45 minutes plus further ¼ of hourly volume.
6. Next feed, give feed at 3 hours and offer full 3 hourly feed volume.
7. Follow similar approach when changing from Q3H to Q4H feeds.

Documentation

Document confirmation of correct tube position in Cerner under NICU Quick View → Gastrointestinal Tubes

Document enteral feeding in Cerner under NICU Quick View → Newborn/Pediatric Feeding

Document gastrointestinal assessment/ feeding readiness assessment in Cerner under NICU Systems Assessment → Gastrointestinal

Parent Education

RN to educate parents on concepts of NG feeding including NG/OG description, why it is placed and where it is placed to.

Encourage parents to remain involved in feeding by holding the syringe of a gravity feed. Educate parents on proper height of syringe and how this correlates to speed of infusion.

Encourage parents to hold their infants skin to skin while the infant is receiving the NG feed and after the feed has completed to support digestion.

Related Documents

1. B-00-07-10028 - Nasogastric/ Orogastric Tube Placement

References

1. Elsevier Skills. (2019). Feeding Tube: Enteral Nutrition (Neonatal). St. Louis, MO. Elsevier. Retrieved October 2020 from https://login.mns.elsevierperformancemanager.com/Login.aspx?virtualname=providencehealthcare-canada
2. Parker, L.A, Weaver, M, Murgas Torrazza, R.J, et al. Effect of Gastric Residual Evaluation on Enteral Intake in Extremely Preterm Infants: A Randomized Clinical Trial [published correction appears in JAMA Pediatr. 2019 Jun 1;173(6):610]. JAMA Pediatr. 2019;173(6):534-543. doi:10.1001/jamapediatrics.2019.0800
3. Boullata, J.I. and others. (2017). ASPEN safe practices for enteral nutrition therapy. JPEN: Journal of Parenteral and Enteral Nutrition, 41(1), 15-103. doi:10.1177/0148607116673053 (Level D)
4. Revised and adapted from B.C. Women's Hospital, NICU program "Enteral Tube Feeding" (2017) and "Tube Feeding: Changing from Q2H to Q3H/Q3H to Q4H" (2017).

Appendix A: EXAMPLE CALCULATION

Infant Smith is now 32 weeks and 1700 g on 150 mL/kg/day and is tolerating **21 mL Q2H.**
The Pediatrician has written the order to attempt Q3H feeds.
Infant Smith is fed at 0800, 1000, 1200, 1400, etc.

How to proceed?

Calculations

What is the Q3H volume? (What is our goal?)	1.7 kg x 150 mL/kg/day = **32 mL Q3H**
What is the hourly volume?	1.7 kg x 150 mL/kg/day = **10.6 mL Q1H**
What is ¼ of the hourly volume?	10.6 mL x 0.25 or ¼ = **2.7 mL**

(This is the number that will be added to the previous feed volumes)

Feeding

It is **1000** and the infant received theQ2H volume. The next feed will be delayed for **2.25 hours**, therefore until **1215.**

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At **1215**, Q2H volume + ¼ of the hourly volume will be given = **23.7 mL**
The next feed will be delayed for **2.5 hours** and, therefore until **1445**.

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At **1445**, if previous feed tolerated, an added ¼ of the hourly volume will be given = **26.4 mL**
The next feed will delayed for **2.75 hours**, and therefore until **1730**.

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At **1730**, if previous feed tolerated, an added ¼ of the previous volume will be given = **29.1 mL**
The next feed will be delayed for **3 hours**, therefore until **2030**.

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At **2030**, if previous feed tolerated, the full Q3H volume will be given = **32 mL**

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This volume will continue to be given as tolerated Q3H

Follow a similar approach when changing from Q3H to Q4H

Appendix B: ENTERAL FEEDING IN THE NICU BY PERINATAL RN

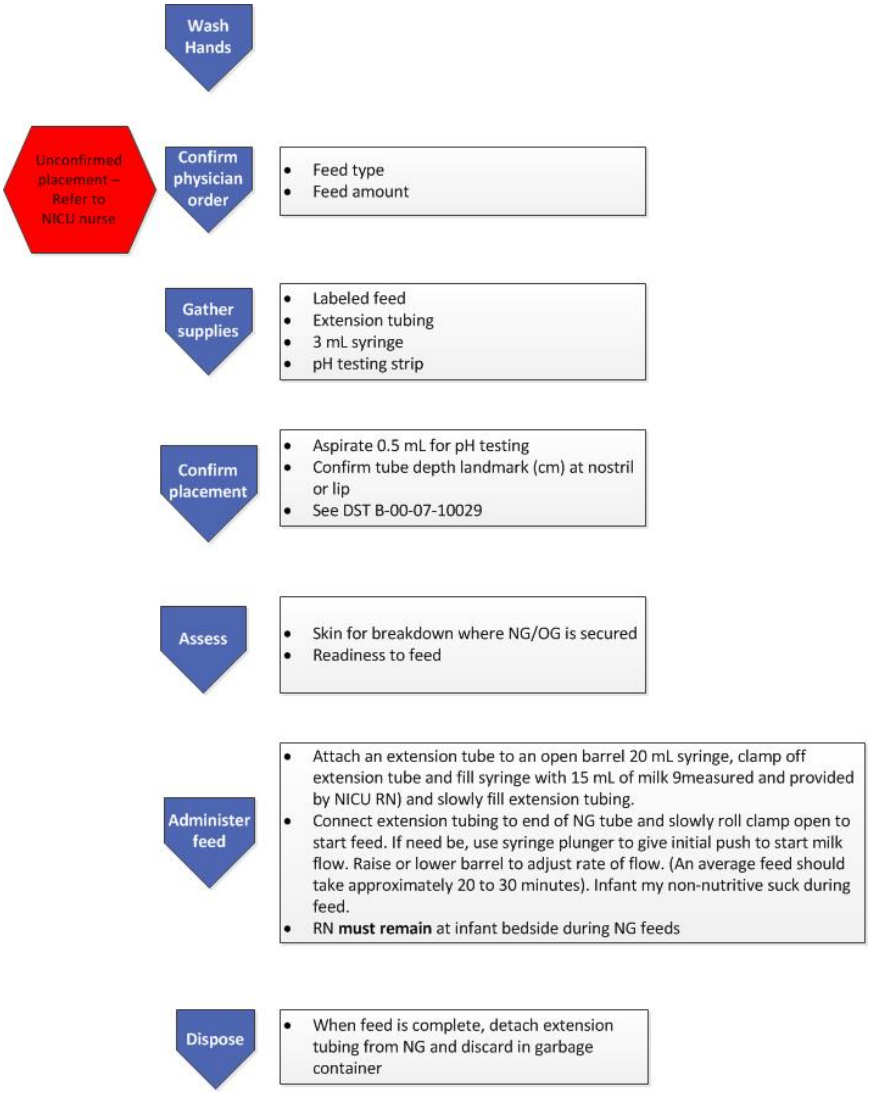
This task should only be performed on a stable infant:

- Tolerating full feeds for at least 2 days
- Occasional or no Apnea/Bradycardia
- Bolus Q3H feeds
- On Room Air

Equipment & Supplies:

1. Labeled feed (expressed breast milk, donor milk or formula)
2. Extension tubing
3. 3 mL syringe (when aspirating larger syringe will produce more pressure)

Assessment and Interventions



Potential Problem	Response
1. Bradycardia, Apnea or Desaturation	- Stop feed by rolling down clamp on the extension tube - Reposition head to open airway, then gently stimulate the infant by rubbing the back. This should get them to breathe, the HR should improve and the O2 saturation should increase - Notify NICU RN
2. Infant vomits during NG feed	- Stop feed - Place infant on side - Ensure NG is in situ and has not slipped out - Notify NICU RN

Documentation

Document confirmation of correct tube position in Cerner under NICU Quick View → Gastrointestinal Tubes

Document enteral feeding in Cerner under NICU Quick View → Newborn/Pediatric Feeding

Document abdominal girth in Cerner under NICU Quick View → Measurements

Appendix C: CONTINUOUS FEEDS

Continuous feeds are not common at SPH NICU however, if they are indicated and ordered, note the following adjustments to the policy. If infant is placed on continuous feeds, consider transfer to higher level of care.

Equipment and Supplies

1. Feed **(4 hour volume)**
2. 3 to 5 mL syringe for aspirating
3. NG/OG Tube
4. **Extension tubing (REQUIRED)**
5. **Feeding Pump (REQUIRED)**

Assessment

In addition to the standard feeding protocol:

- Verify placement (B-00-07-10028: Nasogastric/ Orogastric Tube Placement) at start of feed AND Q4 with syringe change.
- Prime extension tubing then place feeding syringe into infusion pump. Only 4 hour volume of feed should be infusing at any time.
- Vent for 10 – 15 minutes Q4H for continuous feeds. This serves 2 purposes:
    1. Allows air bubbles and excess fluid to be drained from the stomach, therefore promoting infant comfort
    2. Allows for accurate pH testing
- Change venting tubing and syringe Q4h with feeding syringe changes
- When transitioning from continuous to Q2 feeds, follow physician orders.

Persons/Groups Consulted: SPH Maternity

Revised by: Clinical Nurse Leader/ Nurse Educator, NICU SPH

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