Standard of Practice: Care of the Patient Receiving Enteral Nutrition

Essential Information

1. Coordinate with research team to have patient/family provide needed special supplies prior to admission.
2. The use of food dye in tube feedings is prohibited.
3. Use the smallest bore catheter possible for tube feeding based on patient size to reduce the risk of aspiration. The recommended tube size for enteral feeding is 8Fr, 10Fr, or 12Fr (Adults), 6Fr to 10Fr (Peds). If a Salem sump tube is used strictly for feeding an order to change to a feeding tube should be obtained.
4. The use of an Intravenous Pump to deliver enteral feeding is prohibited.
5. The use of luer lock connections and IV syringes is prohibited to prevent tubing misconnections.
6. Use sterile water for flush or irrigation for neutropenic or otherwise immunocompromised patients.
7. The Lopez Valve or a universal adapter may be used with enteral feeding tubes.
8. Consult with the multidisciplinary team for the appropriate route and formulation of medications to be administered.
9. Tube feedings are categorized by the method and timing of administration.
   a. Continuous Feeding: delivered by pump or gravity over a 24 hour period.
   b. Intermittent Feeding: delivered by pump at regular intervals (i.e. every 6 hours), over 30-60 minutes.
   c. Cyclic Feeding: type of intermittent feeding that is given over an 8-16 hour period.
   d. Bolus Feeding: large volume intermittent feeding that is given in less than 30 minutes by gravity or syringe.
10. Use hand hygiene before handling feedings or administration system.

I. Pre Initiation Assessment
   A. Assess patient for candidacy for enteral feeding including: bowel function, advanced directive, social support, type of tube/delivery method, and allergies to food, drugs, latex, or adhesive tape. Discuss initiation rate and goal with Dietitian (RD). Discuss need for GI consults with multidisciplinary team prior to initiating feeding. Discuss type of tube, delivery, and concentration of feeding i.e. bolus vs. continuous. Bolus feeding is not recommended when feeding is delivered directly into small bowel.
   B. Assess patient and family understanding of need for tube feeding and process.

II. Intratherapy Assessment
   A. Tube Placement Confirmation for Orogastric or Nasogastric Tubes:
      1. Initial Confirmation: Initial confirmation of correct tube placement will be performed using radiography with a medical order prior to use.
      2. Ongoing Confirmation:
         a. Confirmation of ongoing correct tube placement will be performed by: measure external length*, visually inspect, aspirate **, and auscultate*** over stomach or intestine and verify that there are no changes:
Every shift for continuous tube feedings,
Prior to intermittent feedings or medication administration,
When placement is in question,
Or with a change in patient condition (i.e. coughing, retching, vomiting, visible dislocation of tube).

*Note: Some tubes may have centimeter markings that are noted on the insertion. External length can be determined by observing that the tube insertion site is still at the centimeter marking provided.

**Note: Gently withdraw to obtain small amount of aspirate. If unable to obtain aspirate, instill 30 mL of air and then retry. If no aspirate obtained after second try then note in care plan and use alternative methods to verify placement. Color may not indicate placement in the presence of tube feedings.

- **Gastric:** green (cloudy), off-white (cloudy), bloody or brown, colorless (clear), or curdled
- **Intestinal:** yellow or bile stained (usually clear)
- **Pulmonary:** opaque and off-white/tan colored with mucus

***Note:** Auscultation is the least reliable method because of its lack of sensitivity for identifying location within the gastrointestinal tract and lack of reproducibility.

b. If the placement of tube is in question consult with multidisciplinary team to determine course of action and need for follow up x-ray.

B. Tube Placement Confirmation for Percutaneous Tubes (i.e. PEG Tubes, jejunostomy tubes, gastric tubes, etc.):
1. **Initial Confirmation:** Gastrostomy and jejunostomy tubes are placed under direct visualization. X-rays are not indicated unless ordered by the LIP. External length of tube will be documented following placement.
2. **Ongoing Confirmation:** Confirmation of ongoing correct tube placement will be performed by measuring external length, visual inspection of aspirate, and auscultation.
   a. Measure external length and verify that there are no changes:
      - Once daily
      - When placement is in question,
      - Or with a change in patient condition (i.e. visible dislocation of tube).
   b. Visually inspect, aspirate** and auscultate ***over stomach/intestine:
      - Every shift for continuous tube feedings,
      - Prior to intermittent feedings or medication administration,
      - When placement is in question,
      - Or with a change in patient condition (i.e. visible dislocation of tube)

C. Risks
1. **Aspiration:**
   a. Monitor for signs of aspiration hourly during continuous feeding (for example: productive or nonproductive cough, respiratory rate changes, choking, shortness of breath, wheezing/rhonchi/upper airway gurgling, moist quality of speech, fever, and oxygen saturation changes, as indicated) or constantly during bolus feeding (For more information, access Trach Consult Service Aspiration Guidelines at http://intranet.cc.nih.gov/nursing/training/pdf/aspir_guidelines.pdf).
   b. Assess breath sounds
      - During continuous feeding every 8 hours or more frequently as clinically indicated.
- Before and after bolus feeding.

2. **Dumping Syndrome:** Monitor for signs of dumping syndrome (nausea, weakness, vomiting, sweating, diarrhea, dizziness, bloating, and shortness of breath).

3. **Dehydration:**
   a. Monitor skin turgor, moisture of mucous membranes, thirst, and skin integrity.
   b. For pediatric patients less than 50 kg, the amount of flush should be determined by size of tube and size of patient dictates size of tube.
   c. Hydration requirements: Check with RD and LIP for recommendations for example adults require 1500ml/m2/day, pediatrics depending on weight require 1500-1800ml/m2/day.
   d. Conditions that increase the need for fluid are diarrhea, fever, and large draining wounds.
   e. Conditions that decrease need for fluid are hepatic or renal failure, congestive heart failure, and pulmonary edema.
   f. Multidisciplinary team is to evaluate hydration status and prescribe additional fluids as needed.
   g. Monitor lab results as ordered by LIP (glucose, electrolytes, BUN, creatinine, transferrin, pre-albumin, total protein, cholesterol, triglycerides, liver enzymes, and CBC).
   h. Monitor I&O.

4. **Intolerance:**
   a. Check residuals for gastric tubes. Residuals may not be obtained from J- or nasoduodenal tubes.
      - Assess the presence of residuals on gastric tubes every 4 hours for continuous feeding (do not hold feeding to check residual) and prior to the start of each bolus feeding. Discuss with LIP holding tube feeding if residual volume is above 250 ml on two consecutive checks and/or presence of other symptoms of intolerance. Consider with multidisciplinary team decreasing volume and/or rate delivered, use of prokinetic agents, or continuous feeding or continuous small bowel feeding if signs of intolerance or repeated high residual volume present. 9-15
      - Gastric residual volume can be returned, discuss benefits with multidisciplinary team. 16
   b. Assess bowel sounds at start of each bolus feeding or every 4 hours for continuous feeding.
   c. Assess for constipation, diarrhea, nausea, vomiting, flatulence, abdominal distention, and/or cramps every shift and when feeding is complete. 17

5. **Break in Skin Integrity:**
   a. Assess insertion site for skin integrity and tension on the feeding tube q 8 hours.
   D. Weigh patient daily at approximately the same time or weekly depending on patient status.

III. **Pre Initiation Intervention**
   A. Insert nasal or oral feeding tubes: (If using small bowel feeding tube with guidewire, flush lumen with normal saline to ensure guidewire removal after placement verification)
      2. Insertion of NG tube can be more comfortable if nose is prepared with water soluble lubricant, topical decongestant, and/or anesthetic spray or jelly.
      3. If tube has a guidewire then it must stay in place until after confirmation of placement.
      4. Provide developmentally appropriate care to pediatric patients.

IV. **Intratherapy Interventions**
   A. **Aspiration Precautions:**
1. Elevate head of bed 30 to 45 degrees or have patient sit up, unless contraindicated, during feeding, and 1 hour after feeding complete. If patient cannot bend at hips, then place patient in reverse Trendelenberg. 2, 18, 19, 20, 21
2. Verify that suction equipment is available and functioning.
3. If patient has cuffed tracheostomy tube, inflate cuff during feeding, unless contraindicated (see SOP: Care of Patient with a Tracheostomy for cuff pressure/management).
4. If aspiration is suspected, stop feeding and notify LIP. Suction if indicated, turn on side, and monitor vital signs.

B. Infection Precautions
1. Hang only 4 hours of tube feeding in bag at one time. Store remaining formula/feeding in refrigerator properly labeled with name, date of birth and expiration date/time. Discard unused portion of canned/bottle feeding. Specially mixed feedings should be kept in a temperature monitored nutrition refrigerator, in a secure area if possible, and discarded after 24 hours. 2
2. Bag, tubing, and syringe are to be changed every 24 hours, label with date and time. If using equipment brought from home rinse equipment with water and let dry between feedings. 2

C. Insertion sites
1. Remove dressing after first 24 hours post insertion of gastrostomy tube.
2. If excessive leakage at stomach insertion site then use softwick gauze applied loosely around site and change every 24 hours. Use tape sparingly, skin barrier is optional. Do not apply occlusive dressings. 22
3. Secure tube (e.g. chevron technique) to prevent accidental dislodgment of tube.
4. Clean insertion site with mild soap/water and pat dry.
5. Obtain WOCN consult if site care is a problem.
6. Notify LIP if note redness, granulation, bleeding, purulent drainage, excoriation, compromised skin, tears, or fissures.
7. Pad tubing with gauze around stomach insertion site whenever placing patient prone.
8. Notify LIP if tube is dislodged. Replace tube that came out if it is still functional or place a Foley catheter of same or one size smaller French size. Do not use for feeding or medication until LIP responsible for the tube/GI staff can evaluate and determine if location needs to be confirmed before use. 22, 23
9. The external bumper of gastric tubes should be rotated 90 degrees, once a day to keep the skin from ulcerating. Bumper and tube can be rotated as a unit. Rotation can begin 24 hours after initial insertion. Jejunostomy tubes should not be rotated since they may become displaced.
10. If tube is sutured, sutures should be removed within 7-10 days.

D. Comfort Measures
1. Provide or assist with oral care to patients every 4 to 8 hours.
2. Pediatric patients from infancy to 18 months old should be offered a pacifier and be held or placed in an upright position (foam wedge, sling, or highchair/seat) during bolus feeding. Infants may need a pacifier to maintain sucking strength. Infants after bolus feeding may also need to be burped. 24
3. Administer tube feeding at room temperature. Administering cold tube feedings may cause abdominal pain and cramping.

E. Administration:
1. Tube Feeding 1, 2
   a. Trace all lines back to their origin before each feeding, at change in caregiver, or time of discontinuation of feeding.
   b. Preferred method of delivery for continuous feeding is by feeding pump. Gravity method may also be acceptable (except for jejunostomy feedings). If administration is by gravity then mark container with time tape noting beginning, middle, and endpoint of feeding.
   c. Confirm name of formula, strength of formula, and rate and route of administration with medical order. For formulas that have been reconstituted prior to delivery, verify the name and date of birth for the patient, and expiration date. Formula should be inspected for
appearance and particulate material. (Be A.L.E.R.T. Aseptic technique, Label tubing and enteral feeding bag, Elevate HOB, Right patient/formula/tube, Trace all lines back to patient).

d. Administer 30 mL bolus of sterile water (unless contraindicated or otherwise indicated in LIP order) at completion of bolus feeding and/or every 4 hours for continuous feeding to maintain patency of tube, even if tube is not being used for feeding. Use sterile water flush for all patients. Remaining sterile water must be discarded after each use. Amount of bolus for pediatric patients less than 50kg is 10 mL.²⁴

e. Use only 60 mL or larger syringes for feeding tubes. Do not use plunger when gravity method is used in pediatric patients.

2. When giving medications via tube:²⁵
   a. If oral medication can be tolerated in a patient receiving tube feeding, this is preferable. Pharmacist expertise is needed for selecting the appropriate drug formulation for delivery into a feeding tube. Check with pharmacy if medication can be crushed and mixed with water, to be delivered via tube (example: Phenytoin interacts with formula). Avoid special dosage forms such as extended release.
   b. Note: liquid medications may contain sorbitol, which can lead to diarrhea. Check with pharmacy before administering medications in liquid form.
   c. Hold tube feeding pre and post administration of medication as needed.
   d. Flush tube with 30-60 mL of sterile water pre and post administration of medication (volume for pediatric patients to be determined by LIP)
   e. If fiber or protein (modular) is prescribed, then administer as a bolus diluted in sterile water—do not add to tube feeding in bag. Flush with 30-60 mL water or amount indicated in LIP order before and after administration. Flush with 10 ml sterile water for pediatric patients <50 kg.

3. Clogged tubes: flush with warm sterile water, to un-block tube. Sodium bicarbonate or enzymes are not recommended. If further strategies are needed to unblock tube consult with multidisciplinary team.²⁵, ²⁶

F. Adverse Reactions
   1. Turn off feeding and immediately notify LIP if symptoms such as nausea, vomiting, diarrhea, abdominal distention, cramping, pallor, sweating, or changes in vital signs develop.
   2. If constipation or diarrhea is noted, notify LIP for changes in water requirements, stool softeners, fiber, or changes in formula type.
   3. Notify LIP for absent or diminished bowel sounds.

G. Patient discharge teaching includes, as applicable:
   1. How to administer tube feeding
      a. Type of formula, amount, rate, method of feeding, and duration of feeding).
      b. Method of feeding (use of at least a 60 mL syringe for bolus feeding, pediatric patients should use gravity method without plunger).
   2. Flushing of tube with 30-60 mL (Peds <50kg = 10mL) water twice a day, even if not being used, or before and after feedings. Consider the need for sterile or boiled water depending on patient home environment.
   3. Care of equipment and supplies
      a. Maintain supply of adapters and replacement kits specific to patient’s needs
      b. Pump settings, alarms, and trouble shooting
      c. How to rinse tubing and bag at completion of feeding or every 24 hours with sterile or boiled water as indicated for patient environment
   4. Method to check tube placement and residuals
   5. Symptoms to report to physician
   6. What to do if cannot take tube feeding or tube is dislodged
   7. Care of stoma (tube site)
   8. Need for daily oral care
V. Documentation
A. Document care provided at least every shift
B. Documentation to reflect:
1. Intake and Output
2. Tolerance of tube feeding
3. Breath and bowel sounds
4. Skin integrity and dressing care at site
5. Type of feeding tube
6. Verification of placement
7. Formula strength and amount
8. Modular (benefiber or beneprotein) amount and time of bolus
9. Delivery method
10. Flush amount and time
11. Patient teaching
12. Weight

VI. References