Enteral Nutrition Administration: Care and Management of (in Residential Care)

Site Applicability

All VCH Residential Care Sites

Practice Level

- **RN/RPN**: Basic Skill
- **LPN**: Advanced Skill (The insertion of gastrostomy tube is outside the LPN scope of practice)
- **RD**: (with Restricted Activity A)
- **Pharmacist**

Policy Statement

- Facilities are responsible to ensure staff have the skills, competency, and are compliant with best clinical practice guidelines in managing the care of residents requiring enteral feeding
- Nasogastric tube feeding is not recommended in residential care. Circumstances for use and maintenance of a NG tube must be reviewed on a case to case basis, discussed with and in agreement with the facility interdisciplinary team prior to admission and/ or re-admission
- Refer to "VCH Ethical Decision-Making Framework for Tube/Other Feeding Options" for the ethical consideration and decisions-making process of the initiation and care of enteral feeding

Need to Know

- The initiation and maintenance of enteral feeding requires consultation with a dietitian at the residential facility. Residents transferred between and within healthcare environments require dietitian-to-dietitian communication to promote safe transfer of enteral feed orders
- Safe medication administration via an enteral feeding tube requires consultation with pharmacists. Pharmacists must be notified of residents starting on enteral feeds; medication profile is reviewed for drug safety, compatibility, and precautions when administered via enteral feeding tubes.
- There are health and treatment complications associated with enteral feeding. Tube feeding may cause discomfort and does not necessarily promote weight gain or maintenance, wound healing, or other desirable health outcomes
- There is no evidence to support that tube feeding improves survival in persons with advanced dementia. Consult ethical framework and refer to "VCH Ethical Decision-Making Framework for Tube/Other Feeding Options" for the ethical consideration and decisions-making process of the initiation and care of enteral feeding
- A person-centered care approach and an interdisciplinary process in the management of enteral feeding is critical for safe and efficient service delivery
- Routine reviews involving the different disciplines, persons with tube feeds (if able) and their family, to evaluate and determine the appropriateness of continued use of tube feeding is crucial to ensuring care needs are met and that the decision aligns with the resident/decision maker's goals of care

- Loss of the ability to eat can have psycho/ social/ spiritual implications in the person receiving tube feeds and their family. Consider ways to provide emotional, spiritual and social support and monitor for signs of depression, psychosocial implications in the person receiving tube feeds and their family.
- A number of factors dictate the choice of tube placement including the expected duration of feeding, the condition necessitating the tube feeding, and clinical preference. Whenever gastrostomy tubes are utilized, an RN/RPN can change an established gastrostomy tubes on-site *(Procedure for gastrostomy removal and replacement - in process)*
- There are two types of enteral feeding delivery systems: Closed and Open. The Closed Enteral Feeding system is the preferred method to minimize the risk of bacterial contamination
- Intermittent feeding schedules are preferred to allow greater mobility between feedings, and to replicate regular meal patterns
- Safe care and maintenance of enteral feeding requires ongoing surveillance, recognition of potential problems and conditions conducive to complications, and implementation of evidence-based clinical practice in the delivery of enteral nutrition
- See Appendix A for the types of tubes used for enteral feeding

Equipment & Supplies

- Enteral feeding formula and feeding set
- Enteral feeding infusion pump
- pole
- Replacement tube
- 60 mL catheter tip syringe
- Graduated container
- Disposable gloves
- Tube securement device

Practice Guideline

This guideline outlines:

A. Types of Feeding Delivery System for Enteral Feeding (Closed/ Open)
B. Assessment, Care planning & Evaluation
C. Key Potential Problems and Related Interventions:
   - Aspiration
   - Dislodgement of feeding tube
   - Intolerance of feeds
   - Bacterial contamination
   - Altered skin integrity
   - Blocked feeding tubes
D. Medication Administration via Feeding Tubes

A. Types of Feeding Delivery Systems for Enteral Feeding

Type of Feed Delivery System	Description	Benefits
Closed System	Sterile, pre-filled, ready-to-use formula	• Preferred method • Reduce risk of bacterial contamination • Fewer maintenance needs
Open System	Formula that needs to be poured into a formula container	• Allow mix of formulas • Frequent formula changes • Used for low feed rate

Procedure for the Preparation and Administration of all enteral nutrition:

1. Always use aseptic technique when preparing enteral formula for administration
2. Verify physician/NP's orders/RD recommendations: formula, rate, route, frequency
3. Ensure resident is in proper sitting position with the head of the bed elevated at a 30 to 45 degree angle, aligned correctly in the bed with knees elevated to prevent sliding.
4. Wash hands & don gloves
5. Ensure oral care has been provided
6. Obtain appropriate tubing set and enteral feeding formula container (Closed or Open system)
7. Ensure enteral formula container is labeled with the resident's name, date and time of preparation and expiration date and time
8. Prepare formula for tube feed delivery as per product protocols
9. Prime tubing and thread through pump as per equipment directions
10. Prepare syringe or flush bag for pre-feed flush
    a. If flushing via syringe, use 60 mL catheter tip syringe
    b. If flushing via Feed & Flush set, fill flush bag with tap water and cap bag. Refill as needed
11. Before use, swab end of feed tubing and access ports of the G- tube with alcohol swab; let dry
12. Connect end of feed tubing to proximal end of G-tube
13. Begin administration at prescribed rate
14. Post-flush with 30 mL or designated amount of water
15. When meal is completed, disconnect feed tubing from G-tube, cap or clamp the end of G-tube.
16. Provide oral care after each feed.
17. Dispose of supplies, remove gloves and wash hands.
18. Document interventions and resident responses in the progress notes or on facility Enteral Feeding Monitoring Record Procedure

Procedure for Preparing the Closed Enteral Feeding system for administration:

1. Shake the formula container vigorously and remove the protective cap from formula container. If protective cap is missing DO NOT USE. DO NOT touch porthole underneath cap
2. Remove protective cap from spike of tubing set
3. Hold Closed Enteral Feeding system formula container at the base of port or if using the ultra pak flexible formula container, lie container on sturdy, flat surface then spike formula container with the tubing set. DO NOT touch piercing surface
4. Turn threaded spike of tubing set clockwise until tightly fastened. The formula container is spiked properly when the shaft of the spike from the tubing set is not showing and is all the way into the port of the formula container
5. Invert the formula container and hang for meal delivery

Procedure for Preparing an Open Enteral Feeding system for administration:

1. Swab top of can and access ports with alcohol swab and let dry
2. Ensuring control clamp is closed, pour no more than 4-hour supply of formula into the feeding bag
3. Hang Open Enteral Feeding system bag and prime feed tubing set
4. Cover, label and refrigerate unused open formula. Dispose after 24 hours
5. When meal is completed, rinse bag & tubing with warm soapy water (rinse well)/or discard
6. Dispose of used feeding equipment after 24 hours

B. Assessment, Care Planning and Evaluation

Assessment:

Areas of Assessment	Interventions	Rationale
Goal of tube feeding • Desired outcome, i.e., Weight gain, Maintenance, Comfort • Baseline body weight • Established goal and weighing schedule	• Quarterly review during MDS assessment • Check weight at least monthly • Include interdisciplinary team, resident (if able) and family to evaluate and determine continuation of tube feed	• Aids the development of individualized care plan that respond to care needs and changes to health status • Allows for the development of an evaluation plan to measure goal attainment
Type of tube inserted		• Ensure proper care of feeding tube and access to equipment required
Date of tube inserted	• Regular changing and replacement of feeding tube as per product manufacture recommendations and resident's condition, i.e. number and type of medications, medical history	• Ensure it is an established stoma/tract • Document due date or next assessment date for tubing change
Past complications, tolerance of feeds	• Daily review of tolerance to feeds i.e. comfort, complications • Review and discuss during quarterly MDS assessment and annual care review	• Identify risk and conditions conducive to potential complications • Develop interventions to reduce risk and potential complications
Current Order of: • Formula(s) • Fluid Replacement • Delivery System • Feeding Schedule	• Consult with physicians and dietitian • Must have physician/NP orders	• Ensures proper preparation of supplies, equipments and delivery of enteral feeds
Position of the resident	• Consult Occupational Therapist as needed for seating recommendation if needed	• Ensures resident is sitting up at 30 to 45 degree (preferred) or as otherwise indicated to prevent aspiration and promote feeds tolerance
Equipment • Type of feeding system • Feeding pump • Feeding tube • External flange • Condition of the equipment		• Ensures availability and accessibility of proper equipment • Ensures resident safety

Areas of Assessment	Interventions	Rationale
Ease of feed flow and resident comfort		• Ensures equipment is set up properly • Maximizes tolerance to feeds
Sign of distress/ discomfort and complications of tube feeds (see C: Key Potential Complications and Related Interventions)	• Daily monitoring of complications • Fluid status including signs and symptoms of dehydration, fluid overload and vomiting • Routine evaluation of lab results to monitor electrolytes, serum albumin and hematocrit as determined by MD/NP	• Allows for early detection of potential complications
Gastric Residual Volume (GRV) Checks: • For **large bore gastric feeding only**, not small bowel feeding (e.g. nasoduodenal, nasojejunal or jejunostomy tubes) • Do not check gastric residuals if the resident is eating as food particles may block tube	• GRV checks may be considered as part of the assessment for residents who present signs and symptoms of feed intolerance: o Signs and symptoms include: nausea, vomiting, abdominal distension, cramps, diarrhea and constipation o Metabolic symptoms of intolerance include glucose, fluid and electrolyte abnormalities GRV is not routinely checked in the residential care setting. The GRV check is performed in situations where the resident is: hemodynamically unstable, ventilated, non-responsive and unable to communicate, hx gastroparesis or on medications associated with impaired gastric emptying • Aspirate gastric content before feed • Consult dietitian and/ or physician immediately if volume is greater than 250mL and resident present signs and symptoms of feed intolerance present • Return aspirated content to the stomach • Flush the tube with 30mL of water	• **GRV is not a valid indicator of true gastric volume and rate of gastric emptying. It cannot be relied upon solely as an indicator of tolerance** • May be considered as part of an assessment to identify GI intolerance to feeds and risk of aspiration
Bowel Assessment • Perform bowel assessment to identify incidents of diarrhea, constipation and fecal impaction	• Review bowel record daily • Monitor for signs and symptoms such as abdominal distension, pain, cramps, absence of bowel sounds, vomiting, high GRV, diarrhea, constipation or fecal impaction	• Detect feed intolerance • Ensure early detection and intervention associated with bowel health

Care Planning:
Care Plan provides directions to individualized care. Consider the Feeding Tube Guidelines in the MDS CAPS manual. Clearly specify details about the feed, which include:

- What formula is being delivered?
- What is the feeding schedule, feeding rate and volume of formula provided?
- Where does the feed take place?
- How is the feed delivered and the system maintained?
- What is the monitoring plan to ensure safety and reduce risk of complications?

Include the following information:

Categories	Details
Goal of enteral feeding	• Resident's goal • Weighing schedule • Reassessment and evaluation date
Enteral tube	• Type and size of tube inserted • Date of current tube insertion • Date for tube change/ replacement • Daily tube rotation schedule • Assessment of tube site & tube/ flange integrity
Feeds	• Name of formula(s) • Amount and type of flushes • Delivery system • Feeding schedule/ flow rate/ location
Interventions to promote comfort and prevent potential complications	• Skin care • Oral care (before/after each feed) • Position during and post-feed • Bowel function • Chest assessment • Refer to Preventative Measures under Section C: Key Potential Complications and Related Interventions
Medication Administration:	• Recommendations from pharmacist, i.e., order of medications to be administered, monitoring of potential adverse effects
Equipment/ Supplies	• Type of feeding delivery system and pump • Back-up plans re: availability and accessibility of supplies

Evaluation:
Include the following information:

Area of Evaluation	Questions or Details to Consider
Goal of tube feeding/Quality of Life	• Is the established goal for enteral feeding being met? • How is enteral feeding impacting the quality of life for the resident? • What is the process that ensures the goal of tube feeds aligns with the changes in resident status and futility of treatment?
Nutritional Status	• What is the current nutritional status? • Consult with dietitian to review progress
Tolerance	• Episodes of and/or sign and symptoms of intolerance
Equipment	• What is the condition of the enteral feeding equipment? • Check for patency, position, and condition of tube
Complications	• Episodes/ incidence of complications related to tube feeding • Were the complications preventable? • Are the current interventions effective in promoting comfort and reducing risk of complications?

C. Key Potential Complications and Related Interventions

Key Potential Problem	Causes, Risk Factors, Symptoms and Guidelines
Aspiration	**Cause:** • Incorrect positioning during and after feed • Materials such as gastric contents, saliva, food, or nasopharyngeal secretions are inhaled into, or enter the airway or respiratory tract • Poor oral hygiene • Feed administration rate **Signs & Symptoms:** • May be minimal- consider possibility of silent aspiration • Coughing, choking, signs of respiratory distress (dyspnea, tachypnea, tachycardia, hypoxia), wheezing or gurgling respirations, increased sputum production • Cyanosis, low/ abnormal SpO_2 level (value as identified for individual resident) • Fever, diaphoresis, decline in mental status, anxiety, agitation • Lab results: elevated white blood cell count, elevated blood urea nitrogen, creatinine or sodium **Preventative Measures:** • Keep HOB at 30 to 45 degrees, 45 degree preferred, during and for a minimum of 30 minutes post feed or otherwise specified in medical orders. Individuals should not be slouched down • Monitor for high GRV • Monitor for signs and symptoms of aspiration • Oral suctioning when appropriate • Use proper feeding techniques if persons with tube feeding are taking foods/ fluids orally. Consult dietitian, speech and language pathologist and occupational therapist as appropriate **Interventions if suspected:** • STOP feed immediately • Do not re-start or administer water or medications through the tube • Monitor vital signs & pulse oximetry immediately and q4h • Complete a chest assessment • Notify physician immediately • Monitor for pulmonary edema (hypertension, tachycardia, dyspnea, cyanosis) • Observe for signs of pulmonary infection (purulent sputum, fever, signs of delirium with change in cognition and behavior) • Trained RN to administer oxygen to manage signs and symptoms of respiratory distress if indicated on resident-specific orders • Transfer to acute care facility if appropriate
Intolerance to Feeds	**Cause:** • High feed administration rates • Delayed gastric emptying or decreased bowel motility is common in the frail elderly • Cold fluids may cause cramps **Symptoms:** • ***Gastrointestinal:*** Nausea, vomiting, abdominal distention, abdominal cramps, diarrhea, and constipation • ***Metabolic:*** glucose, fluid & electrolyte abnormalities

	Preventative Measures: • Monitor for signs & symptoms of intolerance before, during, and after feeds • Check for bowel function, e.g., absent or hypoactive bowel sounds, abdominal distention • Check Gastric Residual Volume • Monitor for metabolic symptoms of intolerance as needed • Ensure formula is delivered at room temperature **Interventions if suspected:** • Consult RD, Physician/NP • Complete nursing assessment to identify cause of feeds intolerance and appropriate interventions • Check Gastric Residual Volume
Metabolic Complications: Hyperglycemia	**Cause:** • May be caused by acute illness (cold, flu, infection, injury) or emotional stress • High caloric intake or overfeeding • High caloric intake may reveal glucose intolerance or diabetes **Symptoms:** • Common: Thirst, dry mouth, frequent urination, urination at night, blurred vision, dry & itchy skin, fatigue or drowsiness, increased appetite • Severe (Diabetic Ketoacidosis): Unconsciousness, increased confusion or drowsiness, breathing difficulty, nausea and vomiting, fruity-smell breath, dizziness with standing **Preventative Measures:** • Contact physician for diabetes screening for high risk groups (http://www.diabetes.ca/diabetes-and-you/what/facts/) • Check for elevated blood sugar and discuss with team members **Interventions if suspected:** • Consult RD, Physician/ NP • Follow clinical guidelines on hyperglycemia management
Tube dislodgement and leakage	**Cause:** • External force (pulling) • Internal anchor becomes defective • No skin securement • Hyperactive bowels without securement device in place **Symptoms:** • Pain/ discomfort • Leakage • Tube misplacement **Preventative Measures:** • Assess tube placement for proper tube anchoring and placement (marked line) prior to each intermittent feed and as per established routine • Check position of external anchor device daily in relation to markings on the tube and tighten or loosen the anchor as needed • Gently rotate a standard gastrostomy tube device 360 degrees in the tract (should freely rotate in the stoma); apply gentle traction to the tube (resistance should be felt). Rotate standard gastrostomy tube only. **Do not rotate G-J, J-tube or any other tubes**

	○ **NOTE:** Follow care instructions as per supplier-specific recommendations, i.e., Kimberley clark instructions ask for 360 degree plus ¼ turn daily • Ensure tube is well secured. If resident repeatedly pulls at the tube, the team should discuss alternative securement and treatment options **Interventions if complications evident:** • Considered tube dislodgement as an urgent situation which requires attention to within hours • Trained RN/RPN can insert a gastrostomy tube to maintain tract and continue feeding. • If a PEJ tube is used, contact physician re: reinsertion of replacement tube. These residents will need to go to acute care for the procedure. Rationale: PEJ has hard bolster that must be removed by the physician, and J tubes required radiology/endoscopy to change • Ensure replacement balloon gastrostomy tubes and the correct French size for each resident are available on unit
Bacterial Contamination	**Cause:** • Contamination of formula or tubing set. • Poor infection control practices **Symptoms:** • Diarrhea, sepsis **Preventative Measures:** • Practice universal precautions • Use closed enteral feeding system whenever possible • Wash hands prior to preparing feeds • Do NOT touch port hole, spike of tubing, inside of bag • Label feeding equipment with current date & time and expiry date & time • Syringe should be pulled apart and allowed to air dry between use • Graduated container should be emptied and allowed to air dry between uses • Syringe and graduated container should be replaced within 24 hours or more frequently as needed **Interventions if suspected:** • Discard formula container, tubing set, and opened cans of formula
Altered Skin Integrity/stoma site	**Cause:** • Poor hygiene • Infections • Positional pressure and friction • Improper tube stabilization • Tube displacement • Improper tube size **Symptoms:** • Skin breakdown, hypergranulation tissue, pressure necrosis • Redness, drainage, swelling, pain/ discomfort around stoma site **Preventative Measures:** • Adhere to infection control protocols • Observe daily and PRN: 1. Stoma and surrounding skin condition for tenderness, irritation, redness and discharge

	2. Position/location of feeding tube for pressure against skin 3. Condition of tube and external flange 4. Rotate tube daily 5. Check volume of water in the balloon each week. Deflate the balloon, measure the amount of water and compare to the amount initially instilled. Re-inflate the balloon with the appropriate volume of water • Cleanse around the stoma daily & PRN with warm water; dry thoroughly • Daily tube rotation as noted above • May use barrier ointment to protect skin from excessive moisture • May need absorbent dressing around tube as temporary measure (consult ET RN/WOCN/WCC) **Interventions if suspected:** • If there is encrustation, using a wet cotton swab, gently cleanse around the stoma and dry thoroughly • Leave site uncovered. • If there is a moderate to large amount of drainage or skin irritation seek advice. Consult ET RN/WOCN as needed. • Inspect and rotate gastrostomy tube and bolster 360 degree daily to prevent tissues from adhering to the tube, and to relieve pressure on the skin. Rotate gastrostomy tube only. **Do NOT rotate G-J, J-tube or any other tubes**. Follow supplier-specific instructions. • Check for correct volume for balloon-retained devices, tube stabilization and tube patency
Feeding Tube Obstruction	**Cause:** • Kinks in tubing • Accumulation of formula sediment in the lower segment of the tube • Improper administration of medications and flushing of the feeding tube • Frequent Interruptions of continuous enteral feeds • Smaller diameter tubes, slow administration rate of calorically dense formulas and fiber-rich formulas, certain type of medications may increase risk **Symptoms:** • Inability to deliver feeds • Slowed flow rate • Discomfort/ pain **Preventative Measures:** • Flush feeding tubes with a minimum of 30 mL of water every 4 hours during continuous feeding, or otherwise specified in prescribed orders • Flush feeding tubes with a minimum of 30 mL of water before and after intermittent feedings, or otherwise specified in prescribed orders • Adhere to protocols for proper medication administration and pre- and post flush • Notify/consult with pharmacist for medication review prior to medication administration • Respond promptly to pump alarms **Interventions:** • Check the tube for kinking, placement of tube, position of resident • Flush 20 mL to 30 mL of warm tap water using a 60 mL syringe • If this does not de-clog the tube, refer to Appendix C

Balloon-related Problems	**Cause:** • Balloon has leaked or deflated • Balloon has migrated into pylorus possibly obstructing stomach outlet valve **Symptoms:** • Leakage • Vomiting • Pain/discomfort **Preventative Measures:** • Check volume of water in the balloon each week. Deflate the balloon, measure the amount of water and compare to the amount initially instilled. Re-inflate the balloon with the appropriate volume of water **Interventions:** Stop feeds, address problem and re-start feeds. Contact physician or ET RN/WOCN/WCC if problem remains unresolved
Pump related Problems	**Cause:** • Varied **Preventative Measures:** • Use feeding set compatible with pump • Follow proper usage of the pump and guide to set up the pump as per manufacturer **Interventions:** Trouble shooting a pump related problem is best accomplished by using the following method. Ensure the following: 1. Feeding set and pump are compatible 2. The formula is in the feeding bag and drip chamber 3. The control clamp is fully open 4. The battery is fully charged 5. The pump is plugged into electric wall outlet 6. The pump is turned on 7. The tubing is threaded correctly 8. The drip chamber is clean 9. The drip chamber is half full 10. The feeding tube is patent Contact supplier if problems remain unresolved

D. Medication administration via feeding tubes

- Notify and consult with pharmacist for medication review prior to medication administration via enteral tube to promote drug efficacy and to minimize risk of tube obstruction
- Dissolve finely crushed or ground medication in 30 mL water or deliver medications in liquid form, if available. Liquid medications may also be diluted in water before administration through the feeding tube
- Administer each drug separately after diluted with water. Do not mix drugs together to avoid altered therapeutic effects from drugs incompatibilities. Follow recommendations from pharmacist.
  Note: some drugs may be safe to be administered together. Important to consult pharmacist prior to medication administration.
- DO NOT mix medication with feeding formula. Stop feeding during medication administration

- DO NOT administer bulking agents such as psyllium and resins such as cholestyramine through tube
- DO NOT crush or administer soft gelatin capsules, enteric-coated tablets, or slow-released medications through a feeding tube
- Flush enteral tube with 30 mL or prescribed amount of water through tube before medication administration, between consecutive medications and after medication administration
- Use a separate port, if available, for medication administration and flushing to prevent contact of medication with formula
- Liquid medications containing sorbitol may cause diarrhea.
- Coordinate medication dosing time with feeding schedule to promote drug efficacy.

Precaution: Some medications cannot be administered via the feeding tube. Refer to Appendix B for specific guidelines

Resident/Family Education

- An adult person in care participates in their own care, freely expresses their views, and participates in the development and implementation of their care plan as able
- Resident/ Substitute Decision Maker (SDM) will be provided information about enteral feeding, potential outcomes of enteral feeding including potential complications, and the opportunity to discuss concerns and participate in the decision-making process of the initiation, maintenance, and termination of enteral feeding.

Expected Patient/Client/Resident Outcomes

- Resident/SDM will be aware of the potential outcomes of enteral feeds
- Resident will maintain or improve nutritional status
- Resident is comfortable and maintaining their weight
- Resident will remain free of complications associated with maintenance of enteral feeds

Evaluation

- Enteral Feeding Monitoring Record
- Resident's Monthly Weight Record
- CPD audit tool (Appendix D)

Documentation

- The feeding bag must have label(s) that contain the following information:
  - Resident name
  - Formula
  - Date/time bag spiked
  - Date/time of feeding set change due
- Complete on appropriate record (i.e., Flowsheet, Fluid Balance Sheet, Progress Notes, Kardex, Care Plan, MAR) as per facility-specific policies and procedures

Related Documents

- D-00-07-30038: Heat Stress: Planning for and preventing in Residential Care
- D-00-07-30040: Hydration: Promoting fluid intake and preventing dehydration
- VCH Ethical Decision-Making Framework for Tube/Other Feeding Options
- VA: T-270: Tube Feeding: Care and Management
- RH: Enteral Nutrition

References

Byrne, K,. (2011). "Chapter 19 Nutrition Support: Enteral and Parenteral Nutrition." *William's Essentials of Nutrition and Diet Therapy*. Elsevier, Mosby.

Bankhead, R., Boullata, J., Brantley, S., Corkins, M., Guenter, P., Krenitsky, J., Wessel, J. (2009). Enteral nutrition practice recommendations. *Journal of Parenteral and Enteral Nutrition*, 33(2), 122-166.

Bankland, Robin & members of the Enteral Nutrition Practice Recommendations Task Force. (2009).

Bourgault, A. M., Ipe, L., Weaver, J., Swartz, S., & O'Dea, P. J. (2007). Development of evidence-based guidelines and critical care nurses' knowledge of enteral feeding. Critical Care Nurse, 27(4), 17-29

A.S.P.E.N. Enteral Nutrition Practice Recommendations. JouRN/RPNal of Parental Enteral nutrition (JPEN) American Society for Parental and Enteral Nutrition. Jan. retrieved Aug 14, 2010 from www. Jpen.sagepub.com

Children's and Women's Health Centre of BC. (2003). *Tube Feeding at Home*. A Guide for Families and Caregivers. Vancouver, BC

Colwell, J.; Goldberg, M.; Carmel, J.. (2004). *Fecal & Urinary Diversions: Management Principles* p. 351-367. Elsevier

Dorner, B., Friedrick, E., & Robinson, G. (2011). Enteral nutrition for older adults in nursing facilities. *Nutrition in Clinical Practice*, 26(3), 261-272.

File, TM; Bartlett, JG; Thorner, AR. Risk factors and prevention of hospital-acquired, ventilator-associated, and healthcare-associated pneumonia in adults. In: UpToDate, Basow, DS (Ed), UpToDate, Waltham, MA, 2013.

Gavi A, Hensley, J; Cervo, F; Nicastro, C., Fields, S. (2008). Management of feeding tube complications in the long-term care resident, *Annals of Long Term Care*, Apr, 01

Herlick, S.; Vogt, C.; Pangman, V.; Fallis, W.(2000). Comparison of open vs closed systems of intermittent enteral feeding in two long term care facilities. *Nutrition in Clinical Practice*. Dec. 15: 287-298.

InterRAI Clinical Assessment Protocols (CAPs)- For Use with Community and Long-term Care Assessment Instruments. March 2008 (Ottawa: CIHI, 2008).

Kenny DJ ; Goodman P. (2010). Care of the Patient with Enteral Tube Feeding: An Evidence Based Practice Protocol. *Nursing Research* (NURS RES), 2010 Jan-Feb; 59(1): Supplement: S22-31

Kuo S ; Rhodes RL ; Mitchell SL ; Mor V ; Teno JM (2009). Natural history of feeding-tube use in nursing home residents with advanced dementia. *JouRN/RPNal of the American Medical Directors Association* (AM MED DIR ASSOC). May; 10(4): 264-70.

McClave, et al (2005). Poor validity of residual volumes as a marker for risk of aspiration in critically ill patients. Crit Care Med 33 (2), 324 - 329

North West Melbourne Division of General Practice. Gastrostomy Tube Management Guidelines Omorogieva, O. (2010). Managing patients on enteral feeding tubes in the community. *British JouRN/RPNal of Community Nursing*, 6-13.

Parrish, C.R., & McClave, S.A. (2008). Checking gastric residual volumes: A practice in search of science? Practical Gastroenterology, 67, 33-46.

Parrish, C. R., & McCray, S. (2003). Enteral feeding: Dispelling myths. Practical Gastroenterology, 33-50.

Perry, A., Potter, P. (2006) 6th Edition. Administering Enteral Feedings via Nasogastric Tube (Large or Small bore). Clinical Nursing Skills & Techniques. St Louis: Mosby/ Elsevier.

Taylor, B., & Mazuski, J. (2005).Enteral access devices and placement techniques. *Support Line*, 27(4), 3-11.

The Joint Commission Perspective on Patient Safety (2009). Part ii: Providing safe and beneficial enteral feeding: Ensuring that patients tolerate tube feeding., 9(1), 6-7.

Williams, T., & Leslie, G. (2004). A review of the nursing care of enteral feeding tubes in critically ill adults: Part 1. *Intensive and Critical Care Nursing*, 20, 330-343.

Yantis, M., & Velander, R. (2011). Untangling enteral nutrition guidelines. *Nursing2011*, 41(9), 32-38.

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Appendix A: Types of Tubes used for Enteral Feeding

Type of Enterostomy Placement Tubes	Location of Tube (see Diagram)	Lumen Size	Balloon ✓ = present ✗ = not present	External Flange ✓ = present ✗ = not present	Indication/use	Management Issues
Gastrostomy (G) Tube **Note:** Consider switch over to a balloon G-tube when the change is due. Consult the physician/ ET RN WOCN/ WCC for recommendation	Surgically placed in stomach through the abdominal wall	10-30 Fr	✓✗	✓	Long-term feeding Uncompromised gastric function & intact gag reflex	3 to 6 months life span Changed at bedside by trained RN/RPN
Percutaneous Endoscopic Gastrostomy (PEG) Tube	Endoscopically or percutaneously placed in the stomach through the abdominal wall	18-22 Fr	✗	✓	Long term feeding Uncompromised gastric function & intact gag reflex	Interperitoneal leakage Gastrocolic fistulas
Jejunostomy (J) Tube	Surgically placed in the jejunum through the abdominal wall Tip placed in small bowel (bypasses stomach)	Single or double lumen 10-16 Fr	✗	✓✗	High aspiration risk Severe reflux disease Gastric/ esophageal Ca Compromised gastric function	Tube migration Pneumatosis Occlusion If tube sutured can run into issue with skin deteriorating
Gastro-Jejunal Tube Conversion (G-J) Tube	Inserted through a PEG tube into the small Intestine Tip placed in small bowel (bypasses stomach)	8-12 Fr	✗	✓	Recurrent aspiration, upper GI obstruction or fistula, gastroparesis & gastroesophageal reflux	Kinking Retrograde migration into stomach Continuous feeding required
Percutaneous Endoscopic Gastro-Jejunostomy (PEGJ) Tube	J-portion delivers contents into jejunum G-portion is to decompress the stomach	Double lumen (triple lumen if balloon) 8-12 Fr	✓✗	✓	Recurrent aspiration, upper GI obstruction or fistula, gastroparesis & gastroesophageal reflux	Kinking Retrograde migration into stomach Continuous feeding required

Appendix B: Guidelines for Medication Use via Enteral Tube

Medication/Medication Type	Guidelines
Phenytoin	Interacts with the tube feed formula. Consult with the dietitian to adjust the tube feed schedule. The tube feed formula should be stopped 2 hours before the medication dose and restarted 2 hours after in order to minimize interaction with the tube feed formula. Suspension should also be diluted with at least equal parts of water and the feeding tube must be flushed with 15-30 mL of water before & after medication administration.
Warfarin	Interacts with vitamin K in the tube feed formula to cause a decrease in effect of warfarin. Monitor the INR closely when starting or discontinuing the tube feed formula.
Tablet dosage form	Crush tablet into a fine powder. Mix powder with 15 to 60 mL of water. Make sure the powder is completely dissolved before administration.
Hard gelatin capsules	Capsules that open in the middle should be opened, and the powder dissolved in water as directed by pharmacy. Hard gelatin capsules that do not have an opening can be accessed by poking a pin-hole in one end and squeezing out the contents.
Liquid forms	Many oral solutions contain large amount of sorbitol, which can cause osmotic diarrhea. If diarrhea occurs, and the liquid medication contains sorbitol, replace with solid tablet dosage form. Highly concentrated and viscous liquids (i.e., Lactulose): dilute with 15 to 60mL of water.
Enteric-coated tablets (e.g., ENTROPHEN, BISACODYL)	Should NOT be crushed and administered via feeding tube. Crushing impairs the protective effects of the enteric coating. However, tablets may be crushed and administered if tube inserted below stomach. Check with pharmacist.
Long-acting tablets/ capsules	Long-acting tablets/ capsules should NOT be administered via feeding tube. Crushing the tablets or opening the capsules to insert the beads will impair the long-acting effects and may result in dose-dumping and toxicities.
Bulk forming agents (e.g., METAMUCIL)	Avoid these agents as they quickly congeal when mixed with water. Consult with a dietitian.
Buccal or sublingual medications (e.g., nitroglycerin)	Should NOT be given via the feeding tube as they are formulated at smaller doses and may lose their effectiveness.

Appendix C: Instructions for Unclogging Feeding Tubes

NOTE: A physician's order is required to obtain and utilize these products

1. Crush and dissolve one sodium bicarbonate 325 mg (or 300 mg) tablet in 15 mL tap water.
2. Dissolve one pancrelipase tab/cap (obtained from pharmacy) in 15 mL warm tap water.
   - If supplied in tablet form (e.g. VIOKASE), crush and add to water.
   - If supplied in capsule form (e.g. COTAZYM), open and empty contents into water.
3. Draw up both sodium bicarbonate and pancrelipase solutions into one syringe.
4. Wearing a mask and goggles is recommended due to possible splash back.
5. Attach an empty syringe to the feeding tube; then draw back on plunger of syringe to decompress all air and fluid from the feeding tube. Pinch off the tube with your fingers, and discard syringe.
6. Instill pancrelipase/bicarbonate mixture into feeding tube.
7. Clamp the tube (or leave syringe attached to the end of feeding tube); wait 30 minutes.
8. After 30 minutes, flush the tube with 30 mL of tap water.
9. Repeat once if necessary.

Discuss tube replacement with the physician if 2 attempts to clear the tube have failed and other causes of tube occlusion (e.g. kinked tube) have been ruled out

Appendix D: Chart Audit for Tube Feeding: Care and Management in a Residential Setting

Site:	Nursing Unit:												
Signature of Evaluator:	Reporting Period:												
Number of charts: 10/unit	Key: Met = M, Not met = N, Not applicable = N/A												
Health Record #											**% M**	**% N**	**% N/A**
Progress Record													
Date & type of tube inserted & reason. Any particular instructions													
How the tube is kept in place; stitches, inteRN/RPNal flange, bumper													
Formula. Type. Frequency, rate of flow													
Water: State amt to be used for flushing and if additional water is required													
Observation of condition of stoma and surrounding skin													
Summarize residents response to feeds													
ADL Sheet													
State when feed is to be started & ended													
Position of resident during feed & for 30 – 60 min after													
Oral care to be provided													
Skin care to be provided													
Care Plan													
Goal of enteral tube feeding													
Individualized Interventions: position of resident, oral care, frequency of feed, response to feed													
Closed/open system; Formula and amount of additional water, rate of flow													
Epected tube change date													
Resident Education													
Information and explanation material provided to resident and supports													
Total													

Total Compliance = $\frac{\text{Total Number Met ( ) X 100}}{\text{Total Number Met + Not Met}} = \_\_\_\_\_$