



مستشفى الملك عبدالله بن عبدالعزيز الجامعي
King Abdullah bin Abdulaziz University Hospital

Princess Nourah bint Abdulrahman University

جامعة الأميرة نورة بنت عبد الرحمن

ENTERAL FEEDING STUDY MODULE

مستشفى الملك عبدالله بن عبدالعزيز الجامعي
King Abdullah bin Abdulaziz University Hospital

Princess Nourah bint Abdulrahman University

جامعة الأميرة نورة بنت عبد الرحمن



Table of Contents

Page No.	Title
3	Purpose
3	Objectives
3	Materials
4	Overview
5	Patient and Family Education
5-8	Assessment and preparation
9-15	Enteral feeding Procedure and Rationale
15-16	Monitoring and care
17	Expected outcomes
17	Unexpected outcomes
17	Documentation
18	Pediatric considerations
18	Gerontological considerations
19-20	References
21-24	Competency Check Off



Purpose

The purpose of this module is to provide the nurses of KAAUH comprehensive information about ENTERAL FEEDING.

Objectives

- Select the appropriate equipment and supplies essential for ENTERAL FEEDING.
- Describe the steps involved in ENTERAL FEEDING.
- Use the correct techniques for securing an ENTERAL FEEDING TUBES.
- Assess a NASOGASTRIC TUBE SITE, GASTROSTOMY TUBE AND JEJUNOSTOMY TUBE.
- Demonstrate safe management of ENTERAL TUBE FEEDING.
- Incorporate teaching in the care of patients Enteral Tube Feeding.
- Documentation on enteral tube feeding.

Materials

- Disposable feeding bag with gravity or pump set tubing and prescribed formula containers or prefilled container with tubing
- Labels
- Alcohol swabs
- 60-ml catheter-tip syringe
- Stethoscope
- Tube feeding pump (required for continuous feedings)
- Feeding pole
- pH point of care measuring materials (scale 0.0 to 14.0)
- Gloves
- Equipment to obtain fingerstick blood glucose level, if ordered
- Sterile water for flushing
- Tape measure



OVERVIEW

Gastric feeding is the most common type of enteral nutrition, allowing tube feeding formulas to enter the stomach and then pass gradually through the intestinal tract to ensure absorption. Small bowel nutrition is used less frequently than gastric feeding. Small-bowel (duodenum or jejunum) feeding occurs beyond the pyloric sphincter of the stomach, which may reduce the risk for aspiration, provided that feedings do not reflux into the stomach. For short-term feedings, tubes are typically passed through the nasopharyngeal or oropharyngeal routes.

The stomach (gastrostomy tube) and jejunum (jejunostomy tube) are the most common sites for long-term feeding tubes. For patients requiring long-term enteral nutrition (i.e., greater than 6 weeks), feeding tubes can be placed directly into the gastrointestinal (GI) tract through the abdominal wall. Small-bowel feedings should be administered continuously to prevent "dumping" syndrome (diarrhea, fullness, cramping, or vomiting) and to enhance tolerance in critically ill patients or those who have not been fed enterally for several days.

The general indications for enteral feeding include the following:

- Patients who cannot eat because of surgery, injury, or disease process. This includes patients who are comatose; receiving mechanical ventilation; recovering from oral, head, and neck surgeries; and having certain GI disorders.
- Nutritional deficit resulting from reduced food ingestion or malabsorption, even in patients who are physically capable of eating (e.g., patients with head injury, confusion, or GI system disorders such as Crohn's disease).
- Patients with impaired swallowing or gag reflex (e.g., patients who have had a stroke).

Inadequate delivery of nutrients, potentially leading to malnutrition or electrolyte disturbances, may occur because of frequent interruptions in feeding. Administration of enteral nutrition is often delayed until after a patient's bowel sounds can be auscultated; however, researchers find it is safe to begin feedings before bowel sounds return, especially in patients with jejunostomy tubes, but this practice does pose some risk (e.g., GI dysmotility, or in rare cases, bowel ischemia). The nurse should take care to balance the benefits and risks by assessing the patient's tolerance of early enteral feeding.



PATIENT AND FAMILY EDUCATION

- Teach patient and caregiver that, if tolerated, patient should remain upright after feedings to promote gastric emptying.
- Instruct patient or caregiver that patient may initially experience feelings of fullness, increased gas, belching, or diarrhea.
- Instruct patient to not pull or alter position of nasoenteric tube.
- Teach patient or caregiver how to determine correct placement of feeding tube by performing aspiration of gastric contents.

ASSESSMENT AND PREPARATION

Assessment

1. Perform hand hygiene before patient contact.
2. Verify the correct patient using two identifiers per institution policy.
3. Assess patient's need for enteral tube feedings, and consult with nutrition support team or practitioner. Conditions that may require that a patient receive tube feedings include the following:
 - a. Decreased level of consciousness
 - b. Head or neck surgery
 - c. Facial trauma
 - d. Impaired swallowing
 - e. Prolonged NPO status
 - f. Inability to ingest required nutrients orally longer than 3 days
 - g. Oral feedings failing to adequately meet nutritional needs
 - h. Other nutritional deficit
4. Assess patient for food sensitivities and allergies (e.g., lactose intolerance, celiac disease, soy allergy).

Rationale: Almost all enteral formulas are currently lactose-free but nutritional supplements are not.

5. Perform abdominal assessment and document findings including bowel sounds, distension, discomfort, or any signs that feeding may not be tolerated.

Absent bowel sounds are not a contraindication to feeding but this finding and other changes from the baseline assessment should be communicated to the practitioner to determine if feeding can safely proceed.



6. Obtain baseline weight.
7. Assess patient for signs and symptoms of fluid, electrolyte, and metabolic abnormalities and assess for laboratory values that indicate these conditions (e.g., metabolic syndrome, a B-type natriuretic peptide, blood glucose level).

pH Testing

A combination of aspirate appearance and pH testing can be used to help make correct predictions about tube placement in the stomach.

pH value of aspirates from feeding tubes should be used to differentiate between gastric and respiratory placement. The pH values and their corresponding indications and action are as follows:

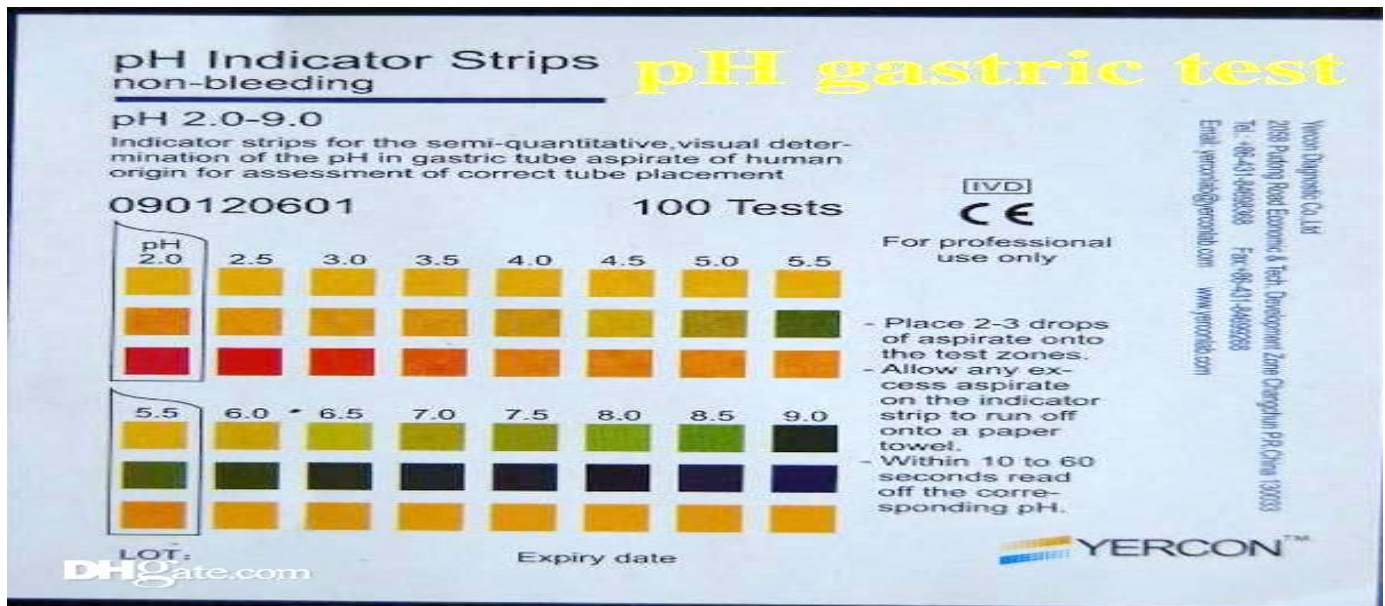
Value	Indications	Action
pH less than 5	Gastric	Proceed to feed
pH 5 – 6	Check visual characteristics of aspirates	If visual characteristics indicate gastric aspirates, proceed to feed. Otherwise, do check x-ray to confirm tube placement
pH more than 6	Intestinal or Respiratory	Do check x-ray to confirm tube placement

Visual characteristics of feeding tube aspirates:

Gastric	Intestinal	Respiratory
May be grassy green with sediment, brown (if blood is present and has been acted on by gastric acid) May also appear clear and colourless (often with shreds of off-white to tan mucus or sediment)	Generally more transparent than gastric aspirates and may appear bile stained, ranging in colour from light to dark golden yellow or brownish-green	Tracheo-broncheal secretion may consist of off white to tan sediment

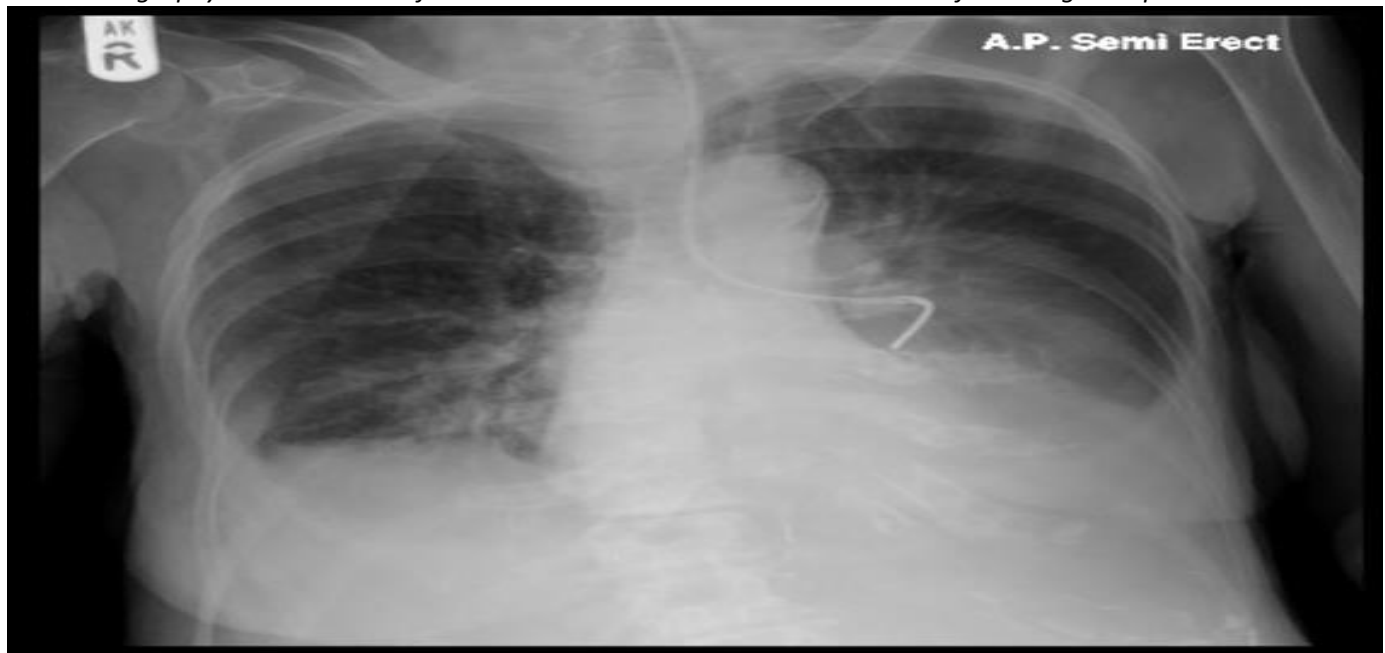


Combination of pH and visual characteristics can be helpful in distinguishing between respiratory and gastrointestinal tube position.



Radiological Determination of Feeding Tube Placement

Radiography determination of tube location is the most accurate method of checking tube placement.

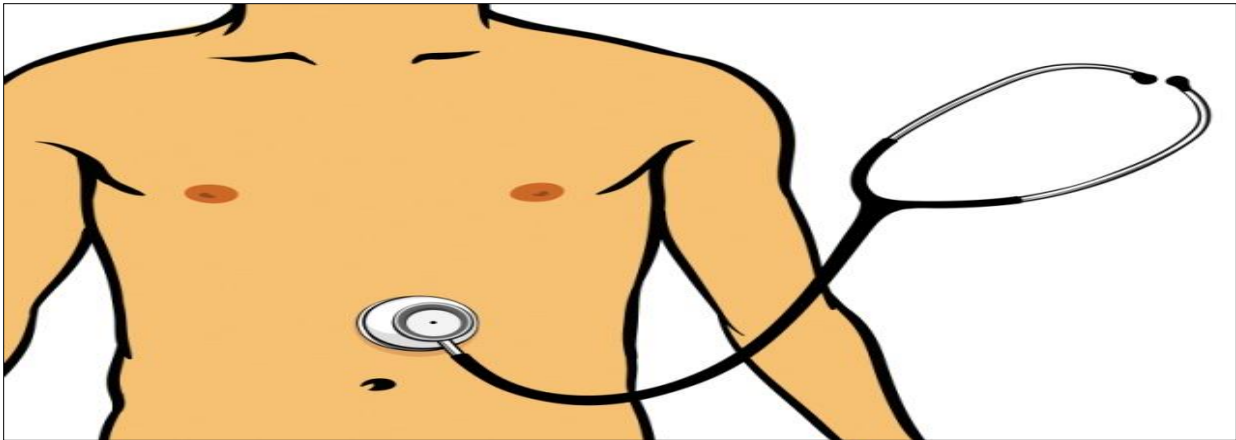




Auscultatory Method

Auscultatory method (also known as air insufflations test) should not be relied on as the sole method to determine the location of the feeding tube.

The auscultatory method is not effective in distinguishing between respiratory and gastrointestinal placement of feeding tube. “Pseudoconfirmatory gurgling” sound can be heard when feeding tubes were positioned in the tracheobronchial tree or pleural spaces. A tube that is inadvertently placed in the respiratory tract or oesophagus can transmit a sound similar to that of air entry in the stomach.



Frequency in Checking Placement

Mark the intersection where the nasogastric tube enters the nostril, use this marking to check the tube placement:

- After initial insertion, before each intermittent feeding, and at every 8-hourly during continuous feedings. (depending on Institutional policy)
- If patients complain of discomfort, coughing, retching or vomiting and show sudden signs of respiratory difficulties.
- If the visible part of the tube changes in the length.

Regular assessment of feeding tube placement is important because a tube can be partially pulled out during movement or when tugged at by a confused patient. Tube malposition may be caused by faulty initial placement or upward dislocation after bouts of coughing or vomiting.



Preparation

1. Verify practitioner's order for formula, rate, route, and frequency.
2. Explain procedure to patient.

Procedure: Enteral Feeding Preparation via NGT and NGT placement checking

Procedure	Rationale
1. Perform hand hygiene and don gloves.	
2. Verify the correct patient using two identifiers per institution policy.	
<p>3. Prepare feeding container and tubing, feeding pump set, or gravity bag as ordered to administer formula.</p> <p>a. Check formula expiration date and integrity of containers.</p> <p>b. Ensure tube-feeding formula is at room temperature.</p> <p>c. Connect tubing of administration set to prefilled container, or prepare feeding pump set or gravity bag with tubing. Use aseptic technique to avoid contaminating the feeding system (including the bag, connections, and tubing) when connecting and hanging.</p> <p>d. Shake formula containers well.</p> <p>e. If administering canned formula, wipe top with alcohol swab and allow to dry before opening and pouring into administration bag. When filling feeding container bag with formula (Figure 1), pour only the amount needed for 8 hours of feeding.</p> <p>Figure 1</p>	<p>Expired formula or damaged container may promote transmission of microorganisms; an intact container is necessary to prevent leakage of tube feeding formula.</p> <p>Cold formula may cause gastric cramping and discomfort when the liquid is not warmed by mouth and esophagus.</p> <p>The feeding system must be free of contamination to prevent bacterial growth.</p> <p>To prevent introducing of micro-organism and</p>



Pour formula into feeding container. (From Perry, A.G., Potter, P.A., Ostendorf, W.R. [2014]. *Clinical nursing skills & techniques* [8th ed.]. St. Louis: Mosby.)

f. Label bag with patient information, enteral access type, and tube feeding type, strength, and amount. Include date, time, and preparer initials.

Do not dilute or add additives to the tube feeding formula.

a. Open roller clamp on tubing or use priming function on tube feeding pump to fill (prime) tubing with formula. Close roller clamp, and cap end of tubing.

b. Label administration set "Tube feeding only." (Note: Some manufacturers now provide feeding tubes labeled "For feeding only.")

c. Hang bag on feeding pole.

2. For intermittent or bolus feeding, have a clean, enteral, large catheter-tip (non-Luer-lok) syringe ready.

the maximum hang time for formula in an open system is 8 hours, to reduce the risk of bacterial colonization.

Filling the tubing with formula prevents excess air from entering GI tract once infusion begins.

3. Place patient in high-Fowler position or elevate head of bed 30 to 45 degrees For patients required to remain supine, place in reverse Trendelenburg position.

Keeping the patient's head elevated helps prevent aspiration. Gravity reduces the likelihood of regurgitation of gastric contents from the distended stomach.



	There is evidence that a sustained supine position (with the head of the bed flat) increases gastroesophageal reflux (GER) and the probability for aspiration.
<p>4. Verify tube placement:</p> <p>Obtain radiographic confirmation of correct placement of tubes before first use for feeding or when assessment findings (e.g., pH of aspirated secretions, auscultation of bowel sounds, large volume of residual fluid aspirated from a post-pyloric tube, or patient complaints) suggest tube displacement.</p> <p>a. Attach a catheter-tip 60-ml syringe to the proximal end of the feeding tube and attempt to aspirate a sufficient amount of secretions for evaluation of color and pH, per institution policy.</p> <p>b. Observe appearance of aspirate.</p> <p>c. Measure and document pH per institution policy.</p> <p>i. Gastric fluid from a patient who has fasted for at least 4 hours typically has pH below 5.</p> <p>ii. Fluid from the small intestine of a fasting patient typically has pH higher than 6.</p> <p>iii. Fluid from patient with continuous tube feeding may have pH of 5 or higher.</p> <p>iv. The pH of secretions from the tracheobronchial tree is generally higher than 6 and the aspirate may have the appearance of sputum.</p>	<p>To ensure NGT is insitu.</p> <p>A pH ranging from 0 to 5 reflects acidic content and is a reliable indicator of stomach tube placement, when the patient is not receiving a gastric acid inhibitor and when the appearance is that of gastric juice.</p> <p>Intestinal contents are more alkaline than stomach contents and they appear bile-stained.</p> <p>Feeding formulas are alkaline solutions that may buffer gastric acid.</p>



5. Check gastric residual volume before each feeding for intermittent feedings, and every 4 to 6 hours initially for continuous feedings.

After tolerance has been established for small bowel feedings, there is no benefit to performing small bowel residual volume checks; in fact, this may contribute to tube clogging.

Intestinal residual is usually very small (10 ml or less); if the residual volume from a small bowel tube is substantial, displacement of the tube into the stomach may have occurred.

a. Draw 30 ml air into a catheter-tip 60-ml syringe, attach the syringe to the proximal end of the feeding tube, and inject the air.

b. Pull back slowly, and aspirate the total amount of gastric contents ([Figure 2](#)).

Figure 2



Check for gastric residual volume. (From Perry, A.G., Potter, P.A., Ostendorf, W.R. [2014]. *Clinical nursing skills & techniques* [8th ed.]. St. Louis: Mosby.)

c. Return aspirated contents to stomach unless volume exceeds 500 ml or other amount specified by institution policy or practitioner order.

d. Flush with 15 to 30 ml water.



<p>Use sterile water for all tube flushes for immunocompromised or critically ill patients.</p>	<p>Gastric residual volumes greater than 500 ml may increase the risk of aspiration. Implement measures to reduce the risk of aspiration, but do not hold feeding for residual volumes less than 500 ml in the absence of other signs of intolerance (e.g., patient report of abdominal discomfort, bloating, gas, or vomiting).</p> <p>Residual volume should be checked again in 1 hour and trends of elevated gastric residual volume should be closely monitored and reported to the ordering practitioner. Glycemic control, sedation, and use of promotility agents should be evaluated to determine whether the patient is tolerating the feeding.</p>
<p>6. Initiate feeding at ordered volume, frequency, and rate on pump or with roller clamp.</p> <p>a. Intermittent administration:</p> <p>i. Pinch proximal end of feeding tube and remove cap.</p> <p>ii. Attach distal end of primed administration set tubing to proximal end of feeding tube.</p> <p>Ensure that administration sets and feeding tubes do not have Luer-lok connections or adapters and that the administration set is labeled as "Tube feeding only" to prevent</p>	<p>Once patient's condition is stable and feeding tolerance has been established, various schedules for intermittent administration may be used to meet patient's nutritional goals while freeing him or her from attachment to a continuous delivery system. For example, this method can be used to achieve the majority of calorie goals during the night while encouraging the patient to consume oral intake during the day.</p> <p>Closing the tube prevents excessive air from entering patient's stomach and leakage of gastric contents.</p>



<p>inadvertent administration of formula into IV access.</p> <p>iii. Set rate using a tube feeding pump or by adjusting the administration set roller clamp and allowing bag to empty gradually over 30 to 60 minutes or as ordered.</p> <p>b. Continuous drip administration:</p> <p>i. Connect distal end of primed administration set tubing to proximal end of feeding tube as described in the preceding steps.</p> <p>ii. Connect tubing through tube feeding pump (if not already in place), open roller clamp on tubing, set rate on pump, turn on pump, and check alarm function.</p>	<p>Gradual emptying of feeding bag by gravity reduces risk for abdominal discomfort, vomiting, or diarrhea induced by a too-rapid bolus or infusion of tube feeding.</p> <p>Continuous feeding method is designed to deliver a prescribed hourly rate of feeding. This method reduces risk for GI intolerance.</p> <p>Feeding pump delivers continuous feeding at a steady rate and pressure and sounds alarm when resistance increases. Use pumps, tubing, and connectors designated for tube feeding (not IV fluids).</p>
<p>7. Gradually advance the rate of tube feeding concentration.</p>	<p>Gradual advances prevent diarrhea and gastric intolerance to formula. Stable patients tolerate a fairly rapid progression of enteral nutrition and should be able to tolerate the established goal within 24 to 48 hours of initiation.</p>
<p>8. Keep the head of the bed elevated at 30 to 45 degrees in the following circumstances:</p> <p>a. During intermittent and continuous enteral feeding administration</p> <p>b. After a bolus or intermittent feeding, or after a continuous feeding is stopped for any reason</p>	<p>Elevating the head of the bed minimizes aspiration risk.</p>



<p>9. Flush feeding tube with 15 to 30 ml water following bolus or intermittent infusion, medication administration, or every 4 hours throughout continuous infusion.</p> <p>Use sterile water for all tube flushes for immunocompromised or critically ill patients.</p> <p>Frequent aspiration of gastric contents and frequent administration of medications without adequate flushing increases clogging of feeding tubes.</p>	<p>Flushing the tube provides patient with water to help maintain fluid and electrolyte balance. It also clears tubing of formula, maintaining patency.</p>
<p>10. Clamp and cap the proximal end of the feeding tube if the patient is receiving intermittent tube feedings.</p>	<p>Clamping prevents air from entering stomach between feedings. Cap prevents contamination of the tubing.</p>
<p>11. For reusable pump sets or bags, remove unused formula and rinse bag and tubing with warm water, before adding a new volume of formula, every 8 hours, and whenever feedings are interrupted.</p>	<p>Rinsing bag and tubing with warm water clears old tube feeding formula and reduces risk of bacterial growth.</p>
<p>Use sterile water for all flushes for immunocompromised or critically ill patients.</p> <p>12. Discard supplies, remove gloves, and perform hand hygiene</p>	
<p>13. Document the procedure in the patient's record.</p>	



MONITORING AND CARE

1. Maintain the patient in an upright position following feeding.	
2. Measure residual volume every 4 to 6 hours or per institution policy. Once the patient tolerates enteral nutrition at the prescribed goal for 24 to 48 hours, frequency of monitoring can be decreased to every 6 to 8 hours in non-critically ill patients or as needed (i.e., if assessment findings suggest intolerance).	Rationale: Measuring residual volume evaluates tolerance of tube feeding.
3. Monitor fingerstick blood glucose levels as ordered, especially for patients at risk for glycemic shifts (e.g., diabetes, renal failure).	
4. Monitor intake and output and calculate fluid balance per unit policy or as ordered.	
5. Consult practitioner for orders regarding supplemental electrolyte-free water	Rationale: Most enteral formulas do not contain sufficient electrolyte-free water to meet the average patient's needs. However, hospitalized patients who are afebrile, not eating, and physically inactive may require less supplemental electrolyte-free water than patients with a higher metabolism.
6. Weigh patient daily until caloric intake goals are met and tolerance is established, then weigh less frequently per institution policy or practitioner order.	Rationale: Frequency of monitoring should depend on severity of illness, level of metabolic stress, and degree of malnutrition. Gradual weight gain is an indicator of improved nutritional status; however, sudden weight gain in a short period usually indicates fluid retention.
7. Monitor laboratory values.	
8. Observe patient's respiratory status.	Rationale: Change in respiratory status may indicate aspiration of feeding formula. Notify practitioner for further evaluation.
9. Observe patient's level of comfort.	Rationale: Reduced gastric emptying leads to abdominal discomfort.

ENTERAL FEEDING



10. Assess, treat, and reassess pain according to institution standard.	
11. Auscultate bowel sounds and look for trends and changes.	Rationale: Bowel sounds indicate status of gastric peristalsis. Trends are more important than an isolated assessment finding.
12. For tube placed through the abdominal wall, inspect site for signs of impaired skin integrity.	Rationale: Enteral tubes may cause pressure and excoriation at the insertion site.
13. Change formula as follows: a. Open tube feeding system: Every 8 hours b. Prefilled formula containers in a closed system: Every 24 to 48 hours (per manufacturer's guidelines)	Rationale: Changing the formula, tubing, and tube feeding container as recommended decreases risk for bacterial colonization.
14. Change tube feeding container and tubing every 24 hours for open tube feeding system. Change tubing every time a new prefilled container is hung in a closed tube feeding system.	
15. If patient experiences more than three liquid stools in 24 hours, evaluate medications for contributing causes, such as hyperosmolar solutions, antibiotics, or side effects.	

EXPECTED OUTCOMES

- Patient achieves prescribed caloric goal in 24 to 48 hours.
- Patient's fluid and electrolyte levels are balanced.
- Patient experiences slow increase in weight.

UNEXPECTED OUTCOMES

- The feeding tube leaks or becomes clogged or contaminated by microorganisms. Gastric residual volume exceeds 500 ml or ordered amount.
- Patient aspirates formula.
- Patient shows signs of respiratory distress.



- Patient develops more than three liquid stools in 24 hours.
- Patient develops nausea and vomiting, which may indicate gastric ileus.
- Patient develops signs of intolerance or dumping syndrome, including abdominal discomfort, bloating, gas, or vomiting.
- Skin around gastrostomy or jejunostomy site breaks down.

DOCUMENTATION

- Amount, type, frequency, and rate of feeding
- Patient's response to tube feeding
- Abdominal assessment
- Patency of tube
- Condition of skin at tube site if placed in abdominal wall
- Amount of any additional water
- Flush volume, frequency, and rate
- Patient and family education

PEDIATRIC CONSIDERATIONS

- Additional precautions are recommended for infant and pediatric patients receiving enteral nutrition (e.g., reconstituted powdered formula, human breast milk, and enteral formula with additives) should have a hang time of only 4 hours, and administration sets for breast milk should be changed every 4 hours.
- For pediatric patients receiving continuous feedings, assess the residual volume with routine vital signs, at least every 4 hours, according to unit policy, or as ordered.
- If long-term enteral nutrition is anticipated, oral stimulation should be initiated for children who will have limited or no oral intake during the first 2 years of life to enhance later feeding skills and speech.

GERONTOLOGICAL CONSIDERATIONS

- Some older adults, especially those with conditions such as diabetes or Parkinson's disease, may experience delayed gastric emptying, so formula remains in the stomach longer.
- Gastric residual checks are of special importance in patients with impaired cognition to decrease the risk for aspiration during gastric feeding.



HOME CARE CONSIDERATIONS

- Instruct primary caregiver and/or patient to monitor intake and output using household measuring devices.
- Ask patient or caregiver about any symptoms or discomfort during enteral feedings. Reinforce instruction to contact nurse if symptoms of discomfort occur.
- Teach patient or primary caregiver how to do skin care around the gastrostomy or jejunostomy tube and about signs and symptoms of infection at insertion site.



REFERENCES

Levels of Evidence

1. American Association of Critical Care Nurses (AACN). (2009). AACN Practice Alert: Verification of feeding tube placement (blindly inserted). Retrieved August 3, 2013, from http://www.aacn.org/WD/Practice/Docs/PracticeAlerts/Verification_of_Feeding_Tube_Placement_05-2005.pdf ([Level VII](#))
2. American Association of Critical Care Nurses (AACN). (2011). AACN Practice Alert: Prevention of aspiration. Retrieved August 3, 2013, from <http://www.aacn.org/wd/practice/content/practicealerts/aspiration-practice-alert.pcms?menu=practice> ([Level VII](#))
3. Bankhead, R. and others. (2009). Enteral nutrition practice recommendations. *Journal of Parenteral & Enteral Nutrition*, 33(2), 122-167. doi:10.1177/0148607108330314 ([Level VII](#))
4. Best, C. Enteral tube feeding and infection control: How safe is our practice? (2008). *British Journal of Nursing*, 17(16), 1036-1041.
5. Btaiche, I.F. and others. (2010). Critical illness, gastrointestinal complications, and medication therapy during enteral feeding in critically ill adult patients. *Nutrition in Clinical Practice*, 25(1), 32-49. doi:10.1177/0884533609357565
6. Chen, Y., Peterson, S.J. (2009). Enteral nutrition formulas: Which formula is right for your adult patient? *Nutrition in Clinical Practice*, 24(3), 344-355. doi:10.1177/0884533609335377 ([Level V](#))
7. Corkins, M.R. and others. (2013). Standards for nutrition support: Pediatric hospitalized patients. *Nutrition in Clinical Practice*, 28(2), 263-276. doi:10.1177/0884533613475822 ([Level VII](#))
8. DeLegge, M.H. (2011). Managing gastric residual volumes in the critically ill patient: An update. *Current Opinion in Clinical Nutrition and Metabolic Care*, 14(2), 193-196.
9. Institute for Safe Medication Practices (ISMP). (2010). Medication Safety Alert: Preventing errors when administering drugs via an enteral feeding tube. Retrieved July 31, 2013, from <http://www.ismp.org/newsletters/acutecare/articles/20100506.asp> ([Level VII](#))
10. Itkin, M. and others. (2011). Multidisciplinary practical guidelines for gastrointestinal access for enteral nutrition and decompression from the Society of Interventional Radiology and American Gastroenterological Association (AGA) Institute, with endorsement by Canadian Interventional Radiological Association (CIRA) and Cardiovascular and Interventional Radiological Society of Europe (CIRSE). *Gastroenterology*, 141(2), 742-765. doi:10.1053/j.gastro.2011.06.001 ([Level VII](#))
11. Juve-Udina, M.E. and others. (2009). To return or to discard? Randomised trial on gastric residual volume management. *Intensive & Critical Care Nursing*, 25(5), 258-267. doi:10.1016/j.iccn.2009.06.004 ([Level II](#))
12. Kenny, D.J., Goodman, P. (2010). Care of the patient with enteral feeding: An evidence-based protocol. *Nursing Research*, 59(Suppl. 1), S22-S31. doi:10.1097/NNR.0b013e3181c3bfe9 ([Level VI](#))
13. McClave, S.A. and others. (2009). Guidelines for the provision and assessment of nutrition support therapy in the adult critically ill patient: Society of Critical Care Medicine and American Society for Parenteral



and Enteral Nutrition. *Journal of Parenteral & Enteral Nutrition*, 33(3), 277-316. doi:10.1177/0148607109335234 ([Level VII](#))

14. Metheny, N.A. (2012). Preventing aspiration in older adults with dysphagia. *Try This: Best Practices in Nursing Care to Older Adults*, 20. Retrieved September 19, 2013, from http://consultgerirn.org/uploads/File/trythis/try_this_20.pdf ([Level VII](#))

15. Metheny, N.A. and others. (2008). Gastric residual volume and aspiration in critically ill patients receiving gastric feedings. *American Journal of Critical Care*, 17(6), 512-519. ([Level VI](#))

16. Metheny, N.A., Davis-Jackson, J., Stewart, B. (2010). Effectiveness of an aspiration risk-reduction protocol. *Nursing Research*, 59(1), 18-25. doi:10.1097/NNR.0b013e3181c3ba05 ([Level III](#))

17. Rayner, C.K., Horowitz, M. (2013). Physiology of the ageing gut. *Current Opinions in Clinical Nutrition and Metabolic Care*, 16(1), 33-38. doi:10.1097/MCO.0b013e31835acaf4

18. Schallom, M. and others. (2013). Gastroesophageal reflux in critically ill patients. *Dimensions in Critical Care Nursing*, 32(2), 69-77. doi:10.1097/DCC.0b013e318280836b

19. Shepherd, A. (2009). Nutrition support 1: Risk factors, causes and physiology of malnutrition. *Nursing Times*, 105(4), 18-20.

20. Szarka, L.A., Camilleri, M. (2009). Gastric emptying. *Clinical Gastroenterology and Hepatology*, 7(8), 823-827. doi:10.1016/j.cgh.2009.04.011

21. Ukleja, A. and others. (2010). Standards for nutrition support: Adult hospitalized patients. *Nutrition in Clinical Practice*, 25(4), 403-414. ([Level VII](#))

Adapted from Perry, A.G., Potter, P.A., Ostendorf, W.R. (2014). *Clinical nursing skills & techniques* (8th ed.). St. Louis: Mosby.



COMPETENCY-BASED CHECK OFF

TITLE: Enteral Feeding				
COMPETENCY STATEMENT: The nurse demonstrates competence in Enteral Feeding				
Standard: Access and Continuity of care				
Patient assessment				
Care of patients				
Quality, safety and environment				
Patient and Family Education				
PERFORMANCE CRITERIA:	4	3	2	1
Communication and Interpersonal Skills				
1. Displays effective verbal and non-verbal communication:				
a. Acknowledge the patient (Privacy, Dignity, Culturally sensitive caring, aware on patients' Bill of Rights)				
b. Introduce her/himself to the patient				
c. Verbalize the reason for the procedure/intervention				
d. Explain the duration and outcome of the procedure				
e. Educates patient and family / caregiver (where appropriate)				
Psychomotor Skill				
1. Performed hand hygiene before patient contact.				
2. Verified the correct patient using two identifiers per institution policy.				
3. Verified practitioner's order for formula, rate, route, and frequency.				
4. Performed hand hygiene and donned gloves.				



<p>5. Prepared feeding container and tubing, feeding pump set, or gravity bag as ordered.</p> <p>a. Checked formula expiration date and integrity of containers.</p> <p>b. Ensured tube feeding formula was at room temperature.</p> <p>c. Connected tubing of administration set to prefilled container, or prepared feeding pump set or gravity bag with tubing. Used aseptic technique when connecting and hanging.</p> <p>d. Shook formula containers well.</p> <p>e. If administering canned formula, wiped top with alcohol swab and allowed to dry before opening. When filling feeding container bag with formula, poured only amount needed for 8 hours of feeding.</p> <p>f. Labeled bag with patient information, enteral access type, and tube feeding type, strength, and amount. Included date, time, and preparer initials. Did not dilute or add additives to tube feeding formula.</p> <p>g. Opened roller clamp on tubing or used priming function on tube feeding pump to fill tubing with formula. Closed roller clamp, and capped end of tubing.</p> <p>h. Labeled administration set "Tube feeding only."</p> <p>i. Hung bag on feeding pole.</p>				
<p>6. For intermittent or bolus feeding, had a clean, enteral, large catheter-tip (non-Luer-lok) syringe ready.</p>				
<p>7. Placed patient in high-Fowler position or elevated head of bed 30 to 45 degrees.</p> <p>If patient must remain supine, placed in reverse Trendelenburg position.</p>				
<p>8. Verified tube placement. Obtained radiographic confirmation of correct placement before first use for feeding or if assessment findings suggested tube displacement.</p> <p>a. Attached catheter-tip 60-ml syringe to proximal end of feeding tube; aspirated secretions for evaluation of color and pH, per institution policy.</p> <p>b. Observed appearance of aspirate.</p> <p>c. Measured and documented pH per institution policy.</p>				
<p>9. Checked gastric residual volume before each feeding for intermittent feedings, and every 4 to 6 hours initially for continuous feedings.</p>				



<ul style="list-style-type: none"> a. Drew 30 ml air into catheter-tip 60-ml syringe, attached syringe to proximal end of feeding tube, and injected air. b. Slowly aspirated total amount of gastric contents. c. Returned aspirate to stomach unless volume exceeded 500 ml or other amount specified by institution policy or practitioner order. d. Flushed with 15 to 30 ml water. Flushed with sterile water for immunocompromised or critically ill patient. 				
<p>10. Initiated feeding at ordered volume, frequency, and rate.</p> <ul style="list-style-type: none"> a. Intermittent administration: <ul style="list-style-type: none"> i. Pinched proximal end of feeding tube and removed cap. ii. Attached distal end of primed administration set tubing to proximal end of feeding tube. Ensured that administration sets and feeding tubes did not have Luer-lok connections or adapters and that administration set was labeled as "Tube feeding only." iii. Set rate using tube feeding pump or by adjusting administration set roller clamp and allowing bag to empty gradually over 30 to 60 minutes or as ordered. b. Continuous drip administration: <ul style="list-style-type: none"> i. Connected distal end of primed administration set tubing to proximal end of feeding tube. ii. Connected tubing through tube feeding pump, opened roller clamp on tubing, set rate on pump, turned on pump, and checked alarm function. Used pumps, tubing, and connectors designated for tube feeding (not IV fluids). 				
<p>11. Gradually advanced the rate of tube feeding concentration.</p>				
<p>12. Kept head of bed elevated at 30 to 45 degrees as appropriate for patient.</p>				
<p>13. Flushed feeding tube with 15 to 30 ml water following bolus or intermittent infusion, medication administration, or every 4 hours throughout continuous infusion. Flushed with sterile water for immunocompromised or critically ill patient.</p>				
<p>14. Clamped and capped proximal end of feeding tube if patient was receiving intermittent feedings.</p>				



15.	For reusable pump sets or bags, removed unused formula and rinsed bag and tubing with warm water before adding a new volume of formula, every 8 hours, and whenever feedings were interrupted. Flushed with sterile water for immunocompromised or critically ill patient.				
16.	Maintained the patient in an upright position following feeding.				
17.	Assessed, treated, and reassessed pain according to institution standard.				
18.	Discarded supplies, removed gloves, and performed hand hygiene.				
19.	Documented the procedure in the patient's record.				
Critical Thinking					
1.	Responds appropriately to scenario and questions presented				
2.	Explains the concept of holistic care as related to the patient				
Documentation					
3.	Documents appropriately and inform the physician of any abnormality				

COMMENTS:

RN Signature: _____

ID# _____ Date: _____

Evaluators Signature: _____ ID# _____ Date: _____

Note:

During 'orientation' the Competency Based Check off is used as a reference only. When the competency is successfully completed the Assessor signs the Mandatory Competency Assessment Record (MCAR) and places it in the employee's file.

Should a learner be found not competent the learner will repeat the Competency Based Check Off and "Competency Not Met" forms are completed and placed in the employee's Portfolio.



مستشفى الملك عبدالله بن عبدالعزيز الجامعي
King Abdullah bin Abdulaziz University Hospital

Princess Nourah bint Abdulrahman University

جامعة الأميرة نورة بنت عبد الرحمن