

AMITY

HEALTHCARE GROUP

Enteral tube feeding, duodenal and jejunal, home care

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■ Introduction

An enteral feeding tube allows direct administration of nutrition, fluids, or medications into the GI system for patients who can't ingest these substances orally (such as those with dysphagia, neurologic impairment, or oral or esophageal cancer) but who have a functional GI tract.^{1|2|3|4} Enteral tube feeding also permits supplemental feedings in patients who can't ingest enough nutrition orally to meet their metabolic requirements or who have high nutritional requirements due to illness.¹

Duodenal or jejunal enteral tube feeding is indicated when a patient can't tolerate gastric enteral feedings, when the esophagus and stomach need to be bypassed (because of gastroesophageal reflux, gastroparesis, gastric outlet obstruction, or pancreatitis), or when a patient is at risk for aspiration because the formula bypasses the pylorus and delivers the feeding directly into the small intestine.^{1|2|5} A nasoduodenal or nasojejunal tube is recommended when the need for enteral nutrition is expected to be short-term (4 to 6 weeks). A surgically or endoscopically placed long-term jejunal access device (such as a jejunostomy tube) is recommended when the need for enteral nutrition is expected to be longer. However, nasoduodenal or nasojejunal tubes may be used long-term in some situations, such as in pediatric patients.¹

Duodenal or jejunal enteral tube feeding involves delivering a liquid nutrient formula directly to the duodenum or jejunum. Patients receive duodenal or jejunal enteral feedings slowly via an enteral pump on a continuous or cyclic (such as 12 hours overnight) basis because rapid delivery of formula into the intestine can cause feeding intolerance and associated dumping syndrome.^{1|3|5|6|7} Enteral nutrition formulas are prescribed with varying amounts of macronutrients, micronutrients, fluid, and fiber, depending on the patient's clinical condition and nutritional needs. However, because jejunal enteral tube feeding results in reduced pancreatic stimulation, the patient may require an elemental or hydrolyzed diet.^{1|4|5}

Enteral tube feeding is contraindicated in patients who have a bowel obstruction or other severe intestinal disease. Parenteral nutrition is an alternative means of nutrition for these patients.⁵ (See the "[Parenteral nutrition administration, home care](#)" procedure.)

Nursing care includes assessing and monitoring the patient and access device, administering home enteral nutrition, coordinating care with the interdisciplinary team (which may include practitioners, dietitians, pharmacists, speech and occupational therapists, and social workers), and teaching the patient and family how to administer home enteral nutrition independently.^{1|2|4}

■ Equipment

- Agency-approved disinfectant
- Disinfectant pad
- Enteral administration set
- Enteral feeding pump^{1|3|6}
- Enteral syringe (30 mL or larger)
- Fluid-impermeable pads or towel
- Gloves
- IV pole or wall hook
- Labels
- Prescribed enteral formula
- Stethoscope
- Tap or purified (sterile, distilled, ultrafiltrated, or ultraviolet light-treated) water¹
- Written educational materials
- Optional: enteral feeding bag, gown, mask with a face shield or a mask and goggles, oral care supplies, pH testing supplies, scale, tape measure

■ Preparation of Equipment

Inspect all equipment and supplies. If a product is expired, is defective, or has compromised integrity, remove it from patient use, label it as expired or defective, and report the expiration or defect as directed by your agency.

■ Implementation

- Review the referral information, plan of care, and previous visit documentation, if available.⁸
- Verify the practitioner's orders, noting the route of administration; enteral feeding device; prescribed enteral formula; administration method, volume, and rate; and type, volume, and frequency of water flushes.¹ ⁹ ¹⁰ ¹¹ ¹²
- Review the patient's medical record for the indication for enteral nutrition, pertinent laboratory test results, and X-ray confirmation of tube placement, if needed.¹ ⁷
- Gather and prepare the necessary equipment and supplies.
- Introduce yourself and state the purpose of your visit.
- Confirm the patient's identity using at least two patient identifiers.¹ ¹³
- Ask the patient and family (if appropriate) about any recent changes in the patient's health status, including practitioner visits, tests, and changes in medications, fluid intake, diet, and activity level.⁸ Also ask about any problems with the enteral feeding tube and signs and symptoms of enteral nutrition complications, such as exit site skin irritation or breakdown, GI distress (including nausea, vomiting, abdominal bloating, and diarrhea or constipation), and respiratory distress (including coughing, choking, and shortness of breath).¹ ² ⁴ ⁷ ¹⁴
- Explain the procedure to the patient and family (if appropriate) according to their individual communication and learning needs *to increase their understanding, allay their fears, and enhance cooperation*.¹⁵ ¹⁶ ¹⁷ ¹⁸
- Verify that the prescribed enteral formula has been stored according to the manufacturer's recommendations. Ensure that the formula is currently at room temperature *because feeding the patient room temperature formula may reduce the risk of cramps and diarrhea*.¹⁴
- Visually inspect the enteral feeding formula for damage to the container, altered formula characteristics, and the expiration date. Don't use the formula if integrity is compromised or if it's expired; instead, obtain a new container of the formula.¹
- Compare the label on the enteral feeding container to the order in the patient's medical record.¹
- Perform hand hygiene.¹ ¹⁹ ²⁰ ²¹ ²² ²³
- Organize equipment and supplies on a clean surface. Place a fluid-impermeable pad between the environment and equipment, if needed.¹ ¹⁹ ²⁴
- Weigh the patient and compare the current weight with previous measurements, as appropriate, *to identify weight changes, fluctuations, and trends*. Use the same scale and make sure that the patient wears similar clothing *to ensure consistency for accurate weight measurement*. As appropriate, measure the patient's height and other anthropometric measurements using a tape measure. (See the "[Weight measurement, home care](#)" procedure.)¹ ² ³ ⁴ ⁷
- Perform a nutrition-focused physical assessment *to identify signs of malnutrition and fluid imbalance, such as dry or brittle hair, skin wounds, dry eyes and mucous membranes, poor dentition, receding gums, edema, and ascites*. Review the patient's intake and output record, if indicated and available.¹ ⁴ ⁷ ²⁵ ²⁶ (See the "[Nutritional screening, home care](#)" and "[Hydration assessment, home care](#)" procedures.)
- Perform a GI assessment by auscultating the abdomen for the presence and characteristics of bowel sounds and palpating the abdomen for distention, masses, rigidity, and tenderness.¹ ⁴ ⁷
- Assist the patient to an upright or a semi-Fowler position *to reduce the risk of reflux and aspiration*.¹ ² ³ ⁷ ¹⁴ ²⁷
- Place a fluid-impermeable pad or towel on the patient's chest or abdomen, as appropriate, *to protect the patient's clothing from soiling*.¹
- Perform hand hygiene.¹ ¹⁹ ²⁰ ²¹ ²² ²³
- Put on gloves and, as needed, other personal protective equipment *to comply with standard precautions*.¹ ¹⁹ ²⁸ ²⁹ ³⁰ ³¹
- If using an open administration system, open the enteral feeding bag (with the enteral administration set tubing preattached) and pour the prescribed volume of enteral formula into the feeding bag. Pour only a premeasured 12-hour volume of enteral formula (or 4-hour volume if the formula is a reconstituted or

modular product) into the enteral feeding bag *because limiting the volume decreases the risk of bacterial growth in the formula*. If using a closed administration system, open the enteral administration set tubing and attach it to the enteral formula container. Replace the enteral administration set at the manufacturer's recommended interval, typically every 24 hours.¹¹⁴

- Hang the enteral feeding bag or enteral formula container on an IV pole or wall hook.¹¹⁴
- Prime the enteral administration set according to the manufacturer's recommendations *to minimize air delivery into the GI tract*.¹¹⁴
- Close the clamp on the enteral administration set.¹⁴
- Attach the enteral administration set tubing to the enteral feeding pump according to the manufacturer's instructions.¹¹⁴
- Label the enteral administration set and enteral formula container or feeding bag as directed by your agency.¹
- Verify enteral feeding tube placement by measuring the external tube length or observing the incremental marking at the tube exit site and comparing your finding with the external tube length or incremental marking at the exit site in the patient's medical record.¹⁷¹⁴ If the measurement or marking indicates a change from the information documented in the medical record, remove the cap from the distal end of the tubing, unclamp the tube, attach an enteral syringe to the enteral feeding tube, and then follow these steps *to verify enteral feeding tube placement*:
 - Aspirate the tube contents and inspect the aspirate's visual characteristics. Fasting gastric secretions commonly appear grassy-green, brown, or clear and colorless. Small-bowel aspirates are usually bile-stained. Aspirate from a tube that has perforated the pleural space typically has a pale yellow, serous appearance.¹
 - Measure the pH of the aspirate from the tube if your agency uses pH measurement. Fasting gastric pH is usually 5 or less, even in patients receiving gastric-acid inhibitors. Small-bowel aspirates have a higher pH than gastric aspirates. Fluid aspirated from a tube in the pleural space typically has a pH of 7 or higher.¹

◆ **Clinical alert:** If enteral feeding tube placement is in doubt after your assessment, don't use the tube and notify the practitioner.¹¹⁴◆

- After verifying enteral tube placement, flush the enteral tube with at least 30 mL of water, as ordered, *to confirm patency*. Monitor the patient closely throughout instillation. Stop the procedure immediately and notify the practitioner if the patient shows signs of distress. Subsequent flushing should occur at scheduled intervals (typically every 4 hours) during a continuous feeding in an adult patient. Purified water may be required for immunocompromised patients.¹¹⁴
- Connect the end of the enteral administration set tubing to the end of the feeding tube and make sure that it's secure *to prevent accidental disconnection of the tubing*.¹¹⁴
- Trace the tubing from the patient to its point of origin *to make sure that you're accessing the correct tube before beginning the tube feeding*.¹³²³³
- Open the enteral administration set clamp.
- Set the prescribed infusion rate and volume on the enteral feeding pump according to the manufacturer's instructions. Make sure that enteral feeding pump alarm limits are set according to the patient's current condition and that alarms are turned on, functioning properly, and audible.¹¹⁴
- Monitor the pump infusion rate *to ensure accurate delivery of the enteral formula*.
- Monitor the patient. If the patient experiences signs or symptoms of GI or respiratory distress, stop the feeding and notify the practitioner.¹⁴
- Instruct the patient to maintain an upright or a semi-Fowler position *to reduce the risk of reflux and aspiration*. If the patient is receiving a feeding overnight, ensure that the head of the bed is elevated at least 30 degrees.¹²³⁷¹⁴²⁷
- Assist the patient with oral care, as needed, *to promote comfort and reduce the bacterial burden in the mouth*.¹¹⁴
- Store the enteral formula according to the manufacturer's instructions. Prepared or opened ready-to-feed formulas can be stored in a refrigerator for up to 24 hours.¹
- Discard used supplies in appropriate receptacles.²⁹³⁰³⁴³⁵
- Remove and discard your gloves and, if worn, other personal protective equipment.³⁰

- Perform hand hygiene.^{1|19|20|21|22|23}
- Clean and disinfect your stethoscope with a disinfectant pad.^{36|37}
- Perform hand hygiene.^{1|19|20|21|22|23}
- Put on gloves and, as needed, other personal protective equipment *to comply with standard precautions*.^{28|29|30|31}
- Clean and disinfect other reusable equipment according to the manufacturer's instructions *to prevent the spread of infection*.^{1|14|36|38|39}
- Store clean equipment and supplies away from potential sources of contamination.¹
- Remove and discard your gloves and, if worn, other personal protective equipment.³⁰
- Perform hand hygiene.^{1|19|20|21|22|23}
- Provide emotional support to the patient and family (as appropriate) *because enteral nutrition can be distressing and disruptive and can negatively affect quality of life*. Encourage them to verbalize their thoughts and feelings; address their specific concerns, which may include discomfort, social isolation, and altered body image.^{1|2|3|4|6}
- Encourage the patient and family (if appropriate) to access resources, such as the Oley Foundation (www.Oley.org), a national nonprofit organization for home parenteral nutrition- and enteral nutrition-dependent people, caregivers, and clinicians that supports education, self-help, and research. Refer the patient to social services, as appropriate, *because the financial burden of long-term or permanent tube feeding can be devastating, even for a patient with health insurance*.^{1|2|4|6}
- Review progress toward the goals in the plan of care with the patient and family, as appropriate.^{8|40}
- Make arrangements for the next visit, as appropriate, and ensure that the patient and family have adequate supplies for self-care until then.
- Provide and review written educational materials, the visit schedule, and contact information in case concerns arise between visits.^{41|42|43|44}
- Report changes in the patient's condition and progress toward goals to the practitioner, as appropriate.^{45|46|47|48}
- Coordinate care with other services, such as pharmacy, nutrition, speech therapy, occupational therapy, and social work, as appropriate.^{1|3|4|6|49|50|51|52}
- Document the procedure.^{53|54|55|56}

■ Special Considerations

- The Joint Commission issued a sentinel event alert related to managing risk during transition to new International Organization for Standardization tubing standards that were designed to prevent dangerous tubing misconnections, which can lead to serious patient injury and death. During the transition, make sure to trace the tubing and catheter from the patient to the point of origin before connecting or reconnecting any device or infusion, at any care transition (such as a new setting or service), and as part of the handoff process; route tubes and catheters having different purposes in different standardized directions; when there are different access sites or several bags hanging, label the tubing at both the distal and proximal ends; use tubing and equipment only as intended; and store medications for different delivery routes in separate locations.³³

■ Patient Teaching

Teach the patient and family (as appropriate) about the enteral feeding tube, including the indication and goals of therapy. Instruct them on tube and site care; formula components, handling, and storage; the feeding regimen; and the use of feeding equipment and supplies. If the patient or a family member will manage the tube independently, teach the proper technique and have the patient or family member perform a return demonstration to identify any learning gaps, correct any misconceptions, and determine competency. (See [Using an enteral feeding tube at home](#).)



PATIENT TEACHING

USING AN ENTERAL FEEDING TUBE AT HOME

If the patient or a family member will manage home enteral nutrition independently, provide additional instruction, including hands-on training and return demonstration.^{1|4} Teach the patient and family member

how to:

- obtain equipment needed for home intubation
- secure the tube with tape or a securement device
- use a skin barrier at the access site and under the tube, dressing, and securement device (as indicated)
- verify tube placement
- flush and irrigate the tube
- administer enteral feedings via the tube, including formula preparation and storage
- administer medications via the tube (as appropriate)
- clean and store reusable supplies and equipment
- inspect the exit site for fluid leakage or other discharge and resulting skin irritation
- perform hand hygiene and other infection control measures
- provide comfort measures for the patient, including oral care and exit site skin care
- obtain a practitioner's order for local throat spray (if needed) or provide the patient with ice chips (as indicated for a nasogastric tube).

Instruct the patient or family member to contact the practitioner about:

- tube dislodgement, migration, or degradation
- tube occlusion that resists flushing using a back-and-forth motion with the syringe plunger (A pancreatic enzyme solution, an enzymatic declogging kit, or a mechanical device for clearing the tube may be ordered to resolve the occlusion.)
- signs and symptoms of respiratory distress, including coughing, choking, wheezing, grunting, and shortness of breath (Instruct the patient or family member to stop the tube insertion or feeding if these signs or symptoms occur and then notify the practitioner.)
- signs and symptoms of feeding intolerance, including nausea, vomiting, abdominal bloating, cramps, and diarrhea or constipation
- skin breakdown due to fluid leakage, pressure under the enteral tube, or adhesive use for device securement.

■ Complications

Complications associated with enteral tube feeding may include:

- site-related complications
 - fluid leakage
 - skin irritation
 - pressure injuries
 - infection
- tube-related complications
 - migration
 - dislodgement
 - occlusion
 - degradation
- GI complications
 - aspiration
 - nausea
 - vomiting
 - abdominal bloating
 - cramps

- diarrhea or constipation
- metabolic complications
 - fluid imbalance
 - electrolyte imbalances
 - hyperglycemia
 - dumping syndrome
 - refeeding syndrome.¹²³⁴⁷²⁷

■ Documentation

Documentation associated with enteral tube feeding includes:

- date and time of the enteral feeding
- all assessment findings
 - weight
 - nutrition and hydration status
 - GI status
- verification of tube placement
- tube patency
- amount and type of flushes used
- method, rate, and route of administration
- enteral feeding device
- type and volume of the enteral formula
- patient's tolerance of the procedure
 - patient's response to your interventions
- practitioner notification, if needed
 - date and time of notification
 - practitioner's name
 - information conveyed
 - information received
- teaching provided to the patient and family (if applicable)
 - their understanding of that teaching
 - any need for follow-up teaching.

This procedure has been co-developed and reviewed by
the National Association for Home Care & Hospice.



■ Related Procedures

- [Alternative feeding methods for the term neonate](#)
- [Enteral feeding tube insertion, gastric and duodenal](#)
- [Enteral feeding tube insertion, postpyloric, neonate](#)
- [Enteral feeding, continuous drip, pediatric](#)

- [Enteral feeding, gastrostomy feeding button](#)
- [Enteral feeding, gastrostomy feeding button, maintenance and reinsertion, pediatric](#)
- [Enteral gastric tube feedings, neonatal](#)
- [Enteral tube feeding, continuous, gastrostomy and jejunostomy](#)
- [Enteral tube feeding, duodenal and jejunal](#)
- [Enteral tube feeding, gastric](#)
- [Enteral tube feeding, gastric, home care](#)
- [Enteral tube feeding, intermittent or bolus, pediatric](#)
- [Enteral tube feeding, intermittent, gastrostomy and jejunostomy](#)

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(Rating System for the Hierarchy of Evidence for Intervention/Treatment Questions)

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Rating System for the Hierarchy of Evidence for Intervention/Treatment Questions

The following leveling system is from *Evidence-Based Practice in Nursing and Healthcare: A Guide to Best Practice* (2nd ed.) by Bernadette Mazurek Melnyk and Ellen Fineout-Overholt.

Level I: Evidence from a systematic review or meta-analysis of all relevant randomized controlled trials (RCTs)

Level II: Evidence obtained from well-designed RCTs

Level III: Evidence obtained from well-designed controlled trials without randomization

Level IV: Evidence from well-designed case-control and cohort studies

Level V: Evidence from systematic reviews of descriptive and qualitative studies

Level VI: Evidence from single descriptive or qualitative studies

Level VII: Evidence from the opinion of authorities and/or reports of expert committees

Modified from Guyatt, G. & Rennie, D. (2002). Users' Guides to the Medical Literature. Chicago, IL: American Medical Association; Harris, R.P., Helfand, M., Woolf, S.H., Lohr, K.N., Mulrow, C.D., Teutsch, S.M., et al. (2001). Current Methods of the U.S. Preventive Services Task Force: A Review of the Process. American Journal of Preventive Medicine, 20, 21-35.

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