

CHAPTER 54 *Nasogastric  
Intubation and  
Enteral Feedings*

Nasogastric intubation is the insertion of a nasogastric (NG) tube to manage gastrointestinal (GI) dysfunction and provide enteral nutrition via NG. Nurses also give enteral feedings through jejunal and gastric tubes.

*Nasogastric intubation*

An NG tube is a hollow, flexible, cylindrical device the nurse inserts through the nasopharynx into the stomach.

**INDICATIONS****Decompression**

- Removal of gases or stomach contents to relieve distention, nausea, or vomiting
- Tube types: Salem sump, Miller-Abbott, Levin

**Feeding**

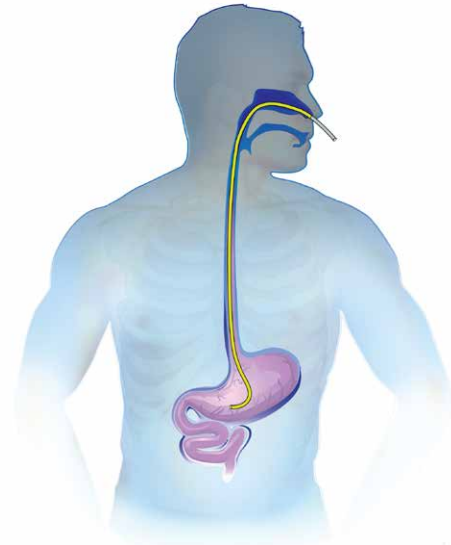
- Alternative to the oral route for administering nutritional supplements
- Tube types: Duo, Levin, Dobhoff

**Lavage**

- Washing out the stomach to treat active bleeding, ingestion of poison, or for gastric dilation
- Tube types: Ewald, Levin, Salem sump

**Compression**

- Using an internal balloon to apply pressure for preventing hemorrhage
- Tube type: Sengstaken-Blakemore

**54.1 Enteral feeding tube****54.2 Sengstaken-Blakemore tube**

## CONSIDERATIONS

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### PREPROCEDURE

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#### NURSING ACTIONS

- Review the prescription and purpose, plan for drainage or suction, and understand the need for placement for diagnostic purposes.
- Identify the client, and explain the procedure.
- Review the client's history (nasal problems, anticoagulants, previous trauma, past history of aspiration).
- Evaluate the client's ability to assist and cooperate.
- Establish a means of communication to signal distress, such as the client raising a hand. **Qpcc**
- Perform hand hygiene.
- Set up the equipment.
  - NG tube: selected according to the indication
  - Tape or use a commercial fixation device to secure the dressing
  - Clean gloves
  - Water-soluble lubricant
  - Topical anesthetic
  - Cup of water and straw
  - Catheter-tipped syringe, usually 30 to 60 mL
  - Basin to prepare for gag-induced nausea
  - pH test strip or meter to measure gastric secretions for acidity
  - Stethoscope
  - Disposable towel to maintain a clean environment
  - Clamp or plug to close the tubing after insertion
  - Suction apparatus if attaching the tube to continuous or intermittent suction
  - Gauze square to cleanse the outside of the tubing after insertion
  - Safety pin and elastic band or commercial device to secure the tubing and prevent accidental removal
- Position a disposable towel and basin.
- Provide privacy.

### INTRAPROCEDURE

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#### NURSING ACTIONS

- Auscultate for bowel sounds, and palpate the abdomen for distention, pain, and rigidity.
- Raise the bed to a level comfortable for the nurse.
- Assist the client to high-Fowler's position (if possible).
- Assess the nares for the best route to determine how to avoid a septal deviation or other obstruction during the insertion process.
- Use the correct procedure for tube insertion, wearing clean gloves, and evaluate the outcome.
- If the client vomits, clear the airway, and provide comfort prior to continuing. **Qs**
- Check placement. Aspirate gently to collect gastric contents, testing pH (4 or less is expected), and assess odor, color, and consistency.

- After placement verification, secure the NG tube on the nose, avoiding pressure on the nares.
  - Confirm placement with an x-ray. **QEBP**
  - Injecting air into the tube and then listening over the abdomen is not an acceptable practice.
- If the tube is not in the stomach, advance it 5 cm (2 in), and repeat the placement check.
- Clamp the NG tube, or connect it to the suction device.
- Salem sump tubing has a blue pigtail for negative air release. Do not insert any substance into the blue pigtail because it will break the seal and the tubing will leak.

### POSTPROCEDURE

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#### NURSING ACTIONS

- The insertion and maintenance of an NG tube is a nursing responsibility, but nurses may delegate measuring output, providing comfort, and giving oral care.
- For removal, wear clean gloves.
  - Inform the client of the prescription and process, emphasizing that removal is less stressful than placement.
  - Measure and record any drainage, assessing it for color, consistency, and odor.
  - Ensure comfort. **Qpcc**
  - Document all relevant information.
    - Tubing removal and condition of the tube
    - Volume and description of the drainage
    - Abdominal assessment, including inspection, auscultation, percussion, and palpation
    - Last and next bowel movement and urine output

## COMPLICATIONS

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### *Excoriation of nares and stomach*

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- Apply water-soluble lubricant to the nares as necessary.
- Assess the color of the drainage. Report dark, coffee-ground, or blood-streaked drainage immediately.
- Consider switching the tube to the other naris.

### *Discomfort*

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- Rinse the mouth with water for dryness.
- Throat lozenges can help.
- Provide oral hygiene frequently.

### *Occlusion of the NG tube leading to distention*

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- Irrigate the tube per the facility's protocol to unclog blockages. Use tap water with enteral feedings. Have the client change position in case the tip of the tube is against the stomach wall.
- Verify that suction equipment functions properly.

# Enteral feedings

Enteral feeding is a method of providing nutrients to clients who cannot consume foods orally.

## ENTERAL FORMULAS

**Polymeric:** 1 to 2 kcal/mL

- Milk-based, blenderized foods
- Whole-nutrient formulas, either commercial or from the dietary department
- Only for clients whose GI tract can absorb whole nutrients

**Modular formulas:** 3.8 to 4 kcal/mL

- Single-macronutrient preparation
- Not nutritionally complete
- Supplement to other foods

**Elemental formulas:** 1 to 3 kcal/mL

- Predigested nutrients
- Not nutritionally complete
- Easier for a partially dysfunctional GI tract to absorb

**Specialty formulas:** 1 to 2 kcal/mL

- For meeting specific nutritional needs
- Not nutritionally complete
- Primarily for clients who have hepatic failure, respiratory disease, or HIV infection

## ENTERAL ACCESS TUBES

Gastroparesis, esophageal reflux, or a history of aspiration pneumonia generally requires intestinal placement.

**Nasogastric or nasointestinal**

- Therapy duration less than 4 weeks
- Inserted via the nose

**Gastrostomy or jejunostomy**

- Therapy duration longer than 4 weeks
- Inserted surgically

**Percutaneous endoscopic gastrostomy or jejunostomy**

- Therapy duration longer than 4 weeks
- Inserted endoscopically

## INDICATIONS

- Critical illness/trauma
- Neurological and muscular disorders: brain neoplasm, stroke, dementia, myopathy, Parkinson's disease
- Cancer that affects the head and neck, upper GI tract
- GI disorders: enterocutaneous fistula, inflammatory bowel disease, mild pancreatitis
- Respiratory failure with prolonged intubation
- Inadequate oral intake

## CONSIDERATIONS

### PREPARATION OF THE CLIENT

#### NURSING ACTIONS

- Review the prescription. Generally, the provider and dietary staff consult to determine the type of tube feeding formula. **Qpcc**
- Set up the equipment.
  - Feeding bag
  - Tubing
  - 30- to 60-mL syringe (compatible with the tubing)
  - Stethoscope
  - pH indicator strip
  - Infusion pump (if not a gravity drip)
  - Appropriate enteral formula
  - Irrigant solution: sterile or tap water, according to the facility's policy
  - Clean gloves
  - Supplies for blood glucose (if protocol or prescription indicates)
  - Suction equipment to use in case of aspiration

### ONGOING CARE

#### NURSING ACTIONS

- Prepare the formula, tubing, and infusion device.
  - Check expiration dates, and note the content of the formula.
  - Ensure that the formula is at room temperature.
  - Set up the feeding system via gravity or pump.
  - Mix or shake the formula, fill the container, prime the tubing, and clamp it.
- Assist the client to Fowler's position, or elevate the head of the bed to a minimum of 30°.
- Auscultate for bowel sounds.
- Monitor tube placement.
  - Check gastric contents for pH. A good indication of appropriate placement is obtaining gastric contents with a pH between 0 and 4.
  - Aspirate for residual volume. **Qs**
  - Note the appearance of the aspirate.
  - Return aspirated contents, or follow the facility's protocol.
- Flush the tubing with at least 30 mL tap water.
- Administer the formula.
  - **Intermittent feeding**
    - Prepare the formula and a 60-mL syringe.
    - Remove the plunger from the syringe.
    - Hold the tubing above the instillation site.
    - Open the stopcock on the tubing, and insert the barrel of the syringe with the end up.
    - Fill the syringe with 40 to 50 mL formula.
    - If using a feeding bag, fill the bag with the total amount of formula for one feeding, and hang it to drain via gravity until empty (about 30 to 45 min).
    - If using a syringe, hold it high enough for the formula to empty gradually via gravity.
    - Continue to refill the syringe until the amount for the feeding is instilled. Follow with at least 30 mL tap water to flush the tube and prevent clogging.

- **Continuous-drip feeding**
  - Connect the feeding bag system to the feeding tube.
  - If using a pump, program the instillation rate, and set the total volume to instill.
  - Start the pump.
  - Flush the enteral tubing with at least 30 mL irrigant, usually tap water, every 4 to 6 hr, and check tube placement again.
  - Monitor intake and output, and include 24-hr totals.
  - Monitor capillary blood glucose every 6 hr until the client tolerates the maximum administration rate for 24 hr.
  - Use an infusion pump for intestinal tube feedings.
  - Follow the manufacturer's recommendations for formula hang time. Refrigerate unused formula, and discard after 24 hr.
  - Check gastric residual every 4 to 8 hr. Each facility's protocol specifies the actions to take for the amount of residual. **Qs**
  - Do not delegate this skill to assistive personnel.

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## COMPLICATIONS

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### *Gastric residual exceeds 250 mL for each of two consecutive assessments*

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#### NURSING ACTIONS

- Withhold the feeding.
- Notify the provider.
- Keep the client in semi-Fowler's position.
- Recheck residual in 1 hr.

### *Diarrhea three times or more in a 24-hr period*

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#### NURSING ACTIONS

- Slow the instillation rate.
- Notify the provider.
- Confer with the dietitian.
- Provide skin care and protection.

## *Nausea or vomiting*

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#### NURSING ACTIONS

- Slow the instillation rate.
- Keep the head of the bed at 30°.
- Make sure the formula is at room temperature.
- Turn the client to the side.
- Notify the provider.
- Check the tube's patency.
- Aspirate for residual.
- Auscultate for bowel sounds.
- Obtain a chest x-ray.

## *Aspiration of formula Qs*

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#### NURSING ACTIONS

- Withhold the feeding.
- Turn the client to the side.
- Suction the airway.
- Provide oxygen if indicated.
- Monitor vital signs for elevated temperature.
- Monitor for decreased oxygen saturation or increased respiratory rate.
- Auscultate breath sounds for increased congestion.
- Notify the provider.
- Obtain a chest x-ray.

## *Skin irritation around the tubing site*

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#### NURSING ACTIONS

- Provide a skin barrier for any drainage at the site.
- Monitor the tube's placement.

## Application Exercises

1. A nurse is delivering an enteral feeding to a client who has an NG tube in place for intermittent feedings. When the nurse pours water into the syringe after the formula drains from the syringe, the client asks the nurse why the water is necessary. Which of the following responses should the nurse make?
  - A. "Water helps clear the tube so it doesn't get clogged."
  - B. "Flushing helps make sure the tube stays in place."
  - C. "This will help you get enough fluids."
  - D. "Adding water makes the formula less concentrated."
2. A nurse is caring for a client who is receiving continuous enteral feedings. Which of the following nursing interventions is the highest priority when the nurse suspects aspiration of the feeding?
  - A. Auscultate breath sounds.
  - B. Stop the feeding.
  - C. Obtain a chest x-ray.
  - D. Initiate oxygen therapy.
3. A nurse is preparing to instill an enteral feeding for a client who has an NG tube in place. Which of the following actions is the nurse's highest assessment priority before performing this procedure?
  - A. Check how long the feeding container has been open.
  - B. Verify the placement of the NG tube.
  - C. Confirm that the client does not have diarrhea.
  - D. Make sure the client is alert and oriented.
4. A nurse is caring for a client in a long-term care facility who is receiving enteral feedings via an NG tube. Which of the following actions should the nurse complete prior to administering the tube feeding? (Select all that apply.)
  - A. Auscultate bowel sounds.
  - B. Assist the client to an upright position.
  - C. Test the pH of gastric aspirate.
  - D. Warm the formula to body temperature.
  - E. Discard any residual gastric contents.
5. A nurse is preparing to insert an NG tube for a client who requires gastric decompression. Which of the following actions should the nurse perform before beginning the procedure? (Select all that apply.)
  - A. Review a signal the client can use if feeling any distress.
  - B. Lay a towel across the client's chest.
  - C. Administer oral pain medication.
  - D. Obtain a Dobhoff tube for insertion.
  - E. Have a petroleum-based lubricant available.

### PRACTICE Active Learning Scenario

A nurse is teaching a group of nursing students about administering enteral feedings. Use the ATI Active Learning Template: Nursing Skill to complete this item.

**INDICATIONS:** List at least four indications for enteral feedings.

**NURSING INTERVENTIONS (INTRAPROCEDURE):** List the steps of administering an enteral feeding.

# Application Exercises Key

- A. **CORRECT:** The nurse should flush the tube after instilling the feeding to help keep the NG tube patent by clearing any excess formula from the tube so that it doesn't clump and clog the tube.

B. The nurse should tape a securing device, not flush the tube with water, to help maintain the position of the NG tube.

C. The nurse should administer additional fluids. The small amount used for flushing the NG tube will not be adequate.

D. The nurse should contact the dietary staff to prepare formula according to the prescription before the nurse instills it.

**N** NCLEX® Connection: Reduction of Risk Potential, Potential for Alterations in Body Systems
- A. The nurse should listen to breath sounds whenever there is suspicion of the client aspirating. However, another assessment is the priority.

B. **CORRECT:** The greatest risk to the client is aspiration pneumonia. The first action the nurse should take is to stop the feeding so that no more formula can enter the lungs.

C. The nurse should obtain a chest x-ray whenever there is suspicion of the client aspirating. However, another assessment is the priority.

D. The nurse should initiate oxygen therapy whenever there is suspicion of the client aspirating. However, another assessment is the priority.

**N** NCLEX® Connection: Reduction of Risk Potential, Potential for Complications of Diagnostic Tests/Treatments/Procedures
- A. Checking that the container has not exceeded its expiration date, either for having it open or for opening it, is important. However, there is a higher assessment priority among these options.

B. **CORRECT:** The greatest risk to the client receiving enteral feedings is injury from aspiration. The priority nursing assessment before initiating an enteral feeding is to verify proper placement of the NG tube.

C. The nurse should assess the client for any possible complications of enteral feedings, such as diarrhea. However, there is another assessment that is the priority.

D. The nurse should determine the client's level of consciousness as an assessment parameter that is ongoing and should precede any procedure. However, another assessment is the priority.

**N** NCLEX® Connection: Reduction of Risk Potential, Potential for Complications of Diagnostic Tests/Treatments/Procedures
- A. **CORRECT:** The nurse should auscultate for bowel sounds, because the client's gastrointestinal tract might not be able to absorb nutrients. The nurse should then withhold feedings and notify the provider.

B. **CORRECT:** The nurse should place the client in an upright position, with at least a 30° elevation of the head of the bed. Upright positioning helps prevent aspiration.

C. **CORRECT:** Before administering enteral feedings, the nurse should verify the placement of the NG tube. The only reliable method is x-ray confirmation, which is impractical prior to every feeding. Testing the pH of gastric aspirate is an acceptable method between x-ray confirmations.

D. The nurse should have the enteral formula at room temperature before administering the enteral feeding.

E. The nurse should return the residual to the client's stomach, unless the volume of gastric contents is more than 250 mL or the facility has other guidelines in place.

**N** NCLEX® Connection: Reduction of Risk Potential, Potential for Complications of Diagnostic Tests/Treatments/Procedures
- A. **CORRECT:** The nurse should establish a means for the client to communicate that she wants to stop the procedure, before inserting an NG tube.

B. **CORRECT:** The nurse should place a disposable towel across the client's chest to provide for a clean environment and protect the client's gown from becoming soiled.

C. Because the purpose of the procedure is to remove stomach contents, the procedure would also remove the oral pain medication.

D. The nurse should plan to use the prescribed type of tube for gastric decompression, which is a Salem sump, Miller-Abbott, or Levin. A Dobhoff tube is for feeding.

E. The nurse should plan to use a water-based lubricant to reduce complications from aspiration.

**N** NCLEX® Connection: Reduction of Risk Potential, Potential for Complications of Diagnostic Tests/Treatments/Procedures

## PRACTICE Answer

### Using the ATI Active Learning Template: Nursing Skill

#### INDICATIONS

- Critical illness, trauma
- Neurological and muscular disorders: brain neoplasm, cerebrovascular accident, dementia, myopathy, Parkinson's disease
- GI disorders: enterocutaneous fistula, inflammatory bowel disease, mild pancreatitis
- Respiratory failure with prolonged intubation
- Inadequate oral intake

#### NURSING INTERVENTIONS (INTRAPROCEDURE)

- Prepare the formula and a 60 mL syringe.
- Remove the plunger from the syringe.
- Hold the tubing above the instillation site.
- Open the stopcock on the tubing, and insert the barrel of the syringe with the end up.
- Fill the syringe with 40 to 50 mL formula.
- If using a feeding bag, fill the bag with the total amount of formula for one feeding, and hang it to drain via gravity until empty (about 30 to 45 min).
- If using a syringe, hold it high enough for the formula to empty gradually via gravity.
- Continue to refill the syringe until the amount for the feeding is instilled.
- Follow with at least 30 mL tap water to flush the tube and prevent clogging.

**N** NCLEX® Connection: Reduction of Risk Potential, Potential for Complications of Diagnostic Tests/Treatments/Procedures