

Administering Medication Through an Enteral Tube

Purpose

An enteral access device is a tube inserted through the nose or mouth, or percutaneously through the abdominal wall, that terminates in the stomach or small intestine. Medications are administered through an [enteral access device](#) for patients who are able to absorb medications via the GI tract yet are unable to swallow or otherwise take in medications via the mouth.

Red Flags

- Understand administering medication via an enteral access device that is displaced can result in patient discomfort and injury (for example, nausea, abdominal distention, gastric reflux, and aspiration) and can impact drug absorption and bioavailability. ¹
- Recognize retrograde tube dislodgement can inadvertently direct medications into respiratory tract, leading to aspiration, aspiration pneumonia, and death. ¹
- Immediately report signs of abdominal pain, nausea, vomiting, diarrhea, and absence of stools to treating clinician, as these are indications of enteral access device migration. ²
- Be aware poor adherence to safe enteral access device medication administration practices or administering a medication via a route for which it is not licensed can result in legal liability, patient injury, malfunctioning of enteral access device, drug-tube interactions, and death. ¹
- **Do not** routinely check gastric residual volume (GRV). Only monitor GRV as ordered or indicated, such as to assess feeding tolerance during initiation of enteral nutrition therapy or when other signs of feeding intolerance are present such as abdominal firmness, feeling of fullness, nausea, vomiting, diarrhea and/or large gastric residual volume. ^{1, 7}

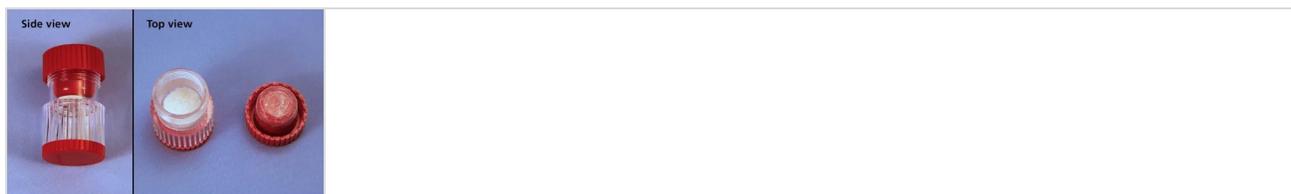
Procedure

SUPPLIES



- Nonsterile gloves

- Additional [personal protective equipment](#) if you anticipate exposure to biohazards, such as bodily fluids and respiratory droplets/aerosols
- Medication administration record
- Pain assessment tool, facility-approved
- Catheter-tip syringe of appropriate size (30-60 mL) or irrigation set (size of syringe will depend on size/age of patient)
- pH indicator strips and medicine cup
- Sterile water for flushing tube
- Irrigation tray, including catheter-tipped syringe of appropriate size (30-60 mL)
- Graduated container of appropriate size (medicine cup, measuring cup) to permit accurate measurement of diluent/solvent (highly concentrated liquid medications can cause mucosal irritation and osmotic diarrhea; the appropriate type and volume of solvent should always be verified prior to administration)
- Appropriate volume of sterile water
- Warmed solvent to dissolve dry or gelatin medication
- Sterile tongue blade or other sterile device for mixing medication and diluent/solvent
- Prescribed medication(s)
- Pill crusher or mortar and pestle for tablets



- Oral/enteral catheter-tipped syringe marked “oral/enteral use only” in appropriate size (do not use large volume syringe to measure small volume of medication due to risk of inaccurate measurement)
- Protective barrier for patient, such as towel or waterproof linen-saver pad

PREPROCEDURE STEPS



1. Check care plan, treating clinician orders, and facility practice on administering medications through an [enteral access device](#). Plan to administer stat medications within 30 minutes of time ordered.

2. Review patient's medical history/medical record for:
 - Indications for medication administration
 - Type, entry point, distal site, and size of enteral access device in place ¹
 - Information about any hepatic, renal, pulmonary, metabolic, or GI disorders that may impact medication administration or fluid volume instillation (be mindful of these restrictions when determining optimal volume of solvent and flush solution to be used)
 - Medication use
 - Labs/other diagnostic test results
 - Allergies (use alternatives, as appropriate) Notify treating clinician immediately if patients have a known drug allergy or contraindications to use alternatives.
3. Consult with pharmacist regarding safety and efficacy of administering prescribed medication via enteral access device. Confirm:
 - Bioavailability of medication if administered via patient's enteral access device ³
 - Route suitability
 - Drug and dosage form suitability
 - Recommended instructions for preparing medication for instillation through tube (note that any allergenic, cytotoxic, carcinogenic, or teratogenic drugs should be crushed by pharmacist under highly controlled conditions and only when necessary)
4. Inform pharmacist of any nutrition being instilled via enteral access device and determine duration of time to hold feeding prior to and following administration of medication.
5. Complete any preprocedure testing (for example, serum blood glucose analysis).
6. Stop any infusing nutrition, allowing sufficient time for stomach/duodenum/jejunum to empty, if necessary.
7. Follow [standard preprocedure steps](#), as appropriate. ^{4, 5, 6}

PROCEDURE STEPS



1. Perform hand hygiene and put on nonsterile gloves.
2. Raise bed to a comfortable working position. Elevate head of bed (HOB) a minimum of 30°, unless contraindicated.
3. Lower bedside rail for better access to enteral access device.
4. Auscultate bowel sounds over all abdominal quadrants.

5. Palpate for tenderness and distention. ³
6. Ask about bowel patterns and verify patient has had a bowel movement within past 3 days.
7. Assess for pain or tenderness, leaking, signs/symptoms of infection, and for skin breakdown. ³
8. Verify tube is anchored in place using sutures, inflated retention balloon, tape, and/or tube fixation device.
9. Verify enteral access device placement prior to medication administration, per facility practice.
10. Perform abdominal x-ray immediately after enteral access device insertion and prior to initial use. Understand radiographic confirmation is most definitive method of establishing placement but only if it shows full course of tube and location of all ports.
11. Observe for a change in position of external marking on tube or length of tube extending from stoma.
12. Use recommended methods to [verify placement of enteral access device](#). ^{7, 8, 9, 10}
13. Aspirate 5-10 mL of gastric or intestinal secretions and assess aspirate. If enteral nutrition has been infusing continuously, do not check aspirate unless tube feeding was held (for other reasons) for 30-60 minutes beforehand. ^{3, 7, 8, 9, 10}
14. Visually inspect gastric or intestinal secretions.
 - Intestinal secretions are often brown- or yellow-colored due to bile.
 - Gastric secretions typically appear clear and colorless or pale yellow or green.
15. Perform pH analysis by gently mixing aspirate in syringe.
 - a. Apply some aspirate to pH indicator strip (or dip pH indicator strip into medicine cup containing aspirate, per manufacturer instructions).
 - b. Compare color on pH strip with color on chart provided by manufacturer.
16. Check for [gastric residual volume](#) using a 60-mL syringe connected to feeding tube connector. Slowly pull back plunger to aspirate gastric content prior to administering medication(s). If gastric residual volume amount is more than 250 mL (or as indicated in facility policy), withhold medication and contact treating clinician. ²
17. **Do not** routinely check gastric residual volume (GRV). Only monitor GRV as ordered or indicated, such as to assess feeding tolerance during initiation of enteral nutrition therapy or when other signs of feeding intolerance are present such as abdominal firmness, feeling of fullness, nausea, vomiting, diarrhea and/or large gastric residual volume. ^{1, 7}

18. Flush tube with 15 mL of [sterile water](#) (use more or less water as indicated in treating clinician's order or facility-specific practice, depending on patient's fluid volume status, needs, and age). ^{3, 7}



19. Remove and discard gloves. Perform hand hygiene and put on clean nonsterile gloves.
20. Prepare medication for administration, unless prepared by pharmacist.
- Prepare each medication individually, 1 at a time, to reduce risk of error.
 - **Do not** combine medications when crushing or dissolving. ³
21. Check expiration date has not passed.
22. Prepare gelatin capsules.
23. Open capsules and empty powder into a medicine cup.
24. Place gelatin capsule in a sufficient volume of warm water and allow it to dissolve if contents are liquid.
25. Crush solid dosage forms of medication or contents of gelatin capsules into a fine powder in pill crusher authorized by facility.
26. Dilute medication (crushed medication as well as liquid medication) in appropriate volume of sterile water.
27. Draw up diluted medication in a syringe marked "for oral/enteral use only."
28. Verify [rights of safe medication administration](#). ^{4, 11, 12}
29. Assist patient into a [high-Fowler](#) or [semi-Fowler position](#) to reduce risk of aspiration, and maintain HOB at 30°-45° angle during and for at least 1 hour after medication administration.
30. Open cap or plug/tab on distal end of enteral access device.
31. Draw up 15 mL of sterile water into an oral/enteral syringe and gently flush enteral access device. A smaller volume may be used for pediatric patients or patients with fluid restrictions. ³
32. Attach syringe with medication to distal end of enteral access device and administer medication by slowly depressing plunger of syringe, or if volume is large, allow medication to flow into enteral access device via gravity.
33. Gently flush enteral access device with another 15 mL of sterile water. ³

34. Repeat above procedure for each individual medication, being certain to flush before and after each dose (with 15 mL). **Do not** mix different medications due to risk of possible physical or chemical incompatibilities, altered drug reaction, or tube obstruction.
35. Reclamp enteral access device after final flush. ³
36. Restart infusion of enteral nutrition, if indicated, at appropriate time.
37. Assist patient into a comfortable position, keeping HOB at a 30°-45° angle for at least 1 hour following medication administration.
38. Place patient on [aspiration precautions for tube-fed patients](#). ^{7, 13, 14}
39. Rinse medicine cup, graduated container, and syringes with tap water and allow to air-dry.
40. Replace irrigation tray every 4-8 hours or per facility-specific practice.

PATIENT/FAMILY EDUCATION



- Explain rationale for using an [enteral access device](#) to administer medications.
- Reinforce patient/family/caregiver education on importance of following recommended techniques for medication delivery via an enteral access device, including [aspiration precautions](#). ^{7, 13, 14}
- Discuss reasons for not mixing medications with nutritional feeding or administering more than 1 medication at a time through enteral access device.
- Instruct patient/family that, if [enteral access device becomes clogged](#), it is reasonable to attempt to restore patency by flushing with a moderate volume of warm sterile water or using oral/enteral syringe to create turbulence within lumen to disperse residue. ^{7, 15, 16}
- Explain pulling back and depressing plunger on syringe while it is connected to feeding tube can dislodge clog in some cases.
- Explain catheter must remain connected to enteral access device to avoid instilling excess air into GI tract.
- Advise patient/family to call treating clinician or go to closest emergency medical facility if tube remains clogged after 4-6 attempts to unclog.
- Provide patient education resources, if available, to reinforce verbal education.

POSTPROCEDURE STEPS



1. Monitor for therapeutic effect as well as for medication-specific adverse effects/complications.
2. If tube occlusion occurs, follow steps to [declog enteral access device](#). If water is not effective, contact treating clinician for a pancrelipase tablet or other order to declog tube. [7, 17, 18](#)
3. Follow [standard postprocedure steps](#), as appropriate. ⁴

DOCUMENTATION



Update patient's plan of care and medical record, as appropriate. Include:

- Consultation with pharmacist regarding safety and efficacy of administering prescribed medication via patient's enteral access device, if applicable
- Date/time of medication administration
- Confirmation of correct tube placement (note pH indicator strip reading)
- Medication(s) administered
- Type and total volume of solvent/diluent and flush solution used
- Patient's tolerance of procedure
- Any unexpected patient events or outcomes, interventions performed, and whether treating clinician was notified
- Patient/family member education, such as topics presented, response to education, plan for follow-up education, any communication barriers, and techniques that promoted successful communication

Care Considerations

- Guidelines recommend irrigation trays (which typically consist of a 500-mL graduated container, a 1,200-mL tray, and either a 60-mL bulb syringe or a 60-mL piston syringe) used to flush the enteral access device be replaced every 4-8 hours. Recommendations include using a syringe greater than or equal to 30 mL (60-mL syringes are often used for adult patients). Various volumes of flush may be required for differing enteral access devices. ¹⁹

- Enteric-coated and extended/slow/delayed-release medications should **not** be crushed because grinding the tablet destroys the protective coating, which can result in unstable blood levels and potential toxicity. The protective coating does not grind to a fine powder and can clog the enteral access device. Capsules with beaded components or enteric-coated microgranules should **not** be instilled through enteral access devices due to increased risk of clogging enteral access device. ²
- Medication should **not** be added directly to an enteral feeding formula. The bioavailability of some medications is altered when combined with enteral formulas. ²
- An enteral/oral syringe greater than or equal to 30 mL should be used for adults. Smaller syringes can exert excessive pressure and result in tissue damage or rupture of feeding tube. ²
- Administration of medication to GI tract offers **several benefits** over parenteral administration. ²
- Some types of enteral access devices are indicated for only short-term enteral access, such as a nasogastric or orogastric tube. If enteral access is required for more than 4 weeks, a long-term enteral access device should be considered.
- A pH reading of less than or equal to 4 is indicative of gastric acid unless patient is receiving proton pump inhibitors, H₂-receptor antagonists, acid-reducing medications, or a continuous enteral feeding infusion. The pH of intestinal secretions is typically greater than or equal to 6. ³

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