

e

Preventing Aspiration During Nasogastric, Nasointestinal, or Gastrostomy Tube Feedings

1. Ensure that the tube is properly positioned before first-time use for feedings or medication administration.
 - As soon as the tube is in position, tape the tube in place and mark the tube at the point where it exits the nose. Measure and record the length of tubing extending from the nose.
 - Obtain an abdominal X-ray to confirm positioning of a blindly inserted nasogastric or nasointestinal feeding tube.¹
 - Obtain confirmation that a gastrostomy tube is positioned correctly and then note the length of tubing extending from the insertion site.
2. Ensure that the tube has remained in position after feedings are started.
 - Observe for a change in the external length of the tube every four hours.^{2,3}
 - Observe appearance of fluid withdrawn from the tube every four hours.^{3,4} Fluid withdrawn from the stomach during continuous feedings will likely have the appearance of formula and perhaps will be curdled (because of the presence of gastric acid). Fluid withdrawn from the small intestine during continuous feedings will likely have the appearance of formula and may be bile stained.^{3,5} In patients receiving intermittent feedings every four to six hours, fluid withdrawn from the stomach before each feeding will likely be green or off-white and cloudy.⁵
 - If pH strips are available, measure the aspirate's pH. This is most likely to be helpful when intermittent feedings are used. Prior to each intermittent feeding, gastric pH is usually less than or equal to 5, and small-intestinal pH is usually greater than or equal to 6. When continuous feedings are in use, pH becomes less helpful, because formula buffers the pH of gastric and small-intestine secretions.²
 - Do not use an auscultation method to check tube placement; it is not reliable.⁶
3. Elevate the head of bed to a minimum of 30° to reduce aspiration risk.^{7,8}
4. Assess for intolerance to tube feedings.⁹
 - Ask the patient if she or he feels nauseated or bloated.
 - Observe the abdomen for distention.
 - Measure residual volume every four hours; record measurements and observe for increasing amounts.^{10,11} (To measure residual volume, inject 30 mL of air into the tube with a 60 mL syringe and then gently and evenly pull back on the plunger of the syringe. This process can be performed several times, if necessary, to obtain fluid from a small-bore pliable tube.)
 - Although there is no consensus on how much is "too much," residual volumes of 200 mL or greater suggest poor tolerance to formula that could lead to regurgitation and aspiration.⁹⁻¹¹ A sharp increase in residual volume from a feeding tube originally placed in the small intestine may suggest the tube has dislocated upward into the stomach.
5. Use continuous, pump-assisted feedings instead of intermittent and gravity-drip feedings when feasible.⁹
6. Do not add blue food coloring to formula to assess for aspiration¹²; also, do not rely on the glucose method to assess for aspiration of formula.⁹
7. Provide good oral hygiene to the patient to decrease the risk of aspiration pneumonia.¹³
 - Brush teeth and tongue several times a day.
 - Consider using an antimicrobial mouthwash.—*Janice L. Palmer, MS, RN, and Norma A. Metheny, PhD, RN, FAAN*

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