

Users are strongly advised to review this chart with their MD, noting any differences in protocols/procedures, prior to taking any actions recommended by this chart. The chart is intended as a helpful reference, and should not replace the advise of your MD. Users should read the entire chart, (at least briefly,) comparing symptoms listed in each section with those actually experienced by the consumer, before taking any action. "Prevention" steps are numbered to correspond with the "causes" listed in each section.

1- Nausea/Vomiting†

Symptoms:

- * Nausea, vomiting
- * Abdominal distress, distention, feeling bloated, cramping.
- * Dry heaves/retching, cold sweat.

Immediate Action:

- * Stop feeding.
- * **As per MD instruction**, drain gastric contents through G-tube into a drainage bag/container or using a large syringe. If there is no return, flush with 10 cc water to make sure the tube is not blocked. Some tubes have valves (such as buttons) which make drainage difficult. If unable to vent button, call MD.
- * If vomiting persists, call MD for appropriate intervention to avoid dehydration/fluid or electrolyte depletion (see Rare Complications #3 "Fluid/Electrolyte Depletion").

Causes:

1. Formula intolerance:
 - A. High administration rate
 - B. High formula concentration, allergy/intolerance of formula components
 - C. Formula contaminated
2. Mechanical problems:
 - A. Tube displaced (Improper tube placement; tube migration)
 - B. Patient improperly positioned for feeding
3. Side effect of medication or other treatments such as chemotherapy
4. GI dysfunction:
 - A. Poor gastric emptying, reflux, ulcer
 - B. Bowel obstruction
 - C. Constipation
5. Psycho-social stressors:
 - A. Anxiety concerning tube feeding procedure
 - B. Offensive odors, sight and smell of food
6. Coughing, post nasal drip, upper respiratory infection, sore throat
7. Intolerance to oral diet (i.e. high sugar, lactose content)

Prevention:

- 1 A. When feeding, build up rate and volume slowly. If nausea develops, decrease rate of HEN feeding until nausea subsides; gradually increase rate, then volume to previous level as tolerated, **as per MD instruction**.
- B. Discuss with MD the possibility of switching formulas.
- C. Use good handwashing and clean technique when handling HEN formula/equipment. Wash all equipment with hot water after each use. It is generally recommended to use 1 bag for feedings within a 24 to 48 hour period. Before reusing, thoroughly clean bags with warm water and place in a clean container in fridge to retard bacterial growth. Do not store or wash equipment in the bathroom. Check expiration date of formula. Inspect can for bulging/evidence of contamination before opening. Cover and store any open formula in refrigerator and discard after 24 hours. Maximum hang time for formula at room temp. is 8 to 12 hours. If possible hang cold formula to slow bacterial growth.
2. A. Examine tube for possible migration or dislodgment (See Complication #4 "Tube Displacement").
- B. Elevate head of bed or sit up with feedings. Position self onto right side after feedings.
3. When starting new medications, check with MD if nausea/vomiting is a possible side effect. If MD prescribes antiemetics, take at least 30 - 60 minutes prior to HEN feedings.
- 4 A. Take dysmotility/antireflux/ulcer medications as prescribed.
- B. If bowel obstruction is suspected, seek medical attention.
- C. See Complication #7 "Constipation"
5. A. Use stress reduction/relaxation techniques/antianxiety medication prior to HEN feedings. Seek out support/encouragement.
- B. Remove offensive sights/smells (bedpan/commode/smell of cooking/food aversion)
6. Notify MD of persistent cough/nasal drip/infection/sore throat for evaluation.
7. Review oral diet with RD to see if it contains elements that lead to nausea/vomiting.

† Early morning nausea/vomiting can be common when first starting tube feeds as the body adjusts to feeding overnight and waking with a "full stomach."

2 - Diarrhea

Symptoms:

- * Abdominal pain or cramping with frequent loose watery stool (color may vary)

Immediate Action:

- * Decrease volume/administration rate of HEN formula.
- * Call MD if diarrhea is excessive (a noticeable increase in watery bowel movements for 24+ hours) to avoid fluid/electrolyte depletion (see rare complications #3).
- * Call MD immediately if there is evidence of bleeding or if you are experiencing severe abdominal pain.

Causes:

1. Formula intolerance:
 - A. High administration rate
 - B. High formula concentration, allergy/intolerance of formula components
 - C. Formula contaminated.
2. GI Dysfunction
 - A. Short bowel syndrome
 - B. Gastric Intestinal Colonization
 - C. Bowel inflammation
3. Adverse side effects of medications, especially antibiotics
4. Intolerance to oral diet (i.e. high sugar, lactose content)

Prevention:

- 1 A. Use appropriate feeding method (bolus, gravity or pump). Build up feeding rate and volume slowly until you reach prescribed rate. If diarrhea develops, decrease rate of HEN feeding until diarrhea subsides; gradually increase rate, then volume to previous level as tolerated, **as per MD instruction**.
- B. Discuss with MD the possibility of switching formula (such as to one with fiber), and the possible need for pancreatic enzyme replacement or lactase enzyme.
- C. Use clean technique when handling and storing HEN formula/equipment. (see #1 Nausea/Vomiting - Prevention 1C.)
2. A. Discuss with MD the possible use of H2 blockers or bowel slowing medication.
- B. Report to MD any recent course of antibiotics. A stool culture may be needed.
- C. Seek MD input on controlling bowel inflammation.
3. Evaluate prescribed medications with RPh for possible sorbitol, magnesium, or phosphorus content. Take proper amount of medication as prescribed. Inform MD of any over the counter medications, herbals or supplements you may be taking.
4. Review oral diet (if any) with RD to see if it contains elements that lead to diarrhea (i.e. sugar, fat or lactose).

3 - Tube Obstruction / Blockage

Symptoms:

- * Inability to flush with water, infuse tube feeding or administer medication.
- * Bulging of tube when feeding by bolus.

Immediate Action:

- * Make sure tube clamp is open.
- * Do not force feeding or medication into clogged tube.
- * Try to flush tube with large syringe (60 ml if possible) filled with warm water. Pull plunger back on syringe; try flushing again with warm water. If flushing doesn't work, call MD.

Causes:

1. **Improper administration of medications** or other non-formula additions with feeding. Medications not adequately crushed and dissolved before put into tube.
2. Inadequate flushing of tube.
3. Tube clamp is closed.
4. Defective tubing (such as valves leaking with buttons)
5. Infusion rate too low.

Prevention:

1. Consult with RPh/MD/RN regarding proper administration of medications. (Medications like Prevacid may require special attention.) When possible use liquid medications and dilute in 30 cc water; otherwise dissolve crushed or powder medications in 30 cc water. Administer each medication separately from food, flushing before and after with water: ask MD for appropriate volume to keep tube unclogged and meet your hydration needs. Never mix meds with formula.
2. Flush tube with water (ask MD for appropriate volume to keep tube unclogged and meet your hydration needs) after each feeding, administration of medication, and between administrations of medication and formula, so medications and formula never come in contact with each other in the feeding tube. Flush tube at least once a day if not in use.
3. Open clamp when flushing, feeding or administering medications.
4. Discuss tube replacement with MD.
5. Evaluate feeding rate and regimen with MD. Flush tube with water (ask MD for appropriate volume to keep tube unclogged and meet your hydration needs) every 6-8 hours with continuous feeds.

4 - Tube Displacement

Symptoms:

- * Tube out of body or otherwise obviously dislodged/displaced
- * Choking /difficulty breathing.
- * Nausea/vomiting; abdominal pain

Immediate Action:

- * Discontinue feeding.
- * If NG/NJ tube curled in the back of the throat, pull tube out of the entry site (not through throat). Do not remove percutaneously placed G/J/G-J tube without MD instruction: if one of these tubes falls out, reinsert if possible so the tract doesn't close, and call MD.
- * Contact MD for instructions.

Causes:

1. Tube not adequately secured.
2. Accidental or excessive pulling of tube. Tubes with gastric balloon may be treated by the stomach as a piece of food and be pulled into the small bowel.
3. With G/G-J/NG/ NJ tube, persistent vomiting.
4. Balloon deflates/bursts.

Prevention:

- 1-3. Check external length of tube before each feeding. Mark feeding tube 1" from where it enters the body (so you can tell later if it's moved). Use a tube attachment device (catheter/tube holder) or careful taping of external tube to nose/cheek/abdomen/clothing to avoid pulling or migration. Specially-designed under garments that helps secure tubes can be purchased for active consumers.
3. See Complication #1 "Nausea/Vomiting."
4. Be sure balloon is intact (you should be able to aspirate a few cc's of water or air). If balloon has burst, wash tube, reinsert, secure position with tape, and call MD. If balloon is intact, deflate balloon, wash, reinsert and reinflate. Report to MD if problem persists.

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5 - Skin/Site Irritation and/or Tube Leaking

Symptoms:

- * Irritated skin, rash around tube; burning pain; foul odor; local infection. NG/NJ tube users may have developed sinus or ear infection.
- * Leakage from the feeding tube itself (hole in tube, malfunctioning anti-reflux valve or cap) or from around the feeding tube.
- * Need to change dressing more than once a day.

Immediate Action:

- * If possible, clamp tube above defect.
- * Stop feeding.
- * Wash skin; apply dry dressing.
- * Call MD.

Causes:

1. Poorly fitting tube. (Tube is too small for tube tract, stem of button is too long or internal bumper is not snug against anterior stomach wall.)
2. Tube tugging at exit site. (Excessive movement or tension at exit site causing enlargement of tube tract/ irritation/ulceration.) "Buried bumper syndrome" when an external bolster migrates into the stoma site.
3. Mechanical tube problem:
 - A. Defective or deteriorated tubing or cap; or defective or clogged anti-reflux valve.
 - B. Repeated clamping at same site, accidental cutting of the tube.

Prevention:

1. Discuss with MD/ET nurse tube sizing, tips to keep tube fitting snugly to avoid skin infection. Check tube for possible migration (see #4 "Tube Displacement - Prevention 1-3."). Consult an ET nurse/MD re: skin care. The ET nurse/MD may apply/prescribe a steroid creme or silver nitrate if granulation tissue is a problem.
2. Secure tube as directed with tape or tube holder (see #4 "Tube Displacement - Prevention 1-3").
3. A. Discuss regarding tube/cap/button replacement with MD.
 - B. Move clamp to a different site daily. Avoid using scissors or sharp objects near tube.

6 - Aspiration††

Symptoms:

- * Vomiting, heartburn
- * Coughing or choking with difficulty breathing; chest pain
- * Possible fever, shortness of breath, indicating pneumonia

Immediate Action:

- * Stop feeding.
- * **As per MD instruction**, drain gastric contents through G-tube into a drainage bag/container or by a large syringe, if possible. Some tubes have valves (such as buttons) which make drainage difficult. If unable to vent button, call MD.
- * Call MD for appropriate intervention.

Causes:

1. Diminished gag reflex, gastroesophageal reflux (GER), swallowing disorder
2. Delayed gastric emptying
3. Tube migration

††More likely to occur in patients whose are tube fed into their stomach (vs. small intestine)

Prevention:

1. Put head of the bed on 6" blocks for night time feedings. Feeding while sitting up or using wedge pillows increases abdominal pressure and can aggravate GER. Do not feed if stomach feels full or distended, or if individual is vomiting. Take prescribed medication for GER.
2. Position self on right side after feedings. Take prescribed medication for dysmotility. Do not feed if stomach feels full or distended, or if individual is vomiting.
3. Anchor tube with tube holder/tape to avoid pulling or dislodging. Check tube for possible migration before feeding (See Complication #4 "Tube Displacement - Prevention 1-3").

7 - Constipation

Symptoms:

- * Infrequent hard stool, stool impaction. (Liquid stool may leak around impacted stool.)
- * Abdominal bloating, cramping/pain.

Immediate Action:

- * Increase fluid intake, use stool softener or laxative as per MD instruction.
- * Call MD if no bowel movement in several days and/or are experiencing vomiting, or severe abdominal distention or cramping.

Causes:

1. Inadequate fluid or fiber intake
2. Side effect of medications (i.e. narcotics, high dose calcium or antacids containing calcium)
3. Inactivity
4. Gastrointestinal dysmotility
5. Bowel obstruction

Prevention:

1. Discuss prophylactic bowel regimen with MD/RD (i.e. increasing fluid and fiber intake, and/or use of a stool softener or laxative).
2. Discuss medications and possible side effects with MD.
3. Maintain regular exercise program, if able.
4. Take medication for dysmotility as prescribed by MD.
5. Call MD if you suspect bowel obstruction.

8 - GI Bleeding

Symptoms:

- * Bright red blood on outside of stool or per rectum
- * Black, tarry stool or diarrhea
- * Black/brown blood in vomit (looks like coffee grounds)
- * Vomiting bright red blood
- * Bright red blood coming from and/or around tube

Immediate Action:

- * Discuss all GI bleeding with MD. If large amounts of blood are visible, seek treatment immediately.

Cause:

1. Bright red blood on outside of stool or per rectum is likely caused by irritated hemorrhoids, fissure or an anal tear commonly linked to excessive diarrhea or constipation.
2. Black, tarry stool or diarrhea; black/brown blood in vomit; or >1 Tablespoon bright red blood in vomit likely indicates upper GI bleeding
3. Vomiting small amounts (< 1 Tablespoon) bright red blood when associated with frequent vomiting is likely caused by burst blood vessel in throat.
4. Bright red blood coming from tube or around the tube may be caused by:
 - A. Gastric ulcer/irritation
 - B. Erosion of stomach lining from excessive tube movement
 - C. External granulation tissue.

Prevention:

1. Reduce diarrhea (see Complication #2 "Diarrhea") or avoid constipation (see Complication #7 "Constipation"). Discuss symptoms with MD.
2. Discuss with MD use of medications that block acid production.
3. Reduce vomiting (see Complication #1 "Nausea/Vomiting"). Discuss symptoms with MD.
4. A. Discuss with MD use of medications that block acid production.
 - B. Secure tube as directed with tape or tube holder (see #4 "Tube Displacement - Prevention 1-3").
 - C. Discuss granulation tissue with MD/ET nurse. (May be related to tube leakage and/or improper skin care. See Complication #5 "Skin/Site Irritation.")

9 - Pump or Power Failure

Symptoms:

- * Unable to start pump.
- * Repeated alarms without obvious cause.

Immediate Action:

- * Check to see if pump is plugged into wall and that wall socket is functioning; or check that battery is charged.
- * Stop pump. Consult pump user manual "trouble shooting" section for possible cause. Call home care company for replacement.
- * If pump will not work and replacement pump is not available, convert to gravity drip and administer at same or lower rate. If tube is located at the jejunum, flow should not exceed a constant drip to avoid dumping syndrome.

Causes:

1. Power failure/low battery. Pump not plugged into wall outlet.
2. Pump malfunction.

Prevention:

1. Check electrical outlet. Notify local power company of durable medical equipment at home for emergency power outages. Keep pump plugged into electrical source whenever possible, even when infusing, if not ambulating to conserve battery charge.
2. Follow manufacturer/home care company recommendation for routine service/maintenance.

Rare Complications ...

1. Hyperglycemia

Symptoms: Nausea, weakness, excessive thirst or hunger, headache, anxiety, nightmares, frequent urination; Glucose levels greater than 1/2% (or other level set by your MD).

Action: Call your MD immediately for specific instructions.

Causes: Diabetes; body under a lot stress (due to illness, medications, steroids etc.)

Prevention: Discuss diabetes management with MD. Maintain prescribed volume and rate of HEN feedings.

2. Hypoglycemia

Symptoms: Shaking, nausea, pale facial color, heart palpitations, sweating, anxiety, dizziness, blurred vision, weakness, fatigue, headache, blood sugar below 50-60 mg/dl.

Action: Instill 2-4 ounces of orange juice, regular soda pop, or sugar water (1 tablespoon sugar to 4 ounces water) through feeding tube. (If you are unable to swallow, and if not contraindicated, place hard candy or cake decorating gel under tongue, or let 1-2 teaspoons of sugar dissolve in mouth.) Then call MD immediately for specific instructions.

Causes: Diabetes, Stopping a feeding suddenly for patients on insulin.

Prevention: Discuss diabetes management with MD. Maintain prescribed volume and rate of HEN feedings.

3. Fluid or Electrolyte Imbalances

Symptoms: Rapid weight loss or weight gain; thirst, weakness; edema, shortness of breath; shakiness; fine tremors; muscle cramping; numbness; tingling of hands or around mouth; palpitations; fatigue; taste changes; skin changes; loss of coordination

Causes: Increased losses from vomiting, diarrhea, fistulae/ostomy output, urine output. Decreased urine output.

Action: If you suspect a fluid overloaded or are extremely short of breath, stop HEN feedings and notify your MD immediately. Call MD regarding signs and symptoms and describe any change in weight, fluid intake or urine/stool output. MD may recommend taking more or less fluid via feeding tube.

Prevention: Take complete volume of HEN formula and fluids as ordered by MD. Discuss with MD indications for taking more or less fluid. Keep daily log of fluid intake, weight and urine/stool output — noting any significant fluctuations.