The Ins and Outs of Enteral Nutrition-Tube Feeding Basics

Jeannine B. Mills MS, RD, CSO, LD
Norris Cotton Cancer Center
Dartmouth Hitchcock Medical Center
Objectives

• Provide practical insight on decisions guiding formula choice, considerations in method of feeding, understanding complications and delivery of care and instruction to patients with feeding tubes.

• Discuss types of gastrostomy tubes, contraindications to the placement of feeding tubes as well as mechanical complications after placement.

• Review feeding tube maintenance, water flushes, medication administration and preventative care.
Indications for Enteral Nutrition

• A.S.P.E.N. recommendations:

• Patients undergoing anticancer therapies who are malnourished and anticipated to be unable to ingest adequate nutrition for a prolonged period of time.

• Patients who are moderately to severely malnourished beginning 7-14 days preoperatively weighing the risks of nutrition support and delay of surgery are weighed against the benefits
Disease-Specific Indications for Enteral Nutrition

- Head and Neck Cancer
- Esophageal Cancer
- Gastric Cancer
- Pancreatic Cancer
Selecting an Enteral Formula

- **Standard, polymeric**: Intact nutrients
- **Elemental or semi-elemental**: Partially or completely hydrolyzed protein and altered fats
- **Blenderized**: Mixture of blenderized food sources
- **Disease-specific**: Used for patients with organ dysfunction or specific metabolic needs ie short bowel syndrome, malabsorption or pancreatic exocrine insufficiency.
- **Modular**: Addition of CHO, protein, fiber to enhance nutrient content of formula or diet
Immunonutrition in GI Surgical Oncology

- Preoperative immunonutrition
- Perioperative
- Recommendations for malnourished GI surgical patients
- 5-7 days pre and postoperatively
- Limitations
- Dose
- Timing
- Cost?
- Need further studies to understand individual nutrients

August DA, Huhmann MB. JPEN. 2009; 33: 472-500
Support Line. 2010; 32: 8-13
• Oncology (Onc) Head and Neck Cancer: Surgery and Use of EPA-Enhanced Medical Food Supplement

• If the use of an EPA-enhanced MFS is proposed to decrease post-surgical complications (e.g., infections and weight loss) for oral and laryngeal cancer patients, advise inadequate evidence exists to show a benefit. **Weak Conditional**
EAL: Oncology Evidence-based Nutrition Practice Guidelines

- **Surgery**
- Oncology (Onc) Head and Neck Cancer: Surgery and Use of Arginine-Enhanced Medical Food Supplement or EN
- Onc-Head and neck cancer: Post-operative use of arginine
- Post-operative use of arginine-enhanced medical food supplements (MFS) or enteral nutrition (EN) to improve outcomes for patients with head and neck cancer is not recommended.  
  **Fair**
  Imperative

- Onc-Head and neck cancer: Pre-operative use of arginine
- Pre-operative use of arginine-enhanced EN to improve outcomes for patients with head and neck cancer is not recommended.  
  **Fair**
  Imperative

Accessed www.Andevidencelibrary.com
Does the patient have...

- Digestive and absorptive capabilities intact?
- Significant organ dysfunction and how is it being managed?
- Increased metabolic requirements?
- Is the patient malnourished?
- Contraindication to any of the formula components?
- Fluid restriction or increased fluid needs?
- Insurance coverage for the desired formula? If so, what documentation is required?
- Insurance that will not cover the formula, or will cover only a portion of the cost?
Insurance Considerations-Medicare

- Is the patient’s medical condition one that requires the tube feedings for 90 days or longer?
- Is adequate nutrition possible by diet modification and/or oral supplements?
- Is the enteral product administered through a feeding tube?
- Will the patient require daily enteral intake of 750-2,000 calories from tube feedings?
  - If NO, staff must obtain documentation from the prescribing physician or RD for justification of calories/day outside of the 750-2000 kcal/day range.
- Is the patient’s condition a result of an anatomic dysfunction (i.e., obstruction due to head/neck cancer or reconstructive surgery, etc.) OR due to motility disorder (i.e., severe dysphagia due to stroke, gastroparesis, malabsorption, etc)?
  - YES  List qualifying diagnosis / condition
  - Include supporting documentation
  - No  If NO, coverage will be denied

Know who to talk with and cover all bases with documentation
Other Insurance Considerations

• Medicaid
• Medicaid pending
• Oral supplementation
• Private insurers
• May dictate formula choice
• May specify home care vendor
• Medical supply coverage may not include formula
• May not cover anything—then what?
  – Oley Foundation
  – Donated product
Home Blended Formulas

• Nutritionally adequate?
• Care Provider support and time at home?
• Food safety considerations
• Blender or food processor
• Volume matters—Calorically dense?
• Fluid estimation
• Insurance provision of supplies
Delivery Methods - What is the best method for your patient?

- Continuous infusion
- Cyclic feeding
- Intermittent feeding
- Bolus or gravity drip feeding
- Transitional feeding
- Insurance considerations
Initiation and Advancement

• Use within 1-4 hours after placement
• Full strength – avoid dilution
• Initiate at 20-50mL/h and increased by 10-25mL/hr every 4-24 hours.
• Intermittent feedings (infusion pump or gravity drip) at 240-720mL over 20-60 minutes provided 4-6 times a day
• Bolus or gravity drip 240mL over 4-10 minutes infused 3-6 times a day
Complications of Enteral Nutrition-why blame the formula?

- Formula tolerance often associated with
- severity of illness
- comorbid conditions
- Enteric pathogens
- Concomitant use of medications administered through the enteral access device
...Why blame the formula?

- Gastrointestinal Complications
  - Nausea and Vomiting
  - Abdominal Distention
  - Maldigestion vs malabsorption
  - Diarrhea
  - Bacterial overgrowth of the intestinal tract
  - Contamination of the enteral feeding formula
  - GI Diseases
  - Constipation
- Metabolic
  - Electrolyte imbalance
  - Hyperglycemia
- Dehydration
- Aspiration
Diarrhea

• Etiologies
  – Drug induced
  – Hyertonic feeding
  – Lactose intolerance

• Management
Transition to Oral Intake

• Once patient is consuming 50% of needs orally, tube feeding can be decreased
• Nocturnal or cyclic (8-12 hours) tube feedings are encouraged during transition feedings
• Tube feedings discontinued when patient is meeting 75% of nutrition needs orally.
• Feeding tube removed if patient maintains weight over 2-3 weeks without use of tube
Building a Team

- Who places the order?
- Templates for recommendations and orders—where does this live in the chart?
- Who teaches care of tube?
- Who teaches method of feeding?
- What patient education materials are used in GI, IR, inpatient, outpatient?
- Is there communication between inpatient and outpatient team?
- Who does the patient call for help?
BELLY UP!
Management of Feeding Tubes

Sharene Evans, APRN
Interventional Radiology
1) Gastrostomy Tubes (GT)

2) Gastrojejunostomy Tubes (GJ)

3) Jejunostomy Tubes (JT)
Gastrostomy Tubes

• GTs are placed percutaneously (IR), endoscopically (aka PEG) and surgically.

• GTs are used for feeding, as well as decompression for patient with intestinal blockage.

• When patient has a GJ tube, the gastric portion is best for delivering medications.
Gastrostomy Tube Placement
What Do You Mean NO?

Contraindications to feeding tubes

• *Interposition of colon and or liver between stomach and anterior abdominal wall

• *Intrathoracic position of stomach

• *Previous gastrectomy

• *Massive ascites (relative..can do LVP first)

• *Gastric malignancy(consider surgical placed) or varices
Contraindications to Enteral Nutrition

- Nonoperative mechanical GI obstruction
- Intractable vomiting and diarrhea refractory to medical management
- Severe short bowel syndrome (<100cm small bowel remaining)
- Paralytic ileus
- Severe GI bleeding
- Severe GI malabsorption (failed EN)
- Inability to gain access to GI tract
- Distal high-output fistulas (too distal to bypass with feeding tube)
- Intestinal ischemia
- Need is expected for less than 5-7 days for malnourished adult patients or 7-9 days if adequately nourished
- Prognosis not consistent with aggressive nutrition
Candidates for Surgically Placed (Open or Laparoscopic) Feeding Tubes

- Obstructing tumors of the upper GI Tract
- Previous upper abdominal surgery
- Inaccessible stomach due to high location
- Hepatomegaly
- Coverage by the transverse colon
- Complications include emesis, high residual volumes, diarrhea, ileus, nausea, pain at the site, and increased morbidity and mortality (compared to PEG)

Supportline. 2011, 33(5), 16-27
Gastrojejunostomy and Direct Jejunostomy tubes

• Tube management identical to GTs

• If patient has a GJ, use the “G” portion for all medications, and the “J” portion for feeds

• If patient has a JT, but is not swallowing medications, ensure the medications are adequately crushed/diluted. When possible, have Provider order medications in liquid form.
If patient has a Foley catheter in the small bowel being used as a feeding tube, DO NOT INFLATE THE BALLOON. This will lead to intestinal blockage.
What Could POSSIBLY Go Wrong?

- Cellulitis
- *Procedural
- *Leaking gastric contents
- Leaking
  - *Expansion of tube entry site r/t excessive external motion
- Peritonitis
- Occlusion
- Malposition
…..POSSIBLY Go Wrong?

• Aspiration
• Gastric Outlet Obstruction
  • *antegrade migration of balloon GT
• Tube dislodgement
  • *tracts usually mature in ~2 weeks
  • *RRC/Foley; then call IR! If tract is “mature”, may not need placement confirmation
• *consider larger tube, or balloon-retained tube
• Tumor Seeding
Other causes of feeding tube issues

• *Incomplete flushing
  - clogging
• *Bulking agents
  - clogging
• *Yeast
  - clogging
• *Malposition
  - leak, vomiting (also=TF rate too high)
• *Balloon
  - under/overinflated, or not snug against stomach wall
• *Tube is kinked within bowel
Tube feeding maintenance

- GTs should be flushed with at least *30ml* water before and after tube feeds, every 4 hours during feeds, and before and after medication administration. Manual flush, not via tube.

- Use clear, white, sugar free solutions such as water, seltzer water and DIET Ginger Ale. NO COCA COLA!!! Acidic fluids will promote clogging.

- If flushing becomes difficult, contact Provider to head off complete occlusion. Use small syringes to help resolve partial occlusion.

- DO NOT FORCEFULLY FLUSH=RUPTURE

- Use soap and water to cleanse peritubal area. NO Hydrogen Peroxide.

- *this amount may vary between providers*
A.S.P.E.N. Enteral Nutrition Practice Recommendations: Related to Water

- EN Administration: flushes
- Flush feeding tube with 30ml water every four hours during continuous and before/after intermittent feedings
- Sterile water for tube flushes in immune compromised or critically ill or infants
- Water and EN formula safety
- Use a purified water or sterile water supply for formula reconstitution and medication dilution

J Parenter Enteral Nutr. 2009; 33. 122-167
Medication Administration

• “Grind simple compressed tablets to a fine powder and mix with sterile water. Open hard gelatin capsules and mix powder with sterile water”

• Flush tube with at least 15 ml water. Dilute solid or liquid medications as needed and administer. Flush tube with at least 15 ml water.
Patient Resources

• Oley Foundation  www.oley.org
• SPOHNC  www.spohnc.org
• Seattle’s Children Hospital for making home made blenderized formulas
• University of Virginia Health System:  www.GInutrition.virginia.edu
• Vitamixer  www.vitamix.com
• Lucy’s home made formulas  www.lucyrealfood.com
Professional Resources

• Dietitians in Nutrition Support www.dnsdpg.org
• August DA, Huhmann MB, American Society for Parenteral and Enteral Nutrition (ASPEN) Board of Directors. ASPEN clinical guidelines: nutrition support therapy during adult and anticancer treatment and in hematopoietic cell transportation. JPEN J Parenter Enteral Nutr. 2009; 33: 472-500
• Evidence Analysis Library: www.an evidencelibrary.com
• The Complete Resource Kit for Oncology Nutrition
• Templates for Home EN
• Oncology Evidence-Based Practice Toolkit (Electronic format)
• Feeding Tube Use and Care
  – Bolus/Syringe Feedings
  – Gravity Tube Feedings
  – Pump Feedings