Optimizing Enteral Nutrition for Oncology Patients

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ACCC Association of Community Cancer Centers

The Center for Provider Education

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Objectives:
Participant will be able to:

1) Recognize nutritional risk factors that indicate need for Registered Dietitian (RD) intervention.

2) Identify patients at risk who may need, or are using enteral nutrition (EN)

3) Help patients achieve nutritional goals with EN

4) Implement methods to troubleshoot- or minimize problems during EN therapy.

Objective # 1:

Recognize nutritional risk factors that indicate need for Registered Dietitian (RD) intervention.

Who needs RD intervention?

Screening & assessment tools

- MST - Malnutrition Screening Tool
- SGA- Subjective Global Assessment
- PGSGA – Patient Generated SGA

Huhmann MB and August DA. Review of American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.) Clinical Guidelines for Nutrition Support in Cancer Patients: Screening and Assessment. *Nutr Clin Pract (NCP) 2008; 23: 182-188*

Malnutrition guidelines at UVA health system

mild

- Weight loss > 5% in past 3 mo
- Food intake < 50-75% of normal in past week

moderate

- Weight loss 5% in 1month; 7.5% in 3 months; 10% in 6 months
- Some muscle wasting and loss of subcutaneous fat
- Poor nutritional intake for prolonged duration
- Reduced functional capacity

severe

- Weight loss > 5% in 1 month; > 7.5% in 3 month; > 10% in 6 months
- Very poor nutritional intake in 2 weeks or more
- Reduced functional capacity or bedridden
- BMI < 17

Surveillance / Screening

- H&P
  - Weight, physical status
  - Diagnosis, stage of cancer
  - GI function
  - Past GI surgery
- Ask questions
  - Weight change
  - Food intake
  - GI problems
  - Feeding tube?
    - Intolerance of tube feeding
- RD is needed for any patient identified at risk

Clinical case

"Greg" is 55 y/o with new Dx esophageal cancer, S/P placement of a central IV access port and a Jejunal feeding tube (JT). Plans include: Chemo and radiation therapy and later, esophagectomy

Ht: 5'10" Wt: 107.7 Kg (237 lbs); IBW: 75.5 Kg, Usual weight 4 months ago 285 lbs.

He states that he cannot eat any solid foods and now can barely take fluids without a lot of pain and reflux. He has been eating soups, liquids and soft foods.

His BMs are normal but decreased in frequency and he c/o gas. His urine looks dark and he c/o some periods of feeling weak and dizzy when he stands up.

Objective #2 :

Identify patients at risk who may need, or are using enteral nutrition (EN)

Who needs EN?

Who needs EN?

- Patients with severe Dysphagia
  - Head & Neck cancers
    - Nutritional problems in 40-57% of Head & Neck Cancer (HNC) patients at time of Dx
  - Esophageal cancer
    - 78.9 % of pts w esophageal cancer malnourished
  - Dysphagia due to other illnesses
- Disruption of the GI tract
  - Cancer of Stomach, Duodenum, Pancreas, Bowel
- Digestive problems after cancer treatments
  - Rectal, gynecologic, bladder cancers

Predictive factors for EN need

- Head & Neck cancer
  - Tumor
    - site: Oropharynx, Larynx, Hypopharynx, Neck, Oral cavity
    - stage 3 to 4
    - size
  - Surgical procedure:
    - Flap reconstruction, neck dissection after XRT, tracheotomy
  - Low BMI
  - Addition of Chemo or XRT to regimen
- Esophageal cancer
  - BMI < 18.5 Kg/m^2
  - Anastomotic leak

PEG tubes for head & neck cancer

- Benefits
  - Decreased weight loss,
  - Optimized body weight for obese patients
  - Fewer hospitalizations for nutrition / hydration problems
  - Less interruptions in treatment
  - QOL ?
- Risks
  - Infection at G tube site
  - GI complications:
    peritonitis, leakage, perforation, tube extrusion, bleeding
  - Persistent dysphagia
  - Poor body image
  - Rare- case reports of metastasis to gastrostomy site

J tube feeding in esophageal cancer

Benefits

- Maintenance of weight
- prolonged nutrition support for the subset of pts w post-op complications

Risks

- small-bowel obstruction
- jejunostomy site infection
- dysfunction of tube: leak, blockage, clogging
- Diarrhea, abdominal distention

(Gupta et al, Fenton et al)

Published Guidelines

- **A.S.P.E.N. American society for parenteral and enteral nutrition**
  - "Nutrition support therapy is appropriate in patients receiving active anticancer treatment who are malnourished and who are anticipated to be unable to ingest or absorb adequate nutrients for a prolonged period of time"…
- **E.S.P.E.N. European society for parenteral and enteral nutrition**
  - Non-surgical oncology:
    - Start EN if inadequate food intake (<60% energy expenditure for > 10 days) is anticipated.
    - Use EN if an obstructing head or neck or esophageal cancer interferes with swallowing or if severe local mucositis is present
  - Surgery:
    - Use nutrition support prior to major surgery for patients at severe nutrition risk
    - Start post op EN within 24 hours after surgery if oral diet cannot be started
- **Academy of Nutrition and Dietetics**
  - oncology practice guidelines
    - "EN may be used to increase calorie and protein intake in esophageal cancer patients undergoing chemoradiation therapy."
    - "Use EN to increase calorie and protein intake for outpatients with stage III or IV head and neck cancer undergoing Intensive radiation treatment."

Objective #3

Help patients achieve nutritional goals with EN

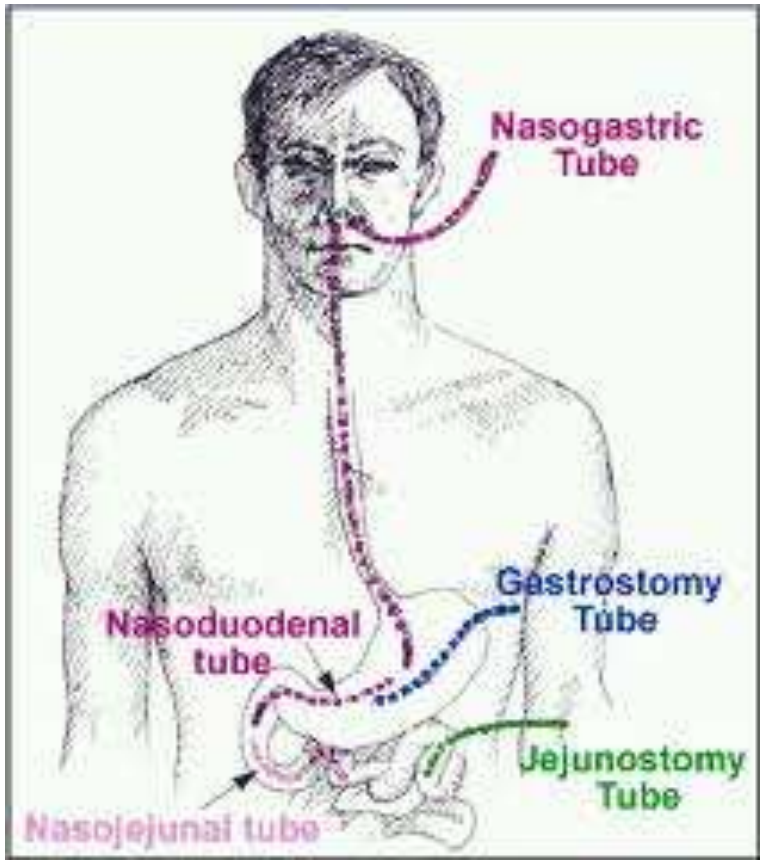
How can I help patients achieve nutritional goals?

Meeting Goals

- **Know some basics…**
  - Feeding tube routes
  - Feeding methods
  - Nutrient needs
  - Medications
  - Financial considerations
- **Teach the Patient or Caregiver**
- **Ongoing follow up !**

Feeding routes

- PEG
  - Percutaneous Endoscopic Gastrostomy
- G tube
  - Gastrostomy tube (surgical or radiologic placement)
- PEG-J
  - PEG w Jejunal tube
- JT
  - Jejunostomy tube
- PEJ
  - Endoscopic J tube
- NG (nasogastric)
- ND, NJ (nasoduodenal, nasojejunal)
- TEP
  - Tracheo-esophageal puncture
  - Temporary- post laryngectomy



Feeding methods

- Syringe Bolus
  - Convenient for Gastric feeding
- Gravity bag
  - If slower infusion is necessary
- Pump
  - Jejunal feeding
  - If a more controlled rate is needed
  - Document need for coverage

Nutrient needs

- Calories
  - Maintenance or gain: 30-45 kcals/Kg
  - Overweight: 20-25 kcals /Kg
  - Adjust as needed after days or weeks
    - Change the daily amount of formula
    - Concentrated formula
    - Calorie supplements
- Protein
  - 1.5-2.0 g/Kg actual weight or Adj body weight
  - Hi protein formulas
  - Protein supplements
- Water
  - 30-35 mls/Kg or 1 ml / kcal
  - Increased needs:
    - enterocutaneous fistula, high ostomy output / diarrhea, or if pt is draining G port of a PEG J tube.

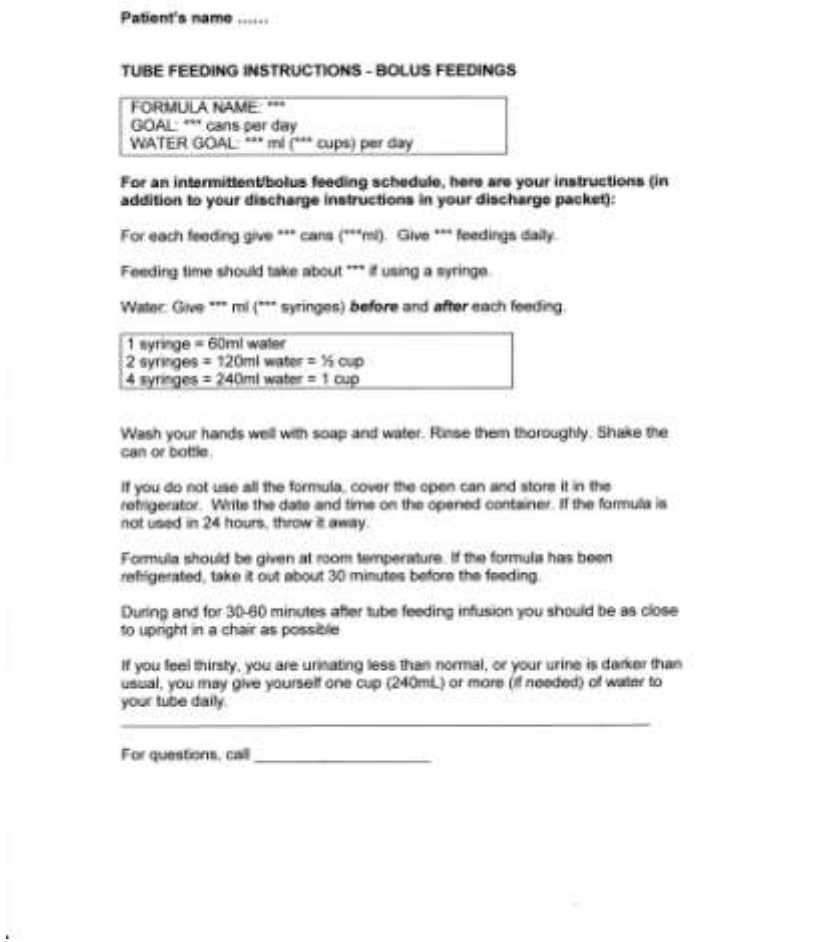
Water

Monitor hydration status

- Signs of dehydration
  - Less or darker urine
  - Skin, oral mucosa, voice quality, orthostatic hypotension, flattened neck veins, rapid weight loss
  - Thirst
  - Hypernatremia / elevated BUN
- Water safety
  - Use bottled water if quality is questionable
  - Sterile or purified water if pt is immunocompromized
    - Bankhead et al. JPEN 2009; 33 (2)

Teaching

- **Teach the Patient or Caregiver !**
  - Prior to hospital discharge
  - Clinic, prior to, or after tube placement
  - Instruction sheet



Patient's name .....

TUBE FEEDING INSTRUCTIONS - BOLUS FEEDINGS

FORMULA NAME: ***
GOAL: *** cans per day
WATER GOAL: *** ml (*** cups) per day

For an intermittent/bolus feeding schedule, here are your instructions (in addition to your discharge instructions in your discharge packet):

For each feeding give *** cans (***ml). Give *** feedings daily.

Feeding time should take about *** if using a syringe.

Water: Give *** ml (*** syringes) ***before*** and ***after*** each feeding.

1 syringe = 60ml water
2 syringes = 120ml water = ½ cup
4 syringes = 240ml water = 1 cup

Wash your hands well with soap and water. Rinse them thoroughly. Shake the can or bottle.

If you do not use all the formula, cover the open can and store it in the refrigerator. Write the date and time on the opened container. If the formula is not used in 24 hours, throw it away.

Formula should be given at room temperature. If the formula has been refrigerated, take it out about 30 minutes before the feeding.

During and for 30-60 minutes after tube feeding infusion you should be as close to upright in a chair as possible

If you feel thirsty, you are urinating less than normal, or your urine is darker than usual, you may give yourself one cup (240mL) or more (if needed) of water to your tube daily.

For questions, call _____

Follow up !

- Ask Questions
  - How many cans?
  - How much water?
  - Weight
  - Tolerance
    - Problems?
  - Tube site problems?
  - Energy levels

Some safety tips

- Medications
  - Flush with water before and after
  - Don't mix meds
  - Don't crush sustained-release tablets
  - Don't mix with enteral formula

- Prevent EN formula contamination
  - Aseptic technique
  - Hang time:
    - Ready to use EN poured into bag: 8-12 hrs
    - Ready to hang closed system: 24 hrs (screw cap) to 48 hrs (piercing pin)
    - Reconstituted powdered formula: 4 hrs
  - New administration set Q 24 hrs, for open system - pump feeding

Bankhead et al. 2009

Financial Considerations

- Health insurance
- Medicare
- Self-Pay / uninsured

- Costs:
  - pump rental, feeding bags, formula
  - Infusion companies
  - DME companies

Medicare coverage criteria

- Diagnosis

  (a) permanent non-function or disease of the structures that normally permit food to reach the small bowel or

  (b) disease of the small bowel which impairs digestion and absorption of an oral diet, either of which requires tube feedings to provide sufficient nutrients to maintain weight and strength commensurate with the patient's overall health status.

- "Test of Permanence"

  Anticipated need 3 months or more

- "Needed to maintain weight and strength"

  ...Coverage is possible for patients with partial impairments - e.g., a patient with dysphagia who can swallow small amounts of food.

Local Coverage for Enteral Nutrition. Policy article, effective August 2011.

U.S. Dept of Health and Human Services. Centers for Medicare and Medicaid Services.

Support group

- Oley foundation
  - National, not-for-profit organization
  - Regional meetings
  - Monthly publication: “Lifeline Letter”
  - Information sheets about feeding complications
  - Telephone hotline, online chat forum
  - Equipment /supply Exchange
  - (800) 776-OLEY/(518) 262-5079
  - www.oley.org

Clinical case

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He states that he cannot eat any solid foods and now can barely take fluids without a lot of pain and reflux. He has been eating soups, liquids and soft foods.

His BMs are normal but decreased in frequency and he c/o gas. His urine looks dark and he c/o some periods of feeling weak and dizzy when he stands up.

Case

- Questions
  - Does Greg need EN?
  - What does he need to take more of, besides EN formula?
  - Which feeding method is appropriate?
  - What are some criteria we want to monitor?

- Answers
  - Greg needs EN to prevent continued weight loss
  - He needs to take more water flushes via J tube
  - He needs a pump for feeding
  - Monitor amount of formula, water, oral intake, bowel regularity.

Objective #4

Implement methods to troubleshoot- or minimize problems during EN therapy.

How can I help patients overcome problems during EN therapy ?

Many problems that nutrition support clinicians can help with…

- Tube site infections
- Refeeding syndrome
- Chyle leak
- Nausea and vomiting
- Maldigestion malabsorption
- Tube clogging
- Fullness and distention
- Constipation
- Diarrhea
- Hyperglycemia
- Skin breakdown at tube site
- Undesired weight changes
- Electrolyte imbalance
- dehydration

Refeeding syndrome

- Who's at risk?
  - Severe malnourished
  - Poor or no nutritional intake for 7 days or more
  - Excessive alcohol use

- 3 main aspects
  - Rapid, severe decline in serum potassium, phosphorus, magnesium
  - Fluid overload
  - Manifestation of B vitamin deficiency
    - Notably - Thiamine

Refeeding syndrome

Severe Hypokalemia < 2.5 mEq/L	Severe Hypophosphatemia < 1-1.5 mg/dL	Severe Hypomagnesemia <1.5 mg/dL
• Cardiac arrhythmias, electrocardiograph changes, alterations in myocardial contraction, respiratory compromise, rhabdomyolysis, paralysis, death	• Impaired cardiac function, impaired diaphragm contractility, respiratory failure, paresthesias, seizures, coma, death • Impaired release of O_2 from Hgb to tissues • 2,3-Diphosphoglycerate declines and Hgb affinity for O_2 increases	• Cardiac arrhytmias, electrocardiographic changes, tetany, convulsions, seizures, coma, death

Managing / preventing refeeding syndrome

- Underfeed for 3-5 days
  - 15-20 kcals / Kg
  - Advance calories gradually
  - Do not increase kcals if serum K, Mg or Phos are low
- Monitor electrolytes daily
- Replete potassium, magnesium, phosphorus
- Avoid excessive fluids.
- Vitamin supplementation

Chyle leak

- Rarely, injury to thoracic duct results in chylothorax (leakage of chyle)
- Chyle
  - white fluid that normally enters bloodstream from thoracic duct.
  - Fat content is from intestinal lacteals after digestion of long-chain fatty acids
- Goal – limit dietary fat to minimize chyle flow
  - Very low-fat, elemental type EN formula with significant amount of fat from medium chain triglycerides (MCTs).
  - MCTs are absorbed & transported to liver without entering lymphatic system

GI problems

- Nausea / vomiting
  - Anti-nausea meds
  - smaller bolus or slower infusion (gravity bag)
  - Upper body in upright position
  - If a PEG J tube – drain G port
  - " " check for malposition of J tube
  - Prokinetic meds -if not contraindicated
  - May need post-pyloric feeding
  - Lower fat formula (ileal brake)
- Fullness / distention
  - Slower infusion
  - If pt c/o 'gas' try avoiding fiber in EN formula
  - Rule out constipation as a cause.
  - If pt not using goal amount of EN , try a more concentrated formula
  - Call MD or visit ER if severe abdominal pain or distention develops

Constipation- causes

- Pre-existing disorders

- Other contributing factors
  - Advanced age, poor fiber content of diet, lack of physical activity, certain meds – opioids
- Cancer-related causes
  - Tumor invasion affecting nervous system, or bowel
- Other things to consider!
  - Obstipation, obstruction

Constipation - treatments

- Sufficient water intake
- Fiber
- Stool softeners
  - Docusate sodium
- Stimulent Laxatives
  - Senna, Bisacodyl
  - Suppositories, enemas
- Osmotic Laxatives
  - Milk of Magnesia, Polyethylene Glycol (Miralax), Lactulose, Sorbitol, magnesium citrate
  - Prune juice
- Opioid receptor antagonists
  - To treat Opioid induced constipation non-responsive to laxatives.
  - Naloxone, Methylnaltrexone, Alvimopan

Diarrhea

- Most commonly reported side effect
- No standard definition used in studies
  - Lebak et al.
- Multitude of causes

Some causes of diarrhea

Medications

- Antibiotics
- Sorbitol content of liquid meds
- Potassium
- Magnesium
- Chemotherapy
- Laxative use

Infections

- c difficile
- Small bowel bacterial overgrowth (sbbo, sibo)
- Formula contamination
- Others: campylobacter, shigella, parasites (uncommon)

Other gastrointestinal conditions

- Pancreatic insufficiency - steatorrhea
- Short bowel syndrome
- Bile salt insufficiency
- Pre-existing crohns, inflammatory bowel disease, etc
- Radiation enteritis
- Dumping syndrome: post-gastrectomy
- Liquid stool around bowel impaction

Formula content or administration method-in some clinical conditions

- Fiber, or lack of it
- Bolus feeding into small bowel
- Hyperosmolar feeding at excessive rate (after partial gastrectomy or into small bowel)
- Intact nutrients (in situations of poor digestion when elemental formula needed)

Managing / preventing diarrhea

- Ask Questions !
- In general
  - Remove meds that may contribute
  - Check for infection
  - Smaller bolus feeds or slower rate
  - Add soluble fiber
  - Use correct feeding method – for example need pump feeds for small bowel feeding.

- GI dysfunction
  - Low fat , MCT containing elemental formula for pancreatic insufficiency
  - Use pancreatic enzyme replacement medication (Creon)
  - Rule out obstruction or impaction
  - Treat infections

- If all else fails
  - Loperamide, codeine, tincture of opium
  - ChemoTx induced diarrhea – octreotide

For more information on nutrition support…

- A.S.P.E.N. (American Society for Parenteral and Enteral Nutrition) www.nutritioncare.org
- Academy of Nutrition and Dietetics www.eatright.org
- Dietitians in Nutrition support (DNS) dietetic practice group http://www.dnsdpg.org
- Nutrition articles in *Practical Gastroenterology* http://www.medicine.virginia.edu/clinical/departments/medicine/divisions/digestive-health/nutrition-support-team/resources-page

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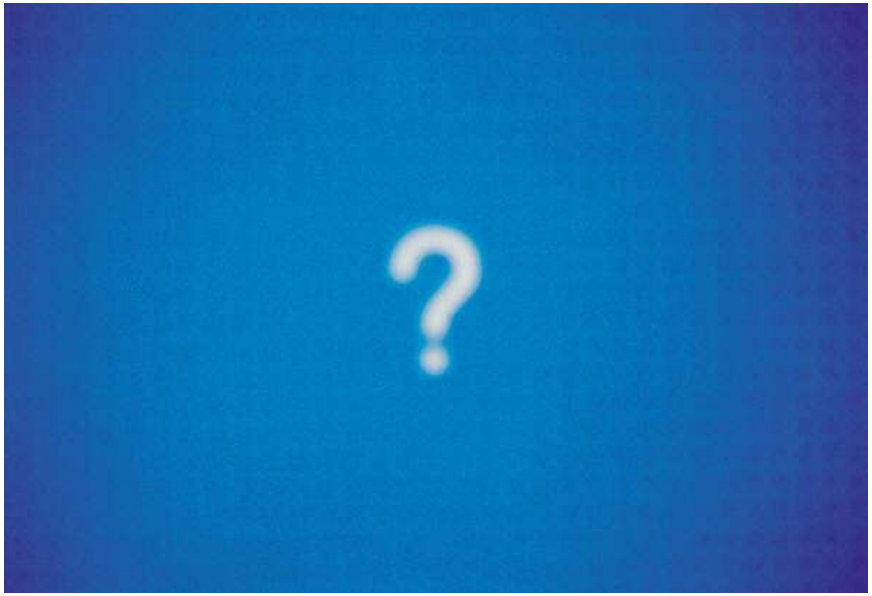

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