



Managing the Common Concerns of Home Enteral Nutrition Patients - Adults and Pediatrics

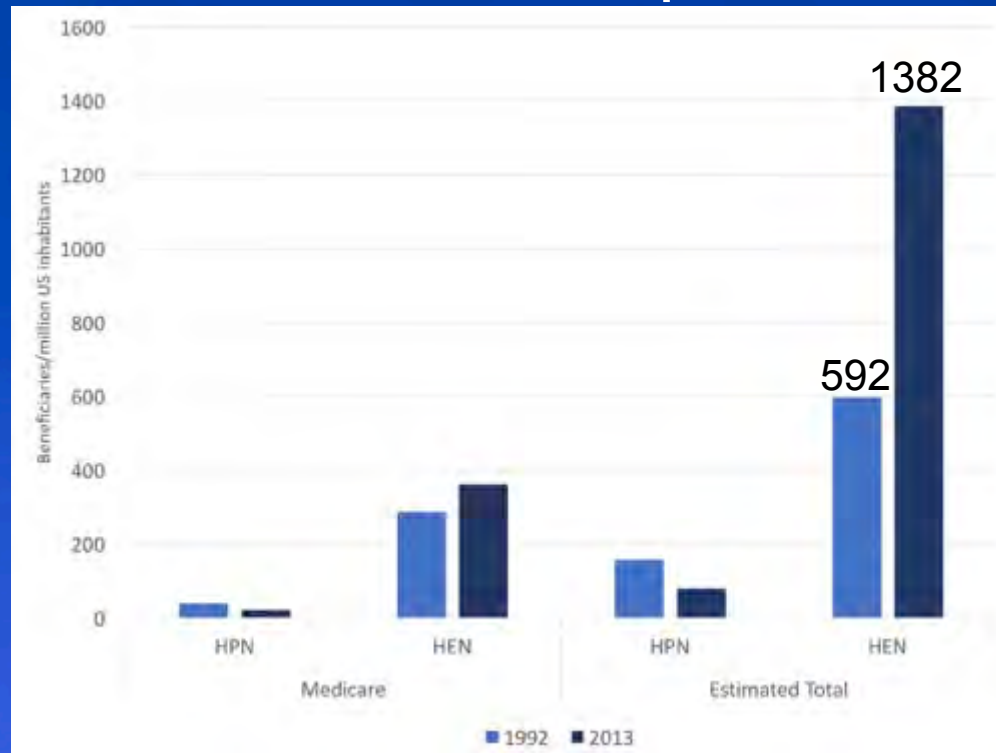
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Disclosure

- I have a commercial relationship with Halyard Health, Nestle and Abbott as a consultant/ member of speaker's bureau, etc. and will provide practice recommendations that are based on formal structured review of the literature.

Introduction

- HEN prevalence
 - Obtained 2013 data from CMS and three of the largest infusion companies
 - Estimated 437,882 HEN patients in the US



Mundi, Manpreet S., Adele Pattinson, Megan T. McMahon, Jacob Davidson, and Ryan T. Hurt. "Prevalence of Home Parenteral and Enteral Nutrition in the United States." *Nutrition in Clinical Practice*, December 2017.

Introduction

- HEN prevalence
 - Obtained 2013 data from CMS and three of the largest infusion companies
 - Estimated 437,882 HEN patients in the US
 - CMS reported \$594 million for HPEN in 2014
 - Management of HPEN in the US:
 - Decentralized
 - Medicare data: 1:1.5 ratio of provider to HEN patients
 - Infusion company: 1.6 patients per HEN provider

Introduction

- Management of HEN
 - Changes in health care
 - Reimbursement of enteral nutrition supplies
 - Formula/supply coverage
 - Each state and policy is different
 - Penalties for hospital readmissions
 - Blenderized tube feeding (BTF)
 - Internet
 - Support groups
 - Oley Foundation, Feeding Tube Awareness Foundation

Introduction

- Complications
 - Mechanical, infection, metabolic
 - Peristomal infections: 5-30%
 - HEN teams may reduce these by 20%

Strollo D, McClave S, Miller K. **Complications of Home Enteral Nutrition: Mechanical Complications and Access Issues in the Home Setting.** [Nutr Clin Pract.](#) 2017 Dec;32(6):723-729

Mundi, Manpreet S., Sara Seegmiller, Jacob Davidson, Jill Schneckloth, Jessica Saied, and Ryan T. Hurt. "Prospective Assessment of Peristomal Infections Using Objective Criteria." *Journal of Parenteral and Enteral Nutrition*

Learning Objectives

- Review some top concerns HEN patients (adults and pediatrics) have after hospital dismissal
- Identify solutions for managing common HEN concerns.
 1. Dehydration
 2. Bowel concerns
 1. Diarrhea
 2. Constipation
 3. Weight concerns
 4. Formula options

Case report

4 year old with cerebral palsy, feeding difficulties, constipation. S/P g-tube / fundoplication. Current tube feeding is 100 mL Pediasure 1.5 six boluses per day + 10 mL water flush. Feeding provides 900 calories, 36 grams protein, 600 mL formula.

Feeding provides 530 mL free fluid; estimated fluid needs = 1250 mL daily.

Case report

- Recommendation: continuous overnight feeding of water. Begin at 50 mL per hour X 9 hours and increase to gradually to goal rate of 80 mL.

Dehydration-

- Dehydration contributes to dry skin, headache, fatigue and constipation.
- Severe dehydration- increased heart rate and decreased blood pressure
- Children with special health care needs may need more fluid due to excess drooling, poor GI motility related to medications or low muscle tone, volume intolerance, poor oral intake, withholding stool.
- Estimate fluid needs
 - Adults (approximately 30-35 ml/kg body weight)
 - Pediatrics
 - 3-10kg=100mL/kg
 - 11-20kg=1000mL + 50ml/kg >10kg
 - >20kg=1500mL + 20ml/kg >20kg

*fluid needs will need to be modified based on patient's clinical status.

Dehydration

- Formulas vary in free water content from as low as 63% up to 85% water. Calculate free water + flushes and compare to estimated needs
- Difficult to assess water content of BTF. Estimated ~ 65-75% water. Additional water boluses will be needed.
- However, over-hydration can occur due to thinning BTF to get it through the tube without clogging. May result in hyponatremia (low sodium). Additional salt may be needed in the BTF recipe.

Case report

- 54 year old male with tonsil cancer, undergoing chemoradiation therapy. Has been on PEG feeding with 1.5kcal/mL fiber containing formula for 2 weeks. He calls with complains of nausea, fullness and no BM for 6 days.
- What are your first thoughts?



Bowel concerns

- How much water is he getting?
- Fiber vs no -fiber?
- Previous diet habits?
- Medications that may affect stooling?

Constipation

- Fiber can increase BM frequency when baseline is low (flushes or in formula)
- Increase activity
- Meet fluid needs
- Prune juice or pear juice flushes

Diarrhea

- Fiber-Soluble and insoluble
 - Reduces BM frequency when frequency is high
 - Insoluble increases transit time and increases fecal weight
 - Soluble might control diarrhea with SCFA
 - ASPEN/SCCM guidelines
 - Don't use fiber if at risk for bowel ischemia or has dysmotility
 - Use fiber for persistent diarrhea
- Prebiotics (FOS) help growth of gut bacteria
 - Kefir via tube

[Spapen H¹](#), [Diltoer M](#), [Van Malderen C](#), [Opdenacker G](#), [Suys E](#), [Huyghens L](#). Soluble fiber reduces the incidence of diarrhea in septic patients receiving total enteral nutrition: a prospective, double-blind, randomized, and controlled trial. [Clin Nutr](#). 2001 Aug;20(4):301-5.

Malone AM. Enteral formulations. In: Cresci, GA, ed. Nutrition Support for the Critically Ill Patient: A Guide to Practice. 2nd ed. Boca Raton, FL: CRC Press; 2015:259-277.

Diarrhea

- Fiber
 - Benefiber or Nutrisource via tube
 - Metamucil may clog tube
 - Change formula
- Nana flakes
- Stool thickening foods via tube
 - Applesauce
 - Banana
 - Rice cereal
- Temp of formula, hang times, feeding too fast

Weight loss

- 30 year old female with h/o gastroparesis and weight loss of 15% body weight in the last 3 months. BMI is now 32kg/m² and was started in PEJ feedings via a standard enteral formula due to inability to eat or drink anything orally. Her husband calls with concerns she is “so skinny” and not gaining weight with the tube feeding.

- How would you answer him?



Weight loss

- Discuss normal BMI
 - 70% of adults are overweight (35% obese)
 - ~50% don't know it
 - DM, cancer, HTN, osteoarthritis, gallbladder disease
- Discuss safe weight loss
 - 10% in 6 months
 - Then goal to maintain for 6 months, or 0.5kg loss per week
 - Hypocaloric, high protein (2-2.5g/kg IBW)
 - May be difficult without a protein supplement

Weight loss/poor growth

- Activity as able to prevent muscle loss
- Increase calories

Ways to add calories

- Duocal
- Benecalorie
- Oil flushes or mixed in formula
- Avocado, butter
- Fluids with calories as flushes (instead of water)

Weight concerns

- Changing nutrition needs, reassess as needed
 - Treatment
 - Healing
 - Maintenance
- HEN team should discuss goal weight with patient and family.
- Have planned schedule for follow up

Formula changes

- Fiber vs no fiber
- Calorie dense
- Protein source
- Hydrolyzed, elemental
- Commercial blenderized
- Homemade blenderized
- Combinations

Conclusion

- Recommend using evidence based guidelines (when available) vs provider opinion to manage common HEN complications.

References

1. Mundi, M, Pattinson, A, McMahon et al. *Prevalence of Home Parenteral and Enteral Nutrition in the United States*. Nutr Clin Pract. 2017 Dec;32(6):799-805.
2. *ASPEN Enteral Nutrition by the Numbers*. Guenter, P and Read J. Silver Spring MD 2017.
3. McClave, SA, Taylor, BE, Martindale, RG. Guidelines for the provision and assessment of nutrition support therapy in the adult critically ill patient: Society of Critical Care Medicine (SCCM) and American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.). JPEN J Parenter Enteral Nutr. 2016;40:159-211.
4. Waila C, Van Hoorn M, Edlbeck A, et al. The Registered Dietitian Nutritionist's Guide to Homemade Tube Feeding. J Acad Nutr Diet. 2016 Mar 16. pii: S2212-2672(16)00117-9. doi: 10.1016/j.jand.2016.02.007.
5. Pentiuk S, O'Flaherty T, Santoro K, Willging P, Kaul A. Pureed by gastrostomy tube diet improves gagging and retching in children with fundoplication. JPEN J Parenter Enteral Nutr. 2011;35(3):375-379.
6. Johnson, T., Spurlock, A., Epp, L., Hurt, R., Mundi, M., *Commercial Formula and Blended Food Tube Feeding in Children: Parents' Reported Experiences*. *Journal of Complementary and Alternative Medicine*. In press
7. Wiegand, D. L. (Ed.). (2017). *AACN procedure manual for high acuity, progressive, and critical care* (7th ed.). St. Louis, MO: Saunders.
8. Itkin, M., et al. (2011). Multidisciplinary practical guidelines for gastrointestinal access for enteral nutrition and decompression from the Society of Interventional Radiology and American Gastroenterological Association (AGA) Institute, with endorsement by Canadian Interventional Radiological Association (CIRA) and Cardiovascular and Interventional Radiological Society of Europe (CIRSE). *Journal of Vascular and Interventional Radiology*, 22, 1089–1106.