Transitioning to Standard, Fiber Free Tube Feed Formulas in the Intensive Care Unit

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Background

Background: The American Society of Parenteral and Enteral Nutrition (ASPEN) guidelines suggest using a standard polymeric formula when initiating Enteral Nutrition (EN) in the Intensive Care Unit (ICU) setting as well as avoiding the routine use of all specialty formulas in critically ill patients in a Medical Intensive Care Unit (MICU) and disease-specific formulas in the Surgical Intensive Care Unit (SICU). A mixed fiber formula should not be routinely used in the adult critically ill patient prophylactically to promote bowel regularity or prevent or prevent diarrhea and both soluble/insoluble fiber containing formulas should be avoided in patients at high risk for bowel ischemia or severe dysmotility.[1] At Northwestern Huntley Hospital, the routine use of a peptide-based formula has been the standard for our critically ill patient population.

- *Standard Formula*: whole proteins, complex carbohydrates and long chain triglycerides (intact nutrients not yet broken down in digestive process)
- *Peptide-Based Formula*: varying lengths of amino acids, simple carbohydrates and medium chain triglyceride (partially pre-digested, not fully digested)

Purpose: The purpose of this data collection is to transition from the routine use of a peptide-based formula (Vital AF 1.2) to a standard polymeric, fiber free formula (Promote) to monitor and evaluate tolerance of the ICU patient population. This will also align with the system goal of fiscal stewardship while continuing to provide a high level of nutrition care.

Methods

Deliverables:

1. 1 month of data collection utilizing standard, fiber free formula in the ICU setting
2. Analysis of data collection
3. Data analysis of the cost of modifying current process
4. Create and deliver education to clinical nutrition therapy team as well as members of the interdisciplinary team regarding results and process adjustments
5. Aid in implementation of updated process at additional Northwestern Medicine sites

Methods:

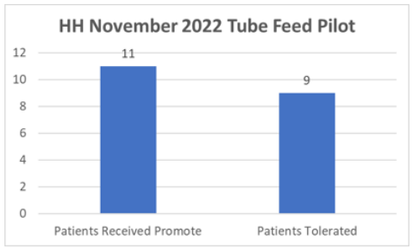
Data was collected over 1 month time, November 2022, in the ICU of Northwestern Medicine Huntley Hospital. Patients were included based on the following criteria:

- *Inclusion Criteria:* Age > 18, patients intubated on mechanical ventilation, patients with functional gastrointestinal tract appropriate for EN, EN access in place, patients determined to be hemodynamically stable on stable, decreasing or low dose vasopressor requirements
- Exclusion Criteria: Age <18, patients not on mechanical ventilation (standard, fiber containing formula remains appropriate), patients necessitating fluid restriction or minimal fluid provision, patients with significant electrolyte derangements or renal dysfunction, patients without functional gastrointestinal tract, hemodynamically unstable patients with increasing dose of vasopressor requirements, unable to achieve EN access

The current dietitian consultation process remained the same; "Consult to Dietitian Tube Feed Evaluate and Treat." The clinical nutrition therapy team and registered dietitian nutritionist performed a complete nutrition assessment and, if patient was deemed appropriate for initiation of enteral nutrition by the RDN and MD, was started on the standard, polymeric and fiber free Promote 1.0 as opposed to the peptide based Vital AF 1.2. The patient was monitored in the ICU setting by both the RDN and interdisciplinary team and was evaluated daily for tolerance, electrolyte derangements and fluid status. Monitoring included the routine use of gastric residual volumes (EN held if GRV > 500), presence of nausea/vomiting/diarrhea/constipation as well as bowel movements, abdominal inspection and daily serum laboratory values.

Results

Results: Of the 11 patients who met inclusion criteria during the data collection period, 9 patients tolerated the initiation of Promote 1.0 during the intubated time period. 2 patients necessitated transition to an alternative formula: Patient A developed hyperkalemia utilizing Promote 1.0 which was successfully managed transitioning the patient to Nepro, Patient B developed GRV > 500 which showed improvement after transitioning the patient to Vital AF 1.2.

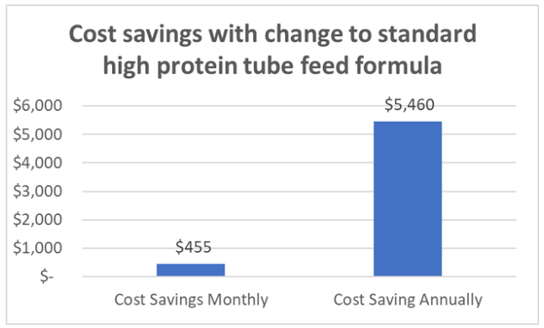


Financial Analysis and Cost Savings

Analysis of Cost: As well as being considered best practice, utilizing Promote 1.0 over Vital AF 1.2 as presents an opportunity for cost savings and the practice of fiscal stewardship of the organization.

Product	Vendor Ordered Through	Manufacturer	Amount	Amt. /Case	NDC Code	Abbott ID	PeopleSoft Marketplace Order	Flavor	Cost / Case Contract	Cost/Item Contract
STANDARD PRODUCTS										
Promote 1L	Medline	Abbott	1L	8	70074-0627-02	62701	349758	n/a	$ 8.10	$ 1.01
SPECIALTY PRODUCTS										
Nepro with Carb Steady 1L	Medline	Abbott	1L	8	70074-0626-70	62669	322616	n/a	$ 22.51	$ 2.81
Vital AF 1.2 1L	Medline	Abbott	1L	8	70074-0627-16	62715	322609	n/a	$ 64.07	$ 8.01
Vital High Protein 1L	Cardinal	Abbott	1L	8	70074-0630-82	63081	366111	n/a	$ 64.75	$ 8.09

Based on current contract with Abbott, Promote 1.0 is purchased for $8.10 per case or $1.01 per 1 L bottle. Vital AF 1.2 is purchased for $64.07 per case or $8.01 per 1 L bottle. The data collection revealed that approximately 65 liters of formula was provided to 11 patients over the course of 1 month. This is the equivalent of $455 in savings per month, or a projected savings of $5,460 per year.



Conclusions

Conclusions: The data collection occurring over the month of November 2022 in the ICU of Northwestern Huntley Hospital was considered to be a success. Not only did the results demonstrate that greater than 75% of patients are able to tolerate a standard, polymeric fiber free formula which best aligns with current recommendations and is considered to be best practice set in place by ASPEN, but the transition to Promote 1.0 when applicable can be cost saving > $5,000 annually at this site alone.

Reference

(1) McClave, S.A., Taylor, B.E., Martindale, R.G., Warren, M.M., Johnson, D.R., Braunschweig, C., McCarthy, M.S., Davanos, E., Rice, T.W., Cresci, G.A., Gervasio, J.M., Sacks, G.S., Roberts, P.R., Compher, C., and (2016), Guidelines for the Provision and Assessment of Nutrition Support Therapy in the Adult Critically Ill Patient. Journal of Parenteral and Enteral Nutrition, 40: 159-211. https://doi.org/10.1177/0148607115621863