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Section 10. Monitoring and Reassessment

Background

The goal of nutrition reassessment is to update the nutrition care plan based on changes in clinical or nutrition status as identified through ongoing monitoring and evaluation. Monitoring the patient receiving EN can help prevent iatrogenic malnutrition and other adverse events. The timeframe for follow-up of enterally fed patients is often driven by an organization's policy and procedures.

Making certain that the patient receives the amount of formula recommended and ordered is important to optimize nutrition status and prevent malnutrition. Volume delivered is often not the amount ordered. In most cases, volume delivered is less than what was ordered, with the most common reasons being GI intolerance, such as nausea, vomiting, abdominal distention, or diarrhea; tube obstruction or dislodgement; or feeding interruptions for nursing or physician care, procedures, or patient refusal. Measuring the volume the patient received within a specified timeframe is important to determine whether nutrient needs are being met. Methods to track volume delivered are not standardized and may include recording intake and output, documenting number of hours the feeding was held vs infusion hours ordered, marking the bottle or bag, or logging the volume measured by the enteral feeding pump, with the latter method possibly allowing the least room for human error. Reassessment will also include the transition from EN to oral nutrition as appropriate.

Question 10.1. What are the minimum monitoring parameters and timeframes for reassessment to allow for safe management of the patient receiving EN?

Practice Recommendations

1. Monitor and evaluate the patient receiving EN to identify all changes in physical examination findings, laboratory values, anthropometric data, and outcomes.
2. Include a thorough review of changes in clinical status, new medications and therapies, EN intake and tolerance, biochemical indices, anthropometric

- changes (eg, physical examination and weight), and malnutrition risk.
3. Assess nutrition risk of the patient receiving EN throughout the patient's therapy.
 - a. Determine frequency of assessment by considering patient acuity and progression of clinical care.
 - b. Provide regular documentation of patient reassessment—typically, daily and/or weekly. Monitoring of nutrition status may be more frequent than documentation of reassessment.
 4. Reassess the tube-fed patient in institutionalized long-term care *at least* monthly.
 5. Reassess the home tube-fed patient *at least* quarterly.

Rationale

Reassessment timeframes will depend on the practice setting. EN intolerance will likely be noted within the first 3 days of initiation, if at all.¹ Monitoring parameters focus on changes in clinical status that will likely affect tolerance of the enteral prescription. Tolerance is measured using various methodologies, which are discussed elsewhere in this document. It is important to monitor the adverse effects of medications or particular forms of medications that can affect the safety of EN. For example, liquid medications with high sorbitol content may contribute to loose stools, dehydration, and perceived intolerance of the enteral formula. Interruptions to EN, including those due to intolerance of EN, are monitored because they can contribute to undernutrition.² Energy deficit is associated with increased clinical complications, especially infections.³ It is important to monitor that medications are administered separately and diluted appropriately to prevent clogging of the tube and missed nutrition.

Routine laboratory monitoring will assist the clinician in determining overall tolerance of the nutrition treatment plan.⁴ The nutrition assessment and recommendations section found earlier in this document addresses this factor in more detail. Unintentional weight loss is a risk factor on validated malnutrition screening tools and therefore must be monitored closely in all patients on EN. Last, organizations need protocols to monitor and prevent potential adverse effects associated with EN, such as aspiration. The clinician can monitor oral hygiene and the use of other precautions, such as elevating the HOB to at least 30° to 45° during and after tube feeding.

Question 10.2. How is EN tolerance best determined?

Practice Recommendations

1. Assess tolerance to EN using a combination of parameters appropriate to the individual patient.
2. Evaluate patient subjective complaints, objective findings of GI function (eg, GRV, vomiting, diarrhea),

and physical examination findings (eg, abdominal distention).

Rationale

Patients in all settings and age groups must be monitored while undergoing EN support. Monitoring EN tolerance is essential in the delivery of EN because patients who experience EN intolerance frequently fail to achieve EN goals.⁵ Monitoring for EN intolerance often includes multiple parameters such as GRV and assessment of GI function.⁶ In a recent observational study, Wang and colleagues⁷ reported that 32% of patients receiving EN in a large tertiary hospital experienced enteral feeding intolerance. Of those patients, approximately two-thirds demonstrated a single high GRV, whereas one-third experienced a combination of 2 or more of the following symptoms: high GRV, nausea/vomiting, and abdominal distention. Blaser and colleagues⁵ recently evaluated EN intolerance in ICU patients with the objective to identify a definition most strongly associated with ICU mortality. They concluded the “best” definition of EN intolerance is based on “a complex assessment of GI symptoms” rather than a single measurement.

GRV monitoring and interventions to improve EN tolerance based on this assessment are covered elsewhere in this document. The American Society for Parenteral and Enteral Nutrition/Society of Critical Care Medicine nutrition guidelines, recommendation D1 states that “patients should be monitored daily for tolerance of EN (determined by physical exam, passage of flatus or stool, radiologic evaluations and absence of patient complaints such as pain or abdominal distention).” Inappropriate cessation of EN should be avoided.⁸

Question 10.3. What is the best way to transition from EN to oral feeding?

Practice Recommendations

1. Identify a safe oral feeding regimen through discussion with interdisciplinary team members, including speech and language specialists who evaluate swallowing and aspiration risk with various food consistencies. Provide an individualized diet with necessary modifications in the initial stages of oral intake.
2. Transition continuous EN to an intermittent schedule when clinically appropriate. Provision of either partial or full EN via this intermittent regimen will depend on the nutrition needs and status of the patient.
3. Coordinate oral feedings with times when EN is off to help stimulate appetite. Consider intermittent EN feedings that are administered as a supplement after a meal is consumed and/or continuous feedings at night.
4. Establish a consistent meal routine.

5. Document the percentage of food consumed at each meal or snack. Ideally, the type and amount of food are also recorded.
6. Document any identified issues with oral consumption.
7. Involve the patient and/or family members in food and oral supplement preferences regarding oral diet advancement.
8. Monitor swallowing performance, nutrition and hydration status, and respiratory complications with adjustment of EN as appropriate.
9. Consider a trial of eliminating the EN regimen when the patient is able to meet the majority of energy needs with oral intake.
10. Obtain weights at least weekly to ensure adequate caloric intake to meet weight goals.

Rationale

Transitional orders from EN to oral feeding have been defined as incremental decreases in EN volume over a period of time to accommodate for increasing oral intake. Minimal research or guidelines exist regarding transition from enteral feeding to oral feeding. Crary and Groher⁹ recommends that at minimum, tube-fed patients with dysphagia must demonstrate a safe and efficient swallow on a consistent basis to be considered candidates to return to oral feeding. Additionally, patients must be able to consume adequate food or liquid to support nutrition requirements before they can be fully transitioned from EN to oral feeding.

Buchholz¹⁰ developed a clinical algorithm specific to patients with acquired brain injury or stroke that provides suggestions for transitioning tube-fed patients to oral feeding. The initial transition phase is termed the *preparatory phase* and focuses on the patient's physiologic readiness for oral nutrition. This first phase incorporates medical and nutrition stability, intermittent tube-feeding implementation, and swallowing assessment. The second phase is termed *weaning* and includes a graduated increase in oral feeding, with corresponding decreases in tube feeding. In this algorithm, once a patient is consuming 75% or more of his or her nutrition requirements consistently by mouth for 3 days, all tube feedings are discontinued. Another proposed option is nighttime cycling of EN once patients are meeting more than 60% of target calories by the oral route.¹¹

Clinical reality dictates that both patients and healthcare professionals will vary in terms of their readiness to discontinue enteral feeding. The process of transition should be thoroughly discussed with the patients, assuming that they are clinically able to communicate, and outline a plan of action. Simple and patient-specific goals are often helpful. Oral ingestion is best attempted at times when the stomach is not full, taking full advantage of the hunger drive. Continuous feedings can be modified to an intermittent schedule to stimulate normal hunger cycles, and ideally, intermittent

feedings are tolerated before an oral diet is attempted. When patients attempt oral feedings, it is important that they are fully upright and alert. For patients with fluctuating mental status, try feeding when their pattern of alertness is maximal. Therefore, for these patients, return to oral intake may only involve attempts at 1 or 2 meals per day. If patients have swallowing difficulties, a speech-language pathologist can recommend appropriate types and textures of food to put on trays.

During the transition process, it is important to remember that the total time to wean from tube feeding to oral feeding is patient dependent. Also, weaning from tube to oral nutrition is not a goal shared by all patients.¹² Abrupt discontinuation of nutrition therapy predisposes the patient to hypoglycemia if an insulin regimen is not adjusted. A reduction in the nutrition support infusion rate without an adjustment in insulin therapy was the second most common cause for hypoglycemia in 1 retrospective study.¹³ Close monitoring of glycemic control in patients transitioning from enteral to oral diet is critical to prevent sentinel events.

Topics for Future Research

- Optimal frequency of nutrition screening/reassessment based on outcomes
- Optimal protocol to transition EN to oral feeding
- Updated data on pump accuracy studies using pumps currently in use in the United States

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