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Medical Nutrition Therapy Summary Page for Nutrition Support in Critical Illness

Tube Feeding Initiation

Assessment Factor—Feeding Route

Recommendation: If the critically ill ICU patient is hemodynamically stable with a functional GI tract, then enteral nutrition is recommended over parenteral nutrition.

Expected Outcome: Patients who received enteral nutrition experienced less septic morbidity and fewer infectious complications than patients who received parenteral nutrition. In the critically ill patient, enteral nutrition is associated with significant cost savings when compared to parenteral nutrition. There is insufficient evidence to draw conclusions about the impact of enteral nutrition or parenteral nutrition on length of stay and mortality.

Conditions: Strong, conditional

Studies that compared enteral nutrition against PN interventions under conditions of tight glucose control are not available

Studies that examined combined enteral nutrition and PN interventions were not included in this phase of the evidence analysis

Assessment Factor—Timing of Enteral Feeding

Recommendation: If the critically ill patient is adequately fluid resuscitated, then enteral nutrition should be started within 24 to 48 hours following injury or admission to the ICU.

Expected Outcome: Early enteral nutrition is associated with a reduction in infectious complications and may reduce length of stay (LOS). The impact of timing of EN on mortality has not been adequately evaluated.

Conditions: Strong, conditional

Adequate hemodynamic stability (MAP sustained above 70 mm Hg), isotonic formula, careful advancement of rate.

Assessment Factor—Type of Formula

Recommendation: Immune-enhancing enteral nutrition is not recommended for *routine* use in critically ill patients in the ICU.

Expected Outcome: Immune-enhancing enteral nutrition is not associated with reduced infectious complications, LOS, reduced cost of medical care, days on mechanical ventilation or mortality in moderately to less severely ill ICU patients. Their use may be associated with increased mortality in severely ill ICU patients, although adequately-powered trials evaluating this have not been conducted. For the trauma patient, it is not recommended to routinely use immune-enhancing enteral nutrition, as its use is not associated with reduced mortality, reduced LOS, reduced infectious complications or fewer days on mechanical ventilation

Conditions: Fair, imperative

Pharmacological doses of single nutrients were not evaluated; therefore this recommendation only applies to immune-enhancing enteral nutrition with more than one nutrient.

Minimization of Aspiration

Assessment Factor—Tube Location

Recommendation: Small bowel tube placement is associated with reduced gastric residual volume (GRV). Adequately-powered studies have not been conducted to evaluate the impact of GRV on aspiration pneumonia. There may be specific disease states or conditions that may warrant small bowel tube placement (e.g., fistulas, pancreatitis, gastroparesis); however, they were not evaluated at this phase of the analysis.

Expected Outcome: Enteral Nutrition administered into the stomach is acceptable for most critically ill patients. Consider placing feeding tube in the small bowel when patient is in supine position or under heavy sedation. If your institution's policy is to measure GRV, then consider small bowel tube feeding placement in patients who have more than 250ml GRV or formula reflux in two consecutive measures.

Conditions: Fair, conditional

Varying interpretations of the impact and importance of GRV may be a barrier to implementing this recommendation

The placement of feeding tubes in the post-pyloric position requires skilled practitioners (hospitals vary in who places tubes from medical or nursing to dietetics personnel)

Some but not all protocols use fluoroscopy to aid in tube placement, while others use promotility agents or magnets and radiographic confirmation of tube tip position.

Assessment Factor—Aspiration Detection

Recommendation: Blue dye should not be added to enteral nutrition for detection of aspiration.

Expected Outcome: The risk of using blue dye outweighs any perceived benefit. The presence of blue dye in tracheal secretions is not a sensitive indicator for aspiration.

Conditions: Strong, imperative

Challenges to Implementation: Prior beliefs or practices about the perceived effectiveness of using blue dye may be a barrier to implementing this recommendation.

Assessment Factor—Patient Positioning

Recommendation: Critically ill patients should be placed in a 45-degree head of bed elevation, if not contraindicated.

Expected Outcome: Decreased incidence of aspiration pneumonia and reflux of gastric contents into the esophagus and pharynx

Conditions: Strong, imperative

Raising the head of bed to 45 degrees may be contraindicated in specific medical conditions that require the patient to be supine (e.g., back and neck surgery, hypotension)

Long-term use of 45-degree head of bed elevation may be associated with increased pressure over the ischial tuberosities and may expose the patient to greater shearing forces due to gravity-related sliding in the bed

Assessment Factor—Gastric Residual Volume (GRV)

Recommendation: Evaluating GRV in critically ill patients is an optional part of a monitoring plan to assess tolerance of enteral nutrition. Enteral nutrition should be held when a GRV greater than or equal to 250ml is documented on two or more consecutive occasions. GRV may not be a useful tool to assess the risk of aspiration pneumonia. Adequately-powered studies have not been conducted to evaluate the impact of GRV on aspiration pneumonia.

Expected Outcome: Holding enteral nutrition when GRV is less than 250ml is associated with delivery of less enteral nutrition.

Conditions: Consensus, imperative

There is little if any evidence to support this recommendation.

Assessment Factor—Pharmacologic

Recommendation: If the patient exhibits a history of gastroparesis or repeated high GRV, then consider the use of a promotility agent in critically ill ICU patients, if there are no contraindications.

Expected Outcome: The use of a promotility agent (e.g., Metoclopramide) has been associated with increased GI transit, improved feeding tolerance, improved enteral nutrition delivery and possibly reduced risk of aspiration.

Conditions: Strong, conditional

Metoclopramide may be contraindicated in specific medical conditions or in combination with certain other drugs and should not be used in such circumstances.

Determination of Energy Expenditure, Effect of Energy Intake

Assessment Factor—Measurement of Energy Expenditure

Recommendation: Indirect calorimetry is the standard for determination of RMR in critically ill patients since RMR based on measurement is more accurate than estimation using predictive equations.

Expected Outcome: Properly conducted measurement reliably produces accurate values for resting energy expenditure.

See guideline sub-menu for specific recommendations regarding the use of indirect calorimetry equipment.

Conditions: Strong, imperative

Measures should be done by personnel trained in and with demonstrated and documented ability to calibrate, operate and maintain the calorimeter, having a general understanding of how mechanical ventilation works and recognizing calorimeter values within the normal physiologic range.

More frequent measures may be needed in patients with rapidly changing clinical course, as recognized by hemodynamic instability, spiking fevers, immediate postoperative status and ventilator weaning.

Assessment Factor—Estimation of Energy Expenditure

Recommendation: If predictive equations are needed in non-obese, critically ill patients, consider using one of the following, as they have the best prediction accuracy of equations studied (listed in order of accuracy): Penn State, 2003a (79%), Swinamer (55%) and Ireton-Jones, 1992 (52%). In some individuals, errors between predicted and actual energy needs will result in under- or over-feeding.

If predictive equations are needed for critically ill mechanically ventilated individuals who are obese, consider using Ireton-Jones, 1992, or Penn State, 1998, as they have the best prediction accuracy of equations studied. In some individuals, errors between predicted and actual energy needs will result in under- or over-feeding.

Expected Outcome: Use of predictive equations sometimes produces accurate values for resting energy expenditure, and sometimes produces over or underestimates of resting energy expenditure.

Conditions: Fair, conditional

Certain predictive equations were designed for application in mechanically ventilated patients and therefore are not applicable if the patient is not mechanically ventilated.

Assessment Factor—Energy Intake

Recommendation: Monitoring plan of critically ill patients must include a determination of daily actual EN intake. Enteral nutrition should be initiated within 48 hours of injury or admission and average intake actually delivered within the first week should be **at least** 60-70% of total estimated energy requirements as determined in the assessment.

Expected Outcome: Provision of enteral nutrition within this time frame and at this level may be associated with a decreased LOS, days on the mechanical ventilation and infectious complications.

Conditions: Fair, imperative

These recommendations are limited to critically ill patients in the early phase of ICU admission.

Medical Nutrition Therapy Critical Illness Data Collection Guide

Name: _____ MR#: _____ Referring Physician: _____

Today's Date: _____ Date of Admission: _____

Medical Diagnosis: _____

Nutrition Assessment

Height: _____ Weight _____ IBW (%IBW) _____ UBW (%UBW) _____

BMI: _____ kg/m2 ❒ Underweight ❒ Adequate ❒ Overweight ❒ Obese ❒ Morbidly Obese

Weight change: None / Intentional / Unintentional Details: _____

Diet/supplements prior to admission: _____

Food allergies/intolerances/religious or cultural food practices: _____

Current Medical Nutrition Therapy: _____

Gastrointestinal

❒ None ❒ Nausea ❒ Vomiting ❒ Diarrhea

❒ Gastric Residual Volume/Gastric Output ❒ Constipation

❒ Anorexia ❒ Early Satiety ❒ Dysphagia ❒ Other

Details: _____

Labs: _____

Physical Findings

❒ Edema/Ascites ❒ Muscle Wasting ❒ Skin

❒ Hydration Status ❒ Ventilation ❒ Temperature

❒ None ❒ Other:

Details: _____

Medications: _____

Nutrition needs: _____ kcals Methods to determine: _____

_____ gms protein (_____) gms per kg Fluid needs: _____ mls ❒ Per physician

Present nuttrient intake meeting needs: ❒ Unable to assess ❒ Yes ❒ No

Nutrition Diagnosis

Problem: _____

Etiology: _____

Signs/Symptoms: _____

Problem: _____

Etiology: _____

Signs/Symptoms: _____

Nutrition Intervention(s)

Nutrition Prescription: ❒ Per Recommendations Intervention: _____

Goal: _____

Other: _____ Intervention: _____

Goal: _____

Nutrition Monitoring/Evaluation

_____

Recommendations: _____

Date/Time: _____ Signature _____

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