

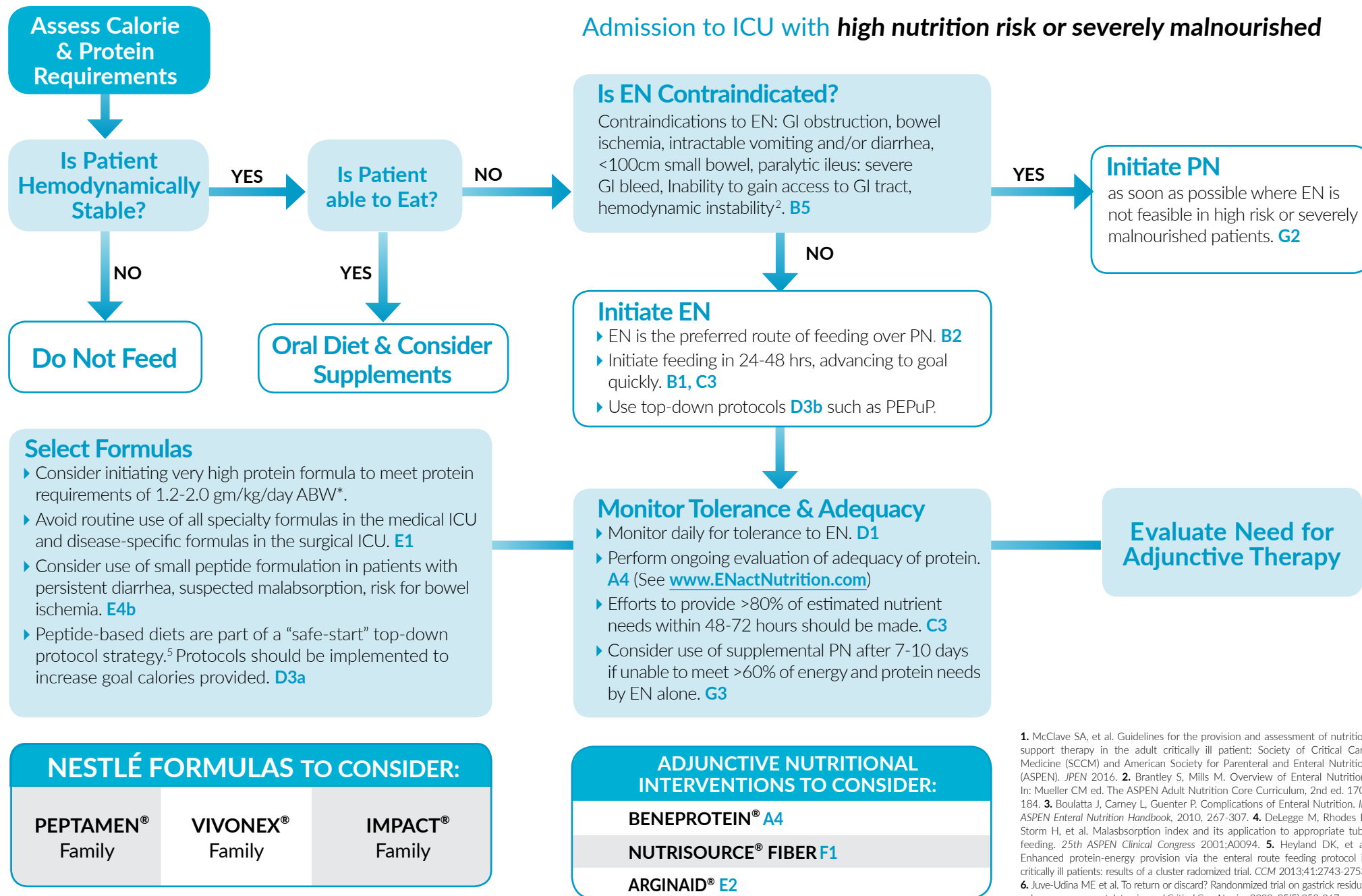
Critical Care Nutrition Therapy Algorithms



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ENTERAL NUTRITION DECISION and Calculation of Needs based on Critical Care Nutrition Guidelines¹



1. McClave SA, et al. 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 (ASPEN). *JPEN* 2016. 2. Brantley S, Mills M. Overview of Enteral Nutrition. In: Mueller CM ed. The ASPEN Adult Nutrition Core Curriculum, 2nd ed. 170-184. 3. Boulatta J, Carney L, Guenter P. Complications of Enteral Nutrition. In: *ASPEN Enteral Nutrition Handbook*, 2010, 267-307. 4. DeLegge M, Rhodes B, Storm H, et al. Malabsorption index and its application to appropriate tube feeding. 25th ASPEN Clinical Congress 2001;A0094. 5. Heyland DK, et al. Enhanced protein-energy provision via the enteral route feeding protocol in critically ill patients: results of a cluster randomized trial. *CCM* 2013;41:2743-2753. 6. Juve-Udina ME et al. To return or discard? Randomized trial on gastric residual volume management. *Intensive and Critical Care Nursing* 2009; 25(5):258-267.

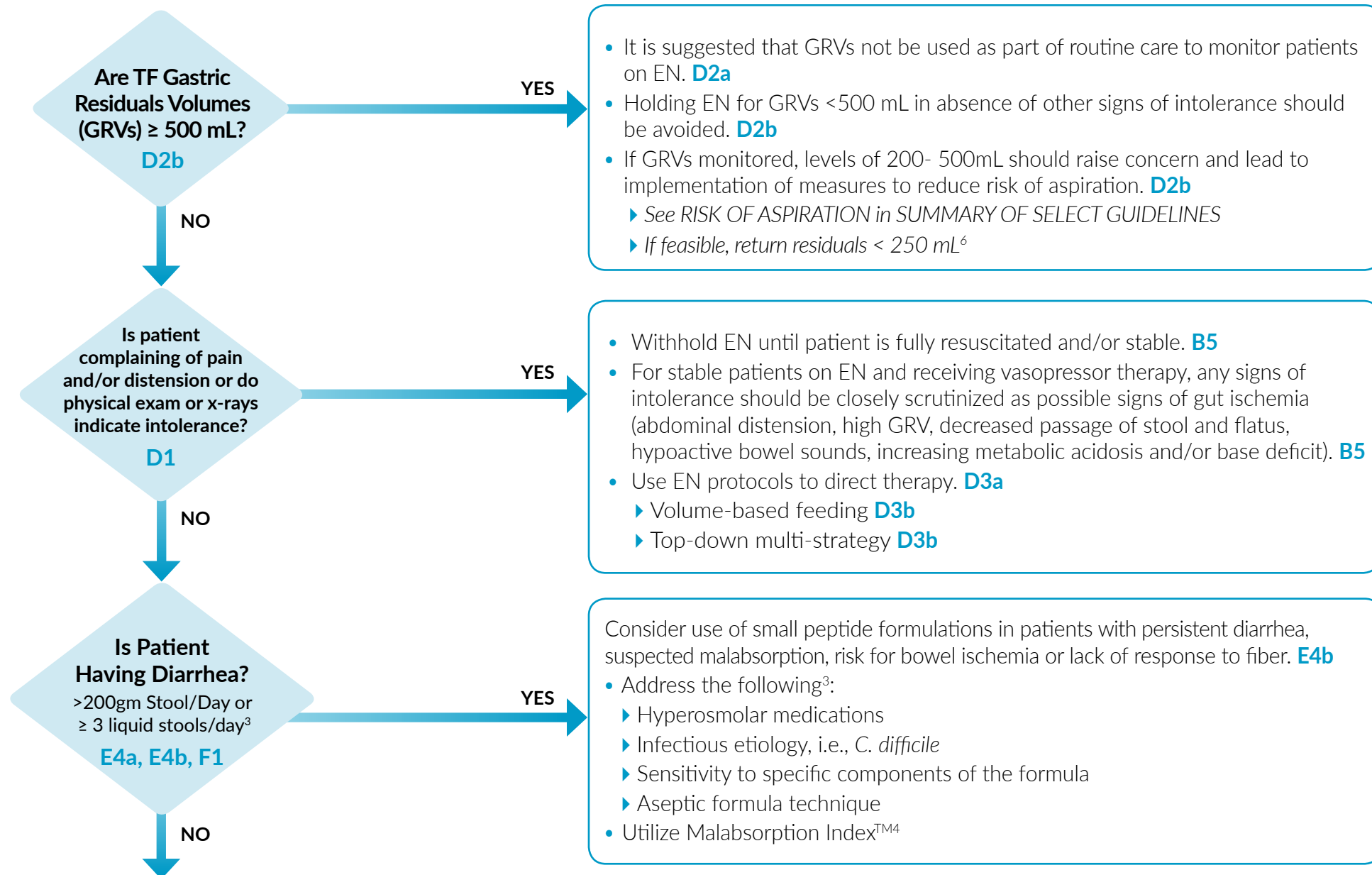
ENTERAL NUTRITION DECISION and Summary of Select 2016 CRITICAL CARE NUTRITION GUIDELINES



USE OF PROTOCOLS	Enteral feeding protocols should be designed and implemented to increase overall percentage of calories provided. D3a Use of volume-based feeding protocol or top-down multi-strategy protocols should be considered. D3b
ROUTE	Nutrition support therapy in the form of early EN should be initiated in 24-48 hours in the patient who is unable to maintain volitional intake. B1 EN over PN is suggested in critically ill patients who require nutrition support therapy. B2
INITIATE EN	Patients at high nutrition risk or severely malnourished should be advanced to goal feeding as quickly as tolerated over 24-48 hours. Goal is to provide >80% of estimated protein and energy needs. C3
PEPTIDES	Suggest considering use of small peptide formulations in the patient with persistent diarrhea with suspected malabsorption, risk of bowel ischemia or lack of response to fiber. E4b
HOLD PN	In the low nutritional risk patient, PN should be withheld for 7 days following ICU admission for the patient who cannot maintain volitional intake or receive EN. G1
INITIATE PN	On admission in high nutrition risk or severely malnourished patients, when EN is not feasible. G2, H2 To supplement EN after 7-10 days of EN if unable to meet > 60% of energy and protein needs. G3
CALORIES	Suggest indirect calorimetry (IC) be used to determine energy requirements when available and in the absence of variables that affect accuracy. A3a In the absence of IC, use a published predictive equation or a simplistic weigh-based equation (25-30 kcal/kg/d) to determine caloric requirements for BMI < 30. A3b See <i>Obesity</i> for recommendations for patients with BMI ≥ 30.
PROTEIN	Protein requirements for patients with BMI less than 30 are expected to be in the range of 1.2-2.0 g/kg ABW*/day and may likely be even higher in burn or multi-trauma patients. C4 An ongoing evaluation of adequacy of protein provision should be performed. A4
OBESITY	Suggest for all classes of obesity where BMI is >30, the goal of the EN regimen should not exceed 60-70% of target energy requirements as measured by IC. If IC unavailable, suggest 11-14 kcal/kg ABW*/day for BMI 30-50, and 22-25 kcal/kg IBW**/day for BMI >50. Protein is suggested at ≥ 2.0 gm/kg IBW**/day for BMI 30-40, and up to
FIBER	Avoid both soluble and insoluble fiber in patients at high risk for bowel ischemia or severe dysmotility. E4b A fermentable soluble fiber should be considered for routine care in all hemodynamically stable medical and surgical patients placed on standard enteral formulations. F1

*ABW is Actual Body Weight; **IBW is Ideal Body Weight

MANAGING INTOLERANCE based on Critical Care Nutrition Guidelines¹



In patients who are high nutrition risk or severely malnourished, EN should be advanced towards goal as quickly as tolerated over 24-48 hours. Efforts to provide >80% of goal protein and energy within 48-72 hours, should be made to achieve clinical benefit of EN over first week of hospitalization. **C3**

MANAGING INTOLERANCE and Summary of Select 2016 Critical Care Nutrition Guidelines¹



USE OF PROTOCOLS

- Enteral feeding protocols should be designed and implemented to increase the overall percentage of goal calories provided. **D3a**
- Use of volume-based feeding protocol or top-down multi-strategy protocol should be considered. **D3b**

GASTRIC RESIDUALS

- Patients should be monitored for tolerance of EN and inappropriate cessation of EN should be avoided. **D1**
- Holding EN for gastric residual volumes < 500mL in the absence of other signs of intolerance should be avoided. **D2b**

RISK OF ASPIRATION

- Patients should be assessed for risk of aspiration and the following steps proactively employed:
 - ▶ Consider post-pyloric tube placement. **D4a**
 - ▶ Elevate head of bed 30°-45°. **D4d**
 - ▶ In high risk patients or those intolerant to bolus gastric EN, switch delivery to continuous infusion. **D4b**
 - ▶ Use chlorhexidine mouthwash twice daily. **D4d**
 - ▶ Prokinetic agents should be initiated where clinically feasible. **D4c**

DIARRHEA

- EN should not be automatically interrupted for diarrhea; evaluate etiology of diarrhea to determine appropriate therapy. **D6**
- Consider use of small peptide formulations in patients with persistent diarrhea, suspected malabsorption, risk for bowel ischemia or lack of response to fiber. **E4b**
- If there is evidence of diarrhea and fiber is not contraindicated, then 10-20 gm of fermentable soluble fiber should be given in divided doses over 24 hours as adjunctive therapy. **F1**