Critical Care Nutrition Algorithms

ASPEN Nutrition Care Algorithm

From 2010 ASPEN Standards of Care for Adult Hospitalized Patients

Target Patient Population - 18 years of age or older, critically ill patient expected to be in a medical or surgical ICU for more than 2-3 days.
Admitted to the ICU with anticipated inadequate volitional intake?

No

Reassess volitional intake in 2-3 days if remains in the ICU.

Yes

Determine nutrition risk (Nutric score or NRS-2002).

Is patient at high nutrition risk or malnourished?

No

Specialized nutrition therapy not required (reassess in 2-3 days if remains in ICU).

Yes

Is early EN feasible?

No

Begin EN and advance toward goal over 24-48 hours (goal of >80% of estimated energy/protein requirements within 48-72 hours) (Refer to Nutrition Assessment).

Yes

Initiate PN as early as feasible.

Is the patient hemodynamically stable?

No

Withhold enteral feedings until the patient is fully resuscitated and/or stable.

Yes
Nutrition Assessment Algorithm

In indirect calorimetry available and able to be performed?

Yes → Measure REE

Use a published predictive or weight based (25 – 30 kcals/kg/d) equation to determine energy requirements.

No → Is the patient obese (BMI > 30)?

Yes → Provide protein dose of 1.2 – 2 g/kg/day (see note)

No → BMI between 30 – 50?

Provide 11 – 14 kcals/kg actual body weight/day

BMI greater than 50?

Provide 22-25 kcals/kg/ideal body weight/day

BMI between 30 – 40?

Provide protein dose of 2 g/kg/ideal body weight per day

BMI greater than 50?

Provide protein dose of 2.6 g/kg/ideal body weight per day

Goal EN regimen: 65%-70% of measured REE

Note: protein requirements specific to other disease states include:
- Continuous renal replacement therapy – 2.5 g/kg/day
- Burns – 1.5 2 g/kg/day
- Open abdomen – 15- 30 g/liter of lost exudate
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| Monitoring Tolerance and Adequacy of EN | - Patients should be monitored daily for tolerance of EN. Inappropriate cessation of EN should be avoided  
|                                  | - Ordering NPO feeding status surrounding the time of diagnostic tests or procedures should be avoided |
| Gastric Residual Volumes (GRV’s) | - Suggest that GRV’s not be used as part of routine care to manage ICU patients on EN  
|                                  | - Suggest that, for those ICU’s where GRV’s are still utilized, holding EN for GRV’s > 500 mL in the absence of other signs of intolerance should be avoided |
| Risk of Aspiration              | - Patients should be assessed for risk of aspiration with steps to reduce risk of aspiration and aspiration pneumonia should be proactively deployed:  
|                                  |   - Elevate the head of bed to 30-45 degrees  
|                                  |   - Consider use of chlorhexidine mouthwash twice a day  
|                                  |   - Divert the level of feeding by post-pyloric enteral access device  
|                                  |   - High risk patients should receive continuous EN infusion  
|                                  |   - High risk patients should receive prokinetic agents where clinically feasible  
|                                  |   - Blue food coloring or glucose oxidase strips should not be used as markers for aspiration |
| Diarrhea                        | - EN should not be automatically interrupted for diarrhea; rather feedings should be continued while evaluating the etiology to determine appropriate treatment  
|                                  | - Consider use of a commercial mixed fiber-containing formulation if evidence of diarrhea  
|                                  | - Suggest 10-20 g fermentable soluble fiber supplement be given in divided doses over 24 hours if there is evidence of diarrhea  
|                                  | - Consider uses of small peptide formulations with persistent diarrhea, suspected malabsorption, ischemia or lack of response to fiber |
Parenteral Nutrition Therapy Algorithm

Is EN feasible in the patient at high nutrition risk or malnutrition?

Yes

Begin EN

Able to meet > 60% nutrient requirements v after 7 days

Yes

Continue EN

No

Begin PN

Maximize Efficiency of PN

- Use protocols and nutrition support teams to help incorporate strategies to maximize efficiency and reduced associated risk off PN
- Suggest hypocaloric dosing with adequate protein initially over the first week of hospitalization
  - ≤ 20 kcals/kg/day or 80% estimated energy needs
  - ≥ 1.2 g protein/kg/day
- Withhold or limit soybean oil based intravenous fat emulsion during the first week to a maximum of 100 g/week
- Target blood glucose range to 140 – 180 mg/dL
- Suggest parenteral glutamine supplementation not be routinely used
- Standardized commercially available PN formulations have no advantage compared to compounded PN admixtures
- Reduce PN energy as EN tolerance improves; discontinue PN when patient is receiving > 60% of target energy requirements from EN