Critical illness is associated with catabolism and altered gut absorption, with up to 75% of patients experiencing feeding intolerance. Per the nutrition risk screening tool, NRS 2002, intensive care patients on mechanical ventilation are considered at high nutritional risk with increased protein requirements. Adequate provision of protein in ventilated patients is associated with lower mortality and increased likelihood of being discharged alive from the ICU.

NUTRITIONAL CONSIDERATIONS

- **Protein and Calorie Requirements:** Indirect calorimetry is the gold standard for nutritional assessment of calorie needs. If unavailable, the following predictive equations are recommended:
  - Non-Obese (BMI <30): 25-30 kcal/kg actual body weight/day and 1.2-2.0g protein/kg/day. During the early phase of critical illness, provision of 15-20 kcal/kg actual body weight or 70-80% of measured needs may be warranted.
  - Obese (BMI 30-50): 11-14 kcal/kg actual body weight/day and 2.0g protein/kg ideal body weight/day for BMI 30-40 with up to 2.5 g protein/kg ideal body weight/day for BMI >40
  - Obese (BMI >50): 22-25 Kcal/kg actual body weight/day and up to 2.5 g protein/kg ideal body weight/day
  - Acute Kidney Injury (no renal replacement therapy): 25-30 kcal/kg actual body weight/day and 1.2-2.0 g protein/kg actual body weight/day
  - Acute Kidney Injury (renal replacement therapy): 25-30 kcal/kg actual body weight/day and up to 2.5 g protein/kg actual body weight/day

- **Feeding Tube Placement:** Patients at high risk for aspiration may benefit from post-pyloric feeding tube placement. Patients with Acute Respiratory Distress Syndrome may benefit from prone positioning with head of bed elevated 10 degrees.

- **Initiation of Enteral Nutrition:** Initiate early enteral nutrition within 24-48 hours of admission to the ICU in hemodynamically stable patients.

- **Refeeding Syndrome:** Patients on mechanical ventilation are at risk for refeeding syndrome. EN should be started at trophic (10-25mL/hour) or half rate and increased slowly over 72 hours. Monitor serum phosphate, potassium and magnesium daily for approximately 4 days.

- **Prokinetic Agents:** Prokinetic agents should only be used as needed; use prophylactically in patients at high risk for aspiration.

- **Vasopressor Agents:** Patients should be fully resuscitated prior to initiation of enteral feeding. Caution should be exercised when providing EN to patients on vasopressors.

- **Gastric Residual Volume (GRV):** If monitored, EN should not be held for GRVs <500mL, unless other signs of intolerance exist.

- **Managing Intolerance:** Monitor for intolerance, including abdominal distention, decreased bowel sounds, absence of flatus, diarrhea, constipation, abdominal pain and vomiting.

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### CRITICAL CARE NUTRITION EDUCATION PROGRAMS

Access videos at [www.nestlenutrition-institute.org/resources/videos](http://www.nestlenutrition-institute.org/resources/videos)

- Controversies in Critical Care
- Feeding the Critically Ill Patient: An Update
- Glucose Management in the ICU: The Evolving Role of Nutrition
- Protein Requirements for the Critically Ill Patient with Renal/Liver Failure: Evidence Update
- Metabolic Management of Enteral Nutrition in the ICU
- Responses of the Gastrointestinal Tract to Stress
- Strategies for Improving Enteral Nutrition Delivery in the ICU
- Use of Peptide-Based Formulations for Optimizing Enteral Nutrition Delivery, GI Tolerance, and Metabolic Management

### Enteral Feeding Initiation (Check Appropriate Order(s))

- 1. RD Nutrition Consult for nutrition assessment, feeding recommendations, tolerance assessment and tracking of cumulative calorie deficit
- 2. Insert nasogastric feeding tube and verify tube placement with abdominal film – OR –
- 3. Consult GI or Tube Team for specialized feeding tube placement: (Circle one) nasogastric, nasojejunal, percutaneous gastrostomy
- 4. If patient has had nothing by mouth for >10 days or is <85% IBW, monitor for Refeeding Syndrome

### Formula Selection and Infusion Method (Check Appropriate Order(s))

- 1. Prescribing physician – OR – RD complete Malabsorption Index to determine optimal formula
- 2. Consider early initiation (within 24-48 hrs) of immune modulating peptide-based formula for the appropriate patient population (major elective surgery, trauma, burns, head and neck cancer)
- 3. Select enzymatically hydrolyzed 100% whey formula:
  - Select enzymatically hydrolyzed 100% whey, 37% protein formula for enhanced protein delivery and blood glucose management:
  - Defer to RD for formula selection
- 4. Select infusion method:
  - Continuous feeding: Begin ________ mL/hour full strength and advance 25 mL/hour every 8 hours as tolerated to goal rate: (Specify) ________ mL/hour
  - Bolus feeding: ________ mL every ________ hours
  - Volume based feeding: ________ mL daily, nurse to infuse over available hours/day, not exceeding 280 mL/hour for gastric feeding and 150 mL/hour post-pyloric feeding
- 5. Select free water flush: 200 mL/shift – OR – ________ mL free water every ________ hour

### Routine Nursing Orders

- Mouthwash swab application 10 mL chlorhexidine to mucous membrane twice daily
- Record accurate initial height and daily weights
- Keep head of bed elevated 30-45 degrees at all times, unless contraindicated
- For clogged feeding tube, instill pancrelipase tablet and bicarbonate tablet crushed in 10 mL water _____ time(s)
- Record stool frequency
- DO NOT stop feeds for residuals less than 500 mL where there are no other signs of intolerance
- Gastric residual aspirate of <500 mL should be returned to the patient when no accompanying signs of intolerance are present
- Flush with 50 mL water every 4 hours if flush is not ordered
- Flush feeding tube with 10 mL at beginning and ending of feedings, after gastric residual aspiration and before/after medication administration
- Nursing to resume feeding once tube placement has been confirmed by radiologist or physician responsible for care
- Do not stop tube feedings for diagnostic tests, usual nursing care, or routine bedside procedures unless specifically ordered by the physician

### Optional Orders

- Monitor blood glucose every ___ hours (default is every 6 hours)
- Call physician if blood glucose is greater than _____ mg/dL or less than ___ mg/dL
- For inadvertent gastric enteral feeding tube removal, nurse may reinsert tube and order abdominal x-ray for placement confirmation
- Metoclopramide 10 mg every 6 hours, if indicated/tolerated for increased gastric motility
- Erythromycin 12 mg every 6 hours, if indicated/tolerated for increased gastric motility

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**USE UNDER MEDICAL SUPERVISION**

This sample order set is based on various clinical references and is not intended as a substitute for clinical judgment or facility protocols.

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