

Trauma ICU Nutrition Management Guidelines

Trauma Critical Care Nutrition Guidelines

Clinical judgment may supersede guidelines as patient circumstances warrant

ASSESSMENT AND EVALUATION

- All patients admitted to the Trauma Intensive Care Unit require a nutrition risk assessment within 24 hours and a nutrition plan within 48 hours
- Consult Nutrition Service as needed for specific recommendations (i.e. tube feeding formulations, oral supplements, poor oral intake, education)

ADMINISTRATION

- Enteral nutrition (EN) preferred over parenteral nutrition (PN)
- Reduce risk of aspiration by reducing sedation, elevating HOB 30 – 45 degrees, performing mouth care per VAP Guidelines and minimizing transport out of ICU

Oral Nutrition

- Oral intake preferred method of nutrition if appropriate for patient
- Initiate regular diet with oral diet advancement (add oral supplement to optimize po intakes)

Enteral Nutrition

- Initiate EN 24 – 48 hours following onset of critical illness and admission to ICU, after resuscitation efforts completed and/or hemodynamic stability achieved
- Initiate tube feedings and advance as quickly as tolerated in 24 – 48 hours to goal within 48 – 72 hours
 - Weaning EN (transitioning to PO diet)
 - Cycle EN x 12hr, 7p to 7am (for 50% of needs during first few days of transition)
 - Wean off EN once patient consistently consumes and tolerates on average 50% or more of meals
- Lower GI tract preferable if EN access needed, especially with high aspiration risk, but nutrition should not be delayed if only gastric access obtained
 - Access
 - Gastric
 - Short term: Orogastric tube (OGT), Nasogastric tube (NGT), Dobhoff tube (DHT)
 - Long term: Percutaneous endoscopic gastrostomy (PEG)
 - Post-pyloric:
 - Short term: DHT (via Cortrak and placement confirmed by abdominal radiographic imaging (KUB))
 - Long term: PEG-Jejunostomy (for unsuccessful placement DHT for post-pyloric access)

Parenteral Nutrition

- If low nutrition risk and unable to meet > 60% energy and protein requirements via EN within 7 - 10 days, then initiate PN
- If high nutrition risk present (malnutrition upon admission, inability to use GI tract expected for more than 3-5 days) and EN not feasible, initiate PN as soon as possible after resuscitation efforts completed
- If high nutrition risk present (malnutrition upon admission determined by AND/ASPEN criteria and inability to use GI tract expected for more than 3-5 days), initiate PN as soon as possible after resuscitation efforts completed
- Wean TPN when 60% of TF goal met or 60% of meals consumed
 - Decrease TPN to ~half, decrease dextrose/AA per PN team order
 - Wean off TPN as TF rate advances or per clinical judgment

If LOS>7days and pt has not consistently met on average near 100% estimated needs consider

nutritional provision from a combination of PO/EN/PN routes.**DOSING**

- Dosing weight
 - Use ideal body weight (IBW) or upper IBW for height if actual body weight > 20% IBW
 - Hamwi Method:
 - Men: 106# (48kg) for 1st 5 feet, then add 6# (2.7kg) per inch >5 feet, +/-10%
 - Women: 100# (45kg) 1st 5 feet, then add 5# (2.3kg) per inch >5feet, +/-10%
 - Use actual body weight if weight < IBW
- Energy goals:
 - 25 – 35 kcal/kg dosing weight/day
 - If BMI >35 (Class II or Class III Obesity), use 22 – 25 kcal/kg IBW/day
- Protein goals:
 - General 1.2 – 2.0 g/kg dosing weight/day
 - Obesity
 - If BMI 35 – 40, use > 2g/kg IBW/day
 - If BMI > 40, use 2.5g/kg IBW/day
 - Renal Failure:
 - HD 1.5 to 2.0 g/kg dosing weight
 - CRRT: 2.0 - 2.5g/kg dosing weight
 - Hepatic Failure: 1.2 - 2.0/kg dry or actual body weight/day
 - Spinal Cord Injury: 2.0/kg dosing weight
 - Traumatic Brain Injury: 1.5-2.0/kg dosing weight
 - Open Abdomen: 15 – 30G/liter of exudate lost
- Fluid Needs
 - 1ml/kcal baseline
 - Cover additional losses (i.e. fever, diarrhea, other GI output)
 - Fluid restriction (i.e. CHF, renal failure, hepatic failure w/ ascites, CNS injury, electrolyte abnormality)
 - Open abdomen: 1.5 – 2ml/kcal (unsure of reference SICU reference-ask Brad about)

MONITORING

- Serum protein markers (i.e. prealbumin, CRP) not recommended for evaluation of nutritional status or goals
- GI Intolerance
 - Gastric residual volume (GRV) not utilized as routine evaluation of tolerance. Daily physical examination, patient symptoms, clinical risk factors, and abdominal radiographic films should be utilized to determine tolerance
 - Prokinetic agents may be introduced if GI intolerance suspected or for patients with high risk of aspiration. Consider QTc prolongation.
 - Erythromycin 200mg IV or per tube q6h x 3 days
 - Metoclopramide 10mg IV q6h x 3 days
 - Naloxone 8mg q8h x 3 days, then 8mg q6h prn
- For persistent diarrhea and C. Diff infection ruled out, initiate Nutrisource fiber 4 packets in 24 hours (reference ?) remove this highlighted statement
- Special considerations
 - **Refeeding syndrome**
 - Replete electrolytes, provide thiamine, folic acid and MVI prior to initiation of tube feedings
 - Patients at risk for refeeding syndrome, initiate trophic feedings (no more than 25% of goal) and then check BMP, phosphorus and magnesium levels
 - Advance tube feedings slowly over 3 – 4 days
 - Check BMP, phosphorus and magnesium levels daily as EN advances to goal
 - **Open Abdomen**

- Early EN recommended 24 – 48 hours after injury, without evidence of bowel injury
- Hyperglycemia: (VUMC EN formulary does not have a “diabetic” EN formula) per gram protein provided
 Replete or Peptamen Intense VHP will provide lowest amount of carbohydrate per TF goal.

ASSOCIATED MDSCC PROTOCOLS

- Glycemic Protocol
- Gastrointestinal Stress Ulcer Prophylaxis
- VAP Protocol

Appendix 1

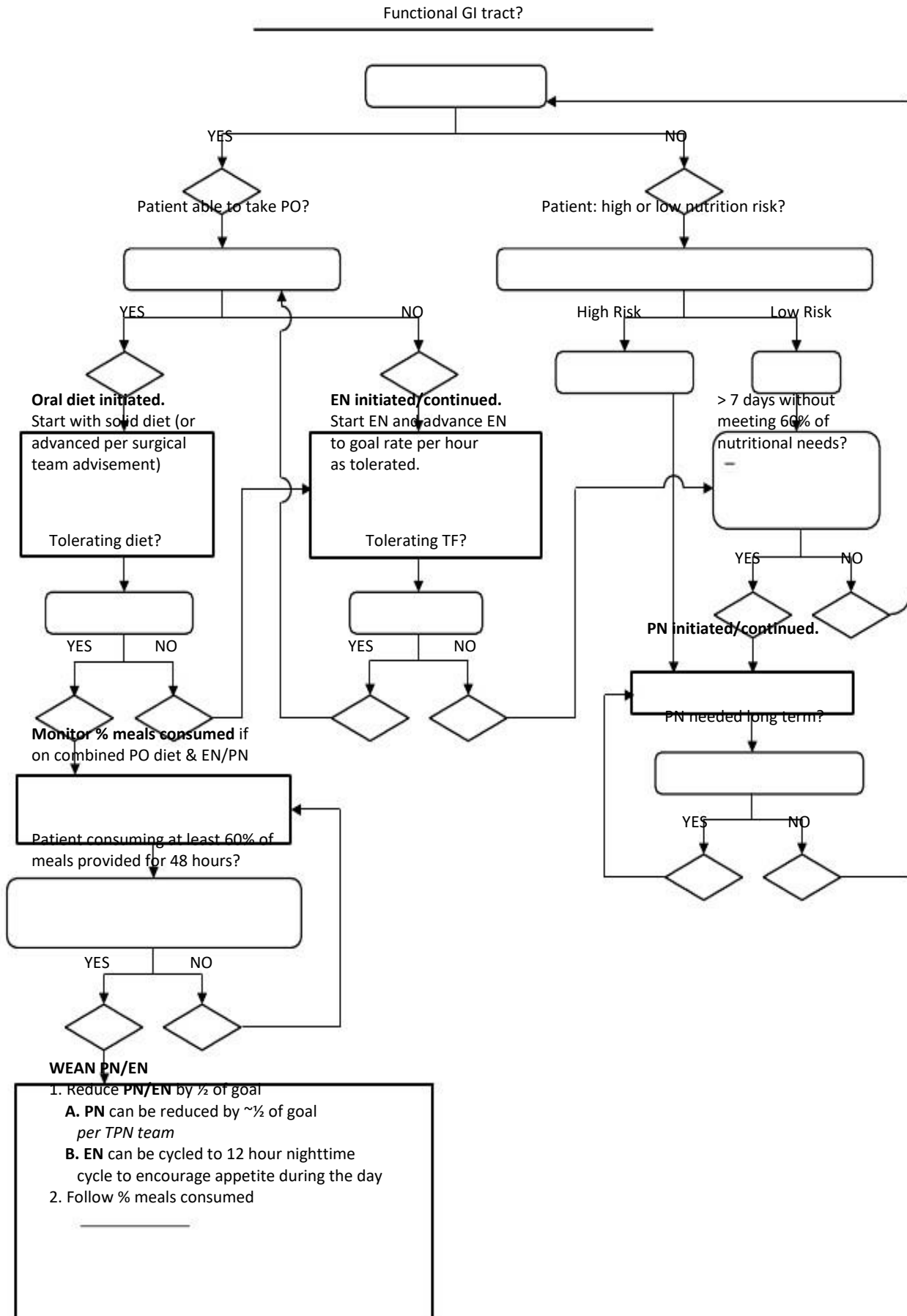
TICU ENTERAL NUTRITION TUBE FEEDING FORMULATIONS

<p>Critically Ill Patient</p> <p>Replete (Nonimmune modulating formula)</p>	<p>Obese Critically Ill Patient</p> <p>Peptamen Intense VHP (very high protein formula)</p>	<p>Non-Critically Ill Patient</p> <p>Isosource HN Nutren 1.5 Nutren 2.0 Replete</p>
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Consult Nutrition Service for disease specific formulations in TICU

<p>Respiratory failure</p> <p>Nutren 2.0</p>	<p>Admitted with pre-existing renal failure</p> <p>Novasource Renal (electrolyte restricted formula)</p>	<p>Renal failure Develops</p> <p>HD: Novasource Renal CRRT: Replete</p>	<p>Acute Pancreatitis</p> <p>Replete Peptamen 1.5</p>	<p>MODS/Chyle Leak</p> <p>Vivonex RTF 1.0</p>	<p>Modulars</p> <p>Nutrisource Fiber</p> <p>Prostat Max (Protein)</p>
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INTERNAL/PARENTERAL NUTRITION FLOW DIAGRAM



PREOPERATIVE ENTERAL NUTRITION PROTOCOL FOR PATIENTS WITH PROTECTED AIRWAY (Trach/Oral ETT)

NON-ABDOMINAL SURGERY

- Turn tube feedings off just prior to OR departure or bedside procedure
- Gastric tube will be flushed and aspirated

ABDOMINAL SURGERY OR OPERATIVE INTERVENTION REQUIRING PRONE POSITIONING

- Turn tube feedings off 6 hours before planned anesthesia
- Gastric tube will be flushed and aspiration prior to OR departure

UPPER GI ENDOSCOPY

- Turn tube feedings off 1 hour prior to elective endoscopy
- Place NGT to suction

OTHER CONSIDERATIONS

- Stop insulin infusion prior to OR transport
- Alert anesthesiology to perform accucheck perioperatively in OR if SQ insulin given within 2 hours
- Restart tube feedings post-surgery unless orders to hold post-surgery
- Patient with confirmed post-pyloric feeding tube, consider perioperative continuous feeding by anesthesiology and surgeon

Sources:

- Boullata JI, Carrera AL, Harvey LH, Hudson L, et al. ASPEN Safe Practices for Enteral Nutrition Therapy. *Journal of Parenteral and Enteral Nutrition*. 2017; 41(1):15 - 103.
- McClave SA, Taylor, BE, Martindale RG, Warren MM, 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 of Parenteral and Enteral Nutrition (ASPEN). *Journal of Parenteral and Enteral Nutrition*. 2016; 40 (2): 159-211.
- Taylor BE, 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). *Critical Care Medicine*. 44(2): 390 – 438, February 2016.

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