

MEDICAL NUTRITION THERAPY FOR POLYTRAUMA AND OPEN ABDOMEN AFTER MOTOR VEHICLE CRASH

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Nutrition Goals in the Trauma ICU

Early Enteral Nutrition Support

Early EN maintains gut integrity and blood flow¹. It is important for wound healing and reducing mortality and gastritis². ASPEN recommends fiber-free formulas for patients at risk for bowel ischemia³.

Indirect Calorimetry

IC measures energy expenditure through CO₂ production and oxygen consumption⁴. This is important to prevent over- or underfeeding.

Antioxidant Supplementation

Trauma leads to ↑ free radicals and oxidative stress, which causes ↓ circulating antioxidants⁵

Antioxidant Supplementation Reduces²:

- Length of Stay
- Mechanical Ventilation
- Organ Failure
- Mortality

HMC Trauma Vitamin Protocol (x7 days)

Vit C: 3000 mg/d
Vit E: 1500 IU/d
Selenium: 400 µg/d

Bowel Regimen

A combination of stool softeners with stimulant or osmotic laxatives prevents constipation from many pain medications. Common bowel medications include⁶:

- Senna (stimulant)
- Docusate (stool softener)
- Bisacodyl (stimulant)
- Polyethylene glycol (osmotic)

For severe cases, methylnaltrexone is an opioid antagonist for opioid-induced constipation⁷.

References

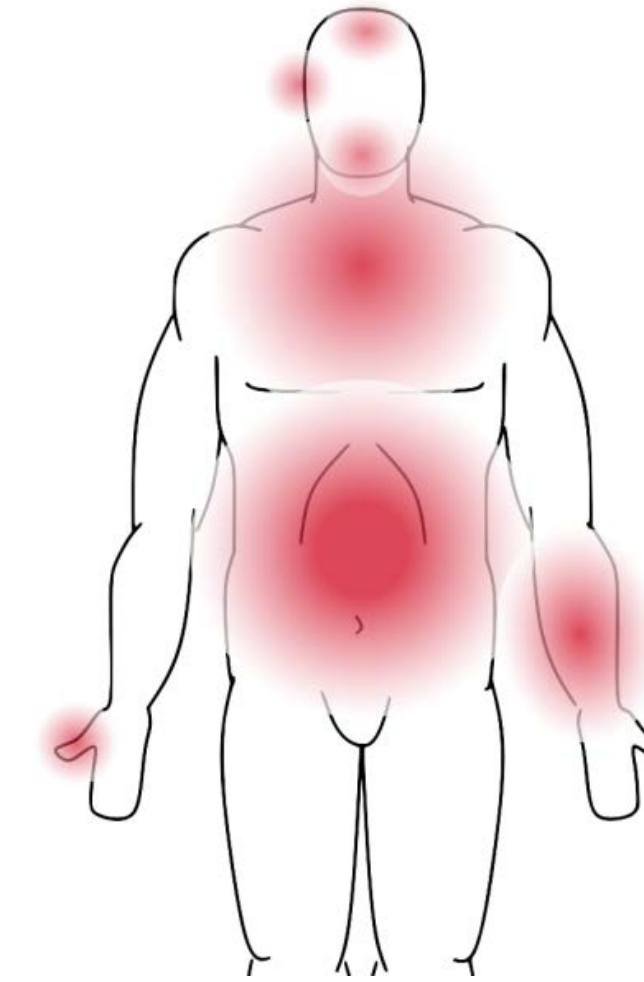
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Case Study

Patient: 35 y/o male passenger ejected from vehicle during high speed crash with +blood alcohol, arrived from an outside hospital intubated with open abdomen after laparotomy and liver packing.

Past medical history: Unknown

Injuries: Hemothorax, hemothorax, pneumothorax, shock with edematous bowel, respiratory insufficiency, cecum serosal tears, mesenteric hematoma, renal hematoma, pseudoaneurysm in pulmonary artery, multiple fractures, liver and spleen lacerations, skin lacerations



Assessment

Height: 175.2 cm **Weight:** 86 kg **BMI:** 28 kg/m²

Calorie Need: 2445 kcal/day
(BEE_x1.3 or ~28kcal/kg)

Protein Need: 129-172 g/day
(1.5-2.0 g/kg)

Met Cart on day 6: 2470 kcal/day

The met cart confirmed the estimated energy requirements

Nutrition Diagnosis

Day 1: Increased kcal/pro needs *r/t* trauma/surgery/wound healing *aeb* calculated BEE_x1.3-1.5 and 1.5-2.0 g/kg pro

Day 3: Inadequate PO intake *r/t* injury, intubation, SOP, *aeb* NPO status w/ no intake x4 days

Day 16: Inadequate intake from enteral/parenteral nutrition *r/t* frequent NPO and TF intolerance, *aeb* high residuals, receiving 47% of goal TF kcal x10 days

Intervention

Nutrition Issue	Nutrition Intervention
Intubation, altered mental status	-Tube feeding: Osmolite 1.5 @ 70ml/hr + Prosource 30ml BID (2640 kcal, 135 g pro)
High gastric residuals	-Prokinetic/antiemetic Reglan to improve gastric emptying ⁸ -Advance feeding tube to duodenum -Continue nasogastric tube to suction
Hypernatremia	-Change to less concentrated formula -Add free water bolus
Continued tube feed intolerance, no stool x10 days, possible ileus	-Change back to concentrated formula -Add methylnaltrexone -If not at goal day 17, start TPN
Feeding tube migrated	-Replace feeding tube in OR: Feeding tube to duodenum, nasogastric tube to suction
Transition to PO	-Nocturnal only TF -Milkshakes and katie drinks on meal trays -Encourage small, frequent meals
Patient pulled FT out	-Monitor PO intake for need to replace FT



(Left) FT migrated: FT curled in gastric fundus, both tubes terminate in stomach



(Right) After replacement, FT terminates in duodenum, NG tube in stomach

Monitoring/Evaluation

Close monitoring of PO intake and a calorie count determined the need to replace the feeding tube and restart a nocturnal feed. If intake dropped below 50% of energy needs, then Osmolite 1.5 @ 80 ml/hr x10 hours would provide 50% of nutrition needs. Fortunately, this patient was able to slowly increase his intake with foods he liked and encouragement from the whole team.

Thank you to Marilyn Shelton, RD, CD, for the guidance and wisdom during this rotation!