Case Study

A 25 year old Male was the unrestrained driver of a vehicle. He was found under a steering wheel and intubated at scene. Once stable he was airlifted to HMC.

Initial Assessment:

Assessment:
-190cm 115kg (based on family reported usual body weight). BMI 31.9.

Injuries included small frontal/parietal hemorrhagic contusions (traumatic brain injury), bilateral pulmonary contusions (acute respiratory insufficiency), multiple rib fractures, spinal fractures, and minor fluid collection in the abdomen.

There were no signs of malnutrition.

Needs were assessed using the following:
- BEE x 1.2-1.4
- 1.5-2.0grams of protein/kg usual body weight

Diagnosis: Inadequate PO intake related to intubation status as evidence by naso-gastric tube for enteral access.

From Prone to Upright: A case study in the challenges of feeding in the trauma ICU

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Preceptor: Marilyn Shelton Site: Harborview Medical Center Trauma ICU

Intervention: Enteral Feeding

The patient was intubated upon assessment and a naso-gastric tube was available for feeding. The patient was started on a high protein with fiber formula providing 27kcal/kg and 1.7g protein/kg when goal rate would be achieved.

ARDS and MODS

Acute Respiratory Distress Syndrome (ARDS): Characterized by inflammation and increased vascular permeability in the lung. This decreases the lungs function and requires mechanical ventilation.

Multiple Organ Dysfunction Syndrome (MODS): Characterized by altered organ function which inhibits the ability to maintain homeostasis. This is often caused by uncontrolled inflammation in the critically ill.

Intervention: Trauma Vitamins

<table>
<thead>
<tr>
<th>Vitamin Protocol</th>
<th>Dosage</th>
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<tbody>
<tr>
<td>Vitamin C</td>
<td>1000mg Vitamin C TID IV x2 days, pft x 5days</td>
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<tr>
<td>Vitamin E</td>
<td>1500 IU Vitamin E BID pft x 7days</td>
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<tr>
<td>Selenium</td>
<td>400mcg Selenium q day IV x2 days, pft x 5 days</td>
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Trauma Vitamin Protocol:

Monitor and Evaluation: Vasopressors and Fiber

The patient was placed on vasopressors during the first 48 hours. A fiber free formula was used to decrease the fluid collection and the patient was started on renin formula during his second week.

Monitor and Evaluation: Prone Position

The patient presented with severe ARDS in the first 7 days. To improve lung functions the patient was placed in a prone position for 5 days during his stay. Despite the lack of data, it is possible to feed a prone positioned patient with continued monitoring for tolerance and bowel tones. Thus, enteral feeding was continued.

Monitoring and Evaluation: Continuous Renal Replacement Therapy

Acute Kidney Injury is common in MODS and often requires renal replacement therapy. Continuous Renal Replacement Therapy (CRRT) provides a method of dialysis 24 hours to avoid large fluid swings. The patient underwent CRRT for 4 days during his second week. Due to the continual filtration of fluids, nutritional concerns include increased protein/amino acid and water soluble nutrient losses. 6,7

Recommendations for tube feeding during CRRT include:

- Renal formula (low K and Phos)
- 25-35kcal/kg and 1.5-1.8g/kg protein
- Glutamine supplementation
- MVI + mineral
- Vitamin C 250mg
- Selenium 100mcg/d
- Thiamine 100mg/d

Outcome:

With constant re-evaluation, re-assessments, and changes to the interventions this patient slowly recovered. Renal function returned, however respiratory status did not fully recover during his ICU stay. During the 4 weeks of evaluation the patient received 68% of recommended kcals and start PO towards the end of the 4 weeks.

Katie Farver RD and the Harborview dietitians!!

References:
6. Everdell et al. Defining Nutritional Support for Patients with Acute Kidney Injury. How Much Protein is Enough or Too Much?