Significance of nutrition in ICU setting
- Catabolic stress state/SIRS
- Infectious morbidity
- Multi-organ dysfunction
- Prolonged hospital stays
- Disproportionate mortality
- Traditional nutrition support regarded as adjunctive
- Now evolved to *nutrition therapy* to favorably impact patient outcomes

AS-PEN/SCCM Guidelines
- Feb 2016 co-published
- “Guidelines for the Provision and Assessment of Nutrition Support Therapy in the Adult Critically Ill Patient”
- JPEN Feb 2016, Vol. 40, No. 2, 159-211
- Guidelines only/ judgement of HCP always takes precedent

What stayed the same?
- EN preferred over parenteral
- Gastric or SB feeding is appropriate
- Bowels sounds, flatus, stools not required to start EN; hemodynamics should be “stable”
- Protocols should be used to optimize EN delivery
- TPN should be started if EN is not feasible or tolerated

What stayed the same?
- Disease specific formulas are not recommended for routine use in organ failure
- Pts on CRRT should receive increased amounts of protein (up to 2.5 g/kg)
- Arginine and fish oils should be considered in trauma and surgery patients
- Hypocaloric, high protein feeding of morbidly obese patients
Nutritional Risk/Assessment tools
- Calorie and Protein levels
- NO!! GRV’s
- “Immunonutrition”
- Adjuvent Therapies
- Patient subsets, esp surgical subsets

What’s New?

Nutritional Risk/Assessment tools
- Calorie and Protein levels
- NO!! GRV’s
- “Immunonutrition”
- Adjuvent Therapies
- Patient subsets, esp surgical subsets

Calorie/Protein GOALS
- Caloric Goals:
<table>
<thead>
<tr>
<th>BMI</th>
<th>Kcal/kg/day</th>
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<tbody>
<tr>
<td>&lt;15</td>
<td>35 - 40</td>
</tr>
<tr>
<td>15-19</td>
<td>30 - 35</td>
</tr>
<tr>
<td>20-29</td>
<td>20 - 25</td>
</tr>
<tr>
<td>30-40</td>
<td>15 - 20</td>
</tr>
<tr>
<td>&gt;40</td>
<td>11 - 14</td>
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</tbody>
</table>

Protein Goals:

<table>
<thead>
<tr>
<th>Clinical Condition</th>
<th>Grams/kg IBW/day</th>
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</thead>
<tbody>
<tr>
<td>Normal</td>
<td>0.75</td>
</tr>
<tr>
<td>Metabolic stress/sepsis/</td>
<td>1.2 - 1.75</td>
</tr>
<tr>
<td>post-op</td>
<td></td>
</tr>
<tr>
<td>Hemodialysis</td>
<td>1.0 - 1.4</td>
</tr>
<tr>
<td>Peritoneal dialysis</td>
<td>1.3 - 1.5</td>
</tr>
<tr>
<td>CRRT/Burns/ BMI &gt;40/</td>
<td>1.5 - 2.5</td>
</tr>
<tr>
<td>Large wounds/severe trauma</td>
<td></td>
</tr>
</tbody>
</table>
**Gastric Residual Volumes**
- Tolerance should be monitored daily in other ways
- If GRV's are still utilized, holding EN for <500 mL should be avoided
- Enteral feeding protocols increase the overall percentage of goal calories provided
- Consider use of a volume-based feeding protocol

**"Immunonutrition"**
- Defined as: arginine, glutamine, Fish oil (EPA/DHA), and nucleic acids
- Not for use in MICU
- Not for sepsis
- Conflicting data in ARDS and severe ALI
- Consideration should be made for select SICU and Traumatic Brain Injury

**Adjuvant Therapies**
- Supplemental Enteral glutamine: NO
- Probiotics: only for select populations where benefit has been shown by RCT's; not for routine ICU use
- Fiber: consider use of mixed (soluble and insoluble) for diarrhea, but avoid if bowel ischemia. Fermentable soluble fiber (eg, FOS, inulin) recommended for all hemodynamically stable ICU, esp if diarrhea

**Specific Patient Subsets**
- Organ Failure: No “pulmonary formula”, esp in ARDS/ALI
- ARF/AKI: fluid restricted, electrolyte restricted, and very high protein if CRRT
- Hepatic Failure: no BCAA, no protein restriction
- Sepsis: avoid TPN in the first week
- Pancreatitis: depends on severity...PO if absence of pain and mild disease; EN preferred over TPN, possible benefit for probiotics

**Surgical Subsets**
- Trauma: (no change): Use arg and Fish oil
- Open Abd: Early EN 24-48 hr post injury
  - Provide 15-30gm extra pro/1 exudate
- Post-Op: start with regular diet(no CI Liq)
  - Use arg/FishOil formula for EN
  - Use EN in gut anastomosis, ileus, and vasopressor Rx
  - Use TPN after 5 days if EN not feasible

**“TAKE – AWAYS”**
- Nutrition therapy depends on nutrition risk
- Focus on adequate protein
- Initiate early ENS whenever possible
- Aim for 80% of goal by end of first week
- In septic patients, do not start TPN for 1 wk
- In high risk patients, start TPN if EN not sufficient or feasible in 5-7 days