**AS PEN Guidelines 2016**

**Protein:**
1.2 - 2.0 g/kg actual BW per day
Albumin, pre-albumin, transferrin and CRP should not be used as indicators of protein status. (Section A4)

**Calories:**
Published predective equation or simplistic weight-based 25 - 30 kcals/ kg using dry BW or UBW in critically ill pts.  
(Section A3a & A3b).

**Initiation of EN:**
- Recommended to initiate enteral nutrition between 24 – 48 hrs in critically ill pts to maintain functional gut integrity, maintain systemic immune response to limit risk for systemic infection, and to limit increased likelihood of multiple-organ dysfunction syndrome. (Section B1)
- Bowel sounds and evidence of bowel function should not be required for initiation of EN since GI dysfunction in ICU patients is common among 30-70% of ICU patients. Bowel sounds are not indicative of mucosal integrity, barrier function, or absorptive capacity. Although, reduced or absent bowel sounds may reflect greater disease severity and worsened prognosis. (Section B3).
- Initiation of EN in the stomach is acceptable for most critically ill patients. EN should be diverted to lower GI tract in critically ill patients are at high risk for aspiration (Section B4).

**Tolerance of EN:**
- Monitor pts daily for tolerance of EN. Indicators for tolerance are physical examination, passage of flatus and stool and radiologic evaluations (Section D1).
- GI intolerances include vomiting, abdominal distension, high NG output, high GRV >500 mL in hospitals still practicing this protocol, diarrhea, etc. (Section D1).
  - GRVs should not be used as part of the routine care to monitor ICU patients receiving EN (Section D2).

**PN:**
- Supplemental PN should be considered after 7-10 days if unable to meet >60% of energy and protein requirements by enteral route alone (Section G3).
  - Exclusive PN should be withheld over first 7 days following ICU admission. EN preferred over PN when appropriate.

**Estimating Needs in Obese Patients:**
- Initiation of EN within 24-48 hours of admission to ICU if patient is unable to maintain adequate PO intake (Section Q1).
- Patients with hx of bariatric surgery should receive supplemental thiamine prior to initiating dextrose-containing fluids or nutrition therapy, and all micronutrient deficiencies should be evaluated and treated (Section Q8)).
- **BMI 30-50:**
  - Kcals: 11-14 kcal/kg actual body weight per day (not exceed 65-75% of target energy requirements measured by IC).
  - Protein: ~2.0 g/kg ideal body weight per day for pt’s with BMI 30-40 & 2-2.5 g/kg/ ideal body weight per day for patients with BMI ≥40.
- **BMI >50:**
  - Kcals: 22-25 kcals/kg ideal body weight per day.
  - Protein: 2-2.5 g/kg/ ideal body weight per day.
- High protein hypocaloric instead of high protein eucaloric feeding should be implemented in the care of obese ICU patients to preserve lean body mass, mobilize adipose stores, and minimize the metabolic complications of over feeding (Section Q4).
- Nutrition assessments should focus on actual, usual, and ideal body weight. Adjusted BW is not recommended due to lack of validation studies. BMI should be calculated, obesity class identified, and weight circumference measures, if possible (Section Q2).
- Focus on evidence of central obesity, metabolic syndrome, sarcopenia, BMI>40, SIR, inflammation, and other comorbidities should be evaluated during nutrition assessment (e.g. serum glucose, triglycerides, cholesterol concentrations, blood pressure, CRP, erythrocyte sedimentation rate, etc) (Section Q3).

Renal Disease:
- Use standard enteral formula. Can use specialty formulas designed for renal failure (e.g low in phosphate and potassium for AKI) if significant electrolyte abnormalities develop (Section J1 & J2).
  - Use usual body weight for normal weight patients and ideal body weight for obese or critically ill patients.

  *Dialysis: Hemodialysis or CRRT*
  - 25-30 kcals/kg actual BW per day or a predicative equation
  - Maximum of 2.5 g/kg actual BW per day

  *No Dialysis: ARF or AKI*
  - 25-30 kcals/kg actual BW per day or a predicative equation.
  - 1.2-2 g/kg actual BW per day.

Liver Disease:
- 25-30 kcals/kg dry weight or usual BW per day or a predicative equation (Section K1).
- 1.2-2 g/kg dry weight or usual BW per day.
  - Avoid restricting protein in patients with liver failure. The primary etiology in liver failure is poor PO intake from multiple factors. Protein restriction for prevention of hepatic encephalopathy is not recommended due to worsened nutrition status, decrease in lean mass, and less ammonia removal (Section K1).
  - Use of standard EN formula instead of a formula with BCAA for ICU patients with acute or chronic liver disease (Section K3).

Hepatic Failure and Cirrhosis
- 25-30 kcals/kg dry weight or usual BW per day or a predicative equation (Section K1).
- 1.2-2 g/kg dry weight or usual BW per day.
  - Dry weight or usual BW per day is used due to the complications of ascites, intravascular volume depletion, edema, portal hypertension, and hypoalbuminemia (Section K1).

Acute Pancreatitis:
- Use of specialized nutrition support recommended for patients who fail to advance to an oral diet within 7 days (Section L1).
  - Use of standard polymeric formula to initiate EN in patients with severe acute pancreatitis (Section L2).
  - EN initiation in patients with severe acute pancreatitis lower in risks compared to TPN support (gastric or jejunal route). If EN is not feasible, use of PN should be considered after 1 week from onset of pancreatitis episode (Section L3).