The Right Approach to Nutrition Care in ICU

A process for incorporating the Canadian CPG, ASPEN/SCCM and ESPEN guidelines into a nutrition care plan for a critically ill patient

Judy King RD, Dr Daren Heyland, Rupinder Dhaliwal RD

Use the following prompts to assist in identifying the Right nutrition care plan for a critically ill patient

Right Patient

- Is this right patient to provide a nutrition support intervention on using the Right approach:
  - Patient should be critically ill and fully resuscitated and hemodynamically stable
- Assess clinical picture for presence of shock, sepsis, MSOF, ALI/RDS, trauma, burns, upper GI Sx, use NUTRIC score to determine nutritional risk, BMI risk
- Consider your plan based on the following:

Right Nutrition Strategy - based on your assessment above. Use EN before PN if at all possible

If EN

- Whole protein, polymeric formulas should be considered first
- Use of small bowel feeding recommended, when it can be carried out easily
- Motility agents recommended
- Probiotics should be considered – not saccharomyces boulardii
- Severe Sepsis/critically ill **no** arginine
- ARDS/ALI/trauma consider EN with fish oil, borage oil and antioxidants
- Shock, MSOF – **no** glutamine enteral or parenteral (REDOXS with combined EN/PN glutamine)
- Burns, trauma patients – consider enteral glutamine
- Burns - supplement with Cu, Se, Zn higher than standard dose
- Severe acute pancreatitis nasoenteric tube for EN as soon as volume resuscitation is complete

If PN

- Supplementary PN is a reserve tool to use when target not reached with EN alone
- Reduction of the load of omega 6 fa /soy bean oil emulsions should be considered
- Not malnourished and tolerating some EN→ withhold IV lipids high in soybean oil
- *Burns, trauma* – consider parenteral glutamine while on PN - CCN Nibble April 2013
- MSOF or shock - NO Parenteral glutamine should be considered – (REDOXS with combined EN/PN glutamine)
- Parenteral selenium should be considered alone or in combination with other antioxidants

Right time - what is the best timing for this therapy on this patient?

If EN

- Early EN – within 24-48h, of admission to ICU strongly recommended, minimize NPO
- Do not start EN and PN at the same time is recommended
- If not tolerating EN there is insufficient data to say when to start PN

If PN

- Do not start PN until all strategies to maximize EN have been attempted is recommended
- PN not to be used for < 5-7 days
- Use PN if:
  - previously healthy but NOT tolerating EN after a significant time
  - On admission patient malnourished and not tolerating EN
  - If major sx planned and EN not feasible and pt malnourished
- Early supplemental PN and high IV glucose not recommended

Right dose

- IC vs. predictive equations? Insufficient data predictive equations used with caution
- Consider the right weight to use in dosing - act BW, IBW, adj BW
- Hypocaloric EN feeding – insufficient data
- Start EN at goal rate (PEPuP)
- Strive to achieve 60-80% goal calories from EN in first 72h
- Patients who are not malnourished, are tolerating some PN or when PN is used short term → low dose PN should be considered
- Meet 80% of energy needs with PN
- Severely undernourished provide 25-30 cal/kg BW/d →if not met give supplementary PN
- RRT patients should receive increased protein - 2.5g/kg/d
- Acute critical phase **excess** of 20-25 cal/kg BW/d may not be favorable

- Anabolic recovery phase 25-30 cal/kg BW/d– if not met give supplementary PN
- Severely undernourished provide 25-30 cal/kg
- In patients BMI <30 protein 1.2-2.0 g/kg act BW
- Obese pt use IC or if not available the PSU 2010 modified PSU if >60yo/1.2g pro/kg act BW or 2-2.5g/kg IBW

Right Evaluation/monitoring

- Use a bedside monitoring tool assess adequacy of intake
- Use of threshold for GRV 250– 500mL should be considered
- Volume of GRV to return to the patient - sufficient data (consider 250-500mL)
- Use of a prokinetic at start of EN should be considered - patients with EN intolerance →the use of a prokinetic is recommended (metoclopramide)
- Monitor position of feeding tubes in small bowel for displacement
- Monitor for HOB 30-45°
- Monitor for metabolic control i.e. blood sugar control of 7-8 mmol/L is recommended and >10mmol/L should be avoided
- Calculate NCP adequacy and report on deficits

Right outcome/response

- Develop and use a plan based on guidelines
- Meet estimated nutritional needs
- Preservation of LBM
- Provision of therapeutic intervention through nutrition
- Metabolic and physical tolerance to care plan
- Consider participate in the International Nutrition Survey to assess your service www.criticalcarenutrition.com

Note: Insufficient data to support use of:

- Enteral: Fibre (soluble), BCAA, hydroxyl methyl butyrate, closed vs. open systems, low pH feeds, ornithine ketoglutarate, high fat/low CHO or low fat/high CHO diets, low CHO diets in conjunction with insulin tx, high protein diets for HI patients, fish oils alone, Vit D, continuous vs. other methods of EN delivery, G feeds vs. NG
- Parenteral: Zinc, use of lipids via TNA vs. piggy back delivery systems

References:

Canadian Clinical Practice Guidelines 2013, www.criticalcarenutrition.com

Choban P et al. A.S.P.E.N. Clinical Guidelines Nutrition Support of Hospitalized Adult Patients With Obesity. JPEN J Parenteral and Enteral Nutn. 2013;37:714-744

ESPEN Guidelines, www.espen.org/education/espen-guidelines

McClave S, 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 (A.S.P.E.N.) *JPEN.* 2009 33: 277

McMahon M, Nystrom E, Braunschweig C, Miles J, Compher et al. Nutrition Support of the Adult Patient with Hyperglycemia. JPEN J Parenteral and Enteral Nutn. 2013;37: 23-36

Mueller C, Compher C, Druyan M. et al. Nutrition Screening, Assessment, and Intervention in Adults. JPEN J Parenteral Enteral Nutn. 2011; 35:16-24.