

重症病患的早期腸道營養照護-目前指南的更新

Early enteral nutrition in critically ill patients – an update of current guideline

主辦單位：重症醫學專科醫師聯合甄審委員會

承辦單位：中華民國重症醫學會

協辦單位：阮綜合醫院

時間：2018 年 7 月 7 日（六）

地點：高雄阮綜合醫院 10 樓大教室（高雄市苓雅區成功一路 162 號）

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| 聯甄 8 分 | 臺灣專科護理師學會： |
| 台灣醫學會 西醫師：申請中 | 護理師/士 及專科護理師：申請中 |
| 台灣內科醫學會、台灣靜脈暨腸道營養醫學會、台灣呼吸治療學會：申請中 | |

| 時間 | Topic | Speaker |
|--------------------|--|-------------------------|
| 09:30-09:40 | Opening 主持人：林少琳 教授 (阮綜合醫院 CCU) | |
| 09:40-10:20 | Nutrition assessment, initiation, dosing, and adequacy of enteral nutrition in ICU patients | 林少琳 教授 (阮綜合醫院 CCU) |
| 10:20-11:00 | 1) Early enteral nutrition (EN) is better than delayed EN; 2) parenteral nutrition in critically ill patients | 張子明 院長 (沙鹿童綜合醫院) |
| 11:00-11:20 | Coffee break 主持人：林少琳 教授 (阮綜合醫院 CCU) | |
| 11:20-12:00 | Early or delayed EN in patients with respiratory failure, prone position, or renal failure | 郭書宏 醫師 (高雄榮總 ICU) |
| 12:00-12:40 | Early enteral nutrition (EN) in patients with hepatic failure and severe acute pancreatitis | 林楷煌 主任 (彰化基督教醫院 ICU) |
| 12:40-13:40 | 午餐 高雄阮綜合醫院 10 樓大教室 主持人：梁興禮 主任 (高雄榮總 MICU) | |
| 13:40-14:20 | Early or delayed EN in sepsis, metabolic acidosis, ECMO, neuromuscular blocker, or therapeutic hypothermia | 李其澧 主任 (阮綜合醫院 ICU) |
| 14:20-15:00 | Early or delayed EN in G-I surgery, trauma to G-I tract, abdominal compartment syndrome, intestinal fistula, or open abdomen | 王照元 副院長 (高雄醫學大學附設醫院) |
| 15:00-15:20 | Coffee break 主持人：梁興禮 主任 (高雄榮總 MICU) | |
| 15:20-16:00 | Early EN in patients with absence of bowel sound, diarrhea, large gastric aspiration volume | 吳碧娟 營養師 (高雄榮總營養室) |
| 16:00-16:40 | Early EN in traumatic brain injury, stroke (ischemic or hemorrhagic), spinal cord injury or abdominal aorta surgery | 許永師 主任 (阮綜合醫院 SICU) |
| 16:40-16:50 | 簽退領取學分證明 (現場未領或遺失者不予補發) | |

Nutrition assessment, initiation, dosing, and adequacy of enteral nutrition in ICU patients

2016 ASPEN : Based on expert consensus, we suggest a determination of nutrition risk (for example, Nutritional Risk Score [NRS-2002], NUTRIC score) be performed on all patients admitted to the ICU for whom volitional intake is anticipated to be insufficient. High nutrition risk identifies those patients most likely to benefit from early EN therapy.

Nutrition risk screening

Timing to initiate nutrition therapy

How to advance nutrition therapy?

Based on expert consensus, we suggest that nutritional assessment include an evaluation of comorbid conditions, function of the gastrointestinal (GI) tract, and risk of aspiration. We suggest not using traditional nutrition indicators or surrogate markers, as they are not validated in critical care.

1)Early enteral nutrition(EN) is better than delayed EN; 2) parenteral nutrition in critically ill patients

1_supplemental enteral/parenteral glutamine not be added to an enteral/parenteral nutrition regimen routinely in critically ill patients.

2_immune-modulating formulations containing arginine and fish oil be considered in patients with severe trauma.

3_suggest the use of either arginine-containing immune-modulating formulations or EPA/DHA supplement with standard enteral formula in patients with traumatic brain injury (TBI).

4_immune-modulating formulas should not be used routinely in patients with severe sepsis.

Early or delayed EN in patients with respiratory failure, prone position, or renal failure

1_trophic or full nutrition by EN is appropriate for patients with acute respiratory distress syndrome (ARDS)/acute lung injury (ALI) and those expected to have a duration of mechanical ventilation > 72 hours

2_trophic feeding (defined as up to 500 kcal/day) for the initial phase of sepsis, advancing as tolerated after 24-48 hours to > 80% of target energy goal over the first week.

Fluid accumulation, pulmonary edema, and renal failure are common in patients with acute respiratory failure, and have been associated with poor clinical outcomes. It is therefore suggested that a fluid-restricted energy-dense nutrient formulation (1.5–2 kcal/mL) be considered for patients with acute respiratory failure that necessitate volume restriction.

Early enteral nutrition(EN) in patients with hepatic failure and severe acute pancreatitis

Mild pancreatitis is defined by the absence of organ failure and local complications. Moderately severe acute pancreatitis is defined by transient organ failure lasting < 48 hours, and local complications. Organ failure is defined by shock (systolic blood pressure < 90 mm Hg), pulmonary insufficiency ($\text{PaO}_2/\text{FIO}_2 \leq 300$), or renal failure (serum creatinine ≥ 1.9 mg/dL). Differentiating patients with moderately severe to severe acute pancreatitis from those with mild disease severity helps identify those patients who need admission to the ICU, receipt of adequate hydration, treatment for early organ failure, and provision of nutrition therapy.

Pharmaconutrients: Glutamine, Arginine, Fish oil

IV glutamine: MICU--not routinely add; SICU--GI surgery, acute pancreatitis, burns, deficiency, route, contraindication

Early or delayed EN in sepsis, metabolic acidosis, ECMO, neuromuscular blocker, or therapeutic hypothermia

Critically ill patients receive EN therapy within 24–48 hours of making the diagnosis of severe sepsis/septic shock as soon as resuscitation is complete and the patient is hemodynamically stable. Studies specifically addressing nutrition therapy in the population of patients with severe sepsis/septic shock are lacking; this condition typically occurs in conjunction with numerous other critical illnesses, and studies to date reflect this heterogeneity. In the ICU setting it is widely believed that patients with severe sepsis and septic shock have GI dysfunction at a rate of up to 60%.

1. Early Goal Directed Therapy
2. Bundle
3. Fluid Management
4. Hemodynamics, Oxygenation, and Tissue
5. Perfusion Vasopressor Treatment of infection
6. Corticosteroids

Early or delayed EN in G-I surgery, trauma to G-I tract, abdominal compartment syndrome, intestinal fistula, or open abdomen

Nutrition assessment with calculation of protein/energy requirements and determination of the route and timing of nutrition therapy for the trauma patient is similar to that for any critically ill patient in an ICU. The metabolic response to trauma is associated with dramatic changes in metabolism, with utilization of lean body tissue to serve as gluconeogenic substrates and to support immune and repair functions. Timing of nutrient delivery in trauma may influence outcome. Although very few studies have been done in the past two decades, previous data support initiation of feeding into the GI tract once the trauma patient is adequately resuscitated (ideally within the first 24 hours).

1. Poor appetite, dysgeusia, and dysosmia can also present a challenge post-injury
2. Percutaneous endoscopic gastrostomy
3. Not necessary delay feeding, studies found that feeding < 72 h is safe

Early EN in patients with absence of bowel sound, diarrhea, large gastric aspiration volume

Critically ill, mechanically ventilated patients in intensive care units (ICU) are most likely to experience delayed gastric emptying, intolerance of enteral feeding, higher chances of malnutrition,¹ pulmonary aspiration, infections,² and mortality.³⁻⁵ Gastrointestinal motility can be impeded by medications, hyperglycemia, electrolyte disturbances, hypoxia, sepsis, increased intra-cranial pressure, and administration of calorically dense or hyperosmolar formulas.⁶ Measuring the gastric residual volume (GRV) is the most common practice in assessing the tolerance of a patient to enteral nutrition and preventing pulmonary aspiration.⁷ However, there is little consensus on the practice standard, and several aspects related to its implementation are controversial.

Absent bowel sounds: If you don't hear any sounds during a bout of **abdominal pain**, this could be a sign of a serious problem and should be brought to the attention of a doctor. Normally, after surgery, there won't be any noticeable sounds, but they resume once the digestive system begins to run normally again

Early EN in traumatic brain injury, stroke (ischemic or hemorrhagic), spinal cord injury or abdominal aorta surgery

1. Early feeding

2. If on vasopressor, trophic feeding use is equally effective

the routine use of an immune-modulating formula (containing both arginine and fish oils) in the surgical ICU for the post-operative patient who requires EN therapy.

target blood glucose range of 140-150 to 180 mg/dL for the general ICU population; ranges for specific patient populations (post cardiovascular surgery, head trauma) may differ and is beyond the scope of this guideline.