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Letter to the Editor

Different barriers to nutritional therapy among critically-ill patients with COVID-19



The COVID-19 pandemic continues to take its toll worldwide. Since it began, it has been an unprecedented challenge to identify effective drugs for the prevention and treatment of COVID-19. As the whole world race against time in finding definitive solutions, healthcare professionals also looked on other directions in search for different opportunities to improve clinical outcomes. Little was known of COVID-19 before but pre-pandemic studies have already established the role of good nutrition in potentially lessening complications and improving clinical outcomes among critically-ill patients [1,2]. Hence, different nutrition guidelines and recommendations were made in response to the global problem. However, there are several challenges that must be identified and managed accordingly to optimize nutritional therapy among this population group. We aim to describe these different barriers and identify specific strategies to address these based on the ESPEN expert statements for the nutritional management of individuals with SARS-CoV-2 infection.

The barriers to nutritional therapy among critically-ill patients with COVID-19 can be clustered into 4 main domains namely: (1) *patient-related barriers* which include the age, existing comorbidities, baseline nutrition status of patients and presence of GI intolerance symptoms; (2) *disease-related barriers* which include the severity of illness and risk of COVID-19 complications; (3) *healthcare-related barriers* which include the skills, expertise and the potential risk of viral exposure of healthcare workers administering care; and (4) *treatment-related barriers* which include nutrition

access, effects of medications and implications of the prone positioning. Each factor can be addressed with corresponding ESPEN recommendations as shown in [Table 1](#).

The ESPEN Expert Statements has provided practical guidance to overcome different barriers in the nutritional therapy of COVID-19 patients. Nevertheless, as knowledge continues to grow during the pandemic, so are the best practices being identified. Here, we also provide additional practical recommendations regarding specific issues on critical care nutrition.

1. Management of GI intolerance

As GI intolerance could occur among critically ill patients, we would like to emphasize that it is important for clinicians to understand its etiology so that EN delivery be optimized and not inadvertently halted. Multifactorial reasons such as the use of sedative drugs, acute phase of disease, and prone positioning are the most likely etiologies of GI intolerance among patients with COVID-19 [3]. Prokinetics could be given and the enteral feeding rate or volume could be decreased. Shifting to an energy dense formula could help so that adequate calories can still be given despite lower formula volume. In addition, it is important to note that concentrated formula may delay gastric emptying, hence, should be addressed accordingly. Shifting to pre-digested formula could also help to mitigate GI intolerance.

Table 1
Barriers to nutritional therapy among critically ill COVID-19 patients.

Barriers	Examples	ESPEN Recommendations
Patient-related	Advanced age, polymorbidity, sarcopenia, baseline nutrition status, GI intolerance symptoms	<ul style="list-style-type: none"> Start enteral nutrition (EN) for polymorbid inpatients and in older patients whose nutritional requirements cannot be met orally Start parenteral nutrition (PN) when EN is not indicated or unable to reach targets. Use prokinetics or shift to post-pyloric feeding if with GI intolerance or if high risk for aspiration
Disease-related	Disease severity, hypercatabolic state, respiratory failure, ICU-acquired weakness	<ul style="list-style-type: none"> Hypocaloric nutrition should be administered in the early phase of acute illness Start 1.3 g/kg protein equivalents per day delivered progressively Assess for dysphagia and consider texture-adapted food after extubation
Healthcare-related	Skills and expertise of healthcare workers, risk of viral exposure, lack of equipment (e.g. infusion pumps) or personal protective equipment (PPE)	<ul style="list-style-type: none"> Train healthcare workers to address nutritional aspects of patients Emphasis on the use of PPE Hospital procurement officers should consider nutritional requirements as essential needs in the resource allocation process
Treatment-related	Enteral access, patency of IV lines for PN, multiple drugs and sedatives, proning maneuvers, mechanical ventilation, length of ICU stay	<ul style="list-style-type: none"> Start early EN through a nasogastric tube for intubated and ventilated patients Consider post-pyloric feeding if with recurrent GI intolerance or if with residual volume >500 mL Start enteral feeding for patients on prone position as it is not a contraindication for EN

2. Use of supplemental parenteral nutrition

Hypocaloric nutrition is recommended during the early phase of acute illness as it is usually represented as the period of greatest risk of enteral feeding intolerance [1,3]. In addition, trophic feeding could serve as a protective strategy as it may reduce gut burden and maintain intestinal physiology among critically ill patients [4]. However, patients with COVID-19 usually present with decreased oral intake even before hospitalization and the longer they are fed optimally could only result to larger caloric and protein deficits in the long run. Hence, starting supplemental parenteral nutrition on critically ill patients could be beneficial if enteral feeding does not meet nutritional targets on the third day of illness [5]. Nevertheless, this should be individualized as certain population groups may have increased risk for refeeding syndrome.

In conclusion, nutrition plays a crucial role in the care of critically ill COVID-19 patients. We recognize that there are several barriers and potential challenges in the provision of nutritional therapy during this pandemic. Nevertheless, counter measures can be done to overcome these barriers and the ESPEN expert statements have already enumerated several of these. As knowledge of COVID-19 continue to evolve, adopting best practices could also help. Finally, during these times that we still do not have definitive treatment for COVID-19, may we be assured that we have a weapon in nutrition and with it, we can improve clinical outcomes and hasten patient recovery.

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