



ICU Patients: Impact of Nutritional Support on Outcomes



Survivorship is at the forefront of critical care research, hence it is imperative that nutrition studies carefully consider biological mechanisms and trial design because these factors can strongly influence outcomes, in particular long-term physical and functional outcome, says a review paper in the journal *Critical Care*. "Failure to do so may lead to inconclusive clinical trials and consequent rejection of the potentially beneficial effects of nutrition interventions during critical illness," the report notes.

Recent randomised controlled trials (RCTs) have not shown any mortality benefit when specific nutritional interventions have been investigated over the first week of critical illness and other studies have reported harm. This has led to useful debate regarding the most appropriate timing, type and amount of nutrition support that should be delivered to critically ill patients.

This review covered clinical trials which have evaluated the physical and functional impact of critical care nutrition interventions, either as secondary outcomes, sub-studies or post-hoc analyses, as well as the effect of timing, type and amount of nutrition support on recovery following critical illness.

Most experts and guidelines agree that enteral nutrition (EN) should be commenced within 24-48 hours of admission to the ICU. Early EN is encouraged to assist with the maintenance of gut integrity, modulation of the stress and immune response and attenuation of disease severity, which may, in turn, improve overall outcome. However, it is possible that current feeding methods may not physiologically be able to produce the desired outcome benefit or that provision of nutrients does not result in anabolism, particularly in the earliest phase of critical illness (e.g., first 48-72 hours) or in clinical conditions defined by persistent inflammation and hypoxia. Studies investigating the anabolic effect of nutrition at different time points over the course of critical illness and recovery are required to provide further guidance on the most appropriate timing of nutrition support in order to influence these outcomes, the review team says.

Notably, recent thinking suggests that consideration of the endogenous production of energy in early critical illness is essential to the timing and dose of nutritional supplementation. However, with no bedside method to measure endogenous energy production, it is impossible to account for this when calculating energy expenditure and devising feeding regimens. It has been postulated that in early critical illness (e.g., within the first 72-96 hours) permissive underfeeding to approximately 15 kcal/kg with full protein nutrition support may be warranted, but this awaits confirmation of benefit in RCTs, the review team points out.

One of the major challenges in demonstrating benefit from nutrition in critically ill patients is the heterogeneous nature of the clinical population. In this regard, the team says, it is unlikely that all patients will benefit from the

same treatment at the same time point. Whilst feeding protocols are recommended as a means of encouraging early enteral feeding, a "one size fits all" approach to the treatment of critically ill patients is no longer considered appropriate, the team adds.

Further, observational studies tend to include patients fed over a longer period of time and exclude those patients fed over shorter durations. "Because of the risk of bias associated with the short duration of trials, we propose that critical care nutrition studies should continue for longer than the first week of critical illness and should consider post-ICU nutritional intake," the review authors write.

The authors also say the investigation of multi-modal interventions, coupling appropriate nutrition and exercise interventions at specific time points, is warranted given the physiological evidence that increases in muscle mass and improvements in exercise capability are stronger when these interventions are provided in tandem. "The outcome of extending the combination of these two interventions in the post-ICU phase should also be investigated," they add.

Source: [Critical Care](#)

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