



## Letter to the Editor

## Nutrition management of obese critically ill patients: More research is urgently needed



Keywords:  
Obesity  
Critical care

Dear Editor,

The worldwide prevalence of obesity is increasing and the complex metabolic needs of obese patients in the intensive care unit (ICU) makes nutrition management uncertain [1]. The effect of nutritional therapy on outcomes is further complicated by the obesity paradox with a body mass index [BMI] of 30–40 kg/m<sup>2</sup> associated with the lowest mortality, whilst a BMI of <25 kg/m<sup>2</sup> or > 40 kg/m<sup>2</sup> associated with the highest mortality [2]. We commend the authors of the recently published 'ESPEN guideline on clinical nutrition in the intensive care unit' [3] for making specific recommendations to assist clinicians in the formulation of an evidenced-based nutrition plan for the obese. We note, however, inconsistent recommendations between the ESPEN guidelines and the 2016 SCCM/ASPEN guidelines [4] regarding the recommended amount of energy and protein to deliver in obese patients and how to estimate requirements. Such discrepancies undoubtedly reflect the limited and low quality evidence available to inform practice.

In the absence of indirect calorimetry and urinary nitrogen measurements, the 2018 ESPEN guidelines recommend 20–25 kcal/kg/day ("isocaloric") and 1.3 g/protein/kg/day using *adjusted* body weight [2]. In contrast, the SCCM/ESPEN guidelines recommend 11–14 kcal/kg/day ("hypocaloric") feeding using *actual* body weight if the BMI is 30–50 kg/m<sup>2</sup> and 22–25 kcal/kg/day using *ideal* body weight patient when the BMI is > 50 kg/m<sup>2</sup>. Recommended protein delivery according to the SCCM/ASPEN guidelines is almost double that of the ESPEN guidelines (2–2.5 g/kg ideal body weight/day); thus, using the illustration of a 100kg female patient with a BMI of 36kg/m<sup>2</sup>, the recommended protein delivery would be 138 g and 82g, respectively. The recommendations for high protein feeding are based on observational studies and two small (combined n = 46) randomised trials of parenteral nutrition conducted over 20 years ago. Of note, one trial did not investigate the effect of protein delivery on clinical outcomes and the other found no survival benefit associated with increased protein delivery [3]. Further, the role of increased protein delivery leading to improved clinically important functional outcomes remains to be established.

Sub-group analysis of the largest, blinded, randomised trial of calorie delivery (TARGET) [5] suggests that patients with a BMI of  $\geq 30$  kg/m<sup>2</sup> may possibly benefit from increased calorie delivery. However, such analyses are hypothesis-generating only and require formal evaluation in a robust, adequately powered and blinded clinical trial, along with the evaluation of protein delivery, before guideline recommendations can truly inform clinical practice on how best to feed the obese patient.

## References

- [1] Dickerson RN. Metabolic support challenges with obesity during critical illness. *Nutrition* 2019;57:24–31.
- [2] Hutagalung R, Marques J, Kobyłka K, Zeidan M, Kabisch B, Brunkhorst F, et al. The obesity paradox in surgical intensive care unit patients. *Intensive Care Med* 2011;37(11):1793–9.
- [3] Singer P, Blaser AR, Berger MM, Alhazzani W, Calder PC, Casaer MP, et al. ESPEN guideline on clinical nutrition in the intensive care unit. *Clin Nutr* 2019;38(1):48–79.
- [4] Taylor BE, McClave SA, Martindale RG, Warren MM, Johnson DR, Braunschweig C, 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.). *Crit Care Med* 2016;44(2):390–438.
- [5] TARGET Investigators, for the ANZICS Clinical Trials Group. Energy-dense versus routine enteral nutrition in the critically ill. *N Engl J Med* 2018;379(19):1823–34.

Kate Lambell\*

Australian and New Zealand Intensive Care Society Research Centre,  
School of Public Health and Preventative Medicine, Monash  
University, Melbourne, Australia

Sandra Peake  
Department of Intensive Care Medicine, Queen Elizabeth Hospital,  
Adelaide, Australia

Emma Ridley  
Australian and New Zealand Intensive Care Society Research Centre,  
School of Public Health and Preventative Medicine, Monash  
University, Melbourne, Australia

\* Corresponding author. Australian and New Zealand Intensive  
Care Society Research Centre, School of Public Health and  
Preventative Medicine, Monash University, Level 3, 555 St Kilda Rd,  
Melbourne, VIC, 3004, Australia.  
E-mail address: [kate.lambell@monash.edu](mailto:kate.lambell@monash.edu) (K. Lambell).

7 February 2019