

High vs Standard Protein Provision and Functional Recovery - PRECISE



Rapid skeletal muscle wasting during critical illness negatively affects both short- and long-term outcomes after ICU admission. Increasing dietary protein intake may help reduce muscle wasting and improve post-ICU function.

ICU-acquired weakness (ICU-AW) is common among ICU survivors and negatively impacts both short- and long-term outcomes. It results from severe muscle wasting due to depleted body reserves during critical illness. Preserving muscle mass and improving recovery after ICU discharge are crucial to address this. Retrospective studies suggest that high-protein nutrition may improve survival and outcomes, with current ICU guidelines recommending protein intake between 1.3 g/kg/day and 2.0 g/kg/day. However, there is a lack of strong prospective evidence on the effectiveness and safety of high enteral protein delivery.

The PProtEin Provision in Critical IllneSs (PRECISE) study aimed to evaluate the impact of high versus standard protein provision on functional recovery in critically ill patients, focusing on functional, patient-centred outcomes rather than traditional clinical endpoints like mortality.

The goal was to determine if providing critically ill, mechanically ventilated patients with a higher amount of enteral protein (2.0 g/kg per day) would improve their health-related quality of life and functional outcomes compared to standard protein provision (1.3 g/kg per day). The study was conducted to see if increased protein intake could reduce muscle wasting and lead to better long-term outcomes in these patients.

The trial was conducted in five Dutch and five Belgian hospitals. Patients were eligible if they were intubated within 24 hours of ICU admission and expected to need ventilation for at least three days.

Patients were randomly assigned to either a high-protein or standard-protein group. Patients received isocaloric enteral feeds with either standard (0.06 g protein/mL) or high protein (0.10 g protein/mL) content. The intervention lasted up to 90 days during the ICU stay, limited to the period when enteral feeding was necessary. The primary outcome was the EuroQoL 5-Dimension 5-level (EQ-5D-5L) health utility score measured at 30, 90, and 180 days post-randomisation.

Between November 19, 2020, and April 14, 2023, 935 patients were randomly assigned to either a standard protein group (465 patients) or a high protein group (470 patients). The primary outcome, the EQ-5D-5L health utility score over 180 days, was slightly lower in the high protein group than the standard protein group. Mortality rates did not significantly differ between the groups, but gastrointestinal intolerance was higher in the high protein group. Other adverse events were similar across both groups.

These findings show that high enteral protein provision compared to standard protein provision led to worse health-related quality of life in critically ill patients and did not improve their functional outcomes over 180 days following ICU admission.

Source: [The Lancet](#)

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