

Meeting current protein guidelines using a modular liquid protein medical food without overfeeding calories.

Clinical Nutrition: European Society of Parenteral and Enteral Nutrition. February 2016, V11 e55-e62, Stephen Taylor, et al.

ABSTRACT:

Introduction: Higher protein intakes in critical care patients have been associated with beneficial outcomes in terms of preservation of lean body mass (LBM) during catabolism, reduced mortality and improved wound healing¹⁻³.

This study examines whether current local, ASPEN or ESPEN protein guidelines for critical care, which recommend 1.2-2.5g protein/kg/d or 2.0-2.5g protein/kg of ideal body weight/d if obese, can be met using standard and high protein tube feed formulas without overfeeding calories.

Method: We prospectively examined the adequacy of protein provisions in ICU patients requiring full enteral nutrition (EN) against ASPEN and ESPEN guidelines.

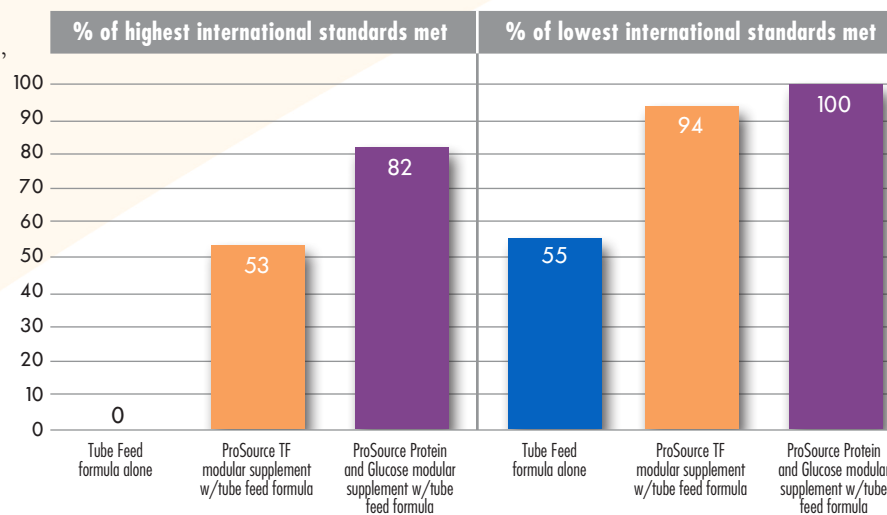
Results: Of 139 ICU patients receiving full enteral nutrition, protein prescriptions failed to meet local guidelines in 75% ($p < 0.001$); this improved to 50% using a high protein tube feed with a non-protein energy to nitrogen ratio (NPE:gN) of 80:1. Furthermore, the prescription failed to meet international guidelines (ASPEN and ESPEN) in 45-100% of these patients.

However, using a modular liquid protein supplement, those meeting at least 90% of each protein guideline and the 130g obligatory glucose requirement could be increased from between 0 and 55%, depending on the guideline, to 53 and 94% using a protein supplement and to 82 and 100% using a protein plus glucose supplement.

The patients most vulnerable to protein (or protein and carbohydrate) deficit were $< 60\text{kg}$ or $\text{BMI} > 30$ or were receiving significant non-nutritional energy (NNE) or hypocaloric feeding; NNE proportionately reduces feed protein prescription which contributed to 19% of energy expenditure in 10% of patients.

Conclusion: Most enteral formulas fail to meet protein (+/- carbohydrate) requirements of critical care patients without overfeeding, especially for patients receiving NNE from Propofol, IV glucose and CRRT fluid.

A combination of high protein feed and a protein or protein-glucose supplement should meet the requirements of all critical care patients based on current guidelines. Importantly, feeding prescriptions need to be proportionally adjusted to allow for calories from NNE sources.



References:

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