

BACKGROUND

Formal guidelines for the dynamic nutritional targets of **post-ICU patients** are lacking.

Guidelines that may be suitable for these patients recommend a **caloric intake** of **25-30 kcal/kg per day** and a **protein intake** of about **1.5 g/kg per day**.

However, during the **recovery phase of critical illness, patients'** metabolic targets and physical mobility increase significantly. Thus, it may be suggested that their energy expenditure will **exceed the recommended energy and protein intake**.

Hypothesis: Adequate nutrition in the post-ICU period may positively impact clinical outcomes

AIM & OBJECTIVES

To describe energy and protein intake in detail over the entire post-ICU hospitalization period and explore associations between protein intake and clinical outcomes.

STUDY OUTLINE



Design

A prospective observational single-center cohort study



Population

Critically ill adult patients (aged >18 years) who were ready for ICU discharge after an ICU-stay of >72 h and who received PN or EN for >24 h during ICU stay

Total N analyzed = 41



Primary outcomes

Energy and protein intake post-ICU in patients with different nutritional routes

Secondary outcomes

LoS after ICU discharge, discharge destinations, readmissions and mortality rates

RESULTS

Primary outcomes

Oral nutrition only

Mean energy intake: **22.3** kcal/kg/IBW per day

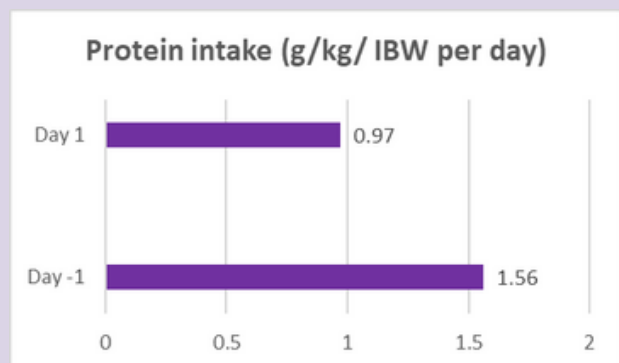
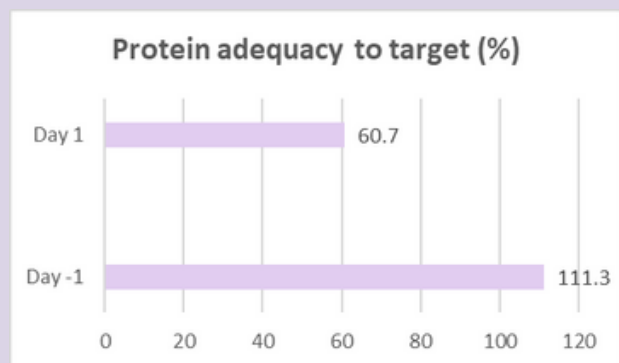
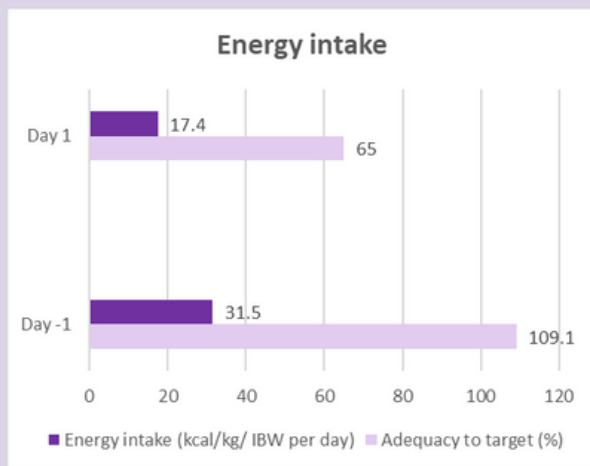
Mean adequacy to target: **82.2%**

Mean protein intake: **1.07** g/kg/IBW per day

Mean adequacy to target: **75.5%**

IBW= ideal bodyweight

Oral + EN



Removal feeding tube after ICU discharge (day 1)

- 44.1 % lower energy intake
- 50.9% lower protein intake

After this, an increase in energy intake was seen until **Day 6** to median 22.3 kcal/g IBW per day and to 1.36 g/kg IBW per day in protein intake.

Day 1: day after EN stop
Day -1: day before EN stop

Summary:

Overall mean **energy** intake: **82%**

Overall mean **protein** intake: **83%**

→ Only **51.2%** of the study participants reached overall **>90%** of prescribed protein targets during post-ICU.

Secondary outcomes

No differences between low and protein intake groups were observed for any parameter (hospital discharge, 3- and 6- month mortality rates, readmission to ICU and hospital, length of ICU and hospital stay, and differences in MRC and CPax scores).

CONCLUSIONS

- Most patients recovering from critical illness did not reach energy and protein recommended intakes and prescribed targets during the post-ICU hospitalization period. However, this was highly dependent on the nutritional route.
- The **lowest intake** was observed in patients with **oral nutrition only** (+ food fortification / ONS).
- The **best intake** was observed in patients receiving **(supplemental) enteral nutrition** with adequacies >90%).
- Discontinuation of EN posed a nutritional risk, resulting in immediate and sustained drops of energy and protein intake (highest drop within the first day).
- Prescribed intake targets were below the recommendations.
- No significant differences in clinical outcomes were observed in the study.

CONSIDERATIONS FOR CLINICAL PRACTICE

Further studies to extend individualized nutritional support to reach energy and protein targets in the post-ICU period.

Nutritional follow-up (from all nutritional routes) and strategies to enhance nutritional intake during post-ICU are necessary

Tube feeding should be continued longer post-ICU and only stopped when oral intake is proven to be sufficient

Intake should be supported with food fortification or ONS, possibly even for a prolonged time after hospital discharge to facilitate recovery