

OPTIMISATION OF ENERGY PROVISION WITH SUPPLEMENTAL PARENTERAL NUTRITION IN CRITICALLY ILL PATIENTS: A RANDOMISED CONTROLLED CLINICAL TRIAL

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Introduction: Background Enteral nutrition (EN) is recommended for patients in the intensive-care unit (ICU), but it does not consistently achieve nutritional goals. We assessed whether delivery of 100% of the energy target from days 4 to 8 in the ICU with EN plus supplemental parenteral nutrition (SPN) could optimise clinical outcome.

Méthode: This randomised controlled trial was undertaken in two centres in Switzerland. We enrolled patients on day 3 of admission to the ICU who had received less than 60% of their energy target from EN, were expected to stay for longer than 5 days, and to survive for longer than 7 days. We calculated energy targets with indirect calorimetry on day 3, or if not possible, set targets as 25 and 30 kcal per kg of ideal bodyweight a day for women and men, respectively. Patients were randomly assigned (1:1) by a computer-generated randomisation sequence to receive EN or SPN. The primary outcome was occurrence of nosocomial infection after cessation of intervention (day 8), measured until end of follow-up (day 28), analysed by intention to treat. This trial is registered with ClinicalTrials.gov:NCT00802503.

Résultat: We randomly assigned 153 patients to SPN and 152 to EN. 30 patients discontinued before the study end. Mean energy delivery between day 4 and 8 was 28 kcal/kg per day (SD 5) for the SPN group (103% [SD 18%] of energy target), compared with 20 kcal/kg per day (7) for the EN group (77[27%]). Between days 9 and 28, 41 (27%) of 153 patients in the SPN group had a nosocomial infection compared with 58 (38%) of 152 patients in the EN group (hazard ratio 0.65, 95% CI 0.43–0.97; $p=0.0338$), and the SPN group had a lower mean number of nosocomial infections per patient (-0.42 [-0.79 to -0.05]; $p=0.0248$).

Conclusion: Individually optimised energy supplementation with SPN starting 4 days after ICU admission could reduce nosocomial infections and should be considered as a strategy to improve clinical outcome in patients in the ICU for whom EN is insufficient.