

# Protein intake and clinical and functional outcome in ICU patients

*a systematic review as a basis for ESPEN guidelines development*

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# Protein intake and clinical and functional outcome in ICU patients: a systematic review as a basis for ESPEN guidelines development

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## INTRODUCTION

Metabolic response in critical illness is characterized by an overwhelming protein catabolism, that exceed protein synthesis, rapidly leading to a severe muscle wasting and to a depletion of amino acids required to regulate inflammatory response, immune function and for wound healing. Recent evidence suggests that enhancing protein intake can attenuate catabolic response and improve clinical outcome in critically ill patients. Optimal protein intake is still debated; current guidelines indicate as target 1.2-1.5 g/kg/day and experts suggest even higher intake. Solid data on the effect of protein intake on clinical and functional outcome parameters are lacking.

## METHODS

- MEDLINE was searched (January 4, 2016) for original articles published between 1946 and 2015. The search was updated on June 2, 2017 to include most recent articles.
- Reference list of the ESPEN, ASPEN, ESICM and the Canadian (international) guidelines for patients on the ICU were checked for additional articles.
- Quality assessment was done according to the guidelines devised by the Nordic Nutrition Recommendations 5 Working Group.
- The grade of evidence was classified as convincing, probable, suggestive or inconclusive.

## RESULTS

- 28 articles included in the systematic review: 15 clinical trials and 13 prospective cohort studies.

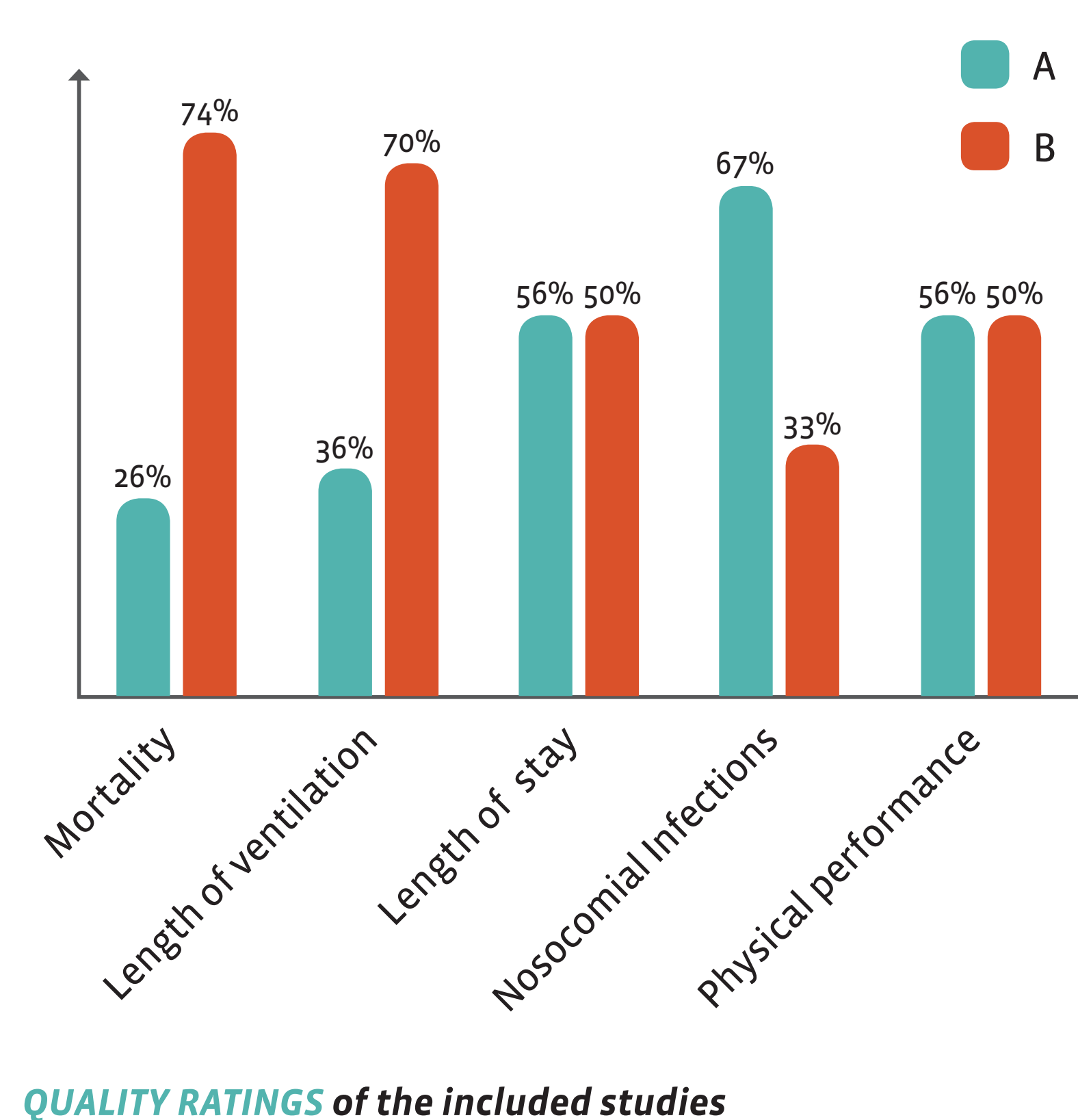
- Overall, protein intake was low, not achieving current recommendations in 72% of the studies.

### Grade of evidence:

- Higher protein intake and lower mortality risk (19 studies): *suggestive*
- Higher protein intake and shorter length of mechanical ventilation (10 studies): *inconclusive*
- Higher protein intake and shorter length of hospital or ICU stay (10 studies): *inconclusive*
- Higher protein intake and lesser nosocomial infections (6 studies): *inconclusive*
- From two studies included in the review, a promising positive role of protein on physical performance emerged.

### CHARACTERISTICS of the included studies

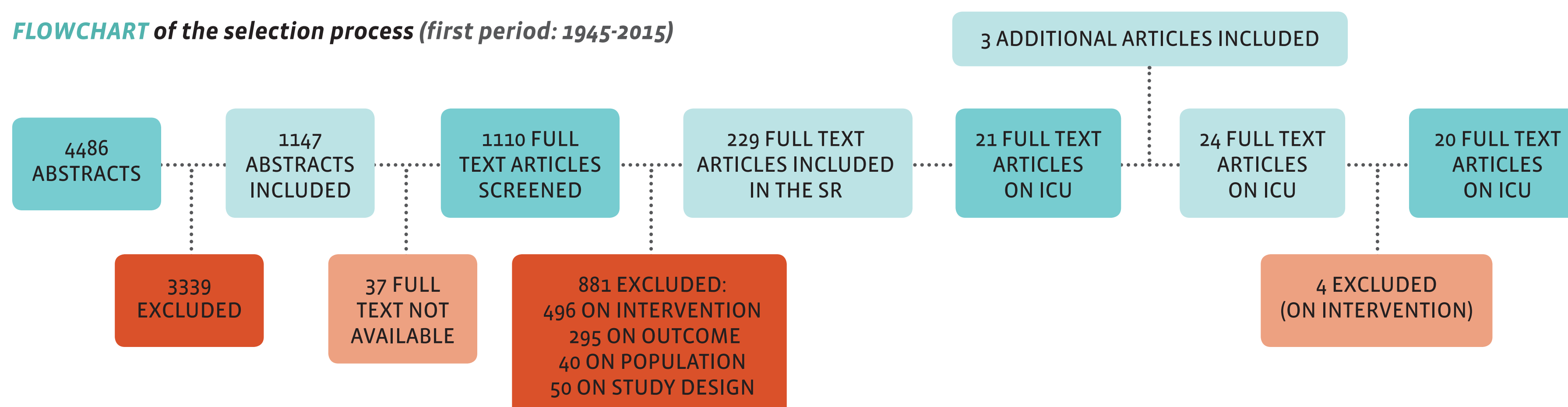
Study Design	
Randomized Controlled Studies	15 (54%)
Prospective Cohort Studies	13 (47%)
Quality Rating	
A	6 (21%)
B	20 (72%)
C	2 (7%)
Outcome Parameter	
Mortality	19
Length of Ventilation	10
Length of Stay (Hospital and ICU)	10
Nosocomial Infections	6
Physical Performance	2



## CONCLUSIONS

Future RCTs, matching recommended protein target (or even higher target) and comparing different protein intake, are urgently needed to assess the evidence behind protein intake in ICU patients.

### FLOWCHART of the selection process (first period: 1945-2015)



### FLOWCHART of the selection process (second period: 2016-June 2017)

