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## Summary

Post-discharge nutritional support in malnourished ill elderly patients –  
Effectiveness and cost-effectiveness

## Introduction

This thesis describes the effectiveness and cost-effectiveness of post-discharge nutritional support in 210 malnourished elderly patients. Patients were randomized into an intervention group or a control group. Patients in the intervention group received an energy and protein enriched diet, oral nutritional supplements, calcium-vitamin D supplementation and were supported by dietetic counselling. Patients in the control group received usual care.

Patients were included on hospital admission and follow-up continued until three months following hospital discharge. Primary outcome parameters were functional limitations and physical activities.

This summary presents the main findings from this study.

## Summary of main findings

### *Effectiveness*

Firstly, a three month duration multi-component nutritional intervention (energy and protein enriched diet, oral nutritional support, calcium-vitamin D supplementation supported by dietetic counselling) in malnourished patients resulted in an increase in body weight. This finding was statistically significant for patients in the highest body weight category, but not significant in those with lower body weights.

Secondly, a statistically significant decrease was found in functional limitations in the intervention group compared to the control group. Patients having received the nutritional intervention, for example, were able to climb up a stairs and/or dress and undress themselves, while patients in the control group could not. What is important about this finding is that most patients are less concerned about an increase in their body weight while a decrease in functional limitations can play an important role in their independence. No statistical significant differences between groups could be demonstrated for physical performance, physical activities, fat-free mass, and handgrip strength.

Thirdly, a statistical significant increase was found among patients in the intervention group on energy intake, protein intake and serum 25-hydroxy vitamin D compared to patients in the control group. A study on fall incidence demonstrated that the number of

patients who had experienced falls and the mean number of fall incidents considerably decreased in patients in the intervention group, compared to patients in the control group.

Finally, in an exploratory study on the effect of the nutritional intervention on a selection of immune parameters, no statistical significant differences between groups in immune markers, endocrine markers and a selection of micronutrients could be demonstrated. The better health status of the selected group of patients could have played a part in the results found.

#### *Cost-effectiveness*

Alongside a significant decrease in functional limitations we were able to demonstrate that the given nutritional intervention was cost neutral. Both groups spent approximately € 9000 on health related costs in the three months following discharge from the hospital. This study concludes that an investment of € 6500 was needed to create a 95 percent change to decrease functional limitations.

This study could not demonstrate cost-effectiveness for quality of life and physical activities.

#### *Survival of malnourished cognitively impaired patients*

In a sub-analysis survival was studied in malnourished elderly patients with cognitive impairment. Survival minimized among patients diagnosed with a malignancy or vascular disease in addition to their malnutrition and cognitive impairment.

#### *Resting energy expenditure; predictive equations versus measurements*

This final study describes the resting energy expenditure of malnourished elderly patients. Resting energy expenditure can be measured by indirect calorimetry. However, this method is hardly feasible in most clinical settings, due to time consuming measurements, lack of trained personnel and expensive equipment. In clinical practice, predictive equations to determine resting energy expenditure are used as an alternative to solve this problem. In this study 33 different equations were compared to the measured values. Predictions of resting energy expenditure for malnourished ill elderly patients during hospitalization were subject to significant errors. The best developed prediction equations, thus far, predicted only 40% of patients accurately. Three months following discharge was this increased to 66%.

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## **Conclusion**

In conclusion, the studies in this thesis demonstrated that three months nutritional intervention in malnourished elderly patients increases body weight, decreases functional limitations and decreases falls. No effectiveness could be demonstrated for hand grip strength, fat free mass, physical activities and physical performance.

Future studies could focus on standard post-discharge nutritional support accompanied by dietetic counselling. Newly developed specialized elderly welfare centres could play an important role in managing this kind of intervention. Promising possibilities are nutritional interventions combined with physical activity, especially when provided for a minimum period of six months.