

## CLINICAL SUMMARY

# Clinical, Nutritional, and Functional Benefits with High Protein Oral Nutritional Supplements

Malnutrition continues to remain undetected and undertreated, adversely affecting both patients and the healthcare system. The results of this review show significant benefits of high protein oral nutritional supplements (ONS) across healthcare settings and patient groups.

There are benefits from high protein ONS use, with little reduction in normal food intake.

Disease-related malnutrition is common across all healthcare settings yet continues to remain undertreated, resulting in many significant, adverse effects to the patient and healthcare system. Malnutrition delays recovery from illness, and increases complications, hospital readmissions, and length of hospital stay.

This systematic review involved 36 randomized, controlled trials with 3790 subjects (mean age 74 years; 83% of trials in patients >65 years) and a series of meta-analyses of high protein ONS. In these studies, ONS were given in the hospital, hospital and community, or community setting. The patients were mostly elderly and included those with hip fractures, pressure ulcers, chronic obstructive pulmonary disease (COPD), cancer, gastrointestinal disease, and a range of critical and acute illness. Most studies compared ONS with a control group (n=33), and the intervention and follow-up periods ranged from 10 to 360 days (mean 88 days). The prescribed daily energy and protein intake from the high protein ONS ranged from 149 to 995 calories (mean 440 calories) and 10-60 grams of protein (mean 29 grams).

The results showed significant clinical, nutritional, and functional benefits, including:

<b>19% ▼</b>	Reduction in complications	( <i>P</i> <0.001)
<b>10% ▼</b>	Reduction in length of hospital stay	( <i>P</i> =0.04)
<b>30% ▼</b>	Reduction in hospital readmissions	( <i>P</i> =0.004)

The study also showed:

Improvement in handgrip strength	( <i>P</i> <0.014)
Improvement in body weight	( <i>P</i> <0.001)
Increase in muscle mass (mid-arm muscle circumference)	( <i>P</i> <0.05)
Increase in protein and energy intake with little reduction in normal food intake	( <i>P</i> <0.001)

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This is the first systematic review to examine the effect of high protein ONS on clinical, functional, and nutritional outcomes. Consistent with other reviews of ONS, this demonstrates that high protein ONS have multiple benefits on the test group, while the control group received no significant benefit. The intervention ranged from short to long term (mean period of 3 months) across a range of patients (elderly patients 33% of trials; hip fracture 33% of trials), with varying nutritional status, and different care settings (hospital and community).

In malnutrition patients whose inadequate dietary intake is due to poor appetite, the main purpose of prescribing high protein ONS is to increase protein intake. The high protein ONS increased protein intake from a mean of 55 grams to 74 grams—a significant increase compared to the control group, which accompanied an increase in total energy intake. Additionally, the studies showed that use of high protein ONS had little suppression on normal food intake. Improved nutritional intake is considered to be a key component of the causal pathway leading to clinical benefits. This improved intake may explain the significant increase in body weight and muscle mass (MAMC), which can also help explain the significant improvement in grip strength.

A major finding of this systematic review was a significant overall reduction (19%) in a range of complications including:

- Healing of surgical wounds
- Pressure ulcers
- Infection rates

Some functional outcomes, such as handgrip strength, were improved by ONS, and there were significant improvements in certain domains of quality of life.

Given the improvements in complication rates and functional outcomes, it is not surprising that the use of high protein ONS was also responsible for a reduction in length of hospital stay and readmission rates, both of which have important economic implications.

A nutritional intervention that allows earlier discharge or can keep patients out of the expensive hospital environment is beneficial to the wider health economy.

## NUTRITION CONCLUSION

Patient groups who may benefit from high protein ONS include:

- The acutely ill elderly
- Respiratory patients
- Hip fracture patients
- Those with pressure ulcers
- Patient groups with increased protein requirements