B A P E N

Advancing Clinical Nutrition

The cost of disease-related malnutrition in the UK and economic considerations for the use of oral nutritional supplements (ONS) in adults

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1. EXECUTIVE SUMMARY

Cost of malnutrition in the UK

(i) Using the 'Malnutrition Universal Screening Tool' ('MUST') as the basis of calculating the health care cost of malnutrition and any associated disease, the annual cost in the UK in 2003 was estimated to be more than £7.3 billion. Most of this is due to the treatment of malnourished patients in hospital (~£3.8 billion) and long-term care facilities (~£2.6 billion). Smaller contributions arose from GP visits (~£0.49 billion), outpatient visits (£0.36 billion), and enteral and parenteral nutrition, tube feeding and oral nutritional supplementation in the community (~£0.15 billion).

(ii) The annual additional health care cost of malnutrition and associated disease (the extra cost of treating all patients in the general population with medium and high risk of malnutrition and associated disease, compared to treating the same number of patients with low risk of malnutrition and associated disease) was estimated to be over £5.3 billion. Most of this was due to more frequent and more expensive hospital in-patient spells, and greater need for long-term care in those with medium and high risk of malnutrition than low risk of malnutrition.

Cost analysis of oral nutritional supplements in hospital

(iii) A literature search identified only one randomised controlled trial and one cross-over trial that prospectively evaluated the economic effects of oral nutritional supplements (ONS) in hospital. Therefore, the economic consequences of administering oral nutritional supplements in hospital were evaluated retrospectively from published studies. Use was made of disease/procedure specific national reference costs for length of stay in hospital (LOS) (average, lower and upper quartile costs (LQ and UQ) bed-day, and excess bed-day costs) and complications (average, LQ and UQ).

Surgical studies: 7 published randomised controlled trials and 1 cross-over trial in patients undergoing abdominal and orthopaedic surgery were assessed. They were consistent in showing a net cost saving in favour of supplementation, when calculations were based on bed-day costs (mean value of £1166 (£966 LQ, £1368 UQ) per patient, and excess bed-day costs (£363 per patient) ($p \sim 0.05$, one sample t-test; $p < 0.02$, Wilcoxon 2-related sample test in analyses separately based on mean, LQ and UQ results). There was also a significant net cost saving in favour of supplementation when calculations were based on complication costs £321 (£233 LQ, £392, UQ) per patient) ($p<0.05$, t test and Wilcoxon 2-related sample test). Six randomised controlled trials involving abdominal surgery (n = 418 patients), which were amenable to a meta-analysis using LOS, and standard deviation of LOS costs, showed a significant cost saving in favour of supplementation The 95% confidence interval for standardised LOS costs (n =181 control group, n = 177 intervention Group) was -0.45 to -0.03 ($p = 0.03$).

Non-surgical studies: a study involving older subjects in geriatric wards and another in stroke patients in the UK showed net cost savings in favour of the

supplement (£330 and £2080.8 per patient respectively, using average bed-day costs). Another study involving geriatric patients in Belgium showed a net loss (-£246.4).

Mixed surgical and non-surgical patients: A study involving medical, surgical and orthopaedic patients showed longer LOS in the supplemented group (49%) and a net loss associated with supplementation (-£1306 per patient (based on bed-day costs) and -£942 (based on excess bed-day costs).

Cost analysis of supplementation in the community

(iv) *Short-term pre-operative supplementation:* Three randomised controlled trials, involving supplementation of 5 group of patients in the community for about 2 weeks before elective surgery, showed a net cost saving in favour of supplementation when calculations were based on hospital bed-day costs (£688 per patient ($p = 0.008$) (LQ £497 per patient (0.003), UQ £828 per patient ($p=0.010$) per patient) and excess bed-day costs (£359 per patient ($p = 0.028$)).

(v) *Long-term supplementation*: a randomised controlled trial in malnourished older subjects discharged from hospital, prospectively examined the effects of oral nutritional supplements on the costs of hospital admissions, prescriptions, GP and outpatient visits. No economic benefit during a 6 month period of supplementation (ONS) was found. Another observational study involving 90 GP practices found that practices which prescribed ONS rarely had more health care costs that those that prescribed ONS frequently. In both of these studies the largest cost was that associated with hospital admissions.

(vi) Supplementation in the community adds costs to the community health care budget but some studies suggest a reduction in hospital costs. Such a situation could create difficulties if there are separate budgetary arrangements for community and hospital.

Conclusion

(vii) The studies suggest that the use of oral nutritional supplements result in a cost saving in selected groups of patients, especially those requiring abdominal surgery. Extrapolation of these findings to a wide range of conditions should be undertaken with caution because of the small number of studies, most of which were not primarily undertaken for economic evaluation.

Recommendations for future research

(viii) There is a need a) for more studies in a wider range of clinical conditions, in which nutritional status is clearly assessed using a common methodology b) to undertake power (sample size) calculations for economic outcome variables before the studies, especially since evidence for such calculations was lacking for all studies examined in this report c) to use an integrated complete economic analysis when the patient journey involves more than one health care setting d) to develop and apply models of economic analysis using the 'bottom-up' approach, in which costs of individual treatments and the time spent by various health workers to care for patients are taken into account e) to undertake cost-effectiveness and cost-utility analysis.