

The Cost and Cost-effectiveness of Oral Nutritional Supplements

A summary of new evidence



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Collectively as a nation we experience the political wrangling over tax rises, NHS spending cuts, budget freezes and financial deficits year in year out. As individuals, parents or carers we all have first-hand stories of accessing and utilising healthcare services, and as healthcare professionals we have day-to-day experience of delivering the type of high quality care we would want to receive ourselves but within tight financial constraints. You could say we have a '3D' view as payers, patients, and providers. What unites the demands of all three is the need for high quality care delivered in the most cost-effective way. The quest for cost-effective interventions cuts across all aspects of dietetic care but perhaps none more so than in the management of disease-related malnutrition (DRM). This article highlights and summarises recently published evidence in this area, in particular for oral nutritional supplements (ONS). This will be of interest to anyone involved in the identification and management of DRM, or in the commissioning of services to address this issue.

'Millions could be cut from NHS bill by tackling silent malnutrition epidemic,' reported the British Association for Parenteral and Enteral Nutrition (BAPEN) in November 2015.¹ The report published by the National Institute for Health Research (NIHR) Southampton Biomedical Research Centre and BAPEN examined both the cost of malnutrition in England and the potential cost savings through full implementation of appropriate high quality pathways of nutritional care as recommended by the National Institute for Health and Care Excellence (NICE) – NICE Clinical Guideline CG32² and Quality Standard QS24.³

The cost of malnutrition

The public health and social care expenditure associated with malnutrition in adults and children in England in 2011-12 was estimated to be £19.6 billion, with the largest portion (£15.2 billion) being spent in healthcare compared

with social care (£4.4 billion). This equates to approximately 15% of the total public expenditure on health and social care (£127.5 billion). In short, expenditure for a malnourished patient was found to be over three times greater compared to one without malnutrition.

Potential cost savings

Contrast that with the estimated potential net cost savings of between £172 and £229 billion if 85% of adults with medium and high risk of malnutrition (according to 'MUST') were managed according to the clinical guidelines and standards recommended by NICE. The report also points out that much of the net cost savings are due to appropriate use of ONS, and represent only 0.4-3.3% of the total annual healthcare cost of DRM in adults (£14.4 billion).

New evidence on cost and cost-effectiveness of ONS

Two systematic reviews published recently specifically undertaken to assess whether ONS use can produce cost savings and cost-effective outcomes when used in: a) hospitals,⁴ and b) in community and care home settings⁵ support the results of the economic model used by BAPEN and NIHR in the above mentioned report.¹ Some reviews of economic outcomes have been undertaken in the past but it has been difficult to get an accurate overview of the cost and cost-effectiveness of ONS as some reviews have combined data from different patient groups, different healthcare settings and different methods of nutritional support. In some cases, data had been omitted or missed. To overcome these limitations, the two reviews summarised here focused on studies that assessed standard ONS alone and so studies involving disease-specific and immune modulating formulas were excluded. In addition, healthcare settings were dealt with separately. The primary outcome measures were economic but since cost savings in association with clinical benefits can be judged as cost-effective, clinical and functional benefits of standard ONS were also examined as secondary outcomes measures. Literature searches were undertaken on the 31st of March 2014 and covered a variety of databases, including those focusing on health economics. Both reviews were undertaken according to recommended procedures and detailed quality assessment of trials was undertaken using tools specifically designed for different types of studies - e.g. randomised controlled trials, economic evaluations and observational studies. The tools were adapted for nutritional studies on the basis that some items were ambiguous or not relevant to the types of studies being assessed.

Cost-effectiveness of ONS use in hospital

The review focusing on the hospital setting included nine publications (4 full papers, 2 abstracts and 3 reports, one of which included 11 cost analyses). Extensive prior knowledge (by the authors) of the literature meant that many of the analyses not included in previous reviews were included in this review giving a more complete picture of the economic outcomes of ONS.

A mean cost saving of 12% was identified from the cost analyses when patients receiving ONS were compared to those receiving routine care. Results from further subgroup analyses according to age, nutritional status, type of intervention and type of analysis universally favoured the ONS group, although, the number of studies was small. Meta-analysis of abdominal surgical studies showed that the mean net cost saving of administering ONS was £746 per patient, or 13.5% with ONS *versus* standard care. Cost savings were typically associated with significantly improved outcomes, which included reduced mortality (by 35%), reduced complications (by 35%) and reduction in the length of hospital stay (by 2 days, corresponding to -13% reduction). Ten out of 12 (83%) studies had a mean or median length of stay shorter in the ONS group compared to controls. Cost-effectiveness was also demonstrated by avoiding the development of pressure ulcers and releasing hospital beds or by gaining quality adjusted life years.

This is the most comprehensive review to date showing that managing malnutrition with standard ONS benefits patients in the hospital setting. Most of the cost savings were driven by improvements in patients' health (better patient outcomes), such as fewer complications and reduced mortality. The review concludes that ONS use in the hospital setting produce an overall cost saving and are cost-effective.

Cost-effectiveness of ONS use in the community

The same methodology (i.e. literature searches, data extraction, quality assessment and analysis of the data) used for the hospital review was employed for a review focusing on community settings. In total, 19 publications detailing 31 cost and four cost-effectiveness analyses were included. For this review it was important to distinguish between studies undertaken exclusively outside hospital (e.g. community

and care homes), and those started outside hospital and continued in hospital and *vice versa*. For the purposes of the review 'community' was defined as patients residing in their own homes and 'care homes', which includes patients residing in nursing homes, residential homes and other institutions outside of acute hospitals.

To provide an overview of studies undertaken in different countries, at different times, using different currencies, the results were presented as percentage cost savings. Overall there was a significant cost saving (median 8.1%) in favour of the ONS group. When used for <3 months the mean cost saving was 9.2% and when used for ≥3 months there was a median cost saving of 5%. Abstracts were not included in the analysis above, but all favoured the ONS group. A series of meta-analyses involving 10 datasets from eight publications found reduced hospitalisation in favour of the ONS group. For the nine datasets from full text papers only, it was reduced by 16.5%. In the randomised clinical trials (RCTs) that pre-planned to undertake cost analysis, ONS administration for between about two weeks and three months generally accounted for only a small proportion of treatment related costs, i.e. only 1-11% (mean of less than 5%) while hospitalisation contributed to 69 to >90% of costs. So investment in the community produced cost saving in hospital. Of eight RCTs reporting functional or clinical outcomes, all found at least one outcome significantly favouring the ONS group and none significantly favouring the control group. Examples of clinically relevant outcomes that were reported included: improved quality of life, reduced number of infections, reduction in minor postoperative complications, and a reduction in falls and functional limitations.

The review concludes: *'that ONS use in the community produce an overall cost advantage or near neutral balance, often in association with clinically relevant outcomes, suggesting cost-effectiveness.'*

Same question? Different answer?

A further review published in January 2016 by Bally *et al.*⁶ appears to conflict with the results of the two reviews by Elia *et al.* described above. However, as pointed out earlier, the inclusion and exclusion criteria for reviews can differ substantially and should be carefully examined before making comparisons and drawing overall conclusions. Bally *et al.* aimed to assess the

effects of *nutritional support* on outcomes of *medical* inpatients with malnutrition or at risk of malnutrition in a systematic review of RCTs. In contrast to the reviews by Elia *et al.* they did not show a significant reduction in mortality, hospital-acquired infections, functional outcomes or length of hospital stay.

However, Bally *et al.* included studies of *any* type of nutritional support except parenteral nutrition. They included studies that examined interventions as diverse as dietary advice, food fortification, oral supplementation and enteral feeding. In addition, they excluded studies of surgical patients except where there was a mixed cohort of medical and surgical patients where the results for the medical patients were not reported separately. So the question was indeed not the same; the study populations and type of intervention differed from the reviews by Elia *et al.* Therefore, it is unsurprising that the answer was different. Similar to the Elia *et al.* review Bally *et al.* did show a significant reduction in non-elective readmissions in the intervention group compared with controls (20.5% vs. 20.9%; risk ratio, 0.71; 95% CI, 0.57-0.87).⁶

From theory to practice

Whether involved in the day-to-day delivery of nutritional care, in the leadership of teams responsible for the design and delivery of care or in influencing the commissioning of services, we as dietitians, with our 3D view, have a responsibility to critically examine, assimilate and communicate key evidence that can inform local and national decision making about the availability of ONS for the dietary management of DRM. ONS are as much a part of our 'toolkit' as any other type of nutrition support and are indeed complementary to other methods. In addition, they are supported by robust evidence that demonstrates their role in the drive to deliver high quality, safe and cost-effective care. As recently pointed out by Holdoway,⁷ we must critically examine and challenge where necessary the often misguided '*increasing trend for local decision-making bodies to reduce overall prescribing*' in the belief that it delivers cost savings.

Dietitians can utilise the evidence highlighted in this short article to inform, educate and influence decision makers to ensure that patient access is maintained, via prescription, to valuable components of the dietetic toolkit (ONS) to help tackle malnutrition.

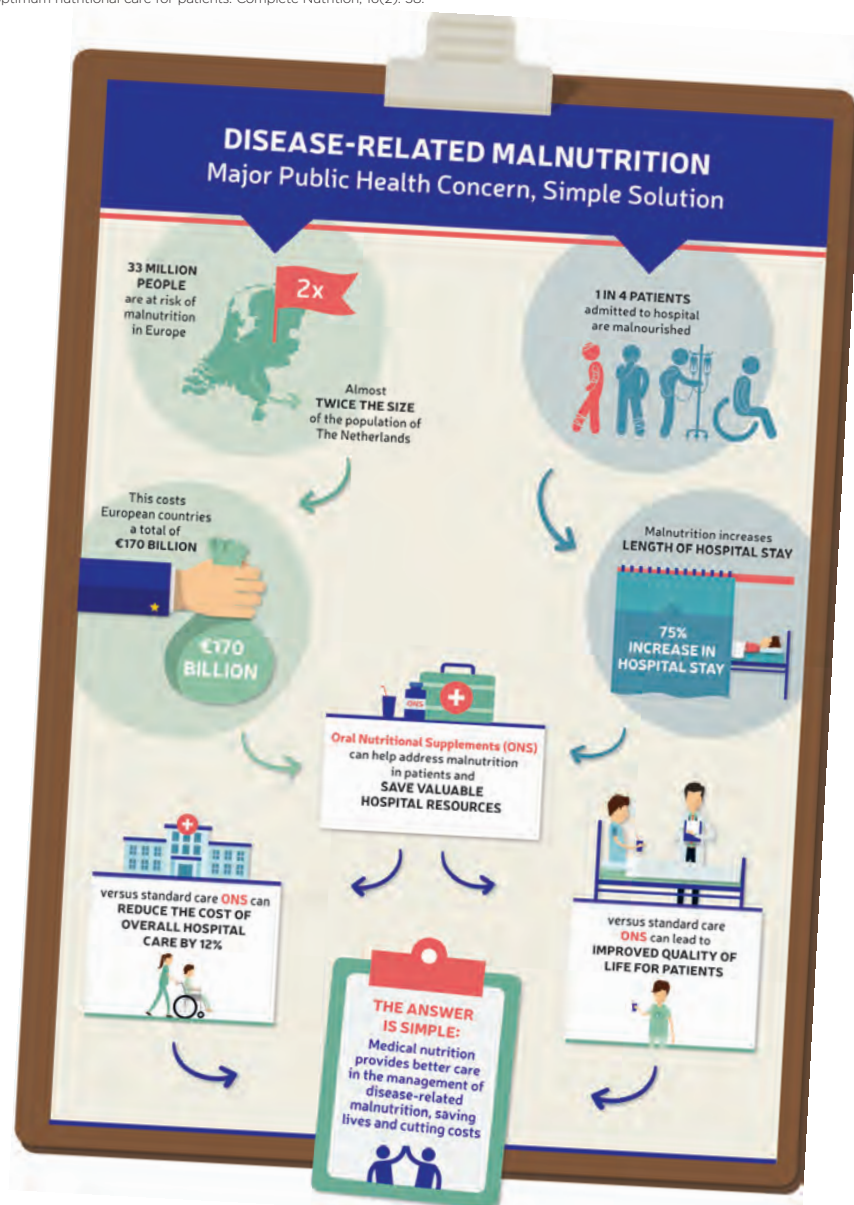
Resources

- A number of recommended pathways have been developed by a variety of expert groups to ensure that malnourished patients are identified early and receive timely and appropriate nutrition support. Access via: <http://pathways.nice.org.uk/pathways/nutrition-support-in-adults> and www.malnutritionpathway.co.uk.

- A variety of materials have been developed by the Medical Nutrition International Industry (MNI) to assist in the dissemination of the results of systematic reviews of the cost and cost-effectiveness of ONS in hospitals, the community and care homes. These can be accessed at www.medicalnutritionindustry.com.

Fionna Page, BSc (Hons) RD is Director of First Page Nutrition Ltd. an independent nutrition consultancy. She assisted with various aspects of two reviews on the cost and cost-effectiveness^{4,5} of ONS including data selection, extraction and quality assessment. Fionna worked with the MNI in developing a range of communications materials on this topic.

References: **1.** Elia M, on behalf of the Malnutrition Action Group of BAPEN and the National Institute for Health Research (NIHR) Southampton Biomedical Research Centre (2015). The cost of malnutrition in England and potential savings from nutritional interventions (full report). BAPEN and NIHR. Accessed online: www.bapen.org.uk/pdfs/economic-report-full.pdf **2.** NICE (2012). Nutrition support in adults. NICE quality standard [QS24]. Accessed online: www.nice.org.uk/guidance/qs24 (May 2016). **3.** NICE (2006). Nutrition support for adults: oral nutrition support, enteral tube feeding and parenteral nutrition. NICE guidelines [CG32]. Accessed online: www.nice.org.uk/guidance/CG32 (May 2016). **4.** Elia M, et al (2016). A systematic review of the cost and cost-effectiveness of standard oral nutritional supplements in the hospital setting. *Clinical Nutrition*; 35: 370-380. **5.** Elia M, et al (2016). A systematic review of the cost and cost-effectiveness of using standard oral nutritional supplements in the community and care home settings. *Clinical Nutrition*; 35: 125-137. **6.** Bally MR, et al. (2016) Nutritional support and outcomes in malnourished medical inpatients: A systematic review and meta-analysis. *JAMA Internal Medicine*; 176: 43-53. **7.** Holdoway A (2016). Misguided Policy: Protecting valuable components of our dietetic toolkit to deliver optimum nutritional care for patients. *Complete Nutrition*; 16(2): 38.



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