

Improving outcomes with a little EFFORT



The adverse effect of excessive weight loss on clinical outcomes was documented over 80 years ago when Hiram Studley¹ showed that, in patients undergoing surgery for perforated duodenal ulcer, postoperative mortality was ten times greater in those who had lost more than 20% of their bodyweight preoperatively, compared with those who had lost less. Similarly, less pronounced results were shown in medical (not undergoing surgical treatment) patients. The potential importance of these observations was emphasised by a study from the 1990s showing that 30% of 500 patients admitted to hospital for treatment had moderate-to-severe malnutrition on admission.² Of the patients who stayed in hospital for more than one week, 65% continued to lose weight, with only a few of the malnourished patients being referred for nutritional intervention.²

Although most hospitals in high-income countries provide food that can meet patients' nutritional requirements, more than 40% of this food might be left on the plate, resulting in the consumption of less than 80% of the recommended protein and caloric (minimum 1800 kcal per day) intake by patients capable of eating.³ The reasons for reduced food intake, especially in older adults, are multifactorial and can stem from the belief of patients that poor appetite is to be expected during hospitalisation, with many supposing that their appetite will return to normal after discharge.⁴ Other reasons include gastrointestinal symptoms, inactivity, depression or low mood, inflexibility of hospital systems, quality of the food, lack of motivation, and the belief by both staff and patients that medical treatment is the main priority and that food is of secondary importance.^{4,5}

Despite these studies on the prevalence and clinical effects of malnutrition, there has, until now, been a scarcity of high-quality evidence on the value of nutritional support in medical patients. A meta-analysis of 22 randomised controlled trials with 3736 participants assessed the effects of nutritional support on outcomes in inpatients with malnutrition or at risk of malnutrition.⁶ Although the review showed that nutritional support increased protein and caloric intake and bodyweight, there was little effect on clinical outcomes in terms of mortality, hospital-acquired

infections, length of stay, and functional improvement,⁶ and these findings were also supported by a Cochrane review.⁷ A study not included in these analyses showed that although a high-protein oral nutritional supplement containing β -hydroxy- β -methylbutyric acid had no effect on the primary composite endpoint of incidence of death or non-elective readmission up to 90 days after discharge when compared with placebo, it was associated with decreased mortality and improved indices of nutritional status during the period of observation.⁸

The Effect of early nutritional support on Frailty, Functional Outcomes and Recovery of malnourished medical inpatients Trial (EFFORT) by Philipp Schuetz and colleagues⁹ in *The Lancet* is a well designed, pragmatic, unblinded, multi centre trial aiming to test the hypothesis that providing patients at nutritional risk (Nutritional Risk Screening 2002 score¹⁰ ≥ 3) with individualised nutritional support would result in a better outcome than in those given the standard hospital diet without any further nutritional intervention.

Of the 5015 patients screened, 2088 were enrolled and 2028 were included in the final analysis. The patients had an average age of 72 years, with more than 82% (n=1673) being 65 years or older; 52% (n=525) in the intervention group and 53% (n=539) in the control group were male. Those in the intervention group received a modest increase of 290 kcal per day and 10 g protein per day compared to those in the control group.

Published Online

April 25, 2019

[http://dx.doi.org/10.1016/S0140-6736\(18\)32856-3](http://dx.doi.org/10.1016/S0140-6736(18)32856-3)

See Online/Articles

[http://dx.doi.org/10.1016/S0140-6736\(18\)32776-4](http://dx.doi.org/10.1016/S0140-6736(18)32776-4)



Jasmin Merdan/GETTY IMAGES

However, and more importantly, during the patients' hospital stay, caloric goals were reached in 79% and protein goals in 76% of patients in the intervention group, compared with 54% and 55%, respectively, in the control group. The investigators were able to show that this intervention led to a significantly better outcome when the primary composite endpoint was assessed (adverse clinical outcomes defined as all-cause mortality, intensive care unit admission, non-elective hospital readmission, major complications, and decline in functional status at day 30). In addition, mortality (7% [73 of 1015] vs 10% [100 of 1013]) and functional decline at 30 days were significantly lower, and quality of life and improvement in activities of daily living were significantly better in the intervention group. Notably, 91% of the intervention group was provided with food adjustment, food fortification, oral nutritional supplements, and, perhaps most importantly, individualised input from a specialist dietitian. Enteral nutrition was used in only eight patients and parenteral nutrition in 12 in the intervention group. The effect of nutritional support on the risk for the primary endpoint was consistent across predefined subgroups (except in patients with chronic kidney disease, in whom the effect of nutritional support was more profound). This is an important study that has shown that a relatively simple intervention in patients at nutritional risk admitted to medical wards can result in significant improvements in outcome, with a need to treat 25 patients to prevent one adverse clinical outcome and 37 to prevent one death. What cannot be measured in this study is the contribution to outcome made by the dietitian's regular visits and the resulting encouragement and attention to detail in the intervention group. Nevertheless, these results are of general importance and support a change in clinical practice in which greater attention is paid to nutritional care in hospital.

EFFORT⁹ has provided 21st century evidence to substantiate the aphorism of Hippocrates of Kos from the fourth to fifth century BCE: "The patient ought likewise to be consider'd, whether he is able to hold out with the prescribed diet, even in the height of the disease; for if the diet is not sufficient, the patient will grow too faint, and be overcome by the disease."¹¹

Dileep N Lobo

Gastrointestinal Surgery, Nottingham Digestive Diseases Centre, The University of Nottingham, Nottingham NG7 2UH, UK; and MRC Arthritis Research UK Centre for Musculoskeletal Ageing Research, School of Life Sciences, The University of Nottingham, Nottingham, UK
 dileep.lobo@nottingham.ac.uk

I have collaborated with one of the authors (Z Stanga) and we have co-published eight peer-reviewed papers, the most recent being in 2010. I have received unrestricted research funding from B Braun and speaker's honoraria from B Braun, Fresenius Kabi, Baxter, and Shire for unrelated work.

- 1 Studley HO. Percentage of weight loss: a basic indicator of surgical risk in patients with chronic peptic ulcer. *JAMA* 1936; **106**: 458-60.
- 2 McWhirter JP, Pennington CR. Incidence and recognition of malnutrition in hospital. *BMJ* 1994; **308**: 945-48.
- 3 Barton AD, Beigg CL, Macdonald IA, Allison SP. High food wastage and low nutritional intakes in hospital patients. *Clin Nutr* 2000; **19**: 445-49.
- 4 Hope K, Ferguson M, Reidlinger DP, Agarwal E. "I don't eat when I'm sick": older people's food and mealtime experiences in hospital. *Maturitas* 2017; **97**: 6-13.
- 5 Hartwell HJ, Shepherd PA, Edwards JSA, Johns N. What do patients value in the hospital meal experience? *Appetite* 2016; **96**: 293-98.
- 6 Bally MR, Blaser Yildirim PZ, Bounoure L, et al. Nutritional support and outcomes in malnourished medical inpatients: a systematic review and meta-analysis. *JAMA Intern Med* 2016; **176**: 43-53.
- 7 Feinberg J, Nielsen EE, Korang SK, et al. Nutrition support in hospitalised adults at nutritional risk. *Cochrane Database Syst Rev* 2017; **5**: CD011598.
- 8 Deutz NE, Matheson EM, Matarese LE, et al. Readmission and mortality in malnourished, older, hospitalized adults treated with a specialized oral nutritional supplement: a randomized clinical trial. *Clin Nutr* 2016; **35**: 18-26.
- 9 Schuetz P, Fehr R, Baechli V, et al. Individualised nutritional support in medical inpatients at nutritional risk: a randomised clinical trial. *Lancet* 2019; published online April 25. [http://dx.doi.org/10.1016/S0140-6736\(18\)32776-4](http://dx.doi.org/10.1016/S0140-6736(18)32776-4).
- 10 Kondrup J, Rasmussen HH, Hamberg O, Stanga Z. Nutritional risk screening (NRS 2002): a new method based on an analysis of controlled clinical trials. *Clin Nutr* 2003; **22**: 321-36.
- 11 Sprengell C. The aphorisms of Hippocrates, and the sentences of Celsus; with explanations and references. London: F R Wilkin and F Bonwick, 1735.