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## Conference on ‘What governs what we eat?’ Symposium 1: The food environment

# Changing the food environment: the effect of trained volunteers on mealtime care for older people in hospital

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This review will describe the evidence for changing the hospital environment to improve nutrition of older people, with particular emphasis on the role of additional mealtime assistance. Poor nutrition among older people in hospital is well recognised in many countries and is associated with poor outcomes of hospital care including increased mortality and longer lengths of stay. Factors recognised to contribute to poor dietary intake include acute illness, co-morbidities, cognitive impairment, low mood and medication. The hospital environment has also been scrutinised with reports from many countries of food being placed out of reach or going cold because time-pressured ward and catering staff often struggle to help an increasingly dependent group of patients at mealtimes. Routine screening in hospital for people at risk of under nutrition is recommended. Coloured trays and protected mealtimes are widespread although there is relatively little evidence for their impact on dietary intake. Volunteers can be trained to safely give additional mealtime assistance including feeding to older patients on acute medical wards. They can improve the quality of mealtime care for patients and nursing staff although the evidence for improved dietary intake is mixed. In conclusion, improving the nutrition of older patients in hospital is challenging. Initiatives such as routine screening, the use of coloured trays, protected mealtimes and additional mealtime assistance can work together synergistically. Volunteers are likely to be increasingly important in an era when healthcare systems are generally limited in both financial resources and the ability to recruit sufficient nursing staff.

### Volunteer: Mealtime: Older patients: Hospital

#### Prevalence of undernutrition among older inpatients

Under nutrition of older people in hospital is common and well-recognised in many countries. A retrospective pooled analysis of published datasets representing 4507 people (mean age 82 years, 75% female) from twelve countries reported the prevalence of malnutrition among hospital patients to be 39%<sup>(1)</sup>. The data on hospitalised patients were drawn from studies in Belgium, Switzerland, Germany, Italy and Sweden. The median Mini Nutritional Assessment (MNA) score was similar for men and women,

with only 14% being well-nourished; 45% men and 36% women were malnourished with the remainder at risk. In the same analysis, based on the MNA, the prevalence among nursing home residents was much lower at 14% and was only 6% among community dwelling older adults. Nutritional screening surveys carried out in hospitals in England between 2007 and 2011 using the Malnutrition Universal Screening Tool similarly demonstrated that 38% of patients on Care of the Elderly wards were at risk of malnutrition<sup>(2)</sup>. This highlights the need to focus on nutrition in hospital.

**Abbreviations:** MNA, Mini-Nutritional assessment; SNAQ, Simplified Nutritional Appetite Questionnaire.  
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An adequate energy intake is usually assessed using the estimated resting energy expenditure of Harris and Benedict<sup>(3)</sup> with an additional factor of 30% for disease<sup>(4)</sup>. An adequate protein intake is currently defined as at least 1.2 g/kg bodyweight per d<sup>(5)</sup>. A prospective Australian study of 134 medical inpatients (mean age 80 years) reported that their mean energy intake was 5104.48 kJ/d (1220 kcal/d; SD 440) and that only 41% met their estimated resting energy requirements<sup>(6)</sup>. Poor energy intake was associated with reduced appetite; diagnosis of infection, cancer or delirium; higher BMI and need for help with feeding. A retrospective study of 610 Dutch inpatients (mean age 69 years) reported that 75% did not meet their energy or protein dietary requirements on day 4 of their admission<sup>(7)</sup>.

### Causes for poor nutrition among older patients

There are many causes for poor nutrition among older patients and it is important to note that malnutrition often starts at home, with an association with social deprivation<sup>(8)</sup>. However, it can get worse during a hospital admission and this deterioration has been estimated to affect up to 60% of older people<sup>(9)</sup>. Patient factors can contribute to poor nutrition in hospital, notably the effects of acute illness which may lead to physical and cognitive impairments<sup>(7)</sup>. Confusion is common among acutely unwell older people, and may be due to delirium, an underlying dementia, low mood and the effects of medication. Altered taste sensation is reported and may represent the impact of the acute illness, co-morbidities and new medications<sup>(6,10,11)</sup>. Poor appetite is common but rarely measured. One study assessed 179 female patients (mean age 87 years) using the Simplified Nutritional Appetite Questionnaire<sup>(12)</sup>, and reported that 42% had a poor appetite. Importantly, in this study poor appetite was associated with an increased risk of hospital acquired infection and death in the subsequent 6 months. Among older people malnutrition is also associated with frailty, sarcopenia and dementia<sup>(13–15)</sup>.

Organisational aspects of the hospital environment may also contribute to poor nutrition and this can affect older people in particular. The timing of mealtimes may differ from older people's usual habits and ordering systems may be inflexible. A Swedish study of 1771 patients (mean age 78 years) reported that overnight fasts exceeding 11 h and less than four eating episodes each day were associated with undernutrition<sup>(16)</sup>. In Nordic countries the recommendation is that the overnight fast should not exceed 11 h to allow sufficient time for in-between meal snacks, and that patients should have at least four eating opportunities during the day<sup>(15)</sup>. In many hospitals the overnight fast may be 12–14 h. There is evidence that patients develop strategies to accommodate the overnight fast, including reserving food items during the day to eat later or requesting snacks with late night drink rounds, but those with confusion or fewer visitors are less able to take such actions<sup>(17)</sup>. Food choice may also differ in hospital from patients' usual preferences, and menus may not be available or easy to manage. Patients report

both enjoying new food options not normally available to them, but also finding foods and food combinations less familiar and not enjoyable<sup>(17)</sup>.

There is evidence that interruptions during mealtimes reduce food consumption, and these include clinical care such as doctor's visits and medication rounds<sup>(18)</sup>. Placing trays out-of-reach<sup>(19)</sup> and food packaging that is hard to open also contribute to poor dietary intake. Particular problems reported with packaging relate to reduced manual dexterity and hand grip strength, with packages of cereal, juice, condiments and biscuits among the main items that cause difficulty<sup>(20)</sup>.

Social interactions between patients and care providers during mealtimes are also important, and a greater number and increased reciprocity of agreeable behaviour during those interactions is recognised to positively influence dietary intake among older patients<sup>(21)</sup>. A qualitative study of stakeholders from four UK hospitals identified the importance of interpersonal engagement through reassurance and help with feeding, as well as the arrangement of resources to facilitate meals<sup>(22)</sup>. A lack of assistance at mealtimes has been highlighted as a particular problem for older patients<sup>(23)</sup>. Time-pressured nurses often struggle to help all their patients in a timely fashion due to clinical duties such as medication rounds and attending to sick patients<sup>(19)</sup>.

### Consequences of poor nutrition among older patients

Poor nutrition among older people in hospital has serious consequences including poor healthcare outcomes and increased resource use. Malnourished older patients have higher rates of medical complications, infections and mortality<sup>(24,25)</sup>. They have longer length of hospital stay and more readmissions<sup>(26)</sup>. Therefore, poor nutrition is also costly to society and was estimated in 2011–2012 to cost the UK alone £19.6 billion<sup>(27)</sup>.

### Screening for malnutrition in hospital

Routine screening of people at risk of malnutrition is recommended as part of good clinical practice<sup>(28)</sup>. Screening should be carried out by any healthcare professional on initial contact with an individual, and should be simple, quick and repeatable. In the UK the Malnutrition Universal Screening Tool is widely used and is based on BMI, unplanned recent weight loss and lack of nutritional intake for more than 5 d<sup>(8)</sup>. Other commonly used and validated screening tools recommended by the European Society of Parenteral and Enteral Nutrition include the MNA, the MNA short form and the Nutrition Risk Screening-2002<sup>(29,30)</sup>. These tools have been compared among 246 nursing home residents of whom about 75% were malnourished or at risk of malnutrition<sup>(31)</sup>. Agreement between the MNA and Malnutrition Universal Screening Tool or Nutrition Risk Screening-2002 was fair ( $\kappa = 0.27$  and  $0.29$ , respectively). Agreement between the MNA and MNA short form was moderate ( $\kappa = 0.59$ ).



Recent appreciation of the impact of loss of appetite in hospital has led to interest in screening using the Simplified Nutritional Appetite Questionnaire (SNAQ). This was validated to predict weight loss among community dwelling older people<sup>(32)</sup>. Comparison of the SNAQ with the MNA among 175 people aged 65 years and older living at home, in a nursing home or in hospital reported that while both were significantly correlated, the SNAQ should not be used to predict older people with an abnormal MNA score<sup>(33)</sup>. However a SNAQ score <14 was the best clinical indicator of which older patients were at risk of malnutrition. Further research is required to evaluate the use of the SNAQ as a screening tool in hospitals.

### Coloured trays

Coloured trays are widely used to identify patients whose tray should not be removed by catering staff before checking with nurses that the patient has finished, and typically indicate patients with some difficulty in eating. However, despite their wide use there has been little formal evaluation and there is no evidence that they improve dietary intake.

### Protected mealtimes

Protected mealtimes have also been widely introduced, where routine clinical tasks such as ward rounds cease during mealtimes to allow staff and patients to focus on eating. Evaluation of the impact of protected mealtimes has shown mixed results. A UK study demonstrated no reduction in mealtime interruptions or improvement in dietary intake across adult wards in a large hospital<sup>(34)</sup>. Similarly, an Australian study of 798 patients over 2 years reported no benefit in dietary intake from protected mealtimes, but certain aspects including mealtime volunteers and appropriate positioning of patients were associated with improvements in protein intake<sup>(35)</sup>. A recent Australian study observing 601 meals across four ward areas also reported that sitting up for meals and timely mealtime assistance were associated with better dietary intake<sup>(36)</sup>.

### Additional mealtime assistance

Mealtime assistance has been defined as enabling someone to complete the eating process. This can include presenting food items in an available form, for example clearing tables and placing meal trays within patients' reach, removing packaging, verbal and non-verbal encouragement, cutting food into smaller pieces, guiding and/or transferring food from plate to the patient's mouth, as well as improving the social setting of mealtimes. This additional assistance may be provided by ward staff or trained volunteers.

Green *et al.* conducted a review in 2010 to evaluate whether volunteers or paid staff specifically engaged to

provide mealtime assistance could improve clinical outcomes of adult hospital patients or care home residents<sup>(37)</sup>. The authors concluded that most studies reported some benefits, usually based on patient/resident, relatives, staff and volunteer satisfaction and views, but often supported by limited evidence. The review did highlight the need for appropriate volunteer training and support.

Tassone *et al.* published the first systematic review and a meta-analysis summarising the evidence for the effect of mealtime assistance from both paid staff and volunteers on nutritional and anthropometric outcomes of hospitalised patients aged  $\geq 65$  years<sup>(38)</sup>. The review included five studies from three countries with a range of study design, size and duration. The meta-analysis demonstrated a mean increase in daily energy intake of 486 kJ and daily protein intake of 5.9 g with additional mealtime assistance. Volunteers were reported to spend more time with patients at mealtimes and both patients and volunteers reported this as a positive experience. However the one randomised controlled trial found little difference in nutritional outcomes while the smaller studies (number of participants ranged from nine to thirty-four) reported increased dietary intake with mealtime assistance<sup>(39)</sup>. None of the studies included demonstrated any improvement in anthropometric outcome measures.

Howson *et al.* conducted a systematic review of the impact of additional mealtime assistance for adult hospital patients provided solely by trained volunteers<sup>(40)</sup>. The review included articles related to nine research studies and five quality improvement initiatives from the UK, USA and New Zealand. The volunteer role included feeding patients in twelve of the fourteen articles. Six articles reported dietary intake of which four small studies demonstrated a mealtime improvement of 184.096–439.32 kJ (44–105 kcal) energy intake and 4.3–10.1 g protein intake. However, two articles found little difference in dietary intake. All ten articles which reported patient, staff and volunteer feedback were positive about the volunteer mealtime assistance. No adverse events were reported in the studies included in this review.

One study included in Howson's review evaluated the training of volunteer mealtime assistants and the views of patients, relatives, staff and volunteers<sup>(41)</sup>. Volunteers attended a half-day evidence-based training programme, which included aspects of nutrition in older people, safe feeding practice, how to identify swallowing difficulties, a practical session of feeding and being fed, and a discussion of the mealtime assistant role. They cleaned patients' hands and trays, opened packaging, encouraged eating, cut-up items of food, helped guide food from plate to mouth, fed as required, and completed food and fluid charts<sup>(42)</sup>. Importantly, patients who were drowsy, unable to sit up or had dysphagia were helped by nursing staff rather than volunteers.

In this study twenty-nine volunteers assisted 3911 patients, including feeding 386 (8%) older people. The volunteers valued the training and in particular the practical aspects. They were perceived to improve the quality of mealtime care for acutely unwell patients. The staff

felt pressured before the introduction of volunteers, with not enough help at mealtimes for all the patients who needed assistance. The volunteers supplemented nursing staff, freeing them up for other duties. Trained volunteers were able to safely help older patients with no adverse events and the majority of older patients required mealtime assistance. Patients had low energy (median 4347·176 kJ (1039 kcal)) and protein (median 39 g) intakes despite assistance with feeding, protected mealtimes, coloured trays and routine screening for malnutrition, which highlights the importance of patient factors associated with acute illness<sup>(43)</sup>. It is interesting to note that the need for mealtime assistance was more strongly associated with poor intake than levels of confusion among patients or the need for texture modified diets and could act as a marker for those at risk of malnutrition.

### Conclusions

Improving the nutrition of older patients in hospital is challenging. Patient factors contribute to poor dietary intake, with poor appetite a prominent feature. The hospital environment also contributes to undernutrition. Initiatives such as routine screening, the use of coloured trays, protected mealtimes and additional mealtime assistance can work together synergistically. Volunteers can be trained to safely give additional mealtime assistance including feeding to older patients on acute medical wards, and can improve the quality of mealtime care for patients and nursing staff.

Future research should evaluate several aspects of the food environment in hospital. Appetite is rarely measured in clinical practice yet the simple SNAQ tool has been validated for use in community dwelling older adults. Further research is required to validate its use among hospital inpatients. The impact of coloured trays on the dietary intake of inpatients at risk of malnutrition has not been formally evaluated. Volunteers are likely to be increasingly important in an era when health-care systems in many countries are generally limited in both financial resources and the ability to recruit sufficient nursing staff. Future research should evaluate whether the need for mealtime assistance could indicate which patients are at risk of malnutrition as well as the wider implementation of trained volunteers in different clinical settings.

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### Conflict of Interest

The author is a member of the Nutrition Advisory Board for *Appetito*.

### Authorship

The author had sole responsibility for all aspects of preparation of this paper.

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