

Conference on ‘Malnutrition matters’

Symposium 2: The skeleton in the closet: malnutrition in the community Malnutrition in the UK: where does it begin?

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More than 3 million individuals are estimated to be at risk of malnutrition in the UK, of whom about 93% live in the community. BAPEN’s Nutrition Screening Week surveys using criteria based on the ‘Malnutrition Universal Screening Tool’ (‘MUST’) revealed that 28% of individuals on admission to hospital and 30–40% of those admitted to care homes in the previous 6 months were malnourished (medium+high risk using ‘MUST’). About three quarters of hospital admissions and about a third of care home admissions came from their own homes with a malnutrition prevalence of 24% in each case. Outpatient studies using ‘MUST’ showed that 16–20% patients were malnourished and these were associated with more hospital admissions and longer length of stay. In sheltered housing, 10–14% of the tenants were found to be malnourished, with an overall estimated absolute prevalence of malnutrition which exceeded that in hospitals. In all cases, the majority of subjects were at high risk of malnutrition. These studies have helped establish the magnitude of the malnutrition problem in the UK and identified the need for integrated strategies between and within care settings. While hospitals provide a good opportunity to identify malnourished patients among more than 10 million patients admitted there annually and the five- to six-fold greater number attending outpatient departments, commissioners and providers of healthcare services should be aware that much of the malnutrition present in the UK originates in the community before admission to hospitals or care homes or attendance at outpatient clinics.

Malnutrition: ‘MUST’: Nutrition Screening Week: Sheltered housing: Community

Malnutrition is a common problem in the UK and hospitals are often considered to be the major cause. Various campaigns and media reports have pointed the finger at hospital food, not only criticising the quality of the food served but also highlighting the lack of help provided to patients at mealtimes. Many healthcare professionals also tend to focus on nutritional care in hospitals as most studies reporting on the prevalence of malnutrition have been undertaken in patients during their stay in the hospital or at discharge. In addition, many of the national societies established to address the malnutrition problem are dominated by doctors, nurses and dietitians from this care setting. Unfortunately, most of the published studies reporting the prevalence of malnutrition in hospitals and community have used different criteria

to define and assess the problem making comparisons difficult⁽¹⁾.

The British Association for Parenteral and Enteral Nutrition (BAPEN), established in 1992, focused on nutritional care in the hospital. It initially only considered care in the community once patients had been discharged on nutritional support. However, more recently BAPEN broadened its scope of activities and in 2003 launched the ‘Malnutrition Universal Screening Tool’ (‘MUST’)⁽²⁾ which was the first screening tool specifically designed to screen patients for the risk of malnutrition in all care settings enabling consistent criteria to be used in a variety of settings in both primary and secondary care.

Nutritional screening should be a simple, quick and general procedure ideally used on first contact with the

Abbreviations: BAPEN, The British Association for Parenteral and Enteral Nutrition; ‘MUST’, ‘Malnutrition Universal Screening Tool’; NSW, Nutrition Screening Week.

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patient to detect those who are malnourished or at risk of becoming malnourished so that appropriate advice and treatment can be provided⁽²⁾. Recommendations made by the 2003 Council of Europe Resolution on malnutrition⁽³⁾ and standards issued in the same year by NHS Quality Improvement Scotland⁽⁴⁾ focused only on screening on admission to hospitals and on nutritional care during the hospital stay. However, in 2006, the National Institute for Health and Clinical Excellence published broader guidelines for nutritional support in adults and recommended that patients should be screened not only on admission to hospitals but also on admission to care homes, on their first outpatient appointment and on registration with a General Practitioner⁽⁵⁾. In addition, the guidance also recommended that screening should be repeated weekly for inpatients and where there is clinical concern for outpatients and residents in care. The launch of 'MUST' by BAPEN provided a springboard for establishing the current prevalence of malnutrition risk on admission to care across different settings in all four nations of the UK via BAPEN's Nutrition Screening Week (NSW). It also stimulated surveys to be undertaken in other settings including sheltered housing, an often forgotten sector of the community.

To address the question raised in the title of this paper, 'Where does malnutrition begin?', data from NSW surveys and other sources are used to examine the following:

The distribution of malnutrition in the UK.

The prevalence of malnutrition on admission to hospitals, which indicates its prior presence in the community.

The prevalence of malnutrition among hospital outpatients, care homes and sheltered housing which also reflects the presence of malnutrition in the community.

Finally, an attempt is made to integrate various strands of information in order to suggest some strategies for the prevention, identification and treatment of malnutrition.

In order to contextualise the information, especially that obtained from the NSW, the reasons for undertaking national surveys to establish the prevalence of malnutrition is discussed first.

National Surveys: BAPEN's Nutrition Screening Week

While it is generally accepted that malnutrition is common in hospitals and care homes, reported prevalence figures tend to be based on studies undertaken some time ago only in a limited number of institutions using varying criteria and screening tests. Large-scale surveys in the UK had not been undertaken until 2007 when the first BAPEN-led NSW was held⁽⁶⁾. The purpose of NSW is to establish and compare the prevalence of malnutrition on admission to hospitals, care homes and mental health units across the UK using criteria based on 'MUST' and to document aspects of screening practice. In this way, the NSW initiative not only helps establish the magnitude of the problem, but it also examines clinical practice in relation to clinical guidelines and standards and provides feedback to individual participating centres for benchmarking against the national picture. By collecting data on admission to care homes the results of NSW complement those

of the European Nutrition Study Day, which were obtained in January from a cross-section of the population already in care rather than on admission to institutionalised care. NSW is to be repeated annually, each time during a different season of the year in order to investigate any difference in seasonality in the prevalence of malnutrition.

In the 2007 NSW survey, data were collected from 175 hospitals, 173 care homes and 22 mental health units on 9336, 1610 and 332 subjects, respectively⁽⁶⁾. The 2008 survey provided information on 5089 subjects from 130 hospitals, 614 from 75 care homes and 185 from 17 mental health units⁽⁷⁾. Most of the subjects came from institutions in England, but there were no significant differences in the findings between the four countries of the UK.

Prevalence of malnutrition

Distribution of malnutrition within the UK

It has been estimated that at any one time, there are more than 3 million individuals at risk of malnutrition in the UK⁽⁸⁾. Of these, the majority (93%) live outside hospitals in the community, 2–3% of whom are in sheltered housing, around 5% live in care homes and only 2% are in hospitals. These figures were established by amalgamating information obtained from studies using 'MUST', the BAPEN NSW surveys and data from the secondary analysis of the National Diet and Nutrition Survey of people aged 65 years and over^(6,7,9,10). While older people are particularly vulnerable, malnutrition is present in all age groups. Since there are six-fold more people in the UK under the age of 65 years than over, it is probably not too surprising that there are also as many if not more adults under the age of 65 years at risk of malnutrition than older adults⁽⁸⁾. The results indicate that most malnutrition exists in the community and probably largely arises there.

Prevalence of malnutrition among hospital inpatients, outpatients and individuals living in care homes and sheltered housing

Hospital inpatients. Cross-sectional surveys of hospitalised patients suggest that the prevalence of malnutrition is 25–40% using a variety of screening tools including 'MUST'^(2,11,12). If malnutrition developed primarily by events occurring in hospital, a low admission prevalence and a much higher ward prevalence of malnutrition (cross-sectional prevalence at a given point of time) would be expected. If on the other hand, hospital malnutrition originated primarily in the community, a high prevalence of malnutrition would be expected to be present on admission to hospitals, with relatively little change subsequently. The data presented below from the NSW are strongly in favour of the second possibility.

Admission to hospital. The overall prevalence of malnutrition risk on admission to hospitals was 28% (6% medium risk; 22% high risk) in both NSW surveys^(6,7). Most of the patients (76%) admitted to hospitals in the 2007 survey were admitted from their own homes, mainly to medical and surgical wards⁽⁶⁾. Twenty-six percent of patients admitted from their own homes were identified as

being at risk, 6% at medium risk and 20% at high risk, while only 3% ($n = 313$) were admitted from care homes 43% of these patients were at risk (6% medium risk; 37% high risk).

In both surveys, the prevalence of malnutrition was significantly higher in patients admitted for an emergency (which accounted for almost two-third of all admissions) than those admitted for elective procedures (32% v. 20%). Overall, more than two-third of the patients, identified as being at (medium and high) risk of malnutrition, did not have a score due to the effect of acute disease (acutely ill and have had or likely to have no food intake for more than 5 d), which means that it was either due to a low BMI and/or history of recent weight loss, factors that could have been identified prior to hospital admission. As expected, a greater proportion of emergency admissions had acute disease effect scores than those who were planned admissions. Nevertheless, the majority of those with an acute disease effect score also scored for low BMI and/or recent weight loss probably due to an underlying chronic disease process and therefore could have been identified as being at risk of malnutrition before admission to hospitals. Overall, it is estimated that more than 80% of those patients identified as being at risk of malnutrition on admission to hospitals could have been identified and treated for malnutrition in the community before hospitalization.

It is known that malnourished patients, according to the 'MUST' criteria, stay in hospitals longer than non-malnourished patients^(13–15) and many patients lose weight during their hospital stay⁽¹⁶⁾. Despite this knowledge, only about a half of the hospitals that participated in the 2008 NSW survey stated that nutrition information for patients identified as malnourished during their stay in hospitals was either always or usually included in discharge communication to the community or another care setting. However, those hospitals with a nutrition screening policy were more likely to include such information than hospitals without a screening policy (always + usually = 52% v. 36%).

Hospital outpatients. The prevalence of malnutrition in outpatient clinics in the UK has not been well established although a general figure of 10% has been used when calculating the cost of disease-related malnutrition in the UK⁽⁸⁾. However, recent studies involving the use of 'MUST' to screen patients attending outpatient clinics have found that malnutrition risk in these patients is higher with about 16% at risk of malnutrition across a range of outpatient clinics⁽¹⁷⁾ and about 20% in patients with Chronic Obstructive Pulmonary Disease⁽¹⁸⁾. All this points to the community being the major source of malnutrition, because almost all outpatients live in the community. However, there are some interactions with hospitals, since treatment provided or recommended by outpatient clinics can influence the subsequent development and/or progress of malnutrition in the community. In addition, outpatients at risk of malnutrition have been shown to have significantly more admissions (planned and emergency) and significantly longer length of hospital stay⁽¹⁹⁾. Although treatment in hospitals can influence malnutrition in the community, the information provided earlier on hospital

inpatients suggests that the hospital setting it is not where most malnutrition originates.

Care homes. The overall prevalence of malnutrition risk on recent admission to care homes was found to be higher in the 2008 NSW survey (42% (11% medium risk; about 30% high risk)) than in the 2007 survey (30% (10% medium risk; 20% high risk)). The reason for this is unclear, but may be due to a different mix of types of care homes participating in the surveys. In both years, the risk was higher in exclusively nursing homes than in exclusively residential homes with most residents being at high risk in both types of homes.

In the 2007 survey, 37% of the residents were admitted to the care homes from their own homes, 24% being at risk of malnutrition (10% medium risk; 14% high risk) and in the 2008 survey 30% were admitted from their own homes, 36% being at risk (12% medium risk; 24% high risk). In all types of homes, there were more residents at high risk than medium risk of malnutrition. Among individuals recently admitted to care homes within the previous 6 months, a low BMI ($<20 \text{ kg/m}^2$) was present in over 80% and weight loss (more than 5% of body weight in the previous 3–6 months) in about 55%.

Other studies investigating the prevalence of malnutrition using 'MUST' in care homes have found similar results for the overall prevalence of malnutrition when all residents, not just for those recently admitted, were examined. In a study by Cawood and coworkers 32% of the residents screened using 'MUST' in care homes in Peterborough were identified as being at risk (13% medium risk; 19% high risk)⁽²⁰⁾ and a study in care homes in Hampshire by Parsons and coworkers also using 'MUST' found that 39% of the residents were at risk (14% medium risk; 25% high risk)⁽²¹⁾. Outside the UK, Lelovics and coworkers reported a prevalence of malnutrition (using 'MUST') of 38% in 20 Hungarian nursing homes⁽²²⁾.

The origin of malnutrition in care homes can be considered using the same principles as for hospitals. The high prevalence of admission to care homes reflects its prior presence in the community and hospitals which are the major sources of admissions to care homes (the hospitals in turn are influenced by admissions from the community). Cross-sectional studies of care homes have also shown no significant change in the prevalence of malnutrition according to the duration of stay in care homes⁽²³⁾.

Sheltered housing. More people live in sheltered housing than in care homes, some being quite independent and active, others being less active and needing some support and yet others with frailty and multiple health problems needing extra care. There is relatively little information on the prevalence of malnutrition in this sector of the community. This was recognised by the stakeholders involved in the Department of Health's Nutrition Action Plan 2007 report – *Improving Nutritional Care*⁽²⁴⁾ which made recommendations for the education and training of staff in housing schemes in order to raise an awareness of malnutrition and enable them to manage it. But first it was necessary to understand the magnitude of the problem in sheltered housing. A study involving 100 tenants in sheltered housing schemes in Wales had evaluated the prevalence of malnutrition according to dietetic assessment

and also to 'MUST'⁽²⁵⁾. Ten percent of the tenants were identified as malnourished according to dietetic opinion and 12% according to 'MUST'. Another survey undertaken by the Group on Nutrition and Sheltered Housing and led by BAPEN investigated the prevalence of malnutrition using 'MUST' in 17 housing schemes (10 around London and 7 in Yorkshire) involving 335 tenants. Fourteen percent were identified as being at risk (5% medium risk; 9% high risk)⁽⁹⁾. The prevalence of malnutrition was not significantly related to the duration of tenancy. A much larger study, recently undertaken in sheltered housing in Wiltshire and Somerset involving 1353 tenants in 140 housing schemes⁽²⁶⁾, reported similar results. Twelve percent of the tenants were identified as being at risk of malnutrition according to 'MUST' (7% medium risk; 5% high risk), the risk being significantly higher in tenants aged 80 years and over than those under 80 years. These studies are not only consistent with each other with respect to the overall prevalence of malnutrition (12–14%), but also suggest that at a single point of time, there is a greater absolute number of people at risk of malnutrition living in sheltered housing schemes than in hospitals⁽⁸⁾. Little information exists to examine the rates of admission from sheltered housing to hospital and care homes and any associated interactions.

Discussion

This paper has examined the distribution and origin of malnutrition, according to care setting within the UK, and now discusses the practical implications associated with the findings. The data indicate that malnutrition is a common problem in hospitals, care homes and other sectors of the community with most affected individuals being at high risk of malnutrition, using the 'MUST' criteria. The data also indicate that much of the malnutrition that exists in hospitals originates in the community and this has important implications. Hospital care is expensive and is estimated to account for about 40% or more of the total health and social care costs attributable to malnutrition⁽²⁷⁾. Malnourished people aged 65 years and over have twice as many hospital admissions compared with non-malnourished older people. They have over 30% longer length of hospital stay and the costs of their hospital admissions are around 2.5 times as much as those for non-malnourished older people⁽¹⁴⁾. Furthermore, malnourished older people have more visits to their General Practitioner and more prescriptions than non-malnourished older people⁽¹⁴⁾. They are therefore well known to healthcare professionals working in primary care where measurements of weight and BMI are commonly taken in order to identify obesity, but surprisingly malnutrition often goes unrecognised and untreated⁽²⁾. The implementation of nutritional screening policies using 'MUST' in this sector could enable targets to be met not only to help tackle obesity, but also to identify those individuals at risk of malnutrition.

The National Institute for Health and Clinical Excellence recommendations on nutritional screening state that while patients should be screened on first registration with their General Practitioner, this should be repeated where

there is clinical concern⁽⁵⁾. A particular group of people who are likely to be of clinical concern are those receiving meals-on-wheels and recommendations to improve the nutritional care of such vulnerable groups in the community have been made by the Department of Health⁽²⁴⁾. A recent survey of adults receiving hot delivered meals identified almost one in three to be at risk of malnutrition (using the 'MUST' criteria), half of whom were at high risk⁽²⁸⁾.

By undertaking nutritional screening in the community, individuals at risk of malnutrition can be identified and treated prior to hospital admission, be it for elective or emergency care. In some cases, such interventions can help avoid unnecessary admissions and re-admissions. For example, the study of Gariballa and coworkers involving the use of oral nutritional supplements in acutely ill elderly patients who were not screened for malnutrition on admission to the hospital reported that continuation of nutritional support following discharge from hospital, reduced the rate of re-admission at 6 months post discharge⁽²⁹⁾. Another study by Norman and coworkers, who used oral nutritional supplements in malnourished patients with benign gastrointestinal disease, found a significant reduction in hospital re-admissions and improvement in the function and quality of life in those receiving oral nutritional supplements at 12 weeks following discharge⁽³⁰⁾.

The study by Cawood *et al.*⁽²⁰⁾, which examined the prevalence of malnutrition in care homes in Peterborough, was extended to investigate the effect of an education and training programme designed to implement the recommendations made by various organisations including the National Institute for Health and Clinical Excellence⁽⁵⁾. This included nutritional screening, documentation of nutritional information, use of nutrition support and admission to hospitals⁽³¹⁾. Routine screening of residents and appropriate use of nutritional support for those identified as being at risk of malnutrition resulted in a 31% reduction in hospital admissions during the study period compared with the number of admissions before the implementation of the training programme. There were also significant associated reductions in costs.

The development and use of 'MUST' has enabled studies and surveys to be undertaken across all care settings using consistent criteria, thereby providing comparable data on the current prevalence of malnutrition in the UK, particularly on admission to care. These data together with data from studies in other settings outside hospitals have helped to answer the question posed in the title of this paper. Such information can help inform healthcare planners and policy-makers and also provide a sound basis for recording the national statistics on malnutrition and related healthcare problems. While hospitals provide a good opportunity to identify individuals at risk of malnutrition attention should also be given to the identification and management of the problem in the community where it often starts and returns. Clearly integrated strategies are needed to prevent, detect and treat malnutrition within and between care settings⁽³²⁾. Such strategies can also tackle inequalities in the prevalence and treatment of malnutrition^(10,15). In this way, healthcare resources can be used more efficiently to provide consistent, high-quality

nutritional care throughout the patient's journey, so that patient outcomes can be improved. Services in the community have an important role to play both in the prevention and treatment of malnutrition. Commissioners of healthcare services need to be made aware of the magnitude of the problem of malnutrition and the potential benefits of implementing nutritional screening programmes across all care settings. Priority should be given to the management of malnutrition when commissioning local services. The NSW has been of value in providing feedback to the participating centres, so that they can benchmark their local results against the national picture in order to design and provide appropriate nutrition services wherever they are required.

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