An Audit of Menus in Three Hospitals in Wales against the All Wales Nutrition and Catering Standards for Food and Fluid Provision for Hospital Inpatients

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Abstract

Background: Welsh Government standards for hospital food aim to ensure good nutritional care as part of a strategy to address malnutrition in hospitals in Wales.

Methods: An audit of food provision in three hospitals in Wales with differing food service systems against Welsh Government standards, using menu and nutritional analysis.

Results: On average, the hospitals audited were compliant with 69% (range 64–74) of standards assessed. Compliance was greater in hospitals where a registered dietitian had conducted nutritional analysis of the menu at the planning stage and where an in-house food production method was used. The energy content of menus was generally acceptable, but there were exceptions including for soup and desserts. The range in protein content of main meals was large and protein content was too low in some instances, particularly for vegetarian meals. Patient choice for first course items was below the standard in all hospitals and for main meals was overall sufficient, although not consistently for vegetarian meals. Missing data limited the assessment of some audit criteria.

Conclusions: No hospital audited was fully compliant with the standards assessed and more can be done to improve hospital food services in Wales to bring them in line with Welsh Government standards and help to address malnutrition. A multidisciplinary approach, including a registered dietitian, is recommended.

Keywords: hospital food, catering standards, malnutrition, nutritional care, dietitian
Introduction

The provision of nutrition is a basic requirement of hospital care (National Institute of Health and Care Excellence, 2006). When this requirement is not met, patients are at risk of malnutrition, which has potentially harmful consequences for the individual and the health service (British Dietetic Association (‘BDA’), 2012). Malnutrition is recognised as a patient safety issue, hence it has been addressed by the National Patient Safety Agency (2009), and nutrition is located in the “Safe Care” theme of Welsh Government (2015) Health and Care Standards. Despite this recognition, malnutrition continues to be prevalent, often remaining undetected and untreated (Russell and Elia, 2014).

Prevalence of malnutrition in UK hospitals is between 20-50%, depending on definition and method of measurement (Norman et al., 2008). Recent data published by British Association for Parenteral and Enteral Nutrition indicates that the prevalence of malnutrition in hospitals is 29% in the UK and 28% specifically in Wales (Russell and Elia, 2014).

The causes of malnutrition are complex, but whilst poverty and psychosocial factors contribute, disease is its greatest cause in the UK (Saunders et al., 2015). Disease may cause or augment malnutrition through altered metabolism, malabsorption or a reduction in intake due, for example, to nausea, pain or unsuitable food choices (Norman et al., 2008).

The interrelationship between disease and malnutrition leads some to argue that their cause and effect cannot be separated (Saunders et al., 2015). However, studies, including that by Lim et al. (2012), have reported the independent effects of malnutrition on patient outcomes, which are well documented and include reduced immune function, reduced cardiac output and delayed wound healing (Saunders et al., 2015). These consequences may result in a 40-
70% increase in length of hospital stay, reduced quality of life and increased mortality in both chronic and acute conditions (Norman et al., 2008).

The economic implications are also estimated to be severe, with malnutrition recently quoted as being the area with the third highest potential for cost savings within the NHS (NHS England, 2015). Greater than 90% of malnutrition in the UK reportedly occurs in the community, but its costs are disproportionately concentrated in hospitals (Baldwin and Weekes, 2011) which also provide a crucial point of access to assess risk and initiate treatment (Elia et al., 2010).

Much of the existing evidence on tackling malnutrition pertains to the provision of artificial nutrition support, although this is relevant to only a minority of patients (Weekes et al., 2009). A Cochrane review conducted by Baldwin and Weekes (2011) found minimal evidence on the impact of food-based interventions, although the potential to positively affect nutritional intake via changes to hospital catering provision has been documented (Barton et al., 2000 and Munk et al., 2014). Despite the reported lack of evidence, it is recognised that dietary intake is the foremost factor influencing malnutrition (Saunders et al., 2015) and Department of Health (2014) recognises that providing appropriate food may both avoid the need for nutrition support and provide a better quality experience for patients.

Council of Europe (‘CoE’) (2002) supports the use of ordinary food in addressing malnutrition, highlighting the importance of both energy and protein in doing so. However, an assessment by Hamilton et al. (2002) in a group of Leicestershire hospitals indicates that hospital menus may not meet patients’ energy requirements and that the protein content of meals may be unacceptably low or variable, particularly for vegetarian meals. Most patients rely on hospital
food and so adequate nutritional quality and enjoyment of the foods offered must be at the centre of nutritional care as well as patient dignity and quality of life (BDA, 2012).

Hospital food and nutritional care are now the subject of policy at all levels of organisation. A 2003 CoE resolution highlighted the importance of nutritional care internationally, leading to publication of 10 Key Characteristics of Good Nutritional Care (CoE, 2009). Nutritional care has featured in many Welsh Government policies, including the current Health and Care Standards (Welsh Government, 2015). Similar policies are found in the other devolved nations of the UK (BDA, 2012).

National health standards have been translated into nutrition and catering standards for operational use. The All Wales Nutrition and Catering Standards for Food and Fluid Provision for Hospital Inpatients (Welsh Government, 2011) (‘The Standards’) fulfils this role in Wales, setting minimum standards for food service and the nutritional composition of hospital food.

It is recognised that providing food with adequate nutritional composition is, alone, not enough to ensure good nutritional care (Parsons et al., 2013). In addition to environmental and clinical factors, aspects of food provision such as portion size, food temperature and choice may all impact upon patients’ intake (BDA, 2012). It has also been reported that patients’ intake may be affected by the type of food service in operation (Mahoney et al., 2009 and Wilson et al., 2000) and that cook-chill food services may offer greater choice of hot foods (Edwards and Hartwell, 2006). Further, Wales Audit Office (‘WAO’) (2011) reported that nutritional analysis of menus was better where cook-chill or cook-freeze systems were used. While it is therefore recognised that many factors are involved, the intention of The Standards is to help to ensure that the complex dietary needs of the hospital population are met, by
providing a benchmark for the nutritional composition and other aspects of food provision (Welsh Government, 2011).

The Standards provide a starting point, but they can only meaningfully contribute to reducing malnutrition if they are implemented successfully, monitored and evaluated (Welsh Government, 2015). Scottish Government (2015) intends to include a requirement for internal and external audit within their proposed new hospital food standards, currently at consultation stage. The importance of monitoring was also highlighted by a WAO (2011) report which concluded that nutritional standards in place in hospitals in Wales at the time were not being met.

To date there have been no published external assessments of the performance of Welsh hospitals against The Standards. The present study aims to investigate whether the menus in three Welsh hospitals comply with The Standards and to identify any potential areas for improvement.

**Materials and Methods**

Compliance with The Standards was assessed by audit. Audit is commonly used to evaluate practice against a set of standards, with a number of audits taking place nationally on this basis, for example the National Inflammatory Bowel Disease Audit (Royal College of Physicians, 2014). Further, WAO (2011) recommends audit as a methodology to evaluate nutritional care in hospitals.

*The Sample*
It was outside the scope of the present study to audit all hospitals in Wales and a sample of three hospitals was selected. In order to represent hospitals across Wales, one large and two medium-sized hospitals were chosen, and the sample included hospitals in three different health boards within different regions of Wales.

Literature discussed above indicates that the type of catering service in operation may affect performance against The Standards. An attempt was made to represent different systems in the sample, which included one external cook-freeze supply, one in-house cook-freeze supply and one in-house mixed conventional and cook-freeze supply. All hospitals in the sample use a cyclical menu, which is reported by WAO (2011) to be the most common type of hospital menu in Wales. One hospital operates a two-week cycle (Hospital A) and the other two operate a one-week cycle.

**The Audit Tool**

Once the focus of an audit has been identified, a key step in the audit process is to agree the audit criteria (Healthcare Quality Improvement Partnership, 2011). All 27 audit criteria in the present study were derived directly from The Standards, predominantly the nutrient and food based standards. A copy of the audit tool is at appendix 1.

Only standards which could be assessed by reference to copies of the hospital menus and information provided by NHS Procurement were included in the audit. It was not possible to include standards which would require observation or details of foods and drinks offered outside of the standard patient menus for midday and evening meals. The food service standards and some nutrient and food based standards, such as the number of daily drinks
rounds, were excluded on this basis. Whilst the importance of hydration is acknowledged, analysis of fluids was also excluded on this basis.

Menu Analysis

A copy of the midday and evening menu for each hospital was provided by NHS Procurement. 15 of the audit criteria (numbers 1-11 and 23-26) were assessed directly from the menu, for example the number of desserts offered at each mealtime. Nutritional analysis by a registered dietitian (number 27), was assessed using information provided by NHS Procurement. To assess the remaining 11 criteria (numbers 12-22), nutritional analysis was used.

Where possible, the energy and protein content of midday and evening menu items was nutritionally analysed for each day of the menu cycle. Following the approach recommended by BDA (2012), where a choice of dishes was offered, each choice was analysed and minimum and maximum nutritional values were obtained for the mealtime. Where a choice of sandwiches or salads was offered, an average of those offered was used. Sandwiches were excluded from the analysis of criteria 19 and 20 because it was not possible to separately analyse the main protein part of the meal, the filling.

To carry out nutritional analysis, nutritional data provided by the hospital or supplier, via NHS Procurement, was used where available. Where this was not available, but recipes were provided, the recipes were analysed in line with BDA (2012) recipe analysis guidance, using Nutrimen nutritional analysis software (Dark Green Media, 2015). Nutrimen (Dark Green Media, 2015) utilises data from McCance & Widdowson’s Composition of Foods Integrated
Dataset (Public Health England, 2015) which is the most commonly used data in the UK for this purpose and is a widely accepted method (BDA, 2012).

If neither nutritional data nor recipes were available, then the data was treated as missing. The decision was made not to use average figures for portion sizes or to rely on data from food composition tables where no recipe was provided, because this would have reduced validity, particularly when the available data indicated that average portion sizes used by the population as a whole are larger than those used in hospital catering (Food Standards Agency, 1988).

For vitamin C a full analysis of the menus was unnecessary because it could readily be determined that the standard on vitamin C was met by all three hospitals by the twice daily inclusion of fruit juice on menus.

Data Analysis

Microsoft Excel was used to record data anonymously as Hospital A, B and C (see appendix 2).

A system of colour-coding was devised to acknowledge when missing data affected the ability to conclusively assess audit criteria. No colour indicates that a full assessment could be made, including all relevant menu options. Blue indicates that no assessment could be made due to missing data. Green indicates that some relevant data was missing, but that the criterion could be conclusively assessed (albeit potentially not to the full extent), for example where non-compliance was determined by the available data, regardless of missing data. Red indicates that some relevant data was missing and that the assessment of that criterion is not
conclusive, for example because it would be necessary to analyse all relevant items to conclussively meet or fail a criterion.

Microsoft Excel was used to perform descriptive statistical tests. It is recognised that the use of inferential statistics would be necessary in order to perform tests relating to statistical significance, however this was not possible in the present study due to the small sample size.

Ethical approval for the study was granted by Cardiff Metropolitan University (see appendix 4).

Results

The audit was conducted using yes/no answers to 27 audit criteria (see appendix 3). The overall results are summarised in Table 1.

Table 1: Overall performance against criteria

<table>
<thead>
<tr>
<th>Criteria assessed (% of all criteria)</th>
<th>Criteria met (% of assessed criteria)</th>
<th>Criteria not met (% of assessed criteria)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital A 23 (85)</td>
<td>16 (70)</td>
<td>7 (30)</td>
</tr>
<tr>
<td>Hospital B 22 (81)</td>
<td>14 (64)</td>
<td>8 (36)</td>
</tr>
<tr>
<td>Hospital C 27 (100)</td>
<td>20 (74)</td>
<td>7 (26)</td>
</tr>
</tbody>
</table>

On average, hospitals audited met 69% of the criteria they were assessed against (range 64 – 74%). No hospital met all of the audit criteria it was assessed against. Hospital B met the lowest percentage of criteria assessed (64%) and Hospital C met the highest (74%).

It was possible to assess all of the audit criteria for Hospital C only. 23 criteria were assessed in Hospital A and 22 in Hospital B. Table 2 shows that fewer criteria that required nutritional analysis could be assessed in Hospital B. A greater number of criteria requiring nutritional analysis could be assessed in Hospitals A and C, which use an in-house catering method and
in which the menus had been nutritionally analysed by a registered dietitian at the planning stage.

Table 2: Nutritional analysis and catering system

<table>
<thead>
<tr>
<th></th>
<th>Hospital A</th>
<th>Hospital B</th>
<th>Hospital C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of the 11 criteria requiring nutritional analysis assessed (%)</td>
<td>10 (91)</td>
<td>6 (55)</td>
<td>11 (100)</td>
</tr>
<tr>
<td>Menus nutritionally analysed by a dietitian at the planning stage</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Catering system</td>
<td>In-house mixed conventional and cook-freeze</td>
<td>External cook-freeze</td>
<td>In-house cook-freeze</td>
</tr>
</tbody>
</table>

Criteria based on nutritional analysis

Soups:

All hospitals met the standard for the protein content of soups, consistently offering soup containing at least 4g of protein per 175mls portion. The analysis of the calorie content of soups is summarised in Table 3. While the mean and median calorie content of soup offered was greater than 150kcals per 175mls portion for all hospitals, only Hospital C always offered soup containing at least 150kcals. Hospital A offered white onion soup (141kcals) at two of 28 mealtimes and Hospital B offered the same soup at one of 14 mealtimes.

Table 3: Calorie content of soups

<table>
<thead>
<tr>
<th></th>
<th>Standard</th>
<th>Range</th>
<th>Mean (standard deviation)</th>
<th>Median</th>
<th>Number offered below standard</th>
<th>Analysed (% of those on menu )</th>
</tr>
</thead>
</table>
Main meals:

Analysis of the calorie and protein content of complete main meals was limited due to missing data. A conclusive assessment of the calorie content of meals was possible for only 39% and 21% of mealtimes for Hospital A and C, respectively (see Table 4). No assessment was possible for Hospital B.

**Table 4: Calorie content of main meals**

<table>
<thead>
<tr>
<th></th>
<th>Standard</th>
<th>Hospital A</th>
<th>Hospital C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum kcals in main meal</td>
<td>300</td>
<td>272</td>
<td>318</td>
</tr>
<tr>
<td>Mealtimes with at least 1 meal offered below standard</td>
<td>-</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Mealtimes conclusively assessed (%)</td>
<td>-</td>
<td>39</td>
<td>21</td>
</tr>
</tbody>
</table>

Available data suggests that Hospital C met the criterion for the minimum number of calories in main meals. However, this assessment was not conclusive, due to missing data. It is possible to conclude that Hospital A failed to meet this standard because it offered at least one meal with fewer than 300kcals. However, missing data means that this result may not capture the full extent of non-compliance.
Due to the limited data available for complete main meals, protein analysis focussed on the criteria relating to the main protein part of meals. The results are summarised in Table 5.

**Table 5: Protein content of the main protein part of meat/fish meals**

<table>
<thead>
<tr>
<th></th>
<th>Standard (g)</th>
<th>Analysed (% of offered)</th>
<th>Min (g)</th>
<th>Max (g)</th>
<th>Mean (g)</th>
<th>SD</th>
<th>Median</th>
<th>Number offered below standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protein in main protein part of meat/fish main course</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospital A</td>
<td>Min 12</td>
<td>90</td>
<td>12</td>
<td>36</td>
<td>21</td>
<td>4.9</td>
<td>19</td>
<td>0</td>
</tr>
<tr>
<td>Hospital B</td>
<td>Min 12</td>
<td>50</td>
<td>12</td>
<td>27</td>
<td>16</td>
<td>4.0</td>
<td>14</td>
<td>0</td>
</tr>
<tr>
<td>Hospital C</td>
<td>Min 12</td>
<td>79</td>
<td>10</td>
<td>29</td>
<td>21</td>
<td>5.2</td>
<td>22</td>
<td>1</td>
</tr>
</tbody>
</table>

meat/fish meals offered at any hospital. The range of protein offered varied between 10-36g and standard deviation figures (4.0 – 5.2) indicate a high degree of variance from the mean.

Available data indicates that Hospitals A and B met this standard, however, this was based on an assessment of 90% and 50% meals offered, respectively, and was not conclusive. The standard was not met by Hospital C because one meal offered, quiche Lorraine, contained fewer than 12g of protein. 79% of relevant meals offered by Hospital C were analysed and so the results may not capture the full extent of non-compliance.

None of the hospitals audited always offered vegetarian options that met the minimum requirement for protein within the main protein part of the meal (9g). This analysis is summarised in Table 6.

**Table 6: Protein content of the main protein part of vegetarian meals**

<table>
<thead>
<tr>
<th></th>
<th>Standard (g)</th>
<th>Analysed (% of offered)</th>
<th>Min (g)</th>
<th>Max (g)</th>
<th>Mean (g)</th>
<th>SD</th>
<th>Median</th>
<th>Number offered below standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protein in main</td>
<td>Min 9</td>
<td>82</td>
<td>4</td>
<td>23</td>
<td>15</td>
<td>2.9</td>
<td>15</td>
<td>2</td>
</tr>
</tbody>
</table>


It was possible to assess 100% of vegetarian meals offered in Hospital C only and so, although available data shows that Hospitals A and B did not meet this criterion, the results may not capture the full extent of non-compliance.

The minimum level of protein offered in vegetarian meals ranged from 4-6g and there was a large range in their overall protein content (4 – 23g), although standard deviation and median figures indicate that the mean figures were slightly more representative for vegetarian meals compared to meat/fish meals. The highest mean and median protein content vegetarian meals were found in Hospital A, but this was also the hospital which offered the highest number of meals below the standard (two). Those two meals were 5 bean stroganoff (8g) and bean goulash (4g). Hospitals B and C each offered one meal below the standard at one out of 14 mealtimes. In Hospital B this was broccoli quiche (6g) and in Hospital C this was Mediterranean vegetable quiche (6g).

Desserts:

Criteria relating to desserts are summarised in Table 7. Criteria requiring nutritional analysis of desserts could not be assessed for Hospital B due to missing data.

<table>
<thead>
<tr>
<th></th>
<th>Hospital A</th>
<th>Hospital B</th>
<th>Hospital C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min 3 desserts at each mealtime</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Min 1 hot dessert at each mealtime</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Number of mealtimes hot dessert standard not met</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Mealtimes conclusively assessed for this standard (%)</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>
Min 1 high energy (‘HE’) dessert (300kcal, 5g protein) each mealtime

<table>
<thead>
<tr>
<th>Number of mealtimes HE standard not met</th>
<th>No</th>
<th>-</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td></td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>

| Mealtimes conclusively assessed for this standard (%) | 50 | - | 100 |

Hospital C met all of the criteria relating to desserts based on a full analysis of desserts offered. All hospitals offered at least the minimum number of overall dessert options at every mealtime, but Hospitals A and B did not always offer a hot dessert. Hospital A did not offer at least one HE dessert at three out of 28 mealtimes. This standard was conclusively assessed for 50% of mealtimes and so this result may not capture the full extent of non-compliance.

The two mealtimes where Hospital A did not offer a hot dessert represent two of the three occasions when it also did not meet the standard to offer at least one HE dessert.

**Menu Choices**

The analysis of criteria relating to menu choices is summarised in Table 8.

**Table 8: Menu choices**

<table>
<thead>
<tr>
<th>Criteria (Number of...)</th>
<th>Standard</th>
<th>Hospital A (% mealtimes standard met)</th>
<th>Hospital B (% mealtimes standard met)</th>
<th>Hospital C (% mealtimes standard met)</th>
</tr>
</thead>
<tbody>
<tr>
<td>First course options, midday</td>
<td>2</td>
<td>2 (100)</td>
<td>1 (0)</td>
<td>1 (0)</td>
</tr>
<tr>
<td>First course options, evening</td>
<td>2</td>
<td>1-2 (86)</td>
<td>2 (100)</td>
<td>1 (0)</td>
</tr>
<tr>
<td>Main course options, midday</td>
<td>3</td>
<td>4 (100)</td>
<td>4 (100)</td>
<td>4 (100)</td>
</tr>
<tr>
<td>Main course options, evening</td>
<td>3</td>
<td>4 (100)</td>
<td>4 (100)</td>
<td>4 (100)</td>
</tr>
<tr>
<td>Hot main course options, midday</td>
<td>2</td>
<td>2 (100)</td>
<td>2 (100)</td>
<td>2-4 (100)</td>
</tr>
<tr>
<td>Hot main course options, evening</td>
<td>2</td>
<td>2 (100)</td>
<td>2-3 (100)</td>
<td>2-4 (100)</td>
</tr>
<tr>
<td>Vegetarian options, midday</td>
<td>1</td>
<td>3 (100)</td>
<td>1-3 (100)</td>
<td>1-2 (100)</td>
</tr>
<tr>
<td>Vegetarian options, evening</td>
<td>1</td>
<td>3 (100)</td>
<td>1-3 (100)</td>
<td>0-2 (71)</td>
</tr>
<tr>
<td>Fruit juice offered, daily</td>
<td>2</td>
<td>2 (100)</td>
<td>2 (100)</td>
<td>2 (100)</td>
</tr>
</tbody>
</table>
No hospital met the standard for the number of first course options offered. Hospitals A and B offered at least the minimum number of options at one mealtime daily. Hospital C did not offer at least the minimum number of options at any mealtime. All hospitals offered the minimum number of choices for main courses and hot main courses. Hospitals A and B offered at least the minimum number of vegetarian main course options. Hospital C did not meet this standard, offering a vegetarian choice for 71% of evening mealtimes.

Hospitals B and C always offered snacks within the main menu that contained at least 100kcals and 1.5g of protein. It was not possible to assess this standard in Hospital A due to missing data.

All hospitals offered fruit juice twice daily, thus meeting this standard.

**Discussion**

The Standards are part of a strategy to address malnutrition in hospitals in Wales through good nutritional care. The present study aimed to contribute to a gap in current knowledge by investigating whether the menus in three Welsh hospitals comply with The Standards.

The sample, although small, included hospitals of different sizes and in different locations within Wales, increasing the validity of the findings.

It is a limitation of the study that the researcher had no direct contact with hospitals, because the possibility that recent changes to food provision have occurred cannot be excluded. Furthermore, because no observation was conducted, this study cannot assess whether food provision in practice differs from the written menus analysed, for example in the portion sizes offered. The inherent limitations of nutritional analysis are acknowledged, including commonly identified problems with food composition data and variability of nutritional
content due to the origin, processing or preparation of foods (Ginani et al., 2012). Missing data and the consequent reduction in validity of findings is recognised as a limitation, although the impact of this has been acknowledged in the presentation of results.

On average, the hospitals in Wales audited met 69% of the audit criteria they were assessed on (range 64 – 74%), suggesting that compliance with The Standards could be improved. A number of specific areas for potential improvement were identified.

Nutritional analysis had been conducted by a registered dietitian during the menu planning stage at two of the three hospitals audited, which is in line with the findings of WAO (2011) that 65% of menus had been nutritionally analysed. WAO (2011) also reported that the type of catering system used impacted on nutritional analysis, with better analysis for cook-freeze and cook-chill services compared with traditional production. This contrasts with the present study which found that a cook-freeze system was used in the hospital where nutritional analysis had not been undertaken by a dietitian and in the only hospital partially using traditional production, nutritional analysis had been undertaken by a dietitian. WAO (2011) reported this finding as a general trend and it may be that the present study does not replicate this because the hospitals in the sample fall outside that general trend. In relation to the hospital using partial traditional production, the difference may be due to the mixed methods of production which included cook-freeze, or because of improvements in practice since the WAO report.

It was interesting to note that nutritional analysis and compliance with The Standards were better in those hospitals with in-house catering, which were also the hospitals in which a dietitian had conducted nutritional analysis. The Standards advocate a multi-disciplinary team (‘MDT’) approach to menu planning and this is echoed by BDA (2012) and Scottish
Government (2008). The results of the present study suggest better compliance with The Standards where an MDT approach had been adopted and that a dietitian was more likely to have nutritionally analysed an in-house service, potentially suggestive of a more collaborative working relationship between dietitians and catering staff where in-house production is used. This could be because the dietitian may have greater opportunity to influence the nutritional content of foods when an in-house production method is used.

Nutritional analysis identified areas where The Standards were not consistently met by hospitals audited. The number of occasions in the menu cycles where foods offered were below the standard was low (1-3), which is encouraging, although it must be remembered that some results may not capture the full extent of non-compliance, due to missing data.

Analysis indicated that minimum energy requirements in The Standards were generally met, although this was not consistent. Where criteria relating to energy content were not met, the extent of non-compliance was not vast, although its implications should not be dismissed.

The same soup offered at two hospitals was below the energy standard by nine calories and the criterion was failed as a result. It is recommended that this recipe is addressed to increase calorie content to the minimum. Similarly, the standard for energy content of main meals was failed by one hospital because of one meal offered. Missing data limited the analysis of the energy content of main meals which may explain why the findings of the present study differ from those of Hamilton et al. (2002), who reported that energy requirements were more frequently not met by menus in Leicestershire hospitals. Alternatively, it may be that practice in hospitals in Wales is comparatively better than those studied by Hamilton et al. (2002), or that increased focus on hospital food in the time since their study and/or the implementation of catering standards have led to improvements in practice.
More noteworthy is the failure of one hospital to offer a HE dessert on three occasions, when the full extent of non-compliance may not have been captured. The BDA (2012) recognises that desserts contribute to patient quality of life and that HE desserts are especially important for patients at risk of malnutrition or with smaller appetites. Further, Scottish Government (2008) highlights that desserts may help patients, particularly vegetarians, meet protein and micronutrient requirements. That this standard was not met on two occasions when a hot dessert, which is invariably served with custard or ice cream, was not offered reinforces the role of more substantial desserts on hospital menus. It is recommended that dessert options are reviewed and suitable hot dessert options are added or substituted in and served with accompaniments, where necessary, to comply with The Standards.

The importance of protein, as well as energy, in addressing malnutrition has been highlighted by CoE (2002). Encouragingly, the protein content of all soups offered met the standard. Available data indicated that protein content of main meals was less consistent. The range of protein in main meals offered varied widely and missing data meant that the analysis was not conclusive as to the full extent of non-compliance. The risk of poor protein content of vegetarian meals is recognised (Scottish Government, 2008) and there was evidence of this in the present study, with all hospitals failing this standard and one meal containing below 50% of the required standard.

The large ranges in protein content and the poor protein content in some vegetarian meals is in line with the findings in Leicestershire hospitals reported by Hamilton et al. (2002). It is recommended that the protein content of meals, in particular vegetarian meals, is assessed and that changes are made where necessary to achieve the minimum requirement in The
Standards, or at least that providers are satisfied that the other items offered at that mealtime mean that the complete meals offered meet the minimum standard in that respect.

It was interesting to note that two vegetarian and one meat meal that fell below the standards for protein content were quiches. Data from food composition tables (Public Health England, 2015) and average portion sizes (Food Standards Agency, 1988) indicate that average portions of vegetarian and meat-containing quiches meet The Standards, which suggests that the products or recipes used or portion sizes served in the hospitals audited may be inadequate. It is recommended that this is investigated by hospitals offering quiches and changes made where necessary to meet The Standards.

The amount of choice offered on menus was predominantly sufficient to meet The Standards, although there were exceptions. It was disappointing to report that no hospital consistently offered at least two first course options, because these can usefully contribute to overall energy and protein intakes and may stimulate appetite (BDA, 2012).

The choice of main courses met The Standards, which accords with the findings of WAO (2011) that most hospitals provide an appropriate choice of meals. It has been suggested that cook-chill services provide more hot menu choices (Edwards and Hartwell, 2006), but the present study did not find a discernible relationship between production method and amount of choice. Increased choice means an increased likelihood that individual preferences are catered for and the opportunity to increase patients’ intake is thereby maximised (Scottish Government, 2008). The choice of vegetarian meals did not meet the criterion in one hospital, adding to the risk that vegetarians may be nutritionally compromised discussed earlier in relation to protein. It is recommended that menu choices are re-evaluated and that
consideration is given to adding first course options and vegetarian choices to comply with The Standards.

Snacks can assist patients to meet nutritional requirements through small, frequent intake (BDA, 2012). The inclusion of snacks on the menu of both hospitals assessed against this criterion contrasts with the WAO (2011) finding that for five of seven patients snacks were rarely or never available. These results may represent a genuine improvement to services or the difference may be because, unlike the WAO audit, the present study was unable to assess the availability of snacks in practice.

The twice daily inclusion of fruit juice on all menus audited similarly contrasts to the findings of Hamilton et al. (2002) where fruit juice was offered in five of seven Leicestershire hospitals. As previously, this may represent comparatively better practice in Wales or an improvement in practice.

A number of areas for potential improvement were identified in the present study, but missing data limited analysis. A repeat audit, with direct access to hospitals is recommended, whereby it is hoped that a fuller analysis would be possible. In line with the approach adopted by WAO (2011), an element of observation should also be considered, which would enable an assessment of additional aspects of The Standards. It is also recommended that a registered dietitian undertakes an analysis of the current menu at each hospital, to identify locally applicable areas of non-compliance with The Standards.

In conclusion, the present study found that compliance with The Standards is, on average, 69% in hospitals audited in Wales and specific areas for improvement were identified. Malnutrition remains prevalent in hospitals and its consequences for individual and health
service outcomes are of serious concern (Saunders et al., 2015). Improving nutritional intake is pivotal to addressing malnutrition (Welsh Government, 2011) and existing evidence suggests that changes to hospital food service can positively impact patients’ intake (Barton et al., 2000). The Standards aim to optimise patients’ nutritional intake through hospital food (Welsh Government, 2011), but the present study indicates that they are not being fully implemented, suggesting that more could be done to improve the contribution that hospital food services make to tackling malnutrition. In seeking to improve compliance with The Standards, it appears that an MDT approach is most effective.

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