



**ACI** NSW Agency  
for Clinical  
Innovation

# Nutrition Standards **FOR ADULT INPATIENTS IN NSW HOSPITALS**



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# FOREWORD

The NSW Government established the Agency for Clinical Innovation (ACI) as a board-governed statutory health corporation in January 2010, in response to the Special Commission of Inquiry into Acute Care Services in NSW Public Hospitals. The ACI seeks to drive innovation across the system by using the expertise of its clinical networks to develop and implement evidence-based standards for the treatment and care of patients.

In April 2009, the ACI (then known as the Greater Metropolitan Clinical Taskforce, the GMCT) established the Nutrition in Hospitals Working Group to advise NSW Health about developing an integrated approach to optimising food and nutritional care in NSW public healthcare facilities. The working group includes doctors, nurses, dietitians, speech pathologists, consumers, academics and food service and health support services.

The ACI, under the auspices of the Nutrition and Food Committee of NSW Health, has developed a suite of nutrition standards and therapeutic diet specifications for adult and paediatric inpatients in NSW hospitals. These standards form part of a framework for improving nutrition and food in hospitals. The suite of nutrition standards includes:

1. *Nutrition standards for adult inpatients in NSW hospitals*
2. *Nutrition standards for paediatric inpatients in NSW hospitals*
3. *Therapeutic diet specifications for adult inpatients*
4. *Therapeutic diet specifications for paediatric inpatients*

In August 2009, the GMCT commissioned Peter Williams, Associate Professor, Nutrition and Dietetics, University of Wollongong, to update the *Nutrition standards for adult inpatients in NSW hospitals* on behalf of the Nutrition and Food Committee, NSW Health. These standards aim to ensure that hospital menus provide the opportunity for patients to select food that satisfies their nutrient requirements and enhances their experience in hospital. They do this by:

- providing a sound nutritional basis for the development of the standard hospital menu, and
- establishing overarching principles that ensure a patient-focused food and nutrition service.

On behalf of the ACI, I thank Peter Williams, the members of the Nutrition Standards Reference Group led by Associate Professor Margaret Allman-Farinelli and the Nutrition in Hospitals Group, co-chaired by Helen Jackson (current co-chair) and Rhonda Matthews (previous co-chair), for their dedication and expertise in developing these nutrition standards.



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# PART A

## INTRODUCTION AND PROCESS

### 1. Introduction to the adult standards

Food served to hospital patients is an important factor that influences both their clinical outcomes and satisfaction with their hospital stay.<sup>1-3</sup> Good-quality food and fluids are basic requirements in effectively managing patients' nutritional needs. Patients expect hospitals to serve food that is good for them.<sup>4</sup>

However, the levels of plate waste in hospital are reported to be as high as 40%,<sup>5-11</sup> so the nutritional quality food on the menu is not the only factor that needs to be considered.

The causes of poor nutrition in hospital involve a wide range of connected factors relating to a patient's medical condition and treatment, and the hospital routine. Some medical conditions affect the patient's nutritional needs and / or food intake.

The hospital routine can also affect a patient's food intake in a number of ways:

- interruptions at mealtimes, such as doctor's rounds and tests
- lack of flexibility with mealtimes and available food, such as limited access to nourishing snacks between meals and limited food choices
- lack of assistance to eat
- lack of identification and monitoring of patient's nutritional status and food intake.<sup>12-14</sup>

The way food is served and the lack of feeding assistance can be significant barriers to adequate nutrient intakes.<sup>15,16</sup>

These standards have been developed in response to the widespread recognition that inpatients are a varied group with special needs, including many who already have, or who are at risk of developing, protein-energy malnutrition.<sup>17-23</sup> This risk has been confirmed in several studies in NSW hospitals where up to 50% of patients had some degree of malnutrition, not all of which could be

attributed to their pre-hospital state.<sup>24-29</sup> These levels are similar to those reported in other Australian studies.<sup>30-33</sup> The nutritional status of patients can deteriorate the longer they stay in hospital.<sup>17, 34-36</sup> Malnutrition in hospital is frequently undetected and untreated, causing a wide range of adverse consequences including.<sup>37-45</sup>

#### For the individual:

- delayed wound healing
- increased risk of pressure areas
- muscle wasting and weakness
- increased prevalence of both adverse drug reactions and drug interactions
- infection
- dehydration
- impaired mobility
- diarrhoea, constipation
- impaired metabolic profiles
- apathy and depression.

#### For the health system

- increased lengths of stay
- increased rates of readmission
- increased costs
- greater antibiotic use
- increased complications
- increased clinical intervention
- increased staff time per patient.

NSW Health accepts its duty of care to provide excellent nutritional care and support to all inpatients and to meet their individual nutrient requirements. These standards, which deal with the menu and food choices, form policies to ensure patients' nutritional needs are met while they are in hospital.

An overarching nutrition care policy has been developed to address essential aspects of the proper care and support of inpatients: nutrition risk screening; nutritional

care planning; food selection and delivery; eating assistance and monitoring. Separate guidelines on menu planning for paediatric therapeutic diet specifications will be developed.

## 1.1 Aim and expected outcomes

These standards aim to ensure that hospital menus provide the opportunity for patients to select food that satisfies their nutrient requirements and enhances their experience in hospital. They do this by:

- providing a sound nutritional basis for the standard hospital menu
- establishing overarching principles that ensure a patient-focused food and nutrition service.

It is expected that each public hospital in NSW will offer:

- a menu that meets this standard
- a food service that meets the nutritional needs of their patient populations including specific patient groups
- a menu format and level of choice consistent with the patient profile at each facility.

## 1.2 Standards development process

These standards have been developed by building on previous policy documents in NSW and other Australian states, to promote harmonisation where possible and facilitate the ultimate development of national hospital menu standards.

They also aim to provide consistent guidelines to food manufacturers who may wish to develop food products for hospitals. The goal has been to develop standards that are:

- evidence based
- nationally consistent where possible
- easy to interpret and implement
- able to allow for flexibility and innovation in local implementation (that is, describing minimum standards without being unnecessarily prescriptive).

Some of the key documents considered in this process have been:

- *Draft NSW nutritional standards for hospital menu development, 2006*<sup>46</sup>
- *National catering and nutrition specification for food and fluid provision in hospitals in Scotland, 2008*<sup>47</sup>

- *The Victorian nutrition standards for menu items in Victorian hospitals and residential aged care facilities, 2009*<sup>48</sup>
- *The draft menu and nutritional standards for adult inpatients in South Australian acute care hospitals, 2009*
- *Nutrition specifications for hospital food service, Department of Health, Western Australia, 2005*
- *Queensland Health Food services nutritional specifications for meal components, 2009*
- *Institute of Hospital Catering (NSW), Food service guidelines for healthcare, 1997*<sup>49</sup>
- *NSW Health Food and nutrition strategic directions, 1996-2000: Healthier food for public hospitals*<sup>50</sup>
- *NSW Department of Health. Standards for food services, 1989.*<sup>51</sup>

## 1.3 The nutritional profile of NSW hospital adult inpatients

There are four broad categories of inpatients:

- 1) Patients who are nutritionally well – previously healthy patients with good appetite and dietary needs in line with the general population admitted for:
  - minor illnesses or elective surgery
  - uncomplicated maternity patients
  - illnesses that result in a relatively short stay.
- 2) Patients who are nutritionally at risk, who have:
  - been admitted to hospital with poor appetites or inadequate food intakes
  - preceding unexplained or unintentional weight loss
  - physical difficulty eating and/or drinking, including poor dentition leading to eating fatigue and lack of interest in food
  - acute or chronic illness or medical treatments affecting appetite and food intake
  - cognitive and communication difficulties, creating difficulties with ordering appropriate food and fluids.
- 3) Patients with high nutritional needs, including:
  - those with increased nutritional requirements eg due to cachexia, trauma, surgery and / or burns
  - some who are malnourished
  - lactating women.



#### 4) Patients with special needs, including those:

- with cultural, religious dietary needs and practices (such as Halal and Kosher meals)
- requiring therapeutic diets
- requiring texture-modified food and fluids.

## 1.4 Who these standards are for

The standards in this document are designed to be appropriate for most acute adult patients in hospital. This includes patients who are nutritionally well and patients who are nutritionally at risk.

Patients with high nutritional needs may require additional energy, protein and other nutrients to those specified in the nutrient goals. BAPEN energy recommendations for unwell patients are 1.3–1.5 times resting energy expenditure, which equates to about 9500–11000kJ for the Reference Person.<sup>52</sup>

**Patients with higher needs** who have a good appetite may be able to meet their requirements from the standard menu by having large serves and additional choices at mealtimes (eg soup and extra sandwiches). However, patients with higher nutritional needs typically have fickle appetites – for many, simply providing more food at main meals is not an effective way to meet their requirements. The use of fortified dishes and supplements, and nutrient-dense snacks is another practical option.<sup>53-59</sup> Providing help to eat can also improve intakes.<sup>60,61</sup> Those with a poor appetite will require other strategies to meet their additional needs (See Section 3.3).

**Patients with special nutritional needs** are a varied group. Many will have similar nutrient goals to those set in this document but will require different food choices to those on the standard menu to achieve these goals. Some patients, such as those with renal disease who need potassium restriction, will require modified nutrient goals for their therapeutic dietary needs, and assessment and management by a dietitian. Texture-modified diets may not always fit with these standards.<sup>62</sup>

**Please note:** The nutrient goals in this document are not designed for paediatric patients. See *Nutrition Standards for Paediatric Inpatients in NSW hospitals*. The nutrient goals set for energy and fat may be higher than those required for patients in long-stay residential settings who are trying to maintain or lose weight and may need to be adjusted accordingly, although many of the menu-planning principles will still apply.

## 1.5 Structure of the standards

Two sets of standards are set out in Part B of this document:

- 1) **Nutrient goals:** the target amount of each key nutrient that the standard menu needs to provide to enable the majority of patients to meet their individual nutrient requirements.
- 2) **Minimum menu choice standard:** the minimum number of food choices and minimum serve size for each type of menu item provided at main meals and mid-meals.

These two standards together can be used to plan and assess standard adult inpatient menus. They do not prescribe the format of menus – they allow hospitals to tailor individual food choices to meet the specific preferences and needs of their local populations. Some special food and nutrition issues to be considered for particular patient groups are set out in Part C of this document.

## 1.6 Overarching principles

The following principles underpin a patient-focused menu / meal service. While the specific nutrient goals outlined in these standards do not apply to paediatric patients and may not apply to some therapeutic diets, most of the overarching principles will still apply.

1. NSW Health acknowledges a **duty of care** to ensure access to **safe, appropriate and adequate food and fluid** as an essential component of patient care and treatment.
2. The menu will offer **food choices that are appealing** and which patients enjoy. This will assist them to meet their nutritional requirements.
3. Menu design will be based on the needs of the local hospital population, and will apply best-practice principles in menu planning, taking into account the **psychosocial, cultural and religious** needs of the patients.
4. The menu design and choices offered will maximise the opportunities for patients to consume the **number of serves from each of the core food groups**.<sup>63</sup>
5. The NHMRC's *Nutrient reference values for Australia and New Zealand*<sup>64</sup> will be the basis for developing menu standards that are adequate in nourishment and hydration. Menus should provide sufficient food and beverages to enable all patients to at least meet their **Recommended Dietary Intake (RDI) targets**.



6. Many patients will have **above-average nutrient needs** due to their age, disease state and / or the impact of treatment. The hospital meal service will enable access to **adequate quantities** of appropriate foods and fluids to be chosen when patients' nutritional needs are higher.
7. Where possible, a patient's nutritional requirements should be provided from food. **Oral supplements** should not substitute for, or be relied on, to enhance provision of adequate food and fluid unless there are clear clinical indicators.
8. Within a meal and over the day, **variety** with respect to food colour, texture, taste, aroma and appearance will be offered to clients.
9. The effectiveness and usefulness of these standards will be **reviewed and evaluated** on a regular basis as part of a commitment to continuous service improvement.

## 1.7 Overall goal

Hospitals in NSW will provide safe, nutritious and appetising high-quality meals of sufficient variety that meet the needs and expectations of patients and which are a model of nutritional best practice in institutional food service.

# PART B

## THE STANDARDS

### 2. Nutrient goals

Tables 1 and 2 set out the nutritional goals for a range of key macro- and micronutrients that standard menu must provide. This will enable most patients to meet their individual nutrient requirements.

These standards only include RDIs likely to be important to hospitalised patients. If menus are designed to meet specified nutrient goals, it is likely the requirements for other essential nutrients (eg thiamin, vitamin A, magnesium or potassium) will be met.

In assessing menus against these goals, it is important to test a range of possible choices, assuming each component of the menu is chosen and eaten (eg at a main meal: one soup, one main course with vegetables, one dessert, bread and spreads).

The standard hospital menu should be capable of meeting these nutrient goals:

- energy and protein on a daily basis
- micronutrients (vitamins and minerals) averaged on a weekly basis.

#### 2.1 Reference Person

For the purposes of developing these standards, the Reference Person chosen is based on the needs of an adult inpatient defined as:

REFERENCE PERSON	
Gender	Male
Body weight	76kg
Age	51-70 years

### Gender

Although the patient population is usually fairly evenly split between male and female, the male Reference Person was chosen to provide for the greater energy and protein needs associated with this gender group.

### Body weight

In the absence of data on body weights of the inpatient population in NSW, the body weight nominated for the Reference Person, 76kg, is consistent with the Nutrient Reference Values (NRV) data for an adult male aged 19 years and older.<sup>64</sup> This is also about the same as the median weight of adults aged 45–64 years in the 1995 National Nutrition Survey (which was 75.8kg).<sup>65</sup>

### Age

Australian Institute of Health and Welfare statistics on hospital separation in 2006/07 show the following age profile of patients in NSW hospitals.<sup>66</sup>

AGE RANGE (YRS)	% OF SEPARATIONS
1-24	17.7
25-54	31.3
55-74	28.3
75+	22.7

Thus, the median age range of NSW hospital inpatients is 55-74 years and the nearest corresponding age range in the NRV data was therefore chosen to set these nutrient standards, which is 51-70 years.

## 2.2 Method for developing nutrient goals

In 2003, the US National Academy of Sciences published a book relating to the applications in dietary planning in relation to their new dietary reference intakes.<sup>67</sup> This publication outlined the uses of the various reference intakes to planning diets for individuals and groups. As the approach taken by Australia and New Zealand in setting NRVs was based on the US and Canadian approach, their menu planning approach is relevant to the Australian situation.

A premise of the US approach was that, regardless of whether diets are planned for individuals or groups, the goal is to plan usual diets that are nutritionally adequate, or designed in such a way that the probability of nutrient inadequacy or excess is acceptably low. They state that for individuals, the goal of planning is to achieve usual intakes that are close to the Recommended Dietary Allowance (= RDI in the NRVs) or the Adequate Intake (AI).

When planning for heterogeneous groups, such as hospital inpatients, where nutrient and energy requirements are not uniform across the group, the approach can either be to identify the most vulnerable group (those with highest nutrient density needs) group or to estimate the nutrient density distributions of each age / gender group and combine the estimates to get an overall nutrient density distribution as a basis for planning.

However, this approach does not consider the distribution of nutrient densities within the group. The National Academy report proposed a new method of planning. Its goal was to develop a target nutrient density distribution for each subgroup, and then choose the highest target median density from these distributions as the nutrient density to be used in planning.

In theory, this approach is more likely to provide an accurate estimate of the appropriate target median intakes for heterogeneous groups but, as the Academy notes, the practicality of its use in planning has not been tested. It also requires data on the usual distribution of intakes of nutrients in the target group, which are not available in the Australian inpatient context.

## Summary

For the reasons above, these standards use the Australian RDI or AI values for the reference person as the default nutrient goal for menu planning.<sup>64</sup> These values provide a high level of assurance that most patients will be able to meet their individual nutrient needs from the standard menu. The default value has been changed in one case (for iron), taking into account the substantially higher needs of female patients in some age groups.

## 2.3 Macronutrient goals

TABLE 1: Macronutrient goals, strategies and rationale

NUTRIENT	GOAL	STRATEGIES	RATIONALE
Energy	8000kJ/day	<p>A choice of menu items of adequate energy density should be available to allow those with small appetite / intake to achieve the recommended daily energy intake.</p> <p>Individuals' requirements will vary. Mechanisms are needed for some patients to achieve higher energy intakes, eg trauma or burn patients, pregnant and lactating women and the malnourished.</p> <p>Suggestions include:</p> <ul style="list-style-type: none"> <li>• access to large (or extra) serves</li> <li>• access to nourishing mid-meal snacks</li> <li>• high-energy foods and fluids eg nutrient-dense soup, desserts.</li> </ul>	<p>Insufficient energy intake is a common cause of poor nutritional status, particularly for elderly patients. Low energy intake reduces the effectiveness of treatment and delays recovery.<sup>53</sup></p> <p>Based on the NRV value for a 76kg male with a PAL of 1.2,<sup>68</sup> the estimated requirement is 8000kJ per day.<sup>64</sup> This is equal to a goal of 105 kJ/kg/d, which is the minimum recommended intake in the 2006 NICE guidelines on nutrition support in adults.<sup>69</sup> This level is also consistent with the recommendation in the Scottish standards for patients.<sup>47</sup></p>
Protein	90g/day	<p>The menu must be adequate to allow those with small appetite / intake to achieve the recommended daily protein intake.</p> <p>Mechanisms are needed for some patients to achieve higher protein intakes, eg for young men, pregnant and lactating women, the elderly and malnourished.</p> <p>Suggestions include:</p> <ul style="list-style-type: none"> <li>• access to large ( or extra) serves</li> <li>• access to nourishing mid-meal snacks</li> <li>• high-energy foods and fluids eg nutrient-dense soup, desserts.</li> </ul>	<p>Protein provides the body with the appropriate amount and type of amino acids for the synthesis of body proteins needed for maintenance and growth of the individual, and sufficient dietary protein optimises wound healing rates.</p> <p>The RDI is 0.75g–1.1g/kg/day.<sup>64</sup> Requirements are increased in the malnourished, those with certain diseases and during treatments. For hospitalised patients, a range of 1.0 to 1.5 g/kg/day has been recommended.<sup>52</sup></p> <p>The level chosen for these standards (~1.2 g/kg/day) aims to cover the majority of hospitalised patients, including the non-stressed elderly through to those recovering from surgery. It is expected that patients requiring higher values of protein (&gt;1.5 g/kg/day) would be identified through effective hospital nutrition screening and prescribed appropriate higher levels.</p>

NUTRIENT	GOAL	STRATEGIES	RATIONALE
Fat	Menu items should <u>not</u> routinely be low in fat. Ideally, not more than 10% of energy should be from trans and saturated fat.	The menu should allow patients to select lower saturated fat options. Mono- and poly-unsaturated fats are to be used in food preparation, where appropriate. <sup>70</sup> A choice of mono-unsaturated or poly-unsaturated spreads should be available.	Low-fat diets are not appropriate for a large proportion of hospital patients who require diets with increased energy and nutrient density. <sup>52</sup> Total fat is no longer recognised as a risk factor for cardiovascular disease, <sup>71</sup> and therefore menu items should not routinely be low in fat. Diets that are low in saturated fat are recommended for the general population as well as high-risk individuals, eg those with cardiovascular disease or obesity. The Heart Foundation now recommends a target of <7% energy from saturated fat, <sup>71</sup> but for hospitals whose population is considerably older, the upper limit 10% energy given in the NRV <sup>64</sup> is considered more appropriate. Slightly higher levels - up to 11%E - are unlikely to be of nutritional concern for most inpatients. <sup>47</sup>
Fibre	30g/day	The menu should allow patients to achieve a fibre intake of 30 g/day by offering high fibre foods from a range of sources including: <ul style="list-style-type: none"> <li>• Cold breakfast cereals: at least 50% provide at least 3g fibre per serve</li> <li>• Wholemeal/multi grain bread at all meals as an alternative to white</li> <li>• Fruit (fresh, canned) and vegetables.</li> </ul>	The NRVs have set an AI for fibre at 30g/day for adult men. <sup>64</sup> Adequate dietary fibre is essential for the normal functioning of the digestive tract <sup>72</sup> . Due to bed rest, medications, poor fluid intake and limited food choices, patients in hospital frequently experience constipation. Constipation leads to patient discomfort, can decrease appetite, and increases expenditure on laxatives and nursing workloads, but adequate fibre can reduce the need for interventions. <sup>73</sup> The action of fibre in preventing constipation depends on an adequate fluid intake.
Fluid	2.1–2.6L/day	Water should be available at the bedside to all patients for whom it is clinically suitable. A selection of beverages based on patient preferences is to be available at meals and mid-meals.	The NRVs have set an AI for water of 2.1–2.6L/day, which includes plain drinking water, milk, coffee, tea and other drinks. <sup>64</sup> The effects of poor fluid intake and dehydration include diminished physical and mental performance and constipation. In the Australian climate older, adults are at particular risk of dehydration.

## 2.4 Micronutrient goals

**TABLE 2: Micronutrient goals, strategies and rationale**

NUTRIENT	GOAL	STRATEGIES	RATIONALE
Vitamin C	45 mg/day	Include specific sources of vitamin C (fruit, juices and salads) in the standard menu.	The RDI for the reference patient is 45mg/d. <sup>64</sup> Several studies have identified hospital patients deficient in vitamin C. <sup>52,74</sup> As there are large losses of vitamin C in food service handling, processing and cooking, specific uncooked sources of vitamin C should be available. <sup>52</sup>
Folate	400µg/day	Use fortified breakfast cereal and include up to 5 serves vegetables and 2 serves of fruit per day. See note on folic acid fortification of bread-making wheat flour below for details on the fortification of bread flour from September 2009.	The RDI for the reference patient is 400µg/day. <sup>64</sup> People with poor food intake are at risk of inadequate folate intake. This can include the elderly, the hospitalised <sup>52</sup> and pregnant women. There are large losses of folate in cooking and processing. <sup>75</sup>
Calcium	1000 mg/day	The preferred food source of calcium is dairy products, which provide the most readily utilised source of calcium. <sup>76</sup> Milk-based soups and desserts, as well as milk beverages, can make a valuable contribution in terms of energy, protein and calcium.	The RDI for the reference patient is 1000mg/d. <sup>64</sup> Women over 50 years and men over 70 years have higher requirements for calcium (1300mg/d).
Iron	11 mg/day	The menu should offer red meat (a good source of haem iron) in at least one main dish per day.	The RDI for the reference male patient is 8mg/d but for younger women (19-50 years) the RDI is 18mg/d. <sup>64</sup> Iron is recognised as one of the at-risk nutrients in the Australian food supply <sup>70</sup> , so a goal of 11mg/d has been chosen (recognising that about 25% of the hospital population would have the higher requirements). This level is also the WHO recommended intake. <sup>77</sup>
Zinc	14 mg/day	Ensuring energy and iron intake is sufficient in the menu will assist in meeting the zinc requirement.	The RDI for the reference patient is 14mg/d. <sup>64</sup> Zinc is a significant mineral with respect to wound healing and immune function. People with low energy consumption are at risk of zinc deficiency, <sup>70</sup> and zinc depletion is associated with decreased taste acuity. <sup>78</sup>



NUTRIENT	GOAL	STRATEGIES	RATIONALE
Sodium	Upper intake Limit 2300 mg/day	<p>The menu should provide for a choice of foods that does not exceed the NRV upper intake limit of 2300 mg/day<sup>64</sup> while allowing some highly salted foods (such as cheese and ham), which are nutritionally dense and well accepted by patients who are unwell or eating poorly.</p> <p>This goal does not prevent some higher-salt foods being offered occasionally on the menu, but it is recommended that highly salted foods (providing &gt;575mg sodium per serve) should make up no more than 10% of main hot menu choices.<sup>79,80</sup></p> <p>Bread is one of the major sources of sodium in the typical diet. Brands with sodium levels of less than 400mg/100g should be preferred where possible.<sup>81</sup></p> <p>Salt sachets may still be offered to patients as an option on the menu, but patients should be able to make food selections within the daily sodium limit.</p>	<p>In Australia the average sodium intake has been estimated to be about 3335mg/d, significantly above the NRV recommendations.<sup>82</sup></p> <p>There is a risk that reduced-salt foods will be less appealing to patients who may not be eating well. Given the need to optimise food intake for inpatients, these standards have nominated the NRV upper intake limit value of 2300mg/day as the maximum sodium intake/day, rather than aiming for the lower AI target of 460-920mg/d.</p>

## 2.5 Folic acid and iodine fortification of bread-making wheat flour

### Folate

Food Standards Australia New Zealand (FSANZ) has developed a new mandatory standard for the fortification of cereals and cereal products, which requires that all wheat flour for making bread, with the exception of flour represented as organic, be fortified with folic acid.<sup>83</sup>

The level of fortification required for bread is 2–3mg of folic acid per kilogram of wheat flour. Bread, therefore, contains an average of 120µg of folic acid per 100g (about three slices) in addition to naturally occurring folate.

Note: because of differences in bioavailability 120ug folic acid added to foods provides 200ug Dietary Folate Equivalents (DFE). The RDI is 400ug DFE/day for adults.

In the modelling of the nutrient content of the menus in this document, it has been assumed that all the bread is folate fortified.

### Iodine

From October 2009, a new food standard mandates the use of iodised salt in bread, with salt iodised to an average level of 45mg of iodine per kilogram of salt.<sup>84</sup> Current (baseline) mean iodine intakes range between 94µg/day and 120µg/day, depending on the population group.

Following fortification of bread, the estimated mean intakes range between 133µg/day and 179µg/day, compared with the RDI of 150 µg/day for the reference person.<sup>64</sup>

Currently, 43% of Australians aged two years and over are estimated to have inadequate iodine intake. After fortification, it is estimated less than 5% of Australians will have inadequate iodine intake, so it was felt that these standards did not need to include goals for iodine.

# MINIMUM MENU CHOICE STANDARD

## 3. Menu choice standard

Studies show that choice is a key factor affecting food intake and satisfaction.<sup>4,85</sup> A minimum standard for menu choice helps to ensure patients are provided with a range of foods consistent with the core food group recommendations,<sup>63</sup> consistency of service provision across the State, and equity of access.

The minimum menu choice standard outlined in the following tables specifies the minimum number of choices, serving size and comments appropriate for an adult patient in an acute care hospital. It is divided into foods provided at main meals and those at mid-meals.

The actual number of main meals and menu patterns are not specified, to allow flexibility in menu planning and implementation.

The traditional meal pattern in hospitals has been: breakfast, main meal and other lighter meal, plus three mid-meals. However, it is recognised that other models could also be used to meet the nutrient goals and the minimum menu choice standard; for example, four or five smaller meals a day.<sup>86,87</sup> Section 4 (sample menus) gives one example of an alternative menu plan.

For each menu item, this minimum menu choice standard specifies:

- minimum number of choices
- minimum serve
- menu design comments
- nutritional standards.

Alternative products are specified as Band 1 (high nutrient density) or Band 2 or 3 (lower nutrient density) as defined in the modified version of the Victorian Nutrition Standards,<sup>48</sup> which is set out in Appendix 1.

This menu choice standard is to be considered a minimum. Facilities are encouraged to extend the meal service and offer additional choices.

### 3.1 Menu choice standard – main meals

Menu item	Minimum number of choices	Minimum serve	Menu design comments	Nutritional standards
<b>Fruit</b> Fresh or canned or stewed, dried	3/day	1 medium piece (e.g. apple, pear, small banana), or 5 prunes  120g	Provide a variety of fruit to avoid monotony in the diet. Include seasonal fruit where possible. Cut-up fruit is easier for patients to eat than whole pieces.	In natural fruit juice or water.
<b>Juice</b>	1/day	100mL		100% juice; no added sugar. At least 20mg vitamin C per 100mL.
<b>Cereal – Hot</b> eg porridge, semolina	1/breakfast meal	180g cooked weight		
<b>Cereal – cold</b>	4/breakfast meal	Portion packs where available or 30g		Cereals to contain less than 30g sugars/100g Offer at least 2 varieties of cold cereal with a fibre content of at least 3g total fibre/serve.
<b>Protein source at breakfast</b> Continental breakfast or Traditional cooked	1	125g yoghurt, or 1 egg, or 20g cheese, or 110g baked beans	As the breakfast meal is often well consumed, offering a protein source at this meal can be strategic for nutritionally at-risk patients. Low-protein food, such as spaghetti, tomato and mushrooms, can be offered in addition to enhance variety and reduce monotony.	At least 5g protein per portion (protein equivalent of 1 egg).
<b>Bread</b> Toast / bread or Bread roll	Offered at each main meal. Patients should be able to select up to 2 slices per meal.	1 slice 1 roll (30g)	Choice of white and at least one of wholemeal, wholegrain or multigrain to be available.	<400mg sodium per 100g.
<b>Margarine</b>	1/main meal	1 portion (10g) per 2 slices of bread	Poly- or mono-unsaturated margarine always available. Butter may be offered as an option.  Minimum of 3 choices.	
<b>Spreads</b>	3/breakfast meal	Portion control packs where available	Spreads should include a selection of jams, marmalade, honey and vegemite. Other items such as peanut butter are optional.	Low-joule jam is not necessary for people with diabetes.
<b>Cold beverage – milk</b>	1/meal and at each mid-meal	150mL	Full cream and reduced fat offered. Soy milk to be available on request. Cordial and chocolate drinks optional.	Soy milk to contain at least 100mg calcium/100mL.
<b>Hot beverages</b>	Offered at least 4 times per day at meal or mid-meals.	150mL 15mL milk for hot beverage	Tea and coffee. Decaffeinated and hot chocolate beverages may be offered.	
<b>Sugar and sugar substitute</b>	1 of each/meal when hot beverage served.	Portion control packs	Offer 2 if patient selects cereal and hot beverage at breakfast.	

### 3.1 Menu choice standard – main meals *continued*

Menu item	Minimum number of choices	Minimum serve	Menu design comments	Nutritional standards
<b>Soup</b>	One Band 1 soup to be offered at least once per day. Additional soup of Band 1 or Band 2 may be offered.	180mL	Variety at consecutive meals.	See Appendix 1 for definition of Bands.
<b>Hot dish</b>	Offer hot dishes on at least two meal occasions per day. At each of these meal occasions provide a minimum of 2 hot dishes. At least one hot dish per meal must meet the standard for Band 1 or Band 2 Main dishes – Meat/Poultry/Fish. Where hospitals determine their populations need a routine vegetarian option at each meal, at least one per day should be from Band 1 Vegetarian. All other dishes should meet band 3.		At least 1 main dish per day must be red meat. A variety of meats to be provided for consecutive meals.	At least 1 main dish per day must be red meat. A variety of meats to be provided for consecutive meals. See Appendix 1 for definition of Bands. Use unsaturated fat in the making of main meals, where appropriate. Less than 20% of hot main menu items to have more than 15 g fat per serve. Less than 10% of main menu items to have more than 575mg sodium per serve.
<b>Potato, rice, pasta</b>	2 choices at each meal offering main hot choices. An alternative to potato is offered at least once per day. Rice or pasta should be offered when it would be a typical accompaniment with a meal.	90g		Cook with minimal salt. Use unsaturated fat in all potato recipes.
<b>Vegetables</b>	2 varieties at each meal offering main hot choices (except breakfast).	70g per vegetable portion	Serve at least one red / orange, and one dark green or leafy vegetable per day. Band 3 side salads may be offered as an alternative. Soups can contribute to vegetable requirements if they contain a significant amount of vegetable / serve.	See Appendix 1 for definition of Bands. Cook without added salt. Use unsaturated fat in vegetable recipes.
<b>Sandwich</b>	One Band 1 sandwich offered twice per day.		Offer sandwiches made with white and at least one of wholemeal, wholegrain or multigrain breads.	See Appendix 1 for definition of Bands. Poly- or mono-unsaturated margarine to be used.
<b>Salad as a main meal</b>	One Band 1 or Band 2 salad offered at least once per day.	Minimum of 5 different vegetables with minimum total of 90g	Portion control salad dressings should be offered as an optional choice item.	See Appendix 1 for definition of Bands.
<b>Desserts</b>	Offer desserts at least twice per day, including at least one Band 1 dessert per day.		Repetition of prepared dessert items should be limited to once per week.	See Appendix 1 for definition of Bands. Use unsaturated fat in the making of desserts, where appropriate.

### 3.2 Menu choice standard – mid-meal food items

Menu item	Minimum number of choices	Minimum serve	Menu design comments	Nutritional standards
Plain biscuits or fruit	2 per day	<ul style="list-style-type: none"> <li>Portion control pack containing 2 plain biscuits or 20 g, or</li> <li>1 piece fresh fruit, or</li> <li>Canned fruit portion control pack at least 120g</li> </ul>		Required to meet the energy requirement of the reference person.
High-energy snack	1 per day	Some suggestions are given in Section 3.3	At least two different high energy snacks options should be available each day, with variety from day to day.	Providing at least 500kJ per serve.

### 3.3 High-energy mid-meal snacks

Poor appetite can make it hard for many patients to meet their nutritional requirements in hospital. Up to 70% of patients don't consume the recommended nutrient intake in hospital, despite the menu providing adequate nutrition in theory.<sup>5-12,45</sup> Food eaten at mid-meals can make a significant contribution to the nutritional requirements of poor eaters and other groups with higher energy requirements. The approach of providing small, frequent intakes of food, including snacks, to maximise patient nutrition has been recommended in the UK and advocated in the Scottish standards.<sup>47,89</sup> Studies in Australia and overseas have also shown that providing high-energy snacks can improve patient nutritional intakes in a cost-effective manner.<sup>90-92</sup>

While high-energy mid-meal snacks are often available for patients identified as malnourished, and prescribed a high-protein / high-energy diet, they are not routinely available for all adult inpatients. Since it is common for inpatients to have a poor appetite and to only be able to eat small amounts of food at a time, it is mandatory that at least one high-energy mid-meal be offered to all adult inpatients as part of the standard menu.

A sample list of high-energy mid-meals is provided below. It is a requirement that each high-energy mid-meal provides at least 500kJ per serve.

#### Examples of high-energy snacks

Food	Serve size	Energy (kJ)	Protein (g)
Cheese and biscuits	1 portion each	610	6.6
Chocolate biscuits	2 biscuits	820	2.2
Flavoured milk	150mL	530	5.2
Fruit and nut mix	30g	650	4.2
Fruit cake	50g	720	2.7
Fruit yoghurt	175g	590	7.0
Potato crisps	30g	660	1.9
Shortbread cream biscuits	2 biscuits	798	2.2
Small muffin	55g	860	3.9



# TEST MENUS

## 4. Test menus

To assess the practicality of these standards and their ability to meet nutritional targets, two test menus were developed as examples of a patient selection from a menu meeting these standards, and analysed to compare them with the nutrient requirements of the reference person. Two different menu patterns were designed: a traditional menu with three meals plus three mid-meals, and an alternative plan with four main meals and two mid-meals.

### MENU 1: Traditional menu pattern *(three meals plus three mid-meals)*

Breakfast	110mL orange juice 2 biscuits Weet-Bix™ 5 prunes 150mL reduced-fat milk 1 boiled egg 1 slice wholemeal reduced-salt toast 1 portion reduced salt canola margarine 1 portion jam 150mL coffee + 1 portion sugar
Lunch	180mL minestrone soup Sandwich (2 slices wholemeal bread, 60g tuna, 20g lettuce, mayonnaise) 50g stewed apricots + 60mL reduced fat custard
Dinner	90g lean roast beef 20g tomato-based sauce 90g boiled potato 70g peas 70g carrots 60g chocolate mousse 1 slice wholemeal reduced-salt bread + 1 portion reduced-salt canola margarine 150mL tea + 1 portion whole milk + 1 portion sugar
3 mid-meals	2 cups tea (150mL tea + 1 portion whole milk + 1 portion sugar) 150mL reduced fat milk 1 Granita™ biscuit 1 small fresh apple 2 Vita-wheat™ biscuits + 20g reduced-fat cheddar

## MENU 2: Alternative menu pattern *(four meals plus two mid-meals)*

<b>Breakfast</b>	<p>110mL orange juice                  2 biscuits Weet-Bix™                  5 prunes                  150mL reduced-fat milk                  2 slices fruit toast                  2 portions reduced-salt canola margarine                  150mL coffee + 1 portion sugar</p>
<b>Brunch</b>	<p>170g beef lasagne                  90g side salad + 30mL dressing                  1 slice wholemeal reduced-salt bread + 1 portion reduced-salt canola margarine</p>
<b>Main meal</b>	<p>90g lean roast chicken                  25mL reduced-salt gravy                  90g boiled potato                  70g broccoli                  70g carrots                  50g stewed apricots + 60mL reduced-fat custard                  1 slice wholemeal reduced salt bread + 1 portion reduced-salt canola margarine                  150mL coffee + 1 portion whole milk + 1 portion sugar</p>
<b>Supper</b>	<p>180mL minestrone soup                  1 slice wholemeal reduced salt bread + 1 portion canola margarine                  2 Vita-wheat™ biscuits + 20g reduced-fat cheddar</p>
<b>2 mid-meals</b>	<p>150mL tea + 1 portion whole milk + 1 portion sugar                  150mL reduced-fat flavoured milk                  1 Granita™ biscuit                  1 small fresh apple</p>

## 4.1 Comparison of analysis of test menus to nutrient standards

The results below show it is possible to meet nutrient standards with choices from two menu formats. However, this is only possible if nourishing food choices are included at mid-meals. Without this, the calcium goal, in particular, is difficult to meet. It can also be difficult to meet zinc requirements every day, and these should be assessed on a weekly basis. In the last National Nutrition Survey, the median daily zinc intake in people in the community was only 10.6mg for those aged 45-64 years and 8.8mg for those aged 65 years and over.<sup>65</sup>

Nutrient	Nutrient goal	Menu 1	% Goal	Menu 2	% Goal
Energy kJ	8000	8046	101	9248	116
Protein g	90	108	120	96.5	107
Saturated fat %E	<10	10.0	100	9.6	96
Fibre g	30	34	113	39	129
Vitamin C mg	45	108	240	163	362
Folate µg †	400	493	123	583	145
Calcium mg	1000	1154	115	1250	125
Iron mg	11	16.2	151	14.5	132
Zinc mg	14	14.2	101	10.6	76
Sodium mg	<2300	1908	83	2189	95

† Includes additional folate from fortification of bread

# PART C

## NUTRITION ISSUES FOR PARTICULAR PATIENT GROUPS

As explained in Section 1.3, these standards should form the basis of menu planning for most inpatients. Many therapeutic diets should be able to be based on the general standard menu offerings, using the same menu-planning principles.

These standards do not attempt to describe the nutritional requirements of specialised therapeutic diets. A few general comments on the needs of particular patient groups follow. They provide some background for menu planners and food-service providers, but do not attempt to be comprehensive guidelines.

**Older people** can be in hospital for extended periods with complex medical problems and / or waiting for a place in rehabilitation or aged-care facilities. Older patients often don't eat enough to meet their nutritional requirements.<sup>7,28</sup> For many of these patients, getting them to eat is the problem. Food needs to be tasty and familiar to tempt them. Large meals can be off-putting so more frequent smaller meals and fortified food may be better strategies.<sup>92,93</sup>

**Acutely ill patients** often eat small amounts of food and subsequently are challenged to meet their nutrient requirements. They are frequently prescribed an oral supplement to boost their energy / protein intake.

Patients who require modified diets who are in hospital for longer than five days are also at nutritional risk and are among the most difficult to accommodate with a standard menu. As their specific nutrient needs vary and their appetites are unpredictable, adequate choice and ordering flexibility is important for this group.

The following groups of patients also have particular nutritional issues that require additional consideration in menu planning:

### **Long-stay patients**

- Long-stay patients (eg those in sub-acute rehabilitation units or high-risk pregnancies)
- Menus must meet the goals for all nutrients and provide a range of dishes that are popular and likely to be eaten.
- A menu cycle of appropriate length must be in place to prevent menu fatigue.

### **Maternity patients**

- Lactating women have significantly higher daily RDI requirements for energy (2.0-2.1MJ) and several nutrients, including folate (500µg) and vitamin C (85mg).
- Menus must meet nutrient goals and provide a range of dishes that are popular and likely to be eaten, incorporating contemporary menu choices.
- These women may require more frequent meals / snacks. Access to high-energy / nutrient-dense snacks is particularly important for this group. Depending on in-house food safety procedures, women may be able to access food from pantries without supervision.
- Flexible meal timing and service arrangements are required to complement breastfeeding demands. Meals that can be eaten cold or heated at ward level can improve flexibility.
- Lactating women need access to fluids to meet their increased fluid requirements.
- A short menu cycle with more choices can suit this typically short-stay population.
- Consider the risks associated with Listeria infection for antenatal patients.<sup>94</sup>

## **Mental health patients**

- This group is at significantly higher risk of chronic disease than the general population.
- Based on the diverse patient population in mental health units, the needs of patients with specific morbidities may need to be incorporated into the menu design, including high-fibre and low-energy / nutrient-dense meals.
- As these patients often stay longer in hospital, variety and flexibility are required.
- They frequently have irregular eating patterns. Access to nourishing snacks and finger foods is important and will allow adequate food intake.

## **Vegetarian patients**

- Menus must offer suitable options to meet the goals for all nutrients and provide a choice of suitable options that are popular and likely to be eaten. In particular, appropriate meat and dairy substitutes should be included. Nutrients at risk in this patient group include vitamin B12, calcium, iron, zinc and long-chain n-3 fatty acids.<sup>95</sup>
- To improve iron absorption, vegetarian menus should offer a good source of vitamin C at each meal, eg fruit juice or salad.
- To ensure adequate calcium, some patients will need a cow's milk alternative, such as a calcium-fortified soy milk.

# APPENDIX 1

## THE BANDS – A MODIFIED VERSION

**Note:** *In consultation over the development of these NSW standards, some minor modifications have been made to the original Victorian standards. These are indicated in the following tables in bold.*

The Victorian nutrition standards for menus in hospitals<sup>48</sup> use the concept of Bands as a method of classifying menu items with respect to nutritional content and density. These Bands define nutritional profiles within each menu item category – soup, main dishes (meat and vegetarian), salads, sandwiches, vegetables and desserts – providing manufacturers with a measurable nutritional outcome for their products.

As well as grouping dishes by common nutrient profile, the Bands attempt to reflect foods typically used in the Australian diet to ensure a range of menu items are able to be offered to all patient groups, including acute, sub-acute residents and patients who are frequent patients.

The Bands have been developed to address:

- energy content
- nutrient density
- patient expectations.

For further information, see the section *How to use the standards in menu planning* in the full document.<sup>48</sup>

The remainder of this section defines the nutritional standards for each Band for:

- soup
- main dishes – meat
- main dishes – vegetarian
- salads
- sandwiches
- desserts
- vegetables.

These standards assume a tolerance of +/-10% in both nutrient content and portion size to allow for variations in nutritional analysis and portion size. However, over the whole day, the standard hospital menu is to provide the recommended amount of nutrients defined in these standards.

Nutrient levels in the following tables are specified for the portion size. All examples cited below refer to a specific recipe. Depending on the recipe, the same menu item (e.g. pumpkin soup) can have a different Band allocation. Each facility needs to analyse their recipes and assess Band compliance.



## Soup

Band	Description	Portion size mL	Nutrients per portion size				Examples of typical compliant menu items
			Energy kJ	Protein g	Fat g	Sodium mmol (mg)	
1	Significant nutrient value Represents a substantial part of the meal/daily intake	180	At least 360	At least 5	Max 9	Max 22 (506)	Minestrone, lentil, chicken and sweet corn, and pea and ham
2	Accompaniment for flavour and variety Provides moderate energy but little other nutrients of any significant value	180	At least 180	At least 2	Max 9	Max 27 (621)	Pumpkin, tomato, and potato and leek

Broth is not considered a nutrient source and has not been included as a Band.

Broth can be offered as a fluid source and should be offered where appropriate for fluid and special diets.

## Main dishes – Meat / poultry / fish

Band	Description	Portion size g	Nutrients per portion size				Examples of typical compliant menu items
			Energy kJ	Protein g	Fat g	Sodium mmol (mg)	
1	Predominantly solid / single ingredient	90-110 <sup>1</sup> Fish (min 110g)			Max 10	Max 7 (161) <sup>2</sup>	Roasts, fish
2	Wet dish with high meat content	Total cooked weight of the entire dish at least 120g	At least 700	At least 20	Max 15	Max 20 (460)	Examples include beef stroganoff, pork goulash, chicken and vegetable casserole, Moroccan lamb and cottage pie
3	Fairly even mix of meat and vegetables	Total cooked weight of the entire dish at least 150g	At least 700	At least 10	Max 15	Max 25 (575)	Salmon quiche and tuna mornay, stir fry and chicken risotto

Main dishes (meat) do not include vegetables or starches (eg potato, rice and pasta) accompanying the main meal.

The portion size range above represents the tolerance of +/-10% in portion size noted on the previous page.

Sauces / gravies served with hot main dishes are expected to be not less than 40mL per serve.

<sup>1</sup> While the standards specify a portion size of 100g of cooked meat (edible portion), the impact of factors such as cooking technique on cooked yield is recognised. There is an expectation in the industry that 130g raw meat provides 100g cooked meat and therefore 20-25g protein. Where production techniques result in a cooked yield less than 100g per 130g of raw meat, kitchens and production facilities have the option of confirming the protein content of the edible portion of their cooked product by submitting product samples for chemical analysis. The site dietitian should interpret this analysis or method for suitability. At the same time, the impact of a reduction in edible portion size on plate appearance and patient / resident satisfaction at the site needs to be considered before deciding to reduce the portion sizes.

<sup>2</sup> Corned beef, turkey,<sup>3</sup> ham and cheese are examples of meat items that will not comply with the sodium level specified for any of the Bands. These items are considered to make a valuable contribution to protein and micronutrient intake as well as menu variety and can continue to be included as a non-compliant menu item at a frequency to be determined by the dietitian and based on the patient / resident needs. These items are, however, expected to meet all the other nutrient criteria, except for sodium, in their relevant category.

Some hospitals may offer non-compliant main dishes – meat, such as meat pies or sausage rolls, on their menu at pre-determined frequency. While these items are of poor nutritional quality, facilities may choose to offer these items for popularity and variety.

<sup>3</sup> At the time of this document being written, turkey was only available as a high sodium product.

## Main dishes – Vegetarian\*

Band	Description	Portion size g	Nutrients per portion size				Examples of typical compliant menu items
			Energy kJ	Protein g	Fat g	Sodium mmol (mg)	
1	Higher protein content	120 cooked weight	At least 700	At least 15	Max 25	Max 25 mmol (575mg)	Macaroni and cheese, lentil and tofu curry and spinach and ricotta slice
2	Lower protein content	120 cooked weight	At least 700	At least 8	Max 25	Max 25 mmol (575mg)	Vegetable moussaka, vegetable patty, and ravioli with tomato sauce

\* Not necessarily suitable for vegan diets

Vegetarian dishes do not include vegetables or starches (eg potato, rice and pasta) accompanying the main meal.

Portion sizes for vegetarian menu items will vary considerably.

As a general guide, an assessment of portion sizes undertaken during the development of this document suggests:

- Portions of vegetarian paella and nasi goreng were acceptable at 160g.
- Portions of flan and vegetable cottage pie were acceptable at 180g.

## Salads

Band	Description	Portion size g	Nutrients per portion size				Examples of typical compliant menu items
			Energy kJ	Protein g	Fat g	Sodium mmol (mg)	
1	Includes meat such as roasts and fish	Meat at least 90-110g See below for starch and salad components		At least 20	Max 30		Roast beef salad and tuna salad
2	Moderate protein content	Meat at least 90g See below for starch and salad components	At least 900 Including starch component	At least 10	Max 30	Max (575) <sup>1</sup>	Quiche and salad, egg salad
3	Minimal nutrient value. Included for variety.	At least 5 vegetables/fruit with a minimum of 90g total weight	At least 100				Side salad, Greek salad

The nutritional analysis for each Band excludes salad dressing (eg portion control pack).

The nutritional analysis for each Band does include salad dressing used in composite salads.

Starch component (potato, rice, beans, bread or crackers) must be equivalent to 1 slice of bread (15-30g CHO / serve).

Salad component (excluding the starch) must be a minimum of 5 vegetables / fruit with a minimum of 90g total weight.

<sup>1</sup> Corned beef, turkey, ham and cheese are examples of meat items that will not comply with the sodium level specified for any of the Bands.

These items are considered to make a valuable contribution to protein and micronutrient intake as well as menu variety and can continue to be included as a non-compliant menu item at a frequency to be determined by the dietitian and based on the patient / resident needs.

These items are, however, expected to meet all the other nutrient criteria, except for sodium, in their relevant category.

## Sandwiches

Band	Description	Portion size Points and g filling	Nutrients per portion size				Examples of typical compliant menu items
			Energy kJ	Protein g	Fat g	Sodium mmol (mg)	
1	Significant nutrient value May represent a substantial part of the meal/daily intake	4 points The lean meat component must be greater than 50g/sandwich; cheese must be greater than 21g/sandwich.	At least 800 including starch component	At least 10	<b>None specified</b>	Max 25 (575) <sup>1</sup>	Egg and lettuce sandwich and roast beef sandwich
2	Minimal protein value Included for a snack or light meal	4 points	At least 500 including starch component	At least 3	None specified	None specified	Assorted sandwiches and salad sandwich

<sup>1</sup> Corned beef, turkey, ham and cheese are examples of meat items that will not comply with the sodium level specified for any of the Bands. These items are considered to make a valuable contribution to protein and micronutrient intake as well as menu variety and can continue to be included as a non-compliant menu item at a frequency to be determined by the dietitian and based on the patient/resident needs. These items are, however, expected to meet all the other nutrient criteria, except for sodium, in their relevant category.

## Desserts

Band	Description	Portion size g	Nutrients per portion size				Examples of typical compliant menu items
			Energy kJ	Protein g	Fat g	Calcium mg	
1	Moderate energy, high protein and calcium content May represent a substantial part of the meal/daily intake	90-120	At least 500	At least 4	<b>Not specified</b>	At least 100	Baked custard and cheesecake
2	Significant level of energy and protein May represent a substantial part of the meal/daily intake	90-120	At least 800	At least 4	Not specified	Not specified	Fruit-based desserts
3	Varying nutrient value. Provide moderate energy but little other nutrients of any significant value Included for variety and popularity	At least 80 Excludes Mousse and whips which should weigh at least 50g	At least 300	Not specified	<b>Not specified</b>	Not specified	Fruit crumble, mousse, plain ice-cream

Custards and sauces are additional dessert components and should not be less than 60mL.

## Vegetables

Potato, rice, pasta	Potato OR rice OR pasta not less than 90g cooked weight. No added salt unless a multiple ingredient recipe is involved <sup>1</sup> No added fat unless a multiple ingredient recipe is involved <sup>1</sup>
Vegetables	2 vegetables (total 140g cooked weight) exclusive of vegetables in the main dish. No added salt unless a multiple ingredient recipe is involved <sup>2</sup> No added fat unless a multiple ingredient recipe is involved <sup>2</sup> Two contrasting colours.

<sup>1</sup> Vegetables include vegetables mixed together, eg peas and corn; sweet potato and parsnip.

<sup>2</sup> Multiple ingredient vegetables have the potential to contribute to energy, protein and micronutrient levels. Examples of multiple ingredient vegetables include mashed potatoes, ratatouille and potato bake.

# ADDENDUM

NSW Health’s Nutrition and Food Committee asked the ACI Nutrition Standards Reference Group to consider the following issues and recommendations to modify the *Nutrition standards for adult inpatients in NSW hospitals* proposed by Health Support Services. The following modifications were accepted on 27 August 2010.

Issue	Reference Group response
<p>Section 3.1 Menu choice standard – main meals Hot dish (p.14)</p> <p><b>Issue:</b> Nutritional standards column states: “Less than 20% of main menu items to have more than 15g fat per serve.”</p> <p><b>Recommend:</b> Confirm that this refers to hot menu items.</p>	<p><b>Accepted</b></p> <p>P14 now reads: <i>“Less than 20% of hot main menu items to have more than 15 g fat per serve”.</i></p>
<p>Vegetables (p.14)</p> <p><b>Issue:</b> Serve size min 70g, in contrast to Appendix 1 (p.26) which states: “2 vegetables (total 120-140g cooked weight)” indicating that 60g serve is suitable.</p> <p><b>Recommend:</b> Modify p.26 to state “2 vegetables (total 140g cooked weight)”.</p>	<p><b>Accepted</b></p> <p>p. 26 now reads: <i>“2 vegetables (total 140g cooked weight) exclusive of vegetables in the Main Dish.”</i></p>
<p>Section 3.2 Menu choice standard – mid-meals (p.15) Plain biscuits or fruit</p> <p><b>Issue:</b> Omission of canned fruit from the Standard serve column.</p> <p><b>Recommend:</b> Inclusion of canned fruit as suitable in the Standard serve section (in addition to fresh fruit).</p>	<p><b>Accepted</b></p> <p>p.15 now reads: <i>“Portion control pack containing 2 plain biscuits or 20g, or 1 piece fresh fruit, or Canned fruit portion control pack at least 120g”.</i></p>

Issue	Reference Group response
<p>Appendix 1: The Bands</p> <p><b>Issue:</b> “These standards assume a tolerance of +/- 10% in both nutrient content and portion size...” (p.22), also referred to on p. 26 in ‘Main dishes – meat’ section). This statement makes the standards difficult to follow since it allows serve sizes and nutrient content to vary significantly. This is of particular concern when considering sodium, upper limit of 575mg for some items then becomes 632mg – there is no way that the menu can meet the sodium limit of 2300mg/day if this 10% rule is applied to sodium. Similarly in the case of roast meats the target serve size is 90-110g, inclusion of +/-10% allows this to become 81-121g, at the lower level of 81g menus will struggle to meet the energy, protein and iron goals.</p> <p><b>Recommend:</b> Removal of this +/-10% rule on p.22 &amp; 23 and replacing with a general statement in Part B section 2, Nutrient goals (p. 6), end of paragraph 1: “The standard hospital menu should be capable of meeting the nutrient goals, allowing flexibility of +/- 10% as follows:</p> <p>Energy and protein on a daily basis</p> <p>Micronutrients (vitamins and minerals) averaged on a weekly basis”.</p> <p>It is acknowledged that nutritional analysis may vary depending on method used, but this is the case for commercial products too. In addition, we do not code compliance with a tolerance of +/- 10% from the nutrition label. Usually the discretion of the dietitian making decisions about coding is relied upon, eg if the upper sodium limit of 575mg and an item has 580mg sodium it would usually be coded as compliant.</p>	<p>The reference group agreed that the statement below was ambiguous.</p> <p><i>“These standards assume a tolerance of +/-10% in both nutrient content and portion size to allow for variations in nutritional analysis and portion size.”</i></p> <p>P.22 now reads:</p> <p><i>“These standards assume a tolerance of +/-10% in both nutrient content and portion size of each dish to allow for variations in nutritional analysis and portion size.”</i></p> <p><i>“However, over the whole day, the standard hospital menu is to provide the recommended amount of nutrients defined in these standards”.</i></p>
<p>Main dishes – meat / poultry / fish (p.23)</p> <p><b>Issue:</b> Current portion sizes for bands 2 &amp; 3</p> <p><b>Recommend:</b> Reduce portion size criteria to “Total cooked weight of the dish 120g”, instead of 150g.</p> <p>Remove “Edible meat component 90-110g” for Band 2.</p>	<p><b>Accepted</b></p> <p>p.23 now reads:</p> <p><i>“Total cooked weight of entire dish at least 120g”.</i></p>
<p><b>Issue:</b> Energy and protein criteria for Band 1 – as a single ingredient i.e. roast meat, grill or fish piece it is not always possible to meet the energy and protein criteria, as the energy and protein criteria will be dependent on both the serve size and nutrient analysis of the piece of meat. E.g fish pieces are 110g but contain 480kJ and 23g protein and so don’t meet all the criteria for Band 1.</p> <p><b>Recommend:</b> Band 1 meat/poultry/fish to contain only a suggested serve size.</p>	<p><b>Accepted</b></p> <p>p.23 now reads:</p> <p><i>“Suggested serve size 90-110g”</i></p> <p><i>“Fish serve to be a minimum of 110g”</i></p> <p>Remove energy and protein minimums as redundant.</p>
<p><b>Issue:</b> Band 3 – carbohydrate maximum per serve. This criteria does not appear to serve any purpose.</p> <p><b>Recommend:</b> Removal of max 40g carbohydrate per serve limit for Band 3.</p>	<p><b>Accepted</b></p> <p>Remove “Max 40g carbohydrate/serve”</p>
<p>Main dishes – vegetarian (p.24)</p> <p><b>Issue:</b> Current portion sizes for bands 1 and 2</p> <p><b>Recommend:</b> Reduction of portion size criteria to “Portion size minimum 120g” as currently some suitable vegetarian choices are suitable but excluded on the basis of this serve size criteria.</p>	<p><b>Accepted</b></p> <p>Minimum portion size reduced to 120g cooked weight as nutrient criteria will ensure adequate energy and protein.</p>

Issue	Reference Group response
<p>Salads (p.24)</p> <p><b>Issue:</b> Inclusion of portion sizes for bands 1 and 2 meat portion</p> <p><b>Recommend:</b> Removal of portion size criteria as the nutrient criteria will ensure adequate protein in the dish.</p>	<p><b>Accepted</b></p> <p>Remove portion size criteria as nutrient criteria will ensure adequate protein.</p>
<p><b>Issue:</b> Statement that “Salads require 90g starch or must contain 15-30g CHO.” (in fine print). All SESIAHS and NSCCAHS salads have only 40g legumes yet still meet the 15g CHO minimum criteria.</p> <p><b>Recommend:</b> Remove requirement for starch component to weigh 90g as it is misleading and may cause confusion. Statement on p.24 in fine print under Salads should say: “Salads must contain 15-30g CHO.”</p>	<p><b>Accepted</b></p> <p>p.24 now reads:  <i>“Starch component (potato, rice, beans, bread or crackers) must be equivalent to 1 slice of bread (15-30g CHO/serve).”</i></p>
<p>Desserts (p.25)</p> <p><b>Issue:</b> Current portion sizes for bands 1, 2 and 3</p> <p><b>Recommend:</b> Reduce portion size criteria to 80g minimum for Bands 1 and 2. Reduce weight of mousse and whips to 50g, also include icecream in this category. In practice the current portion size criteria exclude many common and popular desserts from the Bands altogether eg ice-cream provides 400kJ but only weighs 50g and so does not fit into Band 3.</p>	<p><b>Not accepted: Band 1 and 2</b></p> <p>Desserts are well consumed and the majority of desserts are &gt;90g.</p> <p><b>Accepted: Band 3</b></p> <p>Reduce Dessert Band 3 to 50g minimum.</p>

# ABBREVIATIONS

<b>%E</b>	percentage of energy
<b>AI</b>	adequate intake
<b>ALOS</b>	average length of stay
<b>BAPEN</b>	British Association for Parenteral and Enteral Nutrition
<b>DFE</b>	dietary folate equivalents
<b>kJ</b>	kilojoules
<b>MJ</b>	megajoules
<b>NHMRC</b>	National Health and Medical Research Council
<b>NICE</b>	National Institute for Health and Clinical Excellence
<b>NRV</b>	nutrient reference values
<b>PAL</b>	physical activity level
<b>RDI</b>	Recommended Dietary Intake
<b>WHO</b>	World Health Organisation



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