



ACI NSW Agency
for Clinical
Innovation

Nutrition Standards **FOR PAEDIATRIC INPATIENTS IN NSW HOSPITALS**



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The Agency for Clinical Innovation (ACI) Nutrition in Hospitals Group commissioned Peter Williams, Associate Professor, Nutrition and Dietetics, University of Wollongong, to prepare the *Nutrition standards for adult inpatients in NSW hospitals*.

A significant portion of the adult standards has been adopted or adapted to the paediatric context.

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All staff and departments from LHDs who submitted comments during the formal consultation process are gratefully acknowledged.

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 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 February 2010, a paediatric reference group was formed to develop *Nutrition standards for paediatric inpatients in NSW hospitals*. This is a companion document to the adult standards, which were developed by Peter Williams, Associate Professor, Nutrition and Dietetics, University of Wollongong, and members of the Adult Nutrition Standards Steering Group.

On behalf of the ACI, I thank Prue Watson and Helen Kepreotes (chairs), members of the Paediatric Nutrition Standards Reference Group and Helen Jackson (co-chair Nutrition in Hospitals Group) for their dedication and expertise in developing these nutrition standards.



Dr Hunter Watt

Chief Executive and Co-Chair, Nutrition in Hospitals Group

Agency for Clinical Innovation

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PART A

INTRODUCTION AND PROCESS

1. Introduction to the paediatric standards

Food served to paediatric inpatients is an important aspect of their clinical management due to their specific nutritional requirements, which differ from adults.

This document has been developed as a companion to the NSW Health *Nutrition standards for adult inpatients in NSW hospitals*¹, and is presented in a similar format for ease of use.

All the concerns outlined in the adult standards about the need for good-quality food and fluids apply to paediatric inpatients.

The levels of plate waste and the inter-related factors causing poor nutrition in adult inpatients also apply to the paediatric population, whether they are admitted to the local, district hospital or a tertiary-referral, paediatric hospital.

The management and feeding of paediatric patients presents unique challenges. Infants and children need consistently adequate nutrition so they can grow and reach their genetic potential. Also, they have lower energy stores than adults but use energy at a higher rate, so they are unable to go without food for as long as adults.²

Each stage of development presents different nutritional requirements. These are reflected in the National Health and Medical Research Council (NHMRC) *Nutrient reference standards for Australia and New Zealand*. These standards include the Recommended Dietary Intakes (RDIs)³, which are the basis of the goals set for these standards.

Infants, children and young adults are particularly vulnerable to undernutrition due to their differing stages of physical and cognitive development. Infants and very young children are not able to reason and communicate their needs and preferences. The child's parents are usually their advocates, but may be highly anxious while their child is ill.

Food is often a parent's focus of support and healing for their sick child in an unfamiliar and "hostile" environment. Sometimes parents are reassured if their child "just eats something".

Nutritional issues for children in the community include obesity and poor intake of fruits, vegetables and micronutrients such as calcium. These issues indicate it is important for NSW Health hospitals to model and provide a healthy diet for paediatric inpatients.^{4,5}

Children should be able to eat sufficient food to meet their nutritional requirements. It is important that paediatric meals are nutritious, appetising and tempting to children. Child-friendly food should have a balance between healthy options and familiar or favourite foods. A range of appropriate choices should be available on the paediatric menu.

A recent study in a NSW paediatric tertiary hospital found 17% of paediatric hospital inpatients were underweight for age, wasted or stunted, and 22% of inpatients were overweight or obese.⁶ These findings are consistent with research that has shown infants and children under five years are at the greatest risk of malnutrition.^{7,8,9} The nutritional status of patients can deteriorate the longer they stay in hospital.^{7,8}

Undernutrition in paediatric inpatients can cause a wide range of adverse consequences.⁸

For the individual:

- faltering growth, poor weight gain
- delayed wound healing
- impaired neurodevelopment
- 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, crying, difficult to sooth, irritability
- missed learning opportunities, impaired integration in child's community.

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 their individual nutrient requirements. These paediatric 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 (or their parents) to select food that satisfies their nutrient requirements, is appropriate for their stage of development, and enhances their experience in hospital. They do this by:

1. providing a sound nutritional basis for standard hospital menu
2. 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
- food service that meets the nutritional needs of their patients, including specific patient groups
- a menu format and level of choice consistent with their patient profile.

1.2 Standards development process

The *Nutrition standards for paediatric inpatients in NSW hospitals* is a companion document to the *Nutrition standards for adult inpatients in NSW hospitals*. The adult standards were developed by building on previous policy documents in NSW and other Australian states, to promote consistency where possible and facilitate the development of national hospital menu standards.

They also aim to provide consistent guidelines to food manufacturers who 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).

In addition to the references cited in the adult standards document (46–51), the paediatric-specific documents relevant to the development of these standards are:

- Agency for Clinical Innovation. Nutrition standards for adult inpatients in NSW hospitals, 2011¹
- NHS Estates, UK Department of Health. Better Hospital Food: Catering services for children and young adults, 2003²
- National Health and Medical Research Council. Nutrient reference values for Australia and New Zealand, 2006³
- Department of Health and Ageing. Australian national children's nutrition and physical activity survey, main findings, 2007⁴
- National Health and Medical Research Council. Food for Health: Dietary guidelines for children and adolescents in Australia: A guide to healthy eating, 2003.⁵

1.3 Nutritional profile of NSW hospital paediatric inpatients

There are four broad categories of hospital 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
 - 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
 - previous unexplained or unintentional weight loss
 - physical difficulty eating and / or drinking
 - acute or chronic illness or medical treatments affecting appetite and food intake
 - cognitive and communication difficulties, creating difficulties with ordering appropriate food and fluids. (A higher proportion of the paediatric patient group fall into this category).
3. Patients with high nutritional needs, including those:
 - with increased nutritional requirements due to cachexia, trauma, surgery and / or burns
 - failing to thrive.
4. Patients with special nutritional needs, including those:
 - with cultural, religious dietary needs and practices (such as Halal and Kosher meals)
 - requiring therapeutic diets due to specific diseases
 - 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 paediatric patients (0–18 years) in hospital. This includes patients who are nutritionally well and patients who are nutritionally at risk.

Infants

Breastfeeding is the biological norm and most beneficial method for feeding infants with immediate and long-term health outcomes for mother and infant and is to be actively promoted, protected and supported by the NSW Health system. (NSW Health Policy PD2006_012).¹⁰

Breastfeeding has many nutritional and health benefits, which extend from birth to later life. As stated in the World Health Organisation (WHO) Global Strategy on Infant and Young Child Feeding (WHA55 A55/15, paragraph 10).¹¹

“Breastfeeding is an unequalled way of providing ideal food for the healthy growth and development of infants; it is also an integral part of the reproductive process with important implications for the health of mothers. As a global public health recommendation, infants should be exclusively breastfed for the first six months of life to achieve optimal growth, development and health. Thereafter, to meet their evolving nutritional requirements, infants should receive nutritionally adequate and safe complementary foods while breastfeeding continues for up to two years of age or beyond. Exclusive breastfeeding from birth is possible except for a few medical conditions, and unrestricted exclusive breastfeeding results in ample milk production.”

If not breastfed, infant formula is the main source of nutrition for infants up to six months of age. This infant formula must comply with the Australia and New Zealand Food Standard Code for infant formula products.¹⁶ Breastmilk or commercial infant formula continues as the predominant source of nutrition until at least 12 months of age. WHO recommends infants should receive nutritionally adequate and safe complementary foods while breastfeeding continues for up to two years of age or beyond.¹¹

Complementary solids are introduced at around six months and not before four months of age.¹² Infants require texture-modified foods (strained, puree, cut up) during the transition to family meals.

Patients with high nutritional needs

These patients may require additional energy, protein and other nutrients to those specified in the nutrient goals.

Depending on their age, the standard menu may meet the nutritional needs of these patients if they have a good appetite. However, patients with higher nutritional needs typically have fickle appetites – simply providing more food at main meals is not an effective way to meet their requirements. Toddlers and young children can be particularly fussy when they are in unfamiliar environments and out of their usual routine.

Flexibility – large serves, additional foods and familiar or child-friendly foods – may help meet these demands. The use of fortified dishes and supplements and nutrient-dense snacks is another practical option.¹¹⁻¹⁴

If the parent / carer is not present at mealtimes, the child may need help to eat. Those with poor appetite will require other strategies to meet their additional needs (see Section 3.3).

Patients with special nutritional and feeding needs

This varied group 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.¹⁵

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 paediatric 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

Consistent with the *Nutrition standards for adult inpatients in NSW hospitals*, the following principles underpin the provision of a paediatric patient-focused menu / meal service:

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 **developmental, psychosocial, cultural and religious** needs of patients.
4. The menu design and choices offered will maximise the opportunities for patients to consume the age-appropriate **number of serves from each of the core food groups**.⁵
5. The NHMRC's *Nutrient reference values for Australia and New Zealand* ³ 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 **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 and fluid. Unless there are clear clinical indicators, **oral supplements** should not be a substitute for food or be relied on to achieve adequate nutrition. (Oral supplements may be either nutrition formulae or vitamin and mineral supplements for children over the age of one)
8. Within a meal and over the day, **variety** with respect to food colour, texture, taste, aroma and appearance will be offered to patients.
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 of paediatric patients.

This model outlines nutritional best practice in institutional food service for paediatrics in NSW.

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 the standard menu should provide. This will enable the majority of patients to meet their individual nutrient requirements.

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

In assessing selective 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 a main meal for children 9–13 years: one main course with vegetables, one dessert, bread and spreads and a milk beverage).

Due to children's increased requirements for growth and development, the standard paediatric menu needs to meet energy, protein, calcium and fluid on a daily basis, and other nutrients, particularly iron, on a weekly basis.

2.1 Paediatric considerations

Healthcare facilities should provide age-appropriate food and texture that is appropriate to the various stages of growth and development. There is no single paediatric reference person because different ages and stages of development need to be considered. There may be individual variation in reaching developmental and behavioural milestones, with possible regression occurring with hospitalisation (eg burns patients). The following table provides a guide to the stages of development relevant to food provision.

Age	Developmental and behavioural considerations for food provision
Infants 0–6 months	Breastmilk or commercial infant formula is the main source of nutrition. Single-ingredient, texture-modified food (eg pureed food) is required when solids are introduced. This should not be available before four months of age.
Infants 7–12 months	Breastmilk or formula continues as the main source of nutrition. Take care to choose food that is suitable for the child's age and stage of development. Food texture progresses from puree, mashed and cut-up, to finger food. Many infants will commonly eat a variety of these textures.
1–3 years	Breastfeeding can continue for up to two years of age. A wide range of textures, including finger foods is needed. A wide range of foods and snacks contribute significantly to nutrient intake because of the wide variation in the amount of food eaten at different mealtimes. Typically, food will need to be cut up.
4–8 years	A wide range of foods and snacks contribute significantly to nutrient intake.
9–13 years	Growth spurts result in increased nutritional demands.
14–18 years	Growth spurts result in increased nutritional demands.

2.2 Method for developing paediatric nutrient goals

The theoretical considerations used to develop the nutrient goals for the adult standards¹ also apply to these companion paediatric standards.

Without a paediatric Reference Person, the NHMRC Nutrient Reference Values (NRVs) age groups were used as a basis for the nutrient goals.³ As each age and gender group has different needs for growth and development, the goals were divided into five groups: infants; children 1–3 years; children 4–8 years; children 9–13 years and children 14–18 years. Nutrient goals were based on the NHMRC NRVs. Where available, the RDI values were used otherwise the Adequate Intake (AI) values were used. The Upper Level of Intake (UL) value was used for sodium.

For nutrient goals where there are gender differences in an age group, the higher value has been adopted to ensure the nutrient needs of all children and adolescents in the age group are met. These values provide a high level of assurance that most children admitted to NSW Health hospitals will be provided with adequate food and nutrition to meet their needs from the standard menu.

2.3 Macronutrient goals

TABLE 1: Macronutrient goals, strategies and rationale

Nutrient	Age group	Goal	Strategies	Rationale
Energy	Infants 0-6 months		Breastmilk or an infant formula is the major contributor to the diet.	Breastfeeding is the biological norm and most beneficial method for feeding infants with immediate and long-term health outcomes for mother and infant and is to be actively promoted, protected and supported by the NSW Health system. (NSW Health Policy PD2006_012). ¹⁰
	Infants 7-12 months	3500kJ/day	Breastfeeding can continue for up to two years of age. ¹¹ The menu should provide a range of food types and textures to suit the varying developmental stages of infants within this age range while meeting energy requirements. An infant (7-12 months) will receive ~ 1700kJ/day from either breastmilk or infant formula. The menu should provide an additional 1800kJ/day to meet the balance of energy requirements.	Breastmilk remains the dominant source of nutrition for children in this age group, as their eating skills develop. Age-appropriate infant formula should be provided for those infants unable to be breastfed or receive expressed human milk. The energy goal is based on the estimated energy requirement for a 12 month old male infant and an estimated breastmilk or infant formula intake of 600mL/day providing ~1700kJ. ³ This goal has been set to meet the requirements for all infants in this age group.
Protein	Children 1-3 years	4200kJ/day	Breastfeeding can continue for up to two years of age. Nutritionally adequate and safe complementary foods should be offered. ¹¹	The following applies to all children over one year of age. Insufficient energy intake is a common cause of poor nutritional status. Low energy intake reduces the effectiveness of treatment and further delays recovery. ²
	Children 4-8 years	5500kJ/day	The following applies to all children over one year of age.	Energy goals are based on the Estimated Energy Requirement for the oldest child in each age group with a PAL of 1.2 (bed rest) and no disease factor, to meet the requirements of most children in each age group. ³
	Children 9-13 years	7500kJ/day	To meet the varying energy requirements of the range of age groups, main menu items of adequate energy density and different serving sizes should be available. A range of other child-friendly age appropriate nutrient-dense foods (eg cheese, eggs, milk and baked beans) and desserts should also be offered on the menu.	In early childhood (up to five years), it is common for children to have varying appetites and growth rates. Small, frequent, energy-dense meals from the different food groups are important for meeting energy requirements. ⁵
	Adolescents 14-18 years	9400kJ/day	Mid-meal snacks, such as plain / flavoured milk, yoghurt, cheese, fruit and sandwiches, should be available.	Older children may have higher appetites and rely on large serves and high-energy snacks to help satisfy appetite and higher energy requirements (eg boys, 14-18 years).
				Breastmilk or an infant formula is the major source of protein to the diet.
	Infants 0-6 months	10g (AI)(1.43g/kg)	Introduction of foods containing protein can start at around six months. These foods can include meat, fish, chicken, eggs, custard and yoghurt. ¹²	The NRVs have set an AI for infants aged 0-6 months based on the average intake of breastmilk (0.78L/day) multiplied by the average concentration of protein in breastmilk 12.7g/L. ³
	Infants 7-12 months	14g (AI)(1.60g/kg)		The NRVs have set an AI for infants aged 7-12 months based on multiplying the concentration of protein in breast milk at this stage of lactation of 11g/L by the volume of breast milk (0.6L) and adding an allowance for complementary foods of 7.1g/day. ³

TABLE 1: Macronutrient goals, strategies and rationale *continued*

Nutrient	Age group	Goal	Strategies	Rationale
Protein	Children 1-3 years	14g/day (1.08g/kg)	Breastfeeding can continue for up to two years of age. ¹¹ The menu should offer high-quality protein at each main meal, such as meat, poultry, fish, legumes, milk, cheese and yoghurt.	Protein is required to synthesise enzymes and hormones that regulate body processes and to stimulate growth. Adequate protein intake may be difficult to achieve if chewing skills are limited and / or milk intake is minimal.
	Children 4-8 years	20g/day (0.91g/kg)	When including fish as a protein source, consider the risk of choking on fish bones.	Protein goals are based on the RDI for the oldest child in each age group to meet the requirements of all children in each age group.
	Children 9-13 years	40g/day (0.94g/kg)	If fish is used to meet recommended intakes of protein, consider the mercury content of fish. Refer to Section 2.5.	
	Adolescents 14-18 years	65g/day (0.99g/kg)	The menu must be adequate to allow those with small appetite / intake to achieve the recommended daily protein intake. There need to be mechanisms for some patients to achieve higher protein intakes. Suggestions include high-protein foods and fluids such as nutrient-dense soups, desserts and snacks.	Dietary 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. Growth patterns of adolescents generate higher protein needs.
Fat	Infants 0-6 months		Breastmilk or an infant formula is the major contributor of fat to the diet.	Breastfeeding is the biological norm and most beneficial method for feeding infants with immediate and long-term health outcomes for mother and infant and is to be actively promoted, protected and supported by the NSW Health system. NSW Health Policy PD2006_012. ¹⁰
	All other age groups	Menu items should not 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. ¹⁷ Choices of mono- or poly-unsaturated spreads are to be available. There are limited data on the composition of the omega 3 content of foods. Consequently, the menu should include 2-3 serves of fish per week to provide omega 3 fatty acids. Consider the mercury content of fish. Refer to Section 2.5.	Restriction of dietary fat is not recommended during the first two years of life because it may compromise the intake of energy and essential fatty acids and adversely affect growth, development and the myelination of the central nervous system. ⁵ Low-fat diets are not appropriate for a large proportion of hospital patients who require diets with increased energy and nutrient density. ¹⁸ Total fat is no longer recognised as a risk factor for cardiovascular disease, ¹⁹ 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, such as those with cardiovascular disease or obesity. The Heart Foundation now recommends a target of <7% energy from saturated fat. ¹⁹ Slightly higher levels – up to 11% energy – are unlikely to be of nutritional concern for most inpatients. ²⁰
Fibre	Infants 0-6 months	No AI has been set	If complementary foods are offered from six month onwards, fruits, vegetables and easily digested cereals such as rice cereal are suitable.	Breastfeeding is the biological norm and most beneficial method for feeding infants with immediate and long-term health outcomes for mother and infant and is to be actively promoted, protected and supported by the NSW Health system. NSW Health Policy PD2006_012. ¹⁰
	Infants 7-12 months			There are no functional criteria for dietary fibre for infants. Breastmilk contains no dietary fibre and as such no AI is set. ³

TABLE 1: Macronutrient goals, strategies and rationale continued

Nutrient	Age group	Goal	Strategies	Rationale
Fibre	Children 1-3 years	14g/day	The menu should offer high-fibre foods from a range of sources including: <ul style="list-style-type: none"> cold breakfast cereals: at least 50% provide at least 3g fibre per serve wholemeal / multigrain bread at all meals as an alternative to white fruit (fresh, canned) and / or vegetables at all meals. 	Adequate dietary fibre is essential for the normal functioning of the digestive tract. ²¹ 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. Adequate fibre can reduce the need for interventions. ²² The action of fibre in preventing constipation depends on an adequate fluid intake.
	Children 4-8 years	18g/day		
	Children 9-13 years	24g/day		The NRVs have set an AI at the median for dietary fibre intake in Australia and New Zealand for children of these ages based on the national dietary surveys and allowances for the different age / gender groups. ³
	Adolescents 14-18 years	28g/day		Fibre goals are based on the AI for the oldest child in each age group to meet the requirements of all children in each age group.
Fluid	Infants 0-6 months	0.7L/day	Infants 0-6 months should receive their full fluid requirements from breastmilk or age-appropriate infant formula. Water is not required, but can be given as cooled boiled water or sterile water.	Breastfeeding is the biological norm and most beneficial method for feeding infants with immediate and long-term health outcomes for mother and infant and is to be actively promoted, protected and supported by the NSW Health system. NSW Health Policy PD2006_012. ¹⁰
	Infants 7-12 months	0.7L/day	Infants 7-12 months receive the majority of their fluid requirements from breastmilk or infant formula. Water can be given.	The NRVs have set AIs for water for the range of ages of children. These include plain drinking water, milk and other drinks, depending on appropriateness for age. Cow's milk should not be given as the major nutrient source until one year of age. ³ Juice is not recommended as a source of fluid under one year of age.
	Children 1-3 years	1.0L/day	Ideally fluid intake should consist of milk and water with limited amounts of juice, cordials and soft drinks (both sugar and artificially sweetened). Water should be readily available on the ward.	Fluid goals are based on the AI for the oldest child in each age group to meet the requirements of all children in each age group. ³
	Children 4-8 years	1.2L/day	Breastfeeding can continue for up to two years of age. ¹¹	Excess juice intakes are associated with excess energy intake across all age groups and risk of osmotic diarrhoea in toddlers. ⁵ Caffeinated drinks are not appropriate for children.
	Children 9-13 years	1.6L/day	Cow's milk, plain or flavoured, should be offered at every meal, as well as between meals. Cow's milk should be full cream up to two years of age. From two years onwards, reduced-fat cow's milk is suitable. ⁵	Care should be taken with any hot fluids to prevent burns. Cordial and soft drinks are not appropriate for children due to dental caries and excessive energy intake without nutrients.
	Adolescents 14-18 years	1.9L/day	Soy milk, if offered, should be fortified with calcium $\geq 100\text{mg}/100\text{mL}$. Other milk alternatives, such as rice or oat drinks, are unlikely to be nutritionally comparable to milk and should not be offered as a substitute.	Artificially sweetened soft drinks and confectionery products provide no essential nutrients and may displace foods of nutritional value.
			For children aged 1-6 years, juice should be limited to 150mL/day. For children aged 7-18 years, juice should be limited to 240-360mL/day. Tea and coffee are not appropriate for children and should not be offered. Cordial / soft drinks are not recommended (unless clinically indicated, eg fluid diets).	

2.4 Micronutrient goals

TABLE 2: Micronutrient goals, strategies and rationale

Nutrient	Age group	Goal	Strategies	Rationale
Vitamin C	Infants 0–6 months	25mg/day (AI)	Breastmilk or infant formula is the main source of vitamin C for infants.	Breastmilk or infant formula is the main source of nutrition for infants up to 12 months. Supplementation is not necessary if healthy intakes are consumed.
	Infants 7–12 months	30mg/day (AI)		There have been no reported cases of clinical scurvy in fully breastfed infants, even when mother's intake is low. ³ Cereal-based food for infants may contain added vitamin C to a maximum level of 90mg/100g on a moisture-free basis (FSANZ). ¹⁶
Folate	Children 1–3 years	35mg/day	Include specific sources of vitamin C (fruit, juices and salads) in the standard menu.	As there are large losses of vitamin C in food service handling, processing and cooking, specific uncooked sources of vitamin C should be available. ¹⁸
	Children 4–8 years	35mg/day	Breastfeeding continues for up to two years of age or beyond. ¹¹	
	Children 9–13 years	40mg/day	For children aged 1–3 years, present fruit in small portions and appropriate textures, such as raw, stewed, peeled, sliced, chopped, pureed or grated.	
	Adolescents 14–18 years	40mg/day		
Folate	Infants 0–6 months	65µg/day (AI)	Breastmilk or infant formula is the main source of folate for infants.	The AI for 0–6 months was calculated by multiplying the average intake of breastmilk (0.78L/day) and the average concentration of folate in breastmilk of 85µg/L. ³
	Infant 7–12 months	80µg/day (AI)	Breastmilk or infant formula is the main source of folate for infants. Solids, such as fruits, vegetables and rice cereal, supplement intake.	The AI for 7–12 months was set by the reference body weight ratio, estimating up from young infants or down from adults. Both estimates gave an AI of 80µg/L, which is also consistent with data for older, fully breastfed or fully formula-fed infants. ³
Folate	Children 1–3 years	180µg/day	Use fortified breakfast cereal and bread and include up to three serves vegetables and two serves of fruit per day. ⁵	As there are no experimental data for children, the EAR (estimated average requirements) were set by extrapolation from adult data using metabolic body weight ratios with an allowance for growth. In the absence of information on the standard deviation of the requirement, the was set assuming a coefficient of variation of 10% for the EAR. ³
	Children 4–8 years	200µg/day	Use fortified breakfast cereal and bread and include up to four serves vegetables and two serves of fruit per day. ⁵	Children and adolescents with poor food intake are at risk of inadequate folate intake. ¹⁸ Folate is more susceptible to malabsorption than many other nutrients, especially with tropical sprue, malignancy and dialysis. Folate utilisation is also affected by some long-term drug interactions, including anticonvulsant therapy (phenytoin, Dilantin), some immunosuppressants (methotrexate), metformin, diuretics (triamterene), and antidiarrhoeal medications (sulfasalazine) which may predispose to human folate deficiency. ³ There are large losses of folate in cooking and processing. ²³
	Children 9–13 years	300µg/day	Use fortified breakfast cereal and bread and include up to five serves vegetables and two serves of fruit per day. ⁵	
	Adolescents 14–18 years	400µg/day	Use fortified breakfast cereal and bread and include up to five serves vegetables and two serves of fruit per day. (Australian guide to healthy eating). See Section 2.5 fortification of bread with folate.	

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

Nutrient	Age group	Goal	Strategies	Rationale
Calcium	Infants 0–6 months	210mg/day	Breastmilk or infant formula is the main source of calcium for infants.	Breastfeeding is the biological norm and most beneficial method for feeding infants with immediate and long-term health outcomes for mother and infant and is to be actively promoted, protected and supported by the NSW Health system. NSW Health Policy PD2006_012. ¹⁰
		270mg/day	Breastmilk or infant formula is the main source of calcium for infants.	Breastmilk or infant formula is the main source of calcium for infants.
	Children 1–3 years	500mg/day	Dairy-based desserts, such as yoghurt and custard, contribute to calcium intake. From one year of age, the preferred food source of calcium is dairy products, which provide the most readily utilised source of calcium. ³	Calcium requirements are largely determined by skeletal needs, which increase during periods of rapid growth (such as childhood and adolescence).
		700mg/day	Breastfeeding can continue for up to two years of age. ¹¹ Full-fat milks are advised for children less than two years, because of their high energy needs. Reduced-fat dairy products are not encouraged for children less than two years of age. ⁵	Calcium intake in childhood and adolescence is crucial in attaining peak bone mass and the prevention of osteoporosis in later life. ^{3,5}
	Children 9–13 years	1300mg/day	<i>The Australian guide to healthy eating</i> recommends 2–3 serves of dairy products a day for children aged 4–11 years. ⁵ Offer a choice of full-fat milk and reduced-fat milk drink at every main meal daily.	Calcium goals are based on the RDI value for a child of the upper age of each age group to meet the requirements of all children in each age group.
	Adolescents 14–18 years	1300mg/day	<i>The Australian guide to healthy eating</i> recommends 3–5 serves of dairy products a day for adolescents. ⁵ For adolescents, offer choice of full-fat and reduced-fat milk drink at every main meal daily. Milk-based soups, yoghurt, milk-based desserts and cheese can make a valuable contribution to calcium intake. Soy milk, if offered, should be fortified with calcium 120mg/100mL.	Intakes of calcium-containing foods in Australian children have been found to be particularly low in adolescent girls and boys. ⁵
Iron	Infants 0–6 months	0.2mg/day	Breastmilk or formula is the main source of iron for infants.	Infants 0–6 months have a lower requirement from food as they have foetal iron supplies remaining from birth. ³
		11mg/day	Provide iron-fortified breakfast cereals, including rice cereal, for infants starting solids. The menu should offer red meat (a good source of haem iron) in at least one main dish per day as well as other iron sources, such as white meats, eggs, wholemeal bread and legumes.	Breastmilk or infant formula is a source of iron. Infants need iron-containing solids as foetal iron supply diminishes by seven months. Cereal-based food for infants may contain no less than 20mg iron/100g on a moisture-free basis (FSANZ). ¹⁶

TABLE 2: Micronutrient goals, strategies and rationale continued

Nutrient	Age group	Goal	Strategies	Rationale
Iron	Children 1–3 years	9mg/day	The menu should offer red meat (a good source of haem iron) in at least one main dish per day. Include choice of meat-based sandwich fillings.	Iron-deficiency anaemia can occur if children do not receive enough iron-containing solids, such as children who rely on a high milk intake from a bottle and have not progressed with a variety of solids.
	Children 4–8 years	10mg/day	Wholemeal breads, eggs, legumes and white meats should be available for a wide variety of iron sources.	Australian children have been commonly found to have low iron intakes, and up to 35% may be iron depleted. ⁵
	Children 9–13 years	8mg/day	Iron-fortified breakfast cereals should be on the menu daily.	Iron goals are based on the RDI for the oldest child in each age group and for females in the case of adolescents (which have a higher requirement) to meet the requirements of all children in each age group.
	Adolescents 14–18 years	15mg/day		Iron requirements for adolescent boys increase during the growth spurt as new muscle is laid down. Adolescent girls are at particular risk of developing iron deficiency due to effects of continuing growth, menstrual iron losses, and a low intake of dietary iron as indicated in various studies. ⁵
Zinc	Infants 0–6 months	2mg/day (AI)	Breastmilk or formula is the main source of nutrition for this age group, least one main dish per day as well as other iron sources, such as white meats, eggs, wholemeal bread and legumes.	Based predominately on the average volume and composition of breastmilk. ³
	Infants 7–12 months	2.5mg/day (AI)		
	Children 1–3 years	3mg/day	Meats, fish and poultry are major contributors to the diet, but cereals and dairy foods also contribute substantial amounts.	The amount of protein in the diet contributes to the efficiency of zinc absorption, because zinc binds to protein.
	Children 4–8 years	4mg/day	Ensuring energy and iron intake is sufficient in the menu will assist in meeting the zinc requirement.	Small changes in protein digestion may produce a significant change in zinc absorption.
	Children 9–13 years	6mg/day		Zinc absorption from a diet high in animal protein will be greater than from a diet rich in plant-derived proteins. Zinc is a significant mineral with respect to wound healing and immune function.
Adolescents 14–18 years		13mg/day		Children and adolescents with low energy consumption have been found to be at risk of zinc deficiency ⁵ , and zinc depletion is associated with decreased taste acuity. ²⁴
				Zinc is especially important during adolescence because of its role in growth ³ and sexual maturation.
				Zinc intakes from core foods were below 70% of RDIs for adolescent girls. ²⁵
Sodium	Infants 0–6 months	120mg/day (AI)	Source of intake should be from breastmilk, formula or food only. Cook food without added salt.	Infant kidneys are immature and have difficulty excreting excessive salt. ⁵ There is no sodium RDI for children less than <12 months or upper limit. The goal is to provide a suitable range of foods without added salt to keep as close to the AI as practical.
	Infants 7–12 months	170mg/day (AI)	Some higher-salt items that are introduced as part of normal infant feeding (eg cheese and bread) should not be excluded from the menu. Salt sachets must not be offered on infant menus.	Note: average breastmilk sodium concentration is 160mg/L (0–6 months). This figure is used to extrapolate the AI for infants aged 7–12 months. ³
		Prev RDI 140–280mg/day No upper limit		

TABLE 2: Micronutrient goals, strategies and rationale continued

Nutrient	Age group	Goal	Strategies	Rationale
Sodium	Children 1–3 years	1000mg/day (UL)	The menu should provide a choice of foods that does not exceed the UL for the specified age groups ³ , while allowing some highly salted foods (such as cheese), which are nutrient dense and well accepted by patients who are unwell or eating poorly.	Children who are unwell often have reduced oral intakes. 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 UL as the maximum sodium intake / day, rather than aiming for the lower AI targets. ¹
	Children 4–8 years	1400mg/day (UL)	A selection of menu serving sizes according to age group is recommended to assist adherence to sodium limits for children in younger age ranges.	The UL for children was extrapolated from the adult UL on an energy intake basis as numerous observational studies have documented that blood pressure tracks with age from childhood into the adult years. ³
	Children 9–13 years	2000mg/day (UL)	Hot main meals providing >575mg sodium per serve should make up no more than 10% of main hot menu choices. ^{79,80}	
	Adolescents 14–18 years	2300mg/day (UL)	Bread is one of the major sources of sodium in the typical diet, and brands with sodium levels of less than 400mg/100g are preferred where possible. ⁸¹ Salt sachets should not be offered to patients on the menu.	

2.5 Special considerations – specific micronutrient issues

Foods for infants

Food Standards Australia New Zealand (FSANZ) has developed Food Standards for Foods for Infants (Standard 2.9.2). This standard provides for the compositional (including nutritional) and labelling requirements of foods intended and / or represented for use as food for infants. Foods in this standard are intended to be fed to infants in addition to human milk and / or infant formula products.¹⁶ Foods for infants provided in NSW hospitals must comply with these standards (Appendix 2).

Folate

FSANZ has developed a new mandatory standard for the fortification of cereals and cereal products. It requires that all wheat flour for making bread, with the exception of flour represented as organic, be fortified with folic acid.²⁶

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, 120µg of folic acid added to foods provides 200µg dietary folate equivalents (DFE). The RDI is 400µg DFE per 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 fortified with folate.

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.²⁷ 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 from 133µg/day to 179µg/day, compared with the RDI of 150µg/day for the reference person.³ 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.

Mercury

If fish is used to meet recommended intakes of protein, FSANZ recommends it is safe for children up to eight years to have 2–3 serves / week (75g each) of any fish. Exceptions include orange roughy (deep sea perch) or catfish with no other fish that week. Only one serve of shark or billfish per fortnight is considered safe.²⁸

If fish is used to meet recommended intakes of protein, FSANZ recommends it is safe for older children (over eight years) to have 2–3 serves / week of any fish. A serve is 150g, eg two frozen, crumbed fish portions. Exceptions include orange roughy (deep sea perch) or catfish with no other fish that week. Only one serve of shark or billfish per fortnight is considered safe.²⁸

MINIMUM MENU CHOICE STANDARD

3. Menu choice standard

Studies show that choice is a key factor affecting food intake and satisfaction.^{29,30} A minimum standard for menu choice helps to ensure paediatric patients are provided with a range of foods consistent with the core food group recommendations,³¹ 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 a paediatric inpatient. It is divided into foods provided for main meals and mid-meals.

To support and enhance the nutritional status and recovery of the child, it is important that the hospital meal service should follow as closely as possible an acceptable domestic pattern. The acceptable domestic routine involves a pattern of three meals a day with three additional snacks provided at set times. These should be spread throughout the day at regular intervals. 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.^{32, 33}

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

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

Alternative types of 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*,³⁴ 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.

Special considerations:

- Access to small (½) and large serves is necessary to meet the needs of all paediatric inpatients.
- Young children should be offered simply prepared, mild-tasting foods that they can easily identify and manage – for example, cut-up vegetables they can eat with their fingers and soup in a cup.
- It is important to minimise the possibility of choking in young children. Children should always be supervised while they are eating and drinking. Do not serve tough or stringy foods. Remove skin, gristle and bones from chicken and fish and avoid serving large chunks of any foods for children under three years. The size, hardness and shape of some foods make them more likely to be inhaled and cause choking therefore lollies, nuts, seeds and dry, hard biscuits should be avoided in this age group.
- Caffeinated beverages such as tea, coffee and cola drinks are not recommended.
- There is a high risk of burns and scalds associated with the service of hot food and beverages to children. The facility must have procedures to minimise the risk of burns and scalds.
- Hospitals should ensure that crockery, cutlery, trays and other tableware are suitable for children and age appropriate, eg small spoons for young children.
- Hospitals should ensure that ward kitchens stock a range of popular foods to meet the needs of children outside normal mealtime services.

3.1 Menu choice standard – main meals

Menu item	Age group	Minimum number of choices	Minimum serve	Menu design comments	Nutritional standards
Fruit Fresh or canned or stewed, dried	<1 year	3/day	1 small banana or slices of soft peeled fruits (eg pear) Or: 120g puree or mashed	Provide a variety of fruit to avoid monotony in the diet. Texture modification must be appropriate to the age category.	
	>1 year	3/day	1 medium piece (eg apple, pear, small banana), or 5 prunes (seedless) 120g	Provide a variety of fruit to avoid monotony in the diet. Include seasonal fruit where possible. Cut-up fruit is easier for children to eat than whole pieces.	In natural fruit juice or water.
Juice	<1 year	Not appropriate			
	>1 year	1/day	100mL	For children 1–6 years, juice should be limited to 150mL/day. For children aged 7–18 years juice should be limited to 240–360mL/day.	100% juice; no added sugar. At least 20mg vitamin C per 100mL. This restriction is advised due to excess energy intake and risk of osmotic diarrhoea in toddlers. ³
Cereal – hot eg porridge, semolina	<1 year		45g cooked weight, puree	Texture modification must be appropriate to the age category.	
	>1 year	1/breakfast meal	90g cooked weight		
Cereal – cold	<1 year	2/breakfast meal	10g (dry weight) rice cereal or other infant cereal or 1 breakfast biscuit		Iron-fortified rice cereal must be offered. Preferred choices are infant cereals and cereal biscuit for this age group. Cereals should contain less than 30g sugars/100g.
	>1 year	4/breakfast meal	Portion packs where available or 30g		Cereals to contain less than 30g sugars/100g. Offer at least two varieties of cold cereal with a fibre content of at least 3g total fibre/serve.
Protein source at breakfast Continental breakfast or Traditional cooked	<1 year	1	125g yoghurt, or 1 egg, or 20g cheese		
	>1 year	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 items such as spaghetti or tomato can be offered in addition to vary the menu and reduce monotony.	At least 5g protein per portion (protein equivalent of 1 egg).

3.1 Menu choice standard – main meals *continued*

Menu item	Age group	Minimum number of choices	Minimum serve	Menu design comments	Nutritional standards
Bread Toast / bread or Bread roll	<1 year	Offered at each main meal	1 slice	Choice of white and wholemeal bread to be available.	<400mg sodium per 100g
	>1 year	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. Toast, raisin bread, crumpets or lavash bread may be offered for variety.	
Margarine	<1 year	1/main meal	1 portion (10g) or 5g per slice of bread if spread	Poly- or mono-unsaturated margarine should always be available.	
	>1 year	1/main meal	1 portion (10g) per 2 slices of bread	Butter may be offered as an option.	
Spreads	<1 year	2/breakfast meal	Portion control packs where available	Jam and Vegemite™ are appropriate options. Honey should not be offered. Peanut butter is optional. ¹² This will depend on the facility's policy.	Honey can contain the spores of <i>Clostridium botulinum</i> . Unless it has been carefully sterilised during processing, it has been prohibited for infants in Australia. After the age of 12 months, children are less susceptible to this bacterium. ⁵ Low-joule jam is not necessary for children with diabetes.
	>1 year	3/breakfast meal	Portion control packs where available	Minimum of 3 choices. Spreads should include a selection of jams, marmalade, honey and Vegemite™. Other items such as peanut butter are optional. This will depend on the facility's policy.	
	<1 year	1/breakfast where cereal is served Not appropriate to offer as a beverage	150mL	Full cream only to be offered. Soy milk to be available on request.	
Cold beverage – milk	>1 year	1/meal and at each mid-meal	150mL	Full cream and reduced fat offered. Children <2 years offered only full-cream milk. Soy milk to be available on request. Cordial and flavoured milk drinks optional.	Soy milk to contain at least 100mg calcium/100mL. Cordial and soft drinks have minimal nutritional value and contain large amounts of sugar and energy. Consumption may replace more nutritious beverages.
Hot beverages	<1 year	Not appropriate		There is a high risk of burns and scalds associated with serving hot beverages such as tea, coffee, decaffeinated beverages and hot chocolate to children.	
	>1 year				
Sugar and sugar substitute	<1 year	Offer 1/breakfast if patient selects cereal	Portion control pack		The evidence for sugar's role in the aetiology of dental caries is strong. Sugar may be added to enhance intake of nutritious foods such as breakfast biscuits. Sugar substitutes are not appropriate. ³⁵
	>1 year				

3.1 Menu choice standard – main meals *continued*

Menu item	Age group	Minimum number of choices	Minimum serve	Menu design comments	Nutritional standards
Soup	<1 year	Not appropriate			
	>1 year	One Band 1 soup or Band 2 soup may be offered once per day as an option. Additional soup of Band 1 or Band 2 may be offered as an option.	180mL	Variety at consecutive meals	See Appendix 1 for definition of Bands. If soup is served to patients, the facility must have procedures in place to minimise the risk of burns and scalds.
Hot main dish	<1 year	Offer at least one hot dish on at least two meal occasions per day.	45g puree or minced or small tender pieces fish/meat	Predominantly single ingredient meat / poultry / fish. At least one main dish per day must be red meat. Provide a variety of meats for consecutive meals.	Cook without added salt.
	>1 year	Offer hot dishes on at least two meal occasions per day. At each of these meals, provide a minimum of two 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.	90g	Do not serve tough food items. Remove all bones and gristle to minimise the possibility of choking. Small (½) serves should be provided for young children. At least one main dish per day must be red meat. A variety of meats to be provided for consecutive meals. Texture modification must be appropriate to the age category.	Access to small (½) and large serves is necessary to meet the needs of all paediatric patients. See Appendix 1 for definition of bands. Use unsaturated fat in making main meals, where appropriate. Less than 20% of main menu items to have more than 15g fat per serve. Less than 10% of main menu items to have more than 575mg sodium per serve.
Potato, rice, pasta	<1 year	1 choice at each meal offering main hot choices (except breakfast)	45g strain, puree, finely mash or cut up into thin slices or very small pieces	Texture modification must be appropriate to the age category.	Cook with minimal salt. Use unsaturated fat in all potato recipes.
	>1 year	2 choices at each meal offering main hot choices (except breakfast)	90g		

3.1 Menu choice standard – main meals *continued*

Menu item	Age group	Minimum number of choices	Minimum serve	Menu design comments	Nutritional standards
Vegetables	<1 year	1 variety at each meal offering main hot choices (except breakfast)	35g strain, puree, finely mash or cut up into thin slices or very small pieces	Offer at least one red / orange, and one dark green or leafy vegetable per day. Texture modification must be appropriate to the age category.	See Appendix 1 for definition of bands. Cook without added salt. Use unsaturated fat in vegetable recipes.
	>1 year	2 varieties at each meal offering main hot choices (except breakfast)	70g per vegetable portion	<ul style="list-style-type: none"> Offer at least one red / orange, and one dark green or leafy vegetable per day. Band 3 side salads may be offered as an alternative. Small (1/2) serves should be provided for young children. Soups can contribute to vegetable requirements if they contain a significant amount of vegetable / serve. Steam vegetables until soft to minimise the possibility of choking for young children. 	
Sandwich	<1 year			Offer sandwiches made with white and wholemeal breads.	See Appendix 1 for definition of bands.
	>1 year	Offer one Band 1 sandwich twice per day		Offer sandwiches made with white and at least one of wholemeal, wholegrain or multigrain breads.	Use poly- or mono-unsaturated margarine.
Salad as a main meal	<1 year	Not appropriate			
	>1 year	Offer salad at least twice 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.
Desserts	<1 year				See Appendix 1 for definition of Bands. Use unsaturated fat in the making of desserts, where appropriate.
	>1 year	Offer desserts at least twice per day, including at least one Band 1 dessert per day		Texture modification must be appropriate to the age category.	
Condiments	<1 year	Not appropriate			
	>1 year	May be offered	Portion control pack	A range of condiments, such as tomato sauce and mayonnaise, may be offered as an optional choice.	Salt should not be routinely offered.

3.2 Menu Choice Standard – Mid-meal food items

Menu item	Minimum number of choices/ mid-meal	Standard serve	Menu design comments	Nutritional standards
Plain biscuits	1 per day	Portion control pack containing 2 plain biscuits or 20g		Avoid dry, hard biscuits to minimise the possibility of choking.
Fruit	1 per day	1 piece fresh fruit or equivalent tinned fruit 120g	To promote healthy eating	Cut-up fruit is easier for children to eat than whole pieces.
Milk, plain	3 per day	150mL	Refer to menu design comments for Menu choice standard – Main meal: Cold beverage – milk.	
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 difficult for many patients to meet their nutritional requirements in hospital. Because their stomach capacity is small, children tend to eat small amounts frequently throughout the day. 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 nutritional status has been recommended in the UK and advocated in the Scottish standards.^{36,37} Studies in Australia and overseas have also

shown that providing high-energy snacks can improve patient nutritional intakes in a cost-effective manner.³⁸⁻⁴⁰

While high-energy mid-meal snacks are often available for patients identified as malnourished, and for patients prescribed a high-protein / high-energy diet, they are not routinely available for all inpatients. It is common for children in hospital to have poor appetite and many cannot eat a lot at meal times. Therefore, it is mandatory that at least one high-energy mid-meal be offered to all paediatric 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 cake *	50g	720	2.7
Fruit and nut mix *	30g	650	4.2
Fruit yoghurt	175g	590	7.0
Milk or mousse-type dessert	110g	518	2.4
Plain cake with icing	55g	823	1.5
Potato crisps *	30g	660	1.9
Small muffin	55g	860	3.9
Shortbread cream biscuits	2 biscuits	798	2.2

* Not suitable for young children < 3yrs. ⁴

TEST MENUS

4. Test menus

To assess the practicality of these standards and their ability to meet nutritional targets, test menus were developed as examples of a patient selection from a menu meeting these standards and analysed to compare with the nutrient requirements of each age group.

At least two different menus have been shown for each age group. Snacks are included as appropriate for the various age groups. *The Australian guide to healthy eating*⁵ was referred to for appropriate serves of each food group for the age groupings of 4–8 years, 9–13 years and 14–18 years.

Under one year of age

MENU 1: Three meals plus breastmilk / 600mL infant formula

Breakfast	2 tablespoons infant rice cereal 120g two fruits, canned in natural juice
Lunch	45g braised chicken with gravy 45g steamed potato 35g peas 35g carrots 100g full-cream fruit yoghurt
Dinner	45g lamb, minced with gravy 45g baked potato 35g carrots 35g green beans 120g stewed apricots

MENU 2: Three meals plus breastmilk / 600 mL infant formula

Breakfast	2 tablespoons infant rice cereal 1 banana
Lunch	45g steamed fish 45g mashed potato 35g pumpkin 35g zucchini 120g stewed apple
Dinner	45g beef, minced with gravy 45g pasta 35g peas 35g corn 120g peaches canned in water

MENU 3: Three meals plus breastmilk / 600 mL infant formula

Breakfast	2 tablespoons infant rice cereal 120g two fruits, canned in natural juice
Lunch	45g stewed lamb with gravy 45g mashed potato 35g carrot 120g pear, canned in natural juice 120g custard
Dinner	45g braised chicken with gravy 45g baked potato 35g sweet potato 35g broccoli 120g creamy rice

1–3 years

MENU 1: Three meals plus two mid-meals

Breakfast	100mL orange juice 2 biscuits Weet-Bix™ 1 banana 150mL full-cream milk or breastmilk
Lunch	1 egg sandwich (2 slices white bread + 1 egg mashed) 120g two fruits, canned in natural juice
Dinner	1 sausage, beef with gravy 45g baked potato 35g peas 35g corn 120mL custard 150mL full-cream milk or breastmilk
2 mid-meals	2 plain sweet biscuits 1 mandarin

MENU 2: Three meals plus two mid-meals

Breakfast	100mL orange juice 30g porridge, made on milk 1 scrambled egg
Lunch	100g macaroni tuna in white sauce 35g side salad without dressing 100g fruit yoghurt, full fat
Dinner	1 small crumbed chicken drumstick 45g rice 35g pumpkin 35g green beans 120g pear, canned in natural juice 120g jelly 150mL full-cream milk
2 mid-meals	1 orange 3 small savoury crackers

4–8 years

MENU 1: Three meals plus two mid-meals

Breakfast	100mL apple juice 30g Rice Bubbles™ 150mL milk, reduced fat 100g reduced-fat fruit yoghurt 1 slice wholemeal toast + 1 portion canola margarine 1 portion jam
Lunch	1 egg sandwich (2 slices wholemeal bread + 1 egg mashed) 1 green apple 125g reduced fat fruit yoghurt 120mL jelly
Dinner	90g roast chicken with gravy 1 small jacket potato 35g pumpkin 35g peas and corn 1 scoop ice-cream 150mL reduced-fat milk
2 mid-meals	2 wheat bran crackers 1 slice reduced-fat cheddar cheese 1 orange

MENU 2: Three meals plus two mid-meals

Breakfast	100mL orange juice 2 Weet-Bix™ 150mL reduced-fat milk 130g canned spaghetti 1 slice white bread + 1 portion canola margarine
Lunch	4 chicken nuggets 45g potato wedges 45g side salad 1 green apple 150mL reduced-fat milk
Dinner	150g meat lasagne 70g side salad 120g peaches, canned in natural juice 120g jelly 150mL reduced-fat milk
2 mid-meals	1 piece banana cake, iced 1 mandarin 2 puffed rice cakes

9–13 years

MENU 1: Three meals plus two mid-meals

Breakfast	100mL apple juice 30g cornflakes 150mL reduced-fat milk 20g reduced-fat cheddar cheese 2 slices wholemeal toast + 1 portion canola margarine
Lunch	1 chicken and mayo sandwich (2 slices wholemeal bread, thick slice chicken, mayonnaise) 70g side salad, with dressing 1 fresh red apple 120g jelly
Dinner	150g bolognese sauce 90g spaghetti pasta 70g side salad 1 slice wholemeal bread + 1 portion canola margarine 120mL custard 150mL reduced-fat milk
2 mid-meals	Banana cake, iced 150mL reduced fat milk 1 red apple 6 rice crackers + 20g reduced-fat cheddar cheese

MENU 2: Three meals plus two mid-meals

Breakfast	100mL orange juice 2 slices wholemeal toast + 1 portion canola margarine 120g baked beans, canned in tomato sauce 150mL reduced-fat milk
Lunch	6 fish cocktails 70g potato salad with vinaigrette dressing 35g side salad 2 slices wholemeal bread + 1 portion canola margarine 150mL reduced-fat milk
Dinner	2 lamb chops, grilled 90g mashed potato 70g carrot 70g broccoli 120g jelly 100g ice confection 1 slice wholemeal bread + 1 portion canola margarine
3 mid-meals	175g fruit yoghurt 2 plain sweet biscuits 150mL reduced-fat chocolate flavoured milk 1 large banana

14 – 18 years

MENU 1: Three meals plus two mid-meals

Breakfast	100mL orange juice 4 Weet-Bix™ 300mL reduced-fat milk 1 rasher bacon 70g tomato grilled 300mL reduced fat milk
Lunch	Hamburger (beef patty on a small bun) 90g potato salad with mixed veg & vinaigrette dressing 2 slices beetroot 70g side salad 100g ice-cream
Dinner	2 medium chicken drumsticks, baked 90g steamed potato 70g side salad 1 small cob corn 1 slice white bread + 1 portion canola margarine 120g apricots, canned in natural juice 120g creamy rice
3 mid-meals	1 banana, raw 2 puffed rice cakes 100g chocolate dairy dessert 2 plain sweet biscuits 150mL reduced-fat milk

MENU 2: Three meals plus two mid-meals

Breakfast	100mL apple juice 60g wheat flakes and sultana cereal 125g vanilla yoghurt 120g pear, canned in natural juice 300mL reduced-fat milk
Lunch	Bread roll, wholemeal with ham 1 cheese and tomato sandwich (2 slices wholemeal bread, 20g cheese, 20g tomato) 1 mandarin, raw 150mL reduced-fat milk
Dinner	90g veal steak, pan fried in lemon 90g mashed potato 70g pumpkin 70g green beans 120mL custard 120g jelly 150mL reduced-fat milk
3 mid-meals	1 fruit and bran muffin 6 small savoury biscuits 20g reduced-fat cheddar cheese 25g sultanas 2 date slice biscuits

4.1 Comparison of analysis of test menus to nutrient standards

The results below show it is possible to meet the nutrient standards with the test 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 iron and zinc requirements every day, and these should be assessed on a weekly basis.

Poly- and mono-unsaturated fat sources and low-fat dairy are needed to meet targets for saturated fat in children aged over four years.

Under one year

Nutrient	Nutrient goal	Menu ave	% Goal
Energy kJ	3500	4228	121
Protein g	14	44	314
Vitamin C mg	30	90	300
Folate μg^{\dagger}	80	155	194
Calcium mg	270	616	228
Iron mg	11	13	114
Zinc mg	2.5	9	348
Sodium mg	140-280	370	132

[†] Includes additional folate from fortification of bread

1–3 years

Nutrient	Nutrient goal	Menu ave	% Goal
Energy kJ	4200	5651	134
Protein g	14	58	414
Fat g	33	53	160
Fibre g	14	14	100
Vitamin C mg	35	124	354
Folate μg^{\dagger}	180	214	178
Calcium mg	500	652	130
Iron mg	9	8	89
Zinc mg	3	7	233
Sodium mg	1000	1167	116

[†] Includes additional folate from fortification of bread

4–8 years

Nutrient	Nutrient goal	Menu ave	% Goal
Energy kJ	5500	7267	132
Protein g	20	75	375
Fat g	43	55	127
Saturated fat %E	<10	9	90
Fibre g	18	19	105
Vitamin C mg	35	119	340
Folate µg †	200	285	142
Calcium mg	700	1075	154
Iron mg	10	10	100
Zinc mg	4	9	225
Sodium mg	1400	1977	141

† Includes additional folate from fortification of bread

9–13 years

Nutrient	Nutrient goal	Menu ave	% Goal
Energy kJ	7500	9243	123
Protein g	40	93	232
Fat g	60	77	128
Saturated fat %E	<10	10	100
Fibre g	24	26	108
Vitamin C mg	40	98	245
Folate µg †	300	300	100
Calcium mg	1300	1310	101
Iron mg	8	13	162
Zinc mg	6	11	183
Sodium mg	2000	2603	130

† Includes additional folate from fortification of bread

14–18 years

Nutrient	Nutrient goal	Menu ave	% Goal
Energy kJ	9400	9793	104
Protein g	65	113	174
Fat g	74	76	102
Saturated fat %E	<10	11	110
Fibre g	28	27	96
Vitamin C mg	40	118	295
Folate µg †	400	434	108
Calcium mg	1300	1493	115
Iron mg	15	16	107
Zinc mg	13	15	115
Sodium mg	2300	2558	111

† 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 background for menu planners and food-service providers, but do not attempt to be comprehensive guidelines.

Acutely ill patients

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 a group 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

(eg those in sub-acute paediatric rehabilitation units)

- Children's changing developmental needs should be considered.
- Menus must meet the goals for all nutrients and provide a range of dishes that are popular and likely to be eaten.
- An appropriate menu cycle must be in place to prevent menu fatigue.

Mental health patients

- This patient 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 stay in hospital longer, variety and flexibility are required.
- They frequently have irregular eating patterns, so 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.⁴¹
- To improve iron absorption, vegetarian menus should offer a good source of vitamin C, such as fruit, juice or salad.
- To ensure adequate calcium, a cow's milk alternative will be required for some patients, eg a calcium-fortified soy milk.

Children with disabilities

- Children with disabilities may have delayed rates of physical and mental development.
- They may not need a therapeutic diet but may have swallowing or feeding difficulties requiring adjustments in texture and nutrient requirements. They may have differing macro and micronutrient requirements due to their condition, mobility or growth potential (eg cerebral palsy).
- Children may be on anticonvulsant therapy or other long-term drug therapy that may predispose to micronutrient deficiencies (eg folate).

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 hospitals³⁴ 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.³⁴

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 upon the recipe, the same menu item (eg 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 soup, tomato soup, 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 ¹ Fish (min 110g)			Max 10	Max 7 (161) ²	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.

¹ 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.

² Corned beef, turkey³, 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 upon 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.

³ 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) ¹	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.

¹ 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	None specified	Max 25 (575) ¹	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

¹ 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	Sodium mmol (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	Not specified	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	Not specified	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 ¹ No added fat unless a multiple ingredient recipe is involved ¹
Vegetables	2 vegetables (total 140g cooked weight) exclusive of vegetables in the main dish. No added salt unless a multiple ingredient recipe is involved ² No added fat unless a multiple ingredient recipe is involved ² Two contrasting colours.

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

² 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.

APPENDIX 2

AUSTRALIA NEW ZEALAND

FOOD STANDARDS CODE –

STANDARD 2.9.2 – FOODS FOR INFANTS

Purpose

This Standard provides for the compositional (including nutritional) and labelling requirements of foods intended or represented for use as food for infants. Foods in this Standard are intended to be fed to infants in addition to human milk or infant formula products or both. This Standard does not apply to infant formula products, as they are regulated by Standard 2.9.1, nor does it apply to formulated meal replacements and formulated supplementary foods as they are regulated by Standard 2.9.3.

The Standard recognises the specific needs of infants relating to the texture of the food, the infant's digestion ability, renal capacity and the need for high energy and nutrient intake to support rapid growth. This Standard recognises the particular microbiological and immunological susceptibility of infants including the potential for the development of food allergy.

General labelling requirements are contained in Part 1.2. See Standard 1.2.4 – Labelling of Ingredients for ingredient labelling requirements, including for declaration of compound ingredients in foods for infants. Microbiological requirements are contained in Standard 1.6.1 – Microbiological Limits for Food.

This Standard amends the application of Standard 1.2.8 – Nutrition Information Requirements in relation to food for infants.

Table of Provisions

- 1 Interpretation
- 2 General compositional requirements
- 3 Additional compositional requirements for cereal-based foods
- 4 Additional compositional requirements for non-cereal-based foods
- 5 Labelling
- 6 Additional labelling requirements relating to specific nutrients and energy information
- 7 Representations
- 8 Claims about vitamins and minerals
- 9 Nutrition information
- 10 Food in dehydrated or concentrated form
- 11 Storage requirements

Clauses

1 Interpretation

In this Standard –

cereal-based food means a food for infants that is based on cereal.

ESADDI means, for a vitamin or mineral in column 1 of Table 3 to clause 8, the estimated safe and adequate daily dietary intake specified for that vitamin or mineral in column 2.

food for infants means a food that is intended or represented for use as a source of nourishment for infants, but does not include –

- (a) infant formula products; and
- (b) formulated meal replacements; and
- (c) formulated supplementary foods; and
- (d) unprocessed fruit and vegetables.

fruit-based food means a food for infants that is based on fruit.

infant means a person up to the age of 12 months.

infant formula product means an infant formula product as defined in Standard 2.9.1.

RDI means, for a vitamin or mineral in column 1 of Table 2 to clause 8, the recommended dietary intake specified in relation to that vitamin or mineral in column 2 calculated and expressed in the form specified in the Table.

sugars has the meaning in Standard 2.8.1 and includes honey.

2 General compositional requirements

- (1) Food for infants must not contain a food additive or nutritive substance unless –
- (a) expressly permitted by this Code; or
 - (b) the food additive or nutritive substance is naturally present in an ingredient of the food for infants.
- (2) Food for infants may contain –
- (a) sugars, provided in the case of a vegetable juice, fruit drink or a non-alcoholic beverage, the total sugars content of the food is no more than 4g/100g; and

Editorial note:

Standard 2.6.1 defines 'vegetable juice' and Standard 2.6.2 defines 'fruit drink' and 'non-alcoholic beverage'.

- (b) lactic acid producing cultures; and
 - (c) either singularly or in combination, no more than 0.8g/ 100g of inulin-derived substances and galacto-oligosaccharides, as consumed.
- (3) For paragraph 2(2)(c) the maximum permitted amount only applies when the substances are added. In that case the maximum permitted amount then applies to the sum of the naturally occurring and the added substances.
- (4) Food for infants must not contain –
- (a) more than 50mg/100g of total iron in cereal-based food on a moisture free basis;
 - or
 - (b) honey, unless it has been treated to inactivate *Clostridium botulinum* spores; or
 - (c) more than the total quantity of sodium set out in column 2 of the Table to this paragraph for each particular type of food for infants; or
 - (d) added salt, in the case of ready-to-eat fruit-based foods, fruit drink and vegetable juice.

Table to paragraph 2(4)(c)

Maximum permitted quantity of sodium in food for infants

Food Type	Maximum permitted quantity
Rusks	350mg/100g
Biscuits	300mg/100g
Flours, pasta, ready-to-eat foods for infants (including cereal-based foods other than rusks and biscuits)	100mg/100g
Vegetable juices and ready-to-eat fruit-based foods including, fruit drinks	100mg/100g

- (5) Food for infants intended for infants under the age of 6 months must be formulated and manufactured to a consistency that minimises the risk of choking.

Editorial note:

The intent of subclause (5) is to ensure that the food, except in the case of rusks, should have a texture that is soft and free of lumps.

3 Additional compositional requirements for cereal-based foods

- (1) Cereal-based food for infants which contains more than 70% cereal, on a moisture free basis, and is promoted as suitable for infants over the age of 6 months –
- (a) must contain no less than 20mg iron/100g on a moisture free basis; and
 - (b) may contain added iron in the following forms –
 - (i) electrolytic iron; or
 - (ii) reduced iron; or
 - (iii) in the permitted forms set out in Schedule 1 of Standard 2.9.1; and
 - (c) may contain added thiamin, niacin, vitamin B6, vitamin C, folate, magnesium in the forms permitted in Schedule 1 of Standard 2.9.1; and
 - (d) may contain added vitamin C to a maximum level of 90mg/100g on a moisture free basis.
- (2) Cereal-based food for infants which contains more than 70% cereal, on a moisture free basis, and is promoted as suitable for infants from 4 months of age may contain added –
- (a) iron in the following forms –
 - (i) electrolytic iron; or
 - (ii) reduced iron; or

- (iii) in the permitted forms as set out in Schedule 1 of Standard 2.9.1; and
- (b) vitamin C in the forms permitted in Schedule 1 of Standard 2.9.1 to a maximum level of 90mg/100g on a moisture free basis.

4 Additional compositional requirements for non-cereal-based foods

Foods for infants other than cereal-based food for infants –

- (a) in the case of vegetable juices, fruit drinks and gels, must contain no less than 25mg/100g of vitamin C; and
- (b) in the case of fruit-based foods, may contain vitamin C or folate or both in the permitted forms set out in Schedule 1 of Standard 2.9.1.

5 Labelling

- (1) This clause does not apply to packaged water.
- (2) The label on a package of food for infants must not include a recommendation, whether express or implied, that the food is suitable for infants less than four months old.
- (3) The label on a package of food for infants must include –
 - (a) a statement indicating the consistency of the food; and
 - (b) a statement indicating the minimum age, expressed in numbers, of the infants for whom the food is recommended; and
 - (c) where the food is recommended for infants between the ages of 4–6 months, in association with the statement required by paragraph (b), the words – ‘Not recommended for infants under the age of 4 months’; and
 - (d) where the added sugars content of the food for infants is more than 4g/100g, the word – ‘sweetened’; and
 - (e) where honey has been used as an ingredient, in association with the word ‘honey, the word – ‘sterilised’.

6 Additional labelling requirements relating to specific nutrients and energy information

- (1) In this clause, **food source of protein** means milk, eggs, cheese, fish, meat (including poultry), nuts and legumes.
- (1A) Where a reference is made in the label on a package of food for infants (including in the name of the food) to a food source of protein, the percentage of that

food source of protein in the final food must be declared in the label.

- (2) Where a food for infants contains more than of 3g/100kJ of protein, the label on the package must include the words – ‘Not suitable for infants under the age of 6 months’.
- (3) A claim must not be made, whether express or implied, that a food for infants is a source of protein unless no less than 12% of the average energy content of the food is derived from protein.

Editorial note:

Average energy content is defined in Standard 1.2.8.

7 Representations

- (1) A food must not be represented as being the sole or principal source of nutrition for infants.
- (2) The label on a package of food for infants must not include a recommendation that the food can be added to bottle feeds of an infant formula product.

8 Claims about vitamins and minerals

- (1) A claim must not be made, whether express or implied, in relation to a food for infants comparing the vitamin or mineral content of the food with that of any other food unless such a claim is expressly permitted elsewhere in this Standard.
- (2) A claim, either express or implied, as to the presence of a vitamin or mineral in a food for infants may be made if the food contains in a normal serve at least 10% of the RDI as specified in Table 2 to this clause or at least 10% of the ESADDI as specified in Table 3 to this clause, for that vitamin or mineral.
- (3) A claim, either express or implied, that a food for infants is a good source of a vitamin or mineral may be made if a reference quantity of the food contains at least 25% of the RDI as specified in Table 2 to this clause or at least 25% of the ESADDI as specified in Table 3 to this clause.
- (4) A claim, whether expressed or implied, must not be made in relation to a fruit-based food for infants that the food contains more than –
 - (a) 60mg/100g of vitamin C; or
 - (b) 150µg/100g of folate.
- (5) A claim must not be made, whether express or implied, in relation to a cereal-based food for infants

to which a vitamin or mineral has been added, that the food contains in a normal serve that vitamin or mineral in a quantity greater than that specified in relation to that vitamin or mineral in column 2 of Table 1 to this clause.

Table 1 to clause 8

Maximum claims per serve for cereal-based foods for infants

Vitamins & Minerals	Maximum claim per serve
Thiamin (mg)	15% RDI
Niacin* (mg)	15% RDI
Folate (µg)	10% RDI
Vitamin B6 (mg)	10% RDI
Vitamin C (mg)	10% RDI
Magnesium (mg)	15% RDI

Table 2 to clause 8

Recommended Dietary Intake for infants

Vitamins & Minerals	Specified RDI
Vitamin A	300µg as retinol equivalents ¹
Thiamin	0.35mg
Riboflavin	0.6mg
Niacin	3mg as niacin ²
Folate	75µg
Vitamin B6	0.45mg
Vitamin B12	0.7µg
Vitamin C	30mg in total of L-ascorbic acid and dehydroascorbic acid
Vitamin D	5µg cholecalciferol ³
Vitamin E	4 mg alpha-tocopherol equivalents ⁴
Vitamin K	10µg phyloquinone
Calcium	550mg
Iodine	60µg
Iron	9 mg, in the case of infants from 6 months
Iron	3mg, in the case of infants under 6 months
Magnesium	60mg
Phosphorus	300mg
Selenium	15µg
Zinc	4.5mg

These figures represent US Adequate Intake Levels

1, 2, 3, and 4 These numbers refer to the corresponding numbers in the footnotes in Schedule 1 in Standard 1.1.1

Table 3 to clause 8

Estimated Safe and Adequate Daily Dietary Intake for infants

Vitamins & Minerals	Specified ESADDI
Biotin# (µg)	6
Pantothenic Acid (mg)#	1.8
Copper (mg)	0.65
Manganese (mg)	0.8
Chromium (µg)	40
Molybdenum (µg)	30

These figures represent US Adequate Intake Levels

9 Nutrition information

- (1) The following provisions of Standard 1.2.8 do not apply to this Standard –
- (a) paragraph 3(j); and
 - (b) paragraph 5(1)(e) as it relates to saturated fat and subclauses 5(2), 5(4) and 5(5); and
 - (c) clause 7; and
 - (d) clause 8; and
 - (e) clause 9; and
 - (f) subclause 17(2).
- (2) The nutrition information panel for food for infants must be set out in the following format –

NUTRITION INFORMATION		
Servings per package: (insert number of servings)		
Serving size: g (or mL or other units as appropriate)		
	Quantity per Serving	Quantity per 100g (or 100 mL)
Energy	kJ (Cal)	kJ (Cal)
Protein	g	g
Fat, total	g	g
– (insert claimed fatty acids)	g	g
Carbohydrate	g	g
– sugars	g	g
Sodium	mg (mmol)	mg (mmol)
(insert any other nutrient or biologically active substance to be declared)	g, mg, µg (or other units as appropriate)	g, mg, µg (or other units as appropriate)

10 Food in dehydrated or concentrated form

- (1) The label on a package of food in dehydrated or concentrated form must include directions for how the food should be reconstituted, and the particulars set out in each column of the panel must be expressed as a proportion of the food as reconstituted according to those directions.
- (2) If more than one fluid for preparing the food is nominated in the label, the particulars set out in the column should be adjusted according to the first liquid nominated and the name of this liquid must be included in the Nutrition Information Panel.

11 Storage requirements

The label on a package of food for infants must contain storage instructions covering the period after it is opened.

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ABBREVIATIONS

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

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