Government of South Australia

SA Health

Menu and Nutrition Standards for Public Health Facilities in South Australia

Department for Health & Wellbeing

Contents

Foreword

Originally commissioned in 2008-09, the Menu and Nutritional Standards for Public Health Facilities in South Australia (the Standards) were developed to ensure a baseline was established for facilities to meet the nutritional needs of their consumers. Version 3 of the standards has involved reviewing best practice literature and feedback from a range of stakeholders to ensure clear, easy to use and sound standards that can be implemented in part or full across all Local Health Networks (LHNs).

The Standards have been reviewed by a working group of Food Service Dietitians, Clinical Dietetics Managers and Food Service Managers from metropolitan and country LHNs in South Australia and endorsed by the SA Health Statewide Nutrition and Dietetic, and Speech Pathology Advisory Groups. Wide consultation has been undertaken with key stakeholders including Consumers, Medical, Nursing, Corporate Services and Procurement Departments.

For further information about the development of the Standards, please contact Dietetic departments at the following Local Health Networks:

- Central Adelaide Local Health Network (CALHN)
- Southern Adelaide Local Health Network (SALHN)
- Northern Adelaide Local Health Network (NALHN)
- Women's and Children's Health Network (WCHN)
- Regional Local Health Network (Regional LHN):
  - Barossa Hills Fleurieu Local Health Network (BHF LHN)
  - Yorke and Northern Local Health Network (YNLHN)
  - Riverland Mallee Coorong Local Health Network (RMCLHN)
  - Limestone Coast Local Health Network (LCLHN)
  - Flinders and Upper North Local Health Network (FUNLHN)
  - Eyre and Far North Local Health Network (EFNLHN)

Or alternatively the Allied and Scientific Health Office, SA Health

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Acknowledgement to working group members from the 2009 and 2014 versions of this document.

Introduction

The provision of food is a fundamental human right and is integral to quality patient care. Failure to provide adequate nutrition can delay recovery time, increase complication rates, and extend the length of stay for hospital patients. Specific attention to nutritional intake is required for hospitalised patients due to their increased requirements and often reduced appetites.

The focus of the Standards is to minimise the impact of poor nutrition on patients and consumers in South Australian public health facilities. The Standards aim to meet the nutritional requirements of the majority of patients, residents, consumers, and clients considering length of stay, age, nutritional status and type of facility. A menu consistent with the Australian Dietary Guidelines is appropriate for patients whose appetites are not diminished. The Australian Dietary Guidelines are intended for people of all ages and backgrounds within the general healthy population including people with common diet-related risk factors, such as Type 2 diabetes, overweight but do not apply to people with medical conditions requiring specialised dietary advice or to those people at risk of malnutrition[1].

Admission to hospital for a chronic condition/disease with diet-related risk factors may motivate patients to review their dietary habits. Options which are consistent with the Australian Dietary Guidelines[1] should be available on the menu to accommodate their needs.

Recovery from illness takes priority during hospitalisation to ensure optimal recovery. All patients have the right to expect that the food provided in hospital will promote health and recovery and maintain good nutritional status. Patients who are well nourished on admission can expect that every effort is made to retain their nutritional status on discharge, which allows them to return to independent living.

Dietitians and Food Service departments facilitate and moderate safe and nutritious food supply in line with the menu standards whilst ensuring food provision meets the needs of consumers. Many public facilities will have access to a food service dietitian. The role of the food service dietitian is to:

- advocate for optimum nutritional care of clients through effective menu planning, adequate food supply and strategic management.
- translate nutrition specifications, food safety regulations, accreditation standards and nutrition guidelines and policies for practical application in the management of food services
- apply existing standards to develop and assess recipes and menus, including special diet recipes and menus appropriate for specific population groups
- utilise manual and/or electronic meal management systems and processes and
- develop, implement and assess the results of quality audits to support the provision of safe, nutritious, quality, cost effective food services.

These points follow the Dietitians of Australia (DA) Food Service Interest Group recommendations.[2]

For facilities that do not have access to a food service dietitian, an appropriately skilled dietitian should be consulted to provide advice on relevant therapeutic diets for their patients.

The Standards have been developed to ensure that consumers of South Australian public health facilities have access to sufficient and appropriate types of food and fluids to meet their nutritional needs. Recognising this, these guidelines are based on the following broad assumptions:

- Hospitalised patients are generally acutely ill or suffering from chronic diseases that place their nutritional status at risk. Evidence supports the premise that poor oral intake rather than clinical treatment or medical disease is responsible for daily nutrient requirements not being met.[3,4,5,6]
- Patients who are poorly nourished on admission or who eat poorly even for 3 or 4 days can have increased recovery time, complication rates and consequently increased length of stay, incurring increased health costs. The elderly cohort of this group recover less quickly.[7]
- Intake from the hospital menu is crucial for the nutritional status of patients with a longer length of stay, regardless of their nutritional status on admission.

Purpose

The Standards are applicable to patients requiring standard ward diet, including specific patient groups such as patients who require texture modified diet, paediatrics and those who may be eating poorly. They do not provide nutrition standards for patient populations requiring therapeutic nutritional intervention. For information about appropriate foods suitable for specific therapeutic diets, refer to the NSW Agency for Clinical Innovation Therapeutic Diet Specifications for Adult Inpatients, including any revisions.[8] For information about texture modified food and fluids, refer to the International Dysphagia Diet Standardised initiative (IDDSI).[9] For information about food allergen management in food service, refer to Food Allergen Management in Foodservice – A Best Practice Guideline.[10]

General food service considerations for specific patient groups are outlined in *Nutritional issues for Specific Patient Groups.*

The Standards are intended to inform and assist with the assessment and development of nutritionally adequate and appropriate menus. The Working Group has provided a sample seven day menu that will support menu development. The sample seven day menu demonstrates how to meet minimum nutrition requirements and what the minimum 'default' menu meal must provide. A default menu is what a patient receives if for a number of reasons they have not selected their own choices from the menu.

Principles

The overall approach of the Standard is to ensure patients have access to food that meets their nutritional requirements and contributes to their sense of wellbeing. The application of the Standards is based on the following overarching principles:

- Patients are provided with a variety of safe and quality food that is **appealing, enjoyable** and nutritionally adequate.
- Patients' nutritional requirements are addressed through the hospital's food service production, meal assembly and delivery systems.
- Patients at risk of poor nutrition are identified and intervention strategies implemented.
- The food provided should take into consideration the patients' medical, cultural, and religious circumstances.
- Key stakeholders from food services and clinical staff should work together in collaboration to implement and monitor menus according to the Standards.
- Cost control should not be at the expense of quality food ingredients.
- The health facilities patient profile and patient consumption patterns should be monitored regularly to inform ongoing revision of menu design.
- Patients admitted to SA Health facilities are predominantly unwell and/or frail and have different nutritional requirements to the general public.

Expected outcomes

Each public health facility in South Australia will offer:

- A menu that meets the Standard.
- A menu that meets the nutritional needs of the patient profile at each facility.
- A menu format and level of choice consistent with the patient profile at each facility.
- Regular monitoring of the patient profile at each facility to ensure menus continue to meet the nutritional needs of patients and to inform the development of the menu over time.

Nutrition criteria

The Nutrient Reference Values (NRVs) for Australia and New Zealand[11] were used as the basis for developing the Standards. The NRVs are defined for healthy individuals and are not always appropriate for persons who are ill or require nutritional support.[12] Many inpatients will have increased nutrient requirements as a result of their medical condition and/or need to treat malnutrition acquired prior to entering hospital.

As a result, the Standards include modified requirements for specific nutrients including energy and protein, where good evidence exists to reflect the specific nutritional needs of hospital patients.[13, 14, 15]

For more information on the nutrient goals and reference person used in the development of the Standards, please refer to *Supporting Evidence*.

Food safety and legislation

Public health facilities in South Australia that provide food are considered food businesses and therefore have a legal responsibility to ensure the safety and suitability of food supplied to their patients, residents, or clients. Food businesses must comply with the South Australia Food Act 2001[16], the Food Regulations 2017[17] and the Australia New Zealand Food Standards Code (Food Standards Code).[18]

All food business must comply with the Food Standards Code in particular 'Chapter 3: Food Safety Standards':

- 3.1.1—Interpretation and Application which sets out the interpretation provisions that apply to the other food safety standards, including relevant definitions.
- 3.2.2—Food Safety Practices and General Requirements describes specific food handling controls and requirements (e.g. food receipt, storage, processing, skills, and knowledge).
- 3.2.3—Food Premises and Equipment outlines the requirements for food premises, fixtures, fittings, equipment, and food transport vehicles.

Additionally, in order to protect vulnerable people in our community, including older persons and people who have weakened immune systems due to illness, businesses that serve potentially hazardous food to vulnerable persons need to comply with additional legislative requirements to further manage risks, specifically:

- 3.3.1—Food safety programs for food service to vulnerable persons stipulations that businesses that serve food to six or more vulnerable persons (as defined in the Standard) to implement a documented food safety program that effectively controls the hazards and complies with Standard 3.2.1.[19]
- 3.2.1—Food Safety Programs (FSP) Refer to the 3.2.1 guide.[20] The food safety program must comply with the requirements of Standard 3.2.1 of the Food Standards Code. It must:
    - systematically identify the potential hazards that may be reasonably expected to occur in all food handling operations of the food business
    - identify where, in a food handling operation, each identified hazard can be controlled, and the means of control
    - provide for the systematic monitoring of those controls
    - provide for appropriate corrective action when that hazard, or each of those hazards, is found not to be under control
    - provide for the regular review of the program by the food business to ensure its adequacy; and
    - provide for appropriate records to be made and kept by the food business demonstrating action taken in relation to, or in compliance with, the food safety program.

The Department for Health and Wellbeing[21] has prepared guidance documents that will assist businesses captured by Food Safety Standard 3.3.1 to manage food safety hazards by ensuring their Food Safety Program, hazard identification, and controls are effective.

The guidance, whilst identifying other pathogens of concern in food for vulnerable persons, has specifically identified Listeria as a significant hazard due to the high mortality rate for this specific organism in vulnerable people. While not mandatory, these documents contain best practice advice using evidence-based science and are

designed to establish a consistent state wide approach to managing food safety for vulnerable persons. For further information please contact SA Health; Health Protection and Licensing Services (08) 8226 7100 or email HealthFoodAudit@sa.gov.au.

Recommendations for local implementation

It is recommended that:

1. a gap analysis of the current menu against the Standards and the nutritional implications of any non-compliance be completed. This will require Standard Recipes to be in place, with nutritional analyses. A dietitian can assist with this.
2. a menu be developed and implemented by Food Services, in close consultation with Dietetics and, in relation to texture, Speech Pathology, and consumer satisfaction.
3. a process be co-designed between Food Services (in-house/contractor) and local dietetics service to monitor menu choice, quality, and safety. This should be an ongoing process.
4. patient perceptions are audited by utilising a validated foodservice patient satisfaction questionnaire tool.
5. changes regarding food provision, menu and menu items must involve consultation with the appropriate local dietetics representative (determined by each LHN).

It should be noted that these Standards are not intended to deter development of different Food Service models of food provision which, in recent trials and studies across Australian health care facilities, is proving to meet nutritional, operational, financial and consumer expectations.

National accreditation standards outline requirements to monitor the effectiveness and appropriateness of the nutritional systems.[22]

Compliance to the *Menu and Nutrition Standards for Public Health Facilities in South Australia* should be embedded within organisational quality improvement systems and include:

- Menu review biennially or following a major menu change.[23,24,25]
- Collaborative menu planning processes, involving Dietitians, Food Service Managers, consumers and other key stakeholders to ensure nutrition, psychosocial, financial, and quality goals are met.[23,24,25]
- A credentialed Dietitian to assess the food and menu as meeting these Standards and the patient profile requirements.[23,24,25]

Ongoing service review and improvement should be evident through quality improvement programs[24] and include various audits such as food safety audits, IDDSI framework adherence, food allergies and intolerances.

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Nutrition Standards and Minimum Serve Size

The Nutrition Standard and Minimum Serve Size outlined in the following tables specifies the minimum nutritional specifications and serve sizes for menu items for breakfast, lunch, dinner and three mid-meals for patients in a public facility.

The Nutrition Standard and Minimum Serve Size is to be considered a **minimum** standard. Facilities are encouraged to extend the meal service and offer additional choices.

Breakfast

Menu Item	Minimum Serve and Examples	Nutrition Standards Per Serve
Fruit (fresh)	100g	
Fruit (canned)	120g	In natural fruit juice or water
Cereal (hot)	150g cooked weight	No added sugar No added fat
Cereal (cold)	Portion packs where available or 30g	Cereals (without fruit) to contain less than 15g sugars per 100g Cereals with fruit to contain less than 25g sugars per 100g Offer at least 2 varieties with fibre content of at least 3g total fibre per serve
Protein (hot) Continental breakfast and/or Traditional cooked	55g egg 130g baked beans	At least 6g protein (protein equivalent of 1 egg)
Protein (cold)	150g yoghurt 20g cheese	At least 6g protein
Bread/roll	1 slice 30g roll	
Margarine	Portion pack (10g)	Poly or mono-unsaturated fats are recommended
Milk	150ml	Alternative milks to contain at least 100mg calcium per 100ml
Spreads	Portion packs	Low joule jam not necessary for persons with diabetes Honey should not be given to consumers under 12 months of age
Hot beverages	150ml 15ml milk or portion pack per beverage	
Juice	Portion packs	No added sugar (100% juice)
Sugar and sugar substitute	Portion packs	Artificial sweetener available on request

Lunch and Dinner

Menu Item	Minimum Serve and Examples	Nutrition Standards Per Serve
Soup		
Group 1 Nutrient Dense	180ml	At least 350kJ At least 5g protein Maximum 500mg sodium
Group 2 Minimal Nutrient Value	180ml	At least 180kJ At least 2g protein Maximum 500mg sodium

Hot meal		
Group 1 Solid piece of beef, pork, veal, lamb, chicken or fish	100g cooked weight	At least 20g protein
Group 2 Wet dish—meat and sauce, minimal to no vegetables	130-160g cooked weight Edible meat component 100g	At least 20g protein
Group 3 Wet dish—even mix of meat and vegetables	150-180g cooked weight Edible meat component 100g	At least 20g protein
Group 4 Wet dish – even mix of meat, starch and vegetables	Edible meat component 100g	At least 20g protein
Vegetarian dish		At least 600kJ At least 15g protein
> Less than 20% of hot meals have more than 15g fat per serve > Less than 10% of hot meals have more than 500mg sodium per serve > Maximum 10% of hot meals are less than 20g protein per serve (or less than 15g protein per serve if vegetarian)		
Starch vegetable/ alternatives (cous cous/ rice/pasta)	90g cooked weight	At least 10g carbohydrate Flavoured options should contain less than 500mg sodium
Fortified starch vegetable/ alternatives	90g cooked weight	At least 400kJ At least 3g protein Flavoured options should contain less than 500mg sodium
Vegetables (green/brassica)	60g cooked weight	
Vegetables (orange/red)	60g cooked weight	
Side salad	100g	
Cold meal		
Salad (salad as main meal) Meat or equivalent Fresh salad vegetables	60g cold meat, edible portion and/or 40g cheese and/or 2 eggs and/or 40g legumes 1 cup of a minimum 3 fresh salad vegetables on each plate	At least 20g protein All meat should be lean with no visible fat
Starchy (carbohydrate-based salad)	90g	At least 10g carbohydrate
Sandwich/wrap		
Bread	2 slices/60g wrap	
Margarine		
Filling	45g cold meat, edible portion 40g cheese 2 eggs (55-60g) 60g fish	At least 15g protein All meat should be lean with no visible fat
Fruit		
Fruit (canned)	120g	In natural fruit juice or water
Fruit (fresh)	100g	
Side bread and Spread		
Bread	1 slice	
Margarine	Portion pack (10g)	Poly or mono-unsaturated fats are recommended

Lunch and Dinner - Continued

Beverages		
Cold beverage (milk)	150ml	Alternative milks to contain at least 100mg calcium per 100ml
Cold beverage (juice)	100ml	
Hot beverage	150ml 15ml milk or portion pack per beverage	
Sugar and sugar substitutes	Portion packs	Artificial sweetener available on request
Desserts		
Group 1	60-90g	At least 500kJ At least 4g protein At least 100mg calcium
Group 2	60-90g	At least 300kJ
Ice cream Custard Yoghurt	100ml 100g 150g	

Mid-Meals (Morning Tea, Afternoon Tea and Supper)

Menu Item	Minimum Serve and Examples	Nutrition Standards Per Serve
Mid-meal snack Group 1	cheese and crackers yoghurt cheese scone custard sandwich with protein filling breakfast bar dairy dessert	Greater than 500kJ At least 5g protein
Mid-meal snack Group 2	fruit biscuits crackers nuts (no added salt) muffin scone cake	Greater than 300kJ
Hot beverages	150ml 15ml milk or portion pack per beverage	
Cold beverage (milk)	150ml	Alternative milk to contain at least 100mg calcium per 100ml
Cold beverage (juice)	110ml	

Menu Choice and Design

The Menu Choice and Design section outlined in the following tables provide the recommendations for the configuration of a menu. To maximize patient intake and satisfaction, there are minimum choices per meal (breakfast, lunch, dinner and mid-meals) which should be met as well as variety (recipes/flavour/menu items) targets for specific menu items to reduce repetition. These recommendations can be applied to therapeutic diet menus aiming to ensure patients have adequate choice.

Patients with certain specific dietary requirements may require a menu beyond these recommendations. Specially prepared meals should be made available for such patients.

All sites need to consider the patient population, length of stay (LOS) less than 3 days may benefit from an a la carte menu. Menu cycles should be determined according to patient/resident LOS. LOS of 3-10 days should have a menu cycle of at least seven days. For sites with mixed LOS cohorts a long stay menu cycle should be available and sites with >750 beds should have a menu cycle of at least fourteen days. Sites with residents should have a menu cycle of at least 4 weeks.[1]

Breakfast

Menu Item	Minimum Choice Per Meal	Menu Design (minimum requirement)	Variety Repetition Per Menu Cycle
Fruit (fresh)	1	Provide a variety of fruits Include seasonal fruits where possible Easy to chew fruit to be available	At least 5 different varieties in menu cycle No repetition on consecutive days
Fruit (canned)	1		
Cereal (hot)	1	2 varieties per menu cycle	No repetition on consecutive days unless choices exceed minimum choice per meal
Cereal (cold)	4	2 varieties more than 3g fibre per serve 2 varieties less than 3g fibre per serve	Repetition allowed
Milk for cereal (full cream milk)	1	Skim milk, reduced fat (2%) and soy milk available and to patients on therapeutic diets	Repetition allowed
Protein (hot)	1	3 to 5 varieties per menu cycle A hot breakfast must be made available to patients nutritionally at risk and therapeutic diets Low protein to be offered to create variety	No repetition on consecutive days unless choices exceed minimum choice per meal
Protein (cold)	2	2 to 3 varieties per menu cycle	No repetition on consecutive days unless choices exceed minimum choice per meal
Bread	2	Offer white and at least 1 of wholemeal or multigrain Able to select up to 2 slices per meal Allow selection of up to 1PC Margarine and 1PC spread per slice of bread ordered	Repetition allowed
Margarine	1	Butter to be offered for variety	
Spread	3		
Hot beverages	3	3 varieties per menu cycle Decaffeinated options to be available Offer PC milk, sugar and artificial sweeteners upon request Skim milk, reduced fat (2%) and soy milk available and to patients on therapeutic diets	Repetition allowed
Sugar	1	Offer 2 if patient selects cereal and hot beverage Artificial sweeteners to be available on request	
Cold beverage (milk)	1	Skim milk, reduced fat (2%) and soy milk available on request and to patients on therapeutic diets	Repetition allowed
Cold beverage (juice)	1	2 varieties per menu cycle	Rotate variety on consecutive days unless choices exceed minimum choice per meal

Lunch and Dinner

Menu Item	Minimum Choice Per Meal	Menu Design (minimum requirement)	Variety Repetition Per Menu Cycle
Soup			
Group 1 Nutrient Dense	1 per day	Soup Group 2 to be offered as second choice	If 1 soup offered per day – no repetition in menu cycle of 14days or less If 2 soups available per day, repetition once per menu cycle
Group 2 Minimal Nutrient Value	Only as 2nd choice per day		
Hot meal			
Group 1 Solid piece of beef, pork, veal, lamb, chicken or fish	2 per meal 1 choice must be from Group 1 or 2	1 choice per meal to be suitable for easy to chew. 1 hot meal per day to be beef or lamb dish Fish to be offered twice per week Gravy is additional	No more than 10% repetition per menu cycle
Group 2 Wet dish—meat and sauce, minimal to no vegetables			
Group 3 Wet dish—even mix of meat and vegetables			
Group 4 One dish meal (protein, starch, vegetables)			
Vegetarian dish			
Starch Vegetables/ Alternatives/ (cous/rice/pasta)	1 per meal	4 varieties of starch vegetables and 4 alternatives (cous cous/rice/pasta/noodles) varieties per menu cycle Use different cooking method to provide variety Potato, rice or pasta may not be required as side where included as part of the main dish but must meet more than 10g carbohydrate per serve (min 90g serve size per serve in recipe)	No repetition on consecutive days unless choices exceed minimum choice per meal
Fortified starch/ alternatives		A fortified starch must be made available at lunch and dinner to patients nutritionally at risk and therapeutic diets requiring choice 4 varieties per menu cycle Same recipe can be used for lunch and dinner	No repetition on consecutive days
Vegetables (green/brassica)	2 per meal	Each meal to offer 1 choice from vegetables (green/brassica) and 1 choice from vegetables (orange/red) Side salad can be offered for variety Mixed vegetables can be used for variety	Limit repetition to once every second day
Vegetables (orange/red)			
Side salad			
Cold meal			
Sandwich/Wrap	2 per meal	For 7-day menu cycle, 7 varieties of protein per cycle (4 varieties meat, 1 variety fish and 2 varieties meat alternative) For 14-day menu cycle or more, 8 varieties of protein per cycle (5 varieties meat, 1 variety fish and 2 varieties meat alternatives) 4 varieties salad per menu cycle. Offer white and at least 1 choice of wholemeal/wholegrain/multi-grain sandwich per day. Use wraps and different type of bread for variety Patients should be able to select up to 2 sandwiches per meal time	Variety of fillings on consecutive days.

Salad (as a main meal)	1 per meal	For 7-day menu cycle, 7 varieties of protein per cycle (4 varieties meat, 1 variety fish and 2 varieties meat alternatives). For 14-day menu cycle or more, 10 varieties of protein per cycle (6 varieties meat, 2 variety of fish and 2 varieties meat alternatives). 5 varieties starch per menu cycle. 5 varieties of legume per menu cycle. 6 varieties of vegetables/ salad per menu cycle (3 different colours of vegetables per serve). Offer PC Salad dressing as option	No repetition of protein on consecutive days. No repetition of starch variety on consecutive days
Dessert			
Group 1	1 per day	Sauce/dressing/custard to be provided as addition (60g) Hot dessert required 1 per day Nutritionally at risk patients and/or required increased energy and protein amounts can select up to 2 desserts per meal	No repetition in menu cycle of 14 days or less
Group 2	1 per day		
Ice cream Custard Yoghurt		Can be offered as 2nd or 3rd choice per meal	If offered as second dessert choice per meal, no repetition of same item and flavour on same day lunch and dinner If offered as third dessert choice per meal, same item and/or flavour can be offered on same day lunch and dinner Variety of desserts on consecutive days
Fruit			
Fruit (fresh/canned)	2	4 varieties per menu cycle Provide a variety of fresh and canned fruits Include seasonal fruits where possible Easy to chew fruit to be available	No repetition on same day
Side bread and spread			
Bread	1	Allow selection of up to 2 slices/roll per meal 1 PC margarine per slice/roll of bread Multi-grain/wholemeal option available upon request	Repetition allowed
Margarine	1	1 PC margarine per slice/roll of bread	
Beverages			
Hot beverages	3 per meal	3 varieties per menu cycle Decaffeinated options to be available Offer PC milk, sugar and artificial sweeteners upon request Skim milk, reduced fat (2%) and soy milk available and to patients on therapeutic diets	Repetition allowed
Cold beverage (milk)	1 per meal	Skim milk, reduced fat (2%) and soy milk available and to patients on therapeutic diets	Repetition allowed
Cold beverage (juice)	1 per meal	2 varieties per menu cycle	Rotate variety on consecutive days unless choices exceed minimum choice per meal

Mid-Meals (Morning Tea, Afternoon Tea and Supper)

Menu Item	Minimum Choice Per Meal	Menu Design (minimum requirement)	Variety Repetition Per Menu Cycle
Mid-meal snack Group 1	1	Use different flavours to provide variety Nutritionally at risk patients and/or required increased energy and protein amounts can select up to 2 snacks per mid-meal	No repetition per day No repetition on consecutive days unless choices exceed minimum choice per meal
Mid-meal snack Group 2	2		
Hot beverages	3	3 varieties per menu cycle Decaffeinated options to be available Offer PC milk, sugar and artificial sweeteners upon request Skim milk, reduced fat (2%) and soy milk available and to patients on therapeutic diets	Repetition allowed
Cold beverages (milk)	2	Skim milk, reduced fat (2%) and soy milk available and to patients on therapeutic diets	Repetition allowed
Cold beverages (juice)	2		Repetition allowed

References for Menu Choice and Design:

1. Carrier, N., Ouellet, D., & West, G. (2007) Nursing home food services linked with risk of malnutrition, *Canadian Journal of Dietetic Practice*, 68(1), 14-20.

Nutritional Issues for Specific Patient Groups

While the Standards do not address the needs of patients who require specialised therapeutic intervention, there are some patient groups which may require additional considerations during menu planning. Typically, these are associated with the following hospital patient groups:

- Patients with food allergies
- Patients requiring food with a modified consistency
- Mental health services
- Long stay/Rehabilitation patients
- Patients who follow a vegetarian or vegan diet
- Maternity patients
- Paediatric patients
- Patients from diverse cultural and religious backgrounds
- Patients with diabetes, obesity & requiring diets consistent with Australian Dietary Guidelines
- Nutritionally at risk

The following Nutritional issues for Specific Patient Groups tables are based upon a review of the latest evidence base and observations from nutrition and food service professionals working with these patient groups.

Patients with food allergies

Background/rationale	Considerations for nutrition specifications
In Australia, food allergy affects 10% of children, 5% of adolescents and 2% of adults (1). An allergy is a person's immune system reacting to substances in the environment which are harmless for others. Substances causing allergic reactions are known as allergens. The ten common food allergens in Australia are cow's milk, soy, egg, wheat, peanut, tree nuts, sesame, fish, shellfish and lupin, however an individual may be allergic to *any* food (including fruits, vegetables, meats and grains). In its most severe form, an allergic reaction can result in anaphylaxis which can be life threatening. Anaphylaxis is a generalised allergic reaction which can often involve more than one body system, such as the skin, respiratory, cardiovascular or gastro-intestinal systems. Between 1997 and 2013, the Australian Bureau of Statistics recorded 324 deaths from anaphylaxis, however the exact figure is probably more than this. Even when a patient has an anaphylaxis while in hospital, deaths can still occur as evidenced by coronial cases. While food allergies are most common in young children, a significant number of adolescents and adults have food allergy. Persistent food allergy that lasts into adulthood is becoming more common and all food services must be equipped to provide safe and nutritious foods and snacks for patients with food allergies. The National Allergy Strategy (NAS) provides best practice guidelines for Food Allergen Management in Food Service (2), including training for food service staff.	Ensure nutritional adequacy for patients with food allergy through meal choices which include substitution or alternative choices, rather than just the omission of the allergen. Check recipes and ingredients for food allergens and ensure kept up-to-date All food service staff involved in the preparation of food undertake food safety training inclusive of food allergy training. e.g. All About Allergens for Hospitals online training https://foodallergytraining.org.au Adequate allergen management processes exist within the kitchen for preparation, plating, storage and serving, preventing of cross-contamination. A process exists to identify meals for patients with food allergies.

References for

1 House of Representatives Standing Committee on Health, Aged Care and Sport (2020) *Walking the allergy tightrope Addressing the rise of allergies and anaphylaxis in Australia,* Retrieved November 25 from https://parlinfo.aph.gov.au/parlInfo/download/committees/reportrep/024422/toc_pdf/Walkingtheallergytightrope.pdf;fileType=application%2Fpdf

2 Statewide Foodservices Qld. Health (2018) *Food Allergen Management in Foodservice A BEST PRACTICE GUIDELINE,* Retrieved November 25 2021 from https://www.nationalallergystrategy.org.au/images/doc/Food_Allergen_Best_Practice_Guideline.pdf

3 National Allergy Strategy. (2021) *NAS Food allergy and food intolerance policy template,* Retrieved November 25, 2021 from https://foodallergytraining.org.au/resources/images/docs/NAS_FAFI_Policy_and_Procedure_template_healthcare_ 250421.docx

Patients requiring food with a modified consistency

Background/rationale	Considerations for nutrition specifications
Patients may require texture modified foods for a variety of reasons, including poor dentition. Patients who have dysphagia may not be able to swallow non-texture modified foods and thin fluids safely and be at risk of choking. It is very important that these patients receive the correct consistency of diet. The International Dysphagia Diet Standardised initiative (IDDSI) recommends the following scale for modified fluids and texture- modified foods: Food > Level 7—Easy To Chew > Level 6—Soft and Bite-Sized > Level 5—Minced and Moist > Level 4—Pureed > Level 3–Liquidised Fluids > Level 4—Extremely Thick > Level 3–Moderately Thick > Level 2—Mildly Thick > Level 1—Slightly Thick > Level 0 -Thin Further information regarding the recommended foods and fluids for each of the above textures and thicknesses can be found in IDDSI.[1] Patients who require a texture modified diet and/or thickened fluids can suffer from poor oral intake due to the absence of variation in texture, colour and shape of their food. Liquids may be required during processing of texture modified foods to ensure the correct consistency which can dilute the nutrient density of foods. In addition, patients who require thickened fluids may be at risk of dehydration.	Ensure meal lists are up to date to ensure patients receive the correct consistency of diet as patients' conditions can change suddenly. Avoid mixing foods on the plate or in a bowl to enhance individual flavours. Where possible serve food in attractive containers and colour combinations. Vary shapes wherever possible using moulds or roulades. Offer suitable snacks to achieve energy and nutrient goals. Provide alternative eating utensils to assist patients with poor manual dexterity. Consider the ease with which patients can open containers/packages. Provide support for patients to assist with feeding during mealtimes. Consider the nutrient dilution when foods are modified. Food items that are liquid at room temperature (such as soup, jelly, and ice cream) may not be suitable for patients requiring thickened fluids. Refer to the IDDSI for further menu planning guidance.[1] Seek the advice of speech pathologists for planning menus for this patient group to ensure modified foods and fluids comply with texture and thickness standards. Refer to Nutrition Standards and Menu Design tables for further information and guidance on planning menus for texture modified diets, including nutritional standards and minimum choice.

References for Patients requiring texture modified food/fluids:

1 International Dysphagia Diet Standardisation Initiative (2019). *Complete IDDSI framework detailed definitions 2.0.* Retrieved December 3, 2020 from https://iddsi.org/resources/

Nutrition Standards and Minimum Serve Size
Textured Modified Diet (Pureed, Minced Moist, Soft and Bite Sized)

The items listed below are specific to texture modified diets and should be used in conjunction with the *Nutrition Standards and Menu Design tables (pages 8-13)* and *Nutritional issues for Specific Patient Group: Patients requiring texture modified food/fluids (page 20).*

Breakfast

Menu Item	Minimum Serve and Examples	Nutrition Standards Per Serve
Hot cereal	150g cooked weight	At least 500kJ At least 10g protein
Hot protein Group 1		At least 500kJ At least 6g protein

Lunch and Dinner

Menu Item	Minimum Serve and Examples	Nutrition Standards Per Serve
Soup		
Group 1 Nutrient Dense	180ml	At least 600kJ per serve At least 8g protein per serve Maximum 500mg sodium per serve
Group 2 Minimal Nutrient Value	180ml	At least 400kJ per serve At least 5g protein per serve Maximum 500mg sodium per serve
Hot meal		
Texture Modified Group 1 meat and liquid	100g cooked weight meat per serve Maximum 130g total cooked weight	At least 700kJ per serve At least 20g protein per serve Less than 15g total fat
Texture Modified Group 2 Wet dish—meat and sauce, minimal to no vegetables	100g cooked weight meat per serve Maximum 150g total cooked weight	At least 700kJ per serve At least 20g protein per serve Less than 15g total fat per serve If more than 20g protein per serve, meat weight can be less than 100g
Texture Modified Group 3 Wet dish—even mix of meat and vegetables	100g cooked weight meat per serve Maximum 180g total cooked weight	At least 700kJ per serve At least 20g protein per serve Less than 15g total fat per serve
> Less than 20% of hot meals have more than 15g fat per serve > Less than 10% of hot meals have more than 500mg sodium per serve		
Dessert – refer to Nutrition Standards and Menu Design tables pages 8-13. *Desserts that are liquid at room temperature are not suitable for patients requiring thickened fluids.*		

Mid-Meals (Morning Tea, Afternoon Tea and Supper)

Menu Item	Minimum Serve and Examples	Nutrition Standards Per Serve
High protein high energy beverage/ snack		Greater than 500kJ Greater than 8g protein

Beverages – refer to Nutrition Standards and Menu Design tables pages 8-13

For patients requiring thickened fluids, beverages need to be of appropriate thickness.

Menu Choice and Design
Textured Modified Diet (Pureed, Minced Moist, Soft and Bite Sized)

The items listed below are specific to texture modified diets and should be used in conjunction with the *Nutrition Standards and Menu Design tables (pages 8-13)* and *Nutritional issues for Specific Patient Group: Patients requiring texture modified food/fluids (page 20).*

PC—portion-control

#P—Pureed options can be considered for Minced and Moist diet, pending Speech Pathologists approval.

Breakfast

Menu Item	Minimum Choice Per Meal	Menu Design (minimum requirement)	Variety Repetition Per Menu Cycle
Fruit (canned)	1	3 varieties per menu cycle #P	Rotate variety on consecutive days unless choices exceed minimum choice per meal
Cereal (hot)	2	3 varieties per menu cycle #P	Rotate one variety on consecutive days unless choices exceed minimum choice per meal
Protein (hot)	1	2 varieties per texture per menu cycle #P	Rotate variety on consecutive days unless choices exceed minimum choice per meal
Protein (cold)	1	2 varieties per menu cycle	Rotate variety on consecutive days unless choices exceed minimum choice per meal

Lunch and Dinner

Menu Item	Minimum Choice Per Meal	Menu Design (minimum requirement)	Variety Repetition Per Menu Cycle
Hot meal			
Texture Modified Group 1 meat and liquid	2 per meal	Offer second choice per texture for variety	No repetition on consecutive days unless choices exceed minimum choice per meal
Texture Modified Group 2 Wet dish—meat and sauce, minimal to no vegetables			
Texture Modified Group 3 Wet dish—even mix of meat and vegetables			
Fortified starch vegetables/ alternatives	1 per meal	2 varieties per menu cycle #P	No repetition on consecutive days unless choices exceed minimum choice per meal
Vegetables (green/brassica)	1 per meal	2 to 3 varieties per menu cycle	No repetition on consecutive days unless choices exceed minimum choice per meal
Vegetables (orange/red)	1 per meal	2 to 3 varieties per menu cycle	No repetition on consecutive days unless choices exceed minimum choice per meal
Desserts			
Group 1	1 per day	Patients can select up to 2 desserts per meal. #P	No repetition in menu cycle of 14 days or less
Group 2	1 per day		
Fruit (Canned)	1 per meal	3 varieties per menu cycle #P	No repetition on consecutive days unless choices exceed minimum choice per meal

Mid-Meals (Morning Tea, Afternoon Tea and Supper)

Menu Item	Minimum Choice Per Meal	Menu Design (minimum requirement)	Variety Repetition Per Menu Cycle
Mid-meal snack Group 1	1	2 varieties per menu cycle #P Use different flavours to provide variety Patients can select up to 2 snacks per mid-meal	No repetition per day No repetition on consecutive days unless choices exceed minimum choice per meal
Mid-meal snack Group 2	1		
High protein high energy Beverage/ Snack	1	3 flavours per menu cycle	

Mental Health Services

Background/rationale	Considerations for nutrition specifications
Patients receiving care for mental health in acute care hospitals can have a longer length of stay, with some patients staying for extended periods of time.[1,2] This needs to be taken into consideration when menu planning. The prevalence of obesity and excessive weight gain for mental health patients in acute care hospitals can be high[3]. Associated health risks of excessive weight include Type 2 diabetes and cardiovascular risk. The menu is an important tool to manage and minimise risk of chronic disease. Physical Activity Levels (PAL) may also be low in this population group due to a disinclination to exercise, inability to participate in normal daily living activities, sedation, increased hours of sleep, and diagnoses such as depression, schizophrenia, and agoraphobia [4]. Whilst not defined in the literature, the PAL factor in these patients may be as low as 1.0—1.1. Medication can also dramatically increase patient appetites and have sedative affects, reducing patient activity levels. Some antipsychotic medications reduce metabolic rate, diminish activity levels and affect appetite. Weight gain is a common side effect. [5,6,7,8] Conversely, activity levels may be increased due to diagnoses such as mania, obsessive compulsive disorder and untreated psychosis and subsequently, these patients may suffer from weight loss. Elderly patients with dementia are also at risk of weight loss as these patients may choose not to eat or not eat adequate amounts at the normal mealtimes.	Maintain an interest in eating with strategies such as longer menu cycles, increased choice, seasonal changes, choice at the point of service. Provide access to healthy food choices that are low in energy and saturated fat, yet high in fibre[9]. Requiring minimum amount of three fish meals per week.[9] Additional low energy food made available if patients are still hungry e.g. salad, vegetable soup, fruit. Note caffeine may need to be limited.[9] Serve size and number of serves should be planned to meet the actual energy needs of the patient, not patient demand. Supervised cooking groups can be useful to increase variety and reduce menu fatigue and provide opportunities to share practical education about diet and the risks associated with fast food. Where energy expenditure is increased, offer high energy options at mealtimes and snacks and offer flexible eating times. Some patients may require a menu with 'finger foods' if they are not able to manage cutlery. Where possible, efforts should be made to minimise the duration a patient is on the finger food menu as choice and variety can be compromised. Additional foods are available between meals for patients with malnutrition. Food fortification and/or nutritional supplements may be necessary to meet increased nutrient requirements due to malnutrition and/or increased energy requirements resulting from obsessive behaviour. For Guidance in relation to facilities servicing a large mental health patient unit, please refer to the NSW Agency for Clinical Innovation Nutrition Standards for Consumers of Inpatient Mental Health Services in NSW.[9]

It is important to acknowledge that many mental health patients have opportunities to visit local shops and may use their discretionary spend on foods. This should be considered when planning menus and food related activities

References for Mental Health Services:

1 SA Health. (2020). *SA Health mental health services plan: 2020-2025.* Retrieved December 3, 2020 from https://www.sahealth.sa.gov.au/wps/wcm/connect/public+content/sa+health+internet/about+us/publications+and+resources/plans/sa+mental+health+services+plan/sa+health+mental+health+services+plan

2 Jones, S. (2012). *Mental health data 2009/10.* Mental Health and Drug and Alcohol Office.

3 Teasdale S, Ward P, Rosenbaum S, Samaras K, Stubbs B. Solving a weighty problem: Systematic review and meta analysis of nutrition interventions in severe mental illness. The British Journal of Psychiatry. 2017. 210:2, pg 110-118.

4 Lambert, T. (2011). Managing the metabolic adverse effects of antipsychotic drugs in patients with psychosis. *Australian Prescriber*, 34(4), 97-99.

5 Evans, S., Newton, R., & Higgins, S. (2005). Nutritional intervention to prevent weight gain in patients commenced on Olanzapine: A randomized controlled trial. *Australian and New Zealand Journal of Psychiatry*, 39(6), 479-486.

6 Brecher, M., Leong, R., Stening, G., Osterling-Koskinen, L., & Jones, A. (2007). Quetiapine and long-term weight change: A comprehensive data review of patients with schizophrenia. *The Journal of Clinical Psychiatry*, 68(4), 597-603.

7 Haddad, P. (2005). Weight change with atypical antipsychotics in the treatment of schizophrenia. *Journal of Psychopharmacology (Oxford),* 19(6_suppl), 16-27.

8 Newcomer, J. (2005). Second-generation (atypical) antipsychotics and metabolic effects: A comprehensive literature review. *CNS Drugs, 19 Suppl 1*, 1-93.

9 NSW Agency for Clinical Innovation. (2013). Nutrition standards: For consumers of inpatient mental health services in NSW. Retrieved December 3, 2020 from https://aci.health.nsw.gov.au/resources/nutrition/nutrition-food-in-hospitals/nutrition-standards-diets

Long stay/Rehabilitation patients

Background/rationale	Considerations for nutrition specifications
In any facility there may be patients who are hospitalised for extended periods of time for several reasons including complications, rehabilitation, acute mental illness or waiting for accommodation. For these patients, appetite can decline for numerous reasons increasing the likelihood of poor nutrition and delayed healing.	Incorporate both traditional and contemporary menu choices to appeal to an adult population with a wide age range. Offer flexible meal and mid mealtimes. Maintain an interest in eating with strategies such as longer menu cycles, increased choice, seasonal changes and special theme days. Providing an 'extras list' or supplementary 'long stay menu' with additional choices. Nourishing dishes which are higher in kilojoules and protein for those with increased needs or small appetites are available. High protein options are available at all meals to assist in muscle maintenance.[1,2] Healthy choices to assist patients in improving their health and facilitating weight management. Where energy expenditure is low, offer high protein low energy options.[1,2]

It is important to acknowledge that many long stay patients have opportunities to visit local shops and may use their discretionary spend on foods. This should be considered when planning menus and food related activities

References for Long stay patients/ Rehabilitation:

1 Cermak, N., Res, P., De Groot, L., Saris, W., & Van Loon, L. (2012). Protein supplementation augments the adaptive response of skeletal muscle to resistance-type exercise training: A meta-analysis. The American Journal of Clinical Nutrition, 96(6), 1454-1464.

2 Tieland, M., Dirks, M., Van Der Zwaluw, N., Verdijk, L., Van de Rest, O., De Groot, L., & Van Loon, L. (2012). Protein Supplementation Increases Muscle Mass Gain During Prolonged Resistance-Type Exercise Training in Frail Elderly People: A Randomized, Double-Blind, Placebo-Controlled Trial. Journal of the American Medical Directors Association, 13(8), 713-719.

Residential Aged Care

Background/rationale	Considerations for nutrition specifications
Multi-Purpose Services providing food and fluids to people accessing residential aged care services are to ensure the food and fluids meet their preference, are varied, nutritious, appetizing, and of adequate quantity.[1] Approved providers of care and services for residential care services are to provide 3 meals per day plus morning tea, afternoon tea and supper, which have adequate variety, quality and quantity for each resident's individual nutrition needs including special dietary, medical, religious or cultural requirements, and inclusive of beverages.[2] Diets that restrict macro and micro-nutrients should be minimized for all residents as they reduce quality of life.[3] Availability of healthier menu options can be beneficial. Older adults need more dietary protein (1.0-1.2g/kg body weight per day) than do younger adults to support good health, promote recovery from illness, and maintain functionality. Most older adults who have aged-related sarcopenia or chronic diseases need even more dietary protein (1.2-1.5g/kg body weight per day) except those with severe kidney disease.[4] There is evidence to suggest that optimum protein synthesis occurs with 30g consumed per meal spread equally across the day.[4] The aging process and associated changes in chewing/swallowing, cognition, skin integrity and muscle density impacts nutrient absorption including Vitamin D, calcium, magnesium, zinc, potassium, etc. Recommended dietary intakes of vitamins, particularly vitamin D and calcium are increased. [5,6] Food fortification and finger foods are desirable within residential aged care to facilitate increased oral intake, independence and self-feeding. [7, 8, 9] These are also viable options to prevent unintentional weight loss and potentially malnutrition. Constipation and dehydration are also common issues in older adults requiring encouragement of relevant foods and fluids. Residential aged care facilities should provide meals in a pleasant, homelike atmosphere, according to individual needs with respect to personal preferences. [1, 10]	• Consumers in residential aged care facilities are to receive a menu cycle of adequate length (4 weeks). • Residents food and fluid preferences should be considered in menu planning and residents should have input into menu choices and menu reviews. • Additional food and fluids should be available as required. • Protein options are required at each meal and mid-meal to ensure adequate consumption is maximized across the day. • Higher protein, lower energy options can be useful menu options for residents' weight management considerations. • Hot and cold protein breakfast choice should be available for residents on modified consistency diets. • Meals should be produced from foods of good quality whilst also maximising the nutrient value of these foods. • Fortified foods and fluids such as hot cereal, soup, mashed potato and milk should be provided within the menu. • Finger food options should be available for residents who experience difficulties self-feeding. • Residential aged care facilities should provide a dining room/s which has a home-like environment.

References for Residential Aged Care:

1 Australian Commission on Safety and Quality in Health Care. *National Safety and Quality Health Service Standards. Aged care module and User Guide for Multi-Purpose Services. February 2021. Available at: https://www.safetyandquality.gov.au/publications-and-resources/resource-library/nsqhs-standards-aged-care-module-and-user-guide-multi-purpose-services*

2 Aged Care Quality and Safety Commission 2018, *Guidance and Resources for Providers to support the Aged Care Quality Standards. December 2019. Standard 4(3)(f) Available at: https://www.agedcarequality.gov.au/sites/default/files/media/Guidance_%26_Resource_V9.pdf*

3 Wright, O. R. L., Connelly, L. B., Capra, S., & Hendrikz, J. (2013). Determinants of foodservice satisfaction for patients in geriatrics/rehabilitation and residents in residential aged care. *Health Expectations, 16*(3) Retrieved from https://search.proquest.com/docview/2402273813?accountid=34512

4 Bauer, J., Biolo, G., Cederholm, T., Cesari, M., Cruz-Jentoft, A., Morley, J. E., . . . Boirie, Y. (2013). Evidence-based recommendations for optimal dietary protein intake in older people: A position paper from the PROT-AGE study group. *Journal of the American Medical Directors Association, 14*(8), 542-559. doi:http://dx.doi.org/10.1016/j.jamda.2013.05.021

5 Woods JL, Walker KZ, Iuliano-Burns S, Strauss BJ: Malnutrition on the menu: Nutritional status of institutionalised elderly Australians in low-level care. Journal of Nutrition Health & Aging. 2009, 13: 693-698.

6 Iuliano, S., Woods, J., & Robbins, J. (2013). Consuming two additional serves of dairy food a day significantly improves energy and nutrient intakes in ambulatory aged care residents: A feasibility study. *The Journal of Nutrition, Health & Aging, 17*(6), 509-13. doi:http://dx.doi.org/10.1007/s12603-013-0025-8

7 Sossen, L., Bonham, M., & Porter, J. (2019). Does a high-energy high-protein diet reduce unintentional weight loss in residential aged care residents? *Journal of Nutrition in Gerontology and Geriatrics,* 1-13. doi:http://dx.doi.org/10.1080/21551197.2019.1691108

8 Beelen, J., de Roos, ,N.M., de Groot, L. C., P, G, & , M. (2017). Protein enrichment of familiar foods as an innovative strategy to increase protein intake in institutionalized elderly. *The Journal of Nutrition, Health & Aging, 21*(2), 173-179. doi:http://dx.doi.org/10.1007/s12603-016-0733-y

9 Biernacki, C., & Barratt, J. (2001). Improving the nutritional status of people with dementia. *British Journal of Nursing, 10*(17), 1104. doi:http://dx.doi.org/10.12968/bjon.2001.10.17.994
10 Volkert D, et al., ESPEN guidelines on nutrition in dementia, Clinical Nutrition (2015), http://dx.doi.org/10.1016/j.clnu.2015.09.004

Vegetarian/Vegan

Background/rationale	Considerations for nutrition specifications
Plant based diets are becoming increasingly popular in Australia Vegetarian and vegan diets can be healthy when carefully planned and monitored.[1] The menu for vegetarian/vegan patients' needs to ensure an adequate level and quality of protein as well as micronutrients.[2] Nutrients at risk in this patient group include protein, iron, zinc, calcium and B12.	Provide a choice of suitable options that are popular and likely to be eaten. Include appropriate meat and dairy substitutes. Provide dishes based on brown rice, tofu, lentils, soybeans, and cashews to assist with meeting zinc targets.[3] Convenience vegetable-protein products (e.g. vegetarian/vegan sausages, patties, schnitzels) may be considered for menu variety, however these products can be high in sodium—refer to Nutritional Standards for Hot Meals (page 9) for guidelines. It may be preferable to offer hot meals at lunch and dinner to assist vegetarians and vegans to meet their nutritional targets. Offer a source of Vitamin C at each meal e.g. fruit juice, to improve iron absorption.[2] Iron and zinc-fortified breads and cereals should be offered to assist with meeting the targets for these nutrients.[4,3] To meet protein and calcium requirements, mid-meals should be offered to those on a vegetarian or vegan menu. Considerations specifically for vegans: > Vegan diets require calcium-fortified alternative milk (e.g. soy milk) at mid-meals to assist with meeting calcium and protein targets. > Consider offering dairy-free desserts (e.g. soy custard, soy yoghurt) or high protein vegan desserts (e.g. chia pudding, vegan brownies) to assist with meeting calcium and protein targets. > Patients who follow a vegan diet will require further assistance to ensure adequate nutritional intake and menu variety.[5,6]

References for Vegetarian/Vegan:

1 Reid, M. A., Saunders, A. V., Marsh, K. L., Zeuschner, C. K., & Baines, S. (2014). Meeting the nutrient reference values on a vegetarian Diet. *Medical Journal of Australia, 1*(4), 33-40.

2 Marsh, K. A., Munn, E. K., & Baines, S. (2012). Protein and vegetarian diets. *Medical Journal of Australia, 1*(4), 7-10.

3 Saunders, A., Craig, W., & Baines, S. (2013). Zinc and vegetarian diets. *Medical Journal of Australia, 199*(4), 17-21.

4 Saunders, A., Craig, W., Baines, S., & Posen, J. (2013). Iron and vegetarian diets. *The Medical Journal of Australia*, *199*(S4), 11-16.

5 Radd, S., & Marsh, K. (2013). Practical tips for preparing healthy and delicious plant-based meals. *The Medical Journal of Australia, 199*, 41-48.

6 Zeuschner, C., Hokin, B., Marsh, K., Saunders, A., Reid, M., & Ramsay, M. (2013). Vitamin B12 and vegetarian diets. *Medical Journal of Australia, 199*, 27-32.

Maternity

Background/rationale	Considerations for nutrition specifications
Nutrient requirements for pregnancy and lactation can generally be met with a normal healthy diet if sufficient quantities of food are available. Extra serves and nutrient dense mid meal snacks may be required to meet energy, protein and micronutrient requirements for maternity patients during the last trimester of pregnancy and lactation.[1,2,3] Sufficient choice should be available to provide options for women who are overweight or obese or have gestational diabetes (including low glycaemic index and low carbohydrate meal and snack options) Where nutritional intake is compromised due to hyperemesis gravidarum (severe morning-sickness) or other medical conditions a therapeutic diet and/or nutritional supplements may be required. Consideration should be given to elevated iron, folate, and iodine requirements during pregnancy and mercury in fish advice in menu planning.[3,4,5] Pregnant women and unborn children are at higher risk of Listeria infection. Extra care should be taken to ensure menu choices comply with current recommendations[6,7] to mitigate the risk of Listeriosis and facilities must have appropriate food safety programs in place for maternity patients.[7]	Offer more "contemporary" menu choices. A short menu cycle with a greater number of choices typically suits this short-stay population. Access to a long stay menu with extra food choices at meals and mid-meals should be available for maternity patients with a longer length of stay (> seven days). Nutrient-dense mid-meal snacks are required to help meet nutritional needs. Access to a variety of additional foods and drinks in ward pantries should be available for outside mealtimes. Lactating women need access to additional fluids to meet their increased fluid requirements. Access to additional fluids at the bedside and in ward pantries should be available. Meal times should be flexible to complement the demands of breastfeeding. Access to a variety of additional food items in ward pantries should be available for outside mealtimes. Choices shall be available for maternity patients requiring therapeutic diets and other lifestyle food preferences e.g. gestational diabetes, gluten free, vegetarian/vegan. Consideration should be given to the provision of culturally appropriate food choices where applicable (e.g. Halal). A short order/room service model of food service should strongly be considered to minimize the time between ordering and meal delivery to accommodate short stay patients and frequent movement between wards (e.g. labour ward to postnatal) thereby reducing the use of default meals[8].

References for Maternity:

1 National Health and Medical Research Council. (2006). *Nutrient Reference Values for Australia and New Zealand including recommended dietary intakes*. Retrieved November 17, 2020 from https://www.nhmrc.gov.au/about-us/publications/nutrient-reference-values-australia-and-new-zealand-including-recommended-dietary-intakes

2 National Health and Medical Research Council. (2013). *Australian Dietary Guidelines 2013: Healthy eating during your pregnancy*. Retrieved December 3, 2020 from https://www.eatforhealth.gov.au/guidelines

3 Women's and Children's Hospital. (2014). *Nutrition for pregnancy and breastfeeding.* Retrieved November 17, 2020 from http://www.wch.sa.gov.au/services/az/other/nutrition/PregnancyandBreastfeeding.html

4 Food Standards Australia New Zealand. (2016). *Folic acid/folate in pregnancy*. Retrieved November 17, 2020 from https://www.foodstandards.gov.au/consumer/generalissues/pregnancy/folic/Pages/default.aspx

5 Food Standards Australia New Zealand. (2011). *Mercury in fish.* Retrieved November 17, 2020 from https://www.foodstandards.gov.au/consumer/chemicals/mercury/Pages/default.aspx

6 SA Health. (2019). *Guideline for the Control of Listeria in Food Service to Vulnerable Persons*. Retrieved December 3, 2020 from https://www.sahealth.sa.gov.au/wps/wcm/connect/public+content/sa+health+internet/public+health/food+safety+for+businesses/food+industry+sector/hospital+food+safety+requirements

7 Food Standards Australia New Zealand. (2019). Listeria and food: Advice for people at risk. Retrieved November 17, 2020 from https://www.foodstandards.gov.au/publications/Pages/listeriabrochuretext.aspx

8 McCray, S., Maunder, K., Barsha, L., & Mackenzie-Shalders, K. (2018). Room service in a public hospital improves nutritional intake and increases patient satisfaction while decreasing food waste and cost. *Journal of Human Nutrition and Dietetics.*

Paediatrics

Background/rationale	**Considerations for nutrition specifications**
Nutrition standards for paediatric patients are designed to meet the needs of children from 0-18 years of age. For infants, exclusive breastfeeding to around 6 months of age is encouraged. If not breastfed, infant formula should be used as an alternative to breastmilk.[1] Meals should be provided for breastfeeding women staying with their children in line with Baby Friendly Health Initiative (BFHI) recommendations[2]. Solid foods should be introduced at around 6 months and not before 4 months of age.[1,3] Iron-containing foods should be among the first foods introduced to prevent iron deficiency (e.g. fortified infant rice cereal, pureed meat, beans/legumes).[1] Breastmilk or infant formula should be continued until 12 months of age while solid foods are being introduced. Cow's milk should not be introduced as the main milk drink until 12 months of age.[1] A range of appropriate foods and textures should be available for infants to transition to family meals e.g. puree, mashed/lumpy, cut-up and finger foods. Hard, small, round and/or sticky foods are not recommended for children under 3 years of age due to the risk of choking.[1,4] Paediatric menus should provide a range of choices including healthy and familiar child-friendly foods and be flexible to meet a wide range of nutritional requirements across all ages. Access to small (½) and large serve sizes is required to meet the nutritional needs of different age groups e.g. toddlers and adolescents.[4] Mid-meal snacks are required for paediatric patients to meet their nutritional requirements over the day. Ward pantries should stock extra items for paediatric patients to eat and drink outside mealtimes[4]. Special consideration should be given to appropriate crockery and cutlery for paediatric patients and the service of hot foods and beverages to minimize the risks of burns and scalds[4].	Refer to the ACI Nutrition Standards for Paediatric Inpatients in NSW Hospitals and any revisions for further information.[4] Menus for paediatric patients should provide a range of healthy and familiar child-friendly foods to meet their nutritional requirements. A range of age appropriate foods and textures suitable for different stages of growth and development shall be available. Nutritious mid-meal snacks are required for paediatric patients to help meet nutritional needs. Access to a variety of extra food items in ward pantries shall be available for outside mealtimes. Choices shall be available for children requiring therapeutic diets e.g .food allergies and intolerances, gluten-free, high-energy (refer to ACI Therapeutic Diet Specifications for Paediatric Inpatients[5] for further information). Honey shall not be given to infants under the age of 12 months due to the risk of bolutilsm.[1] Caffeinated beverages are not suitable for children under 12 years.[6,7] A short order/room service model of food service should strongly be considered for paediatric patients to minimise the time between meal ordering and delivery to optimise nutritional intake and minimise the use of default meals.[8]

References for Paediatrics:

1 National Health and Medical Research Council. (2013). *Eat for health infant feeding guidelines*. Retrieved December 3, 2020 from https://www.eatforhealth.gov.au/guidelines

2 Australian College of Midwives. (2016). *Baby friendly health initiative information for maternity patients*. Retrieved December 3, 2020 from https://www.midwives.org.au/resources/bfhi-information-pack-maternity-facilities

3 Australasian Society of Clinical Immunology and Allergy. (2016). *Infant feeding and allergy prevention guidelines*. Retrieved November 17, 2020 from https://www.allergy.org.au/hp/papers/infant-feeding-and-allergy-prevention

4 Agency for Clinical Innovation Nutrition Network. (2011). *Nutrition standards for paediatric inpatients in New South Wales hospitals.* Retrieved November 17, 2020 from https://www.aci.health.nsw.gov.au/resources/nutrition/nutrition-food-in-hospitals/nutrition-standards-diets

5 Agency for Clinical Innovation Nutrition Network. (2012). *Therapeutic diet specifications for paediatric patients.* Retrieved November 17, 2020 from https://www.aci.health.nsw.gov.au/resources/nutrition/nutrition-food-in-hospitals/nutrition-standards-diets

6 National Health and Medical Research Council. (2013).*Australian dietary guidelines*. Retrieved December 3, 2020 from https://www.eatforhealth.gov.au/guidelines

7 Australian Government Department of Health. (2014). *Guidelines for healthy foods and drinks supplied in school canteens*. Retrieved December 3, 2020 from https://www1.health.gov.au/internet/main/publishing.nsf/Content/phd-nutrition-canteens

8 McCray, S., Maunder, K., Barsha, L., & Mackenzie-Shalders, K. (2018). Room service in a public hospital improves nutritional intake and increases patient satisfaction while decreasing food waste and cost. *Journal of Human Nutrition and Dietetics*.

Patients from diverse cultural and religious backgrounds

This section aims to provide guidance and examples of food priorities for specific groups. In all cases, it is expected that each facility will support consumers to maintain dietary customs according to their religious and cultural beliefs; and that staff would approach individual patients, their family, friends or relevant community groups to seek guidance on expectations and preferred menu options. It is important to acknowledge that family and friends are often prepared to supplement the hospital diets of patients with particular cultural or religious requirements.[1]

Background/rationale	Considerations for nutrition specifications
Offering appropriate menu items to patients with religious food requirements can encourage better food intake and enjoyment of meals. Planning and development of a localised food service should take into account the needs of the local population, including their cultural dietary preferences. This may involve the purchase of specific items and/or prepared meals from certified suppliers. For example, Kosher meals for Jewish patients and Halal Certified Food for those of Muslim faith. At different times during the year, special cultural or religious practice may be observed. Flexibility at meal service times may be required. > Muslim–during Ramadan food can only be consumed after sunset and prior to dawn for a month, however people who are ill are usually exempted from this requirement, but regardless may choose to fast. > Asian background–during certain festive seasons or religion celebrations specific foods may need to be consumed. Mealtimes may also vary during these events.	The requirements for multicultural menu items can reflect the need for variations to menu patterns, beverages, condiments, ingredients and cooking and serving techniques. To ensure all consumers can participate in menu selection and have an understanding of meals being provided, appropriate menu and food description translation resources (written and/or verbal) should be available. In some cultures, there is an expectation of hot food for breakfast. Offer a range of common beverages from different cultures. For certain cultural groups condiments maybe expected at mealtimes e.g. soy sauce/fish sauce for consumers of Asian background. Ingredients may vary from those typically used in Australian cuisine. Cook using different traditional ingredients e.g. bush spices seasoning, kangaroo and emu for Aboriginal Australians. Staple foods vary between cultures. Offer a variety of carbohydrate sources such as rice, couscous, polenta, pasta or noodles. A range of breads types is encouraged such as roti or flat bread etc. Use a range of cooking techniques to suit a number of cultural diets, e.g. stir-fry and stew. Consumers may find selecting from vegetarian/vegan menus suitable. In some religions there are strict requirements of how meals are prepared and served.

The following offer additional information to assist those facilities undertaking menu planning for patients from diverse cultural and religious groups:

> www.jewishaustralia.com/food.htm
> http://www.icv.org.au/
> http://www.ceh.org.au/
> http://www.africaguide.com/cooking.htm
> https://www.gmmh.nhs.uk/download.cfm?doc=docm93jijm4n901.

Below are food and cultural profiles for some CALD communities residing in South Australia. For other country profiles, please refer to:

> Metro South Health (2019). Multicultural nutrition resources accessed online 23 Dec 2019. https://metrosouth.health.qld.gov.au/multicultural-nutrition-resources
> Indian
> Greek
> Burmese
> Chinese
> Somali.

References for Patients from diverse cultural and religious backgrounds:

1 Millichamp, A., & Gallegos, D. (2011). *Meeting the food needs of Queensland's culturally and linguistically diverse (CALD) aged population: A review of the literature*. Retrieved November 17, 2020 from https://eprints.qut.edu.au/55540/1/DiversicareLiteratureReview%282%29.pdf

Diabetes, obesity and patients requiring diets consistent with Australian Dietary Guidelines as inpatients

Background/rationale	Considerations for nutrition specifications
Admission to hospital for a disease with diet-related risk factors may motivate patients to review their dietary habits. Options which are consistent with the Australian Dietary Guidelines should be available on the menu to accommodate their needs. People with diabetes do not need a special diet. Patients with diabetes need access to regular amounts of carbohydrate to help spread carbohydrate load across the meals/day. The inclusion of foods/fluids with a low glycaemic at meals and mid-meals can help to moderate variations in blood glucose levels (refer to GI database for more information).[1] Patients with diabetes who are at risk of hypoglycaemia may need regular amounts of carbohydrate, including mid-meals. Admission to hospital for a disease with diet-related risk factors may motivate patients to review their dietary habits. Options which are consistent with the Australian Dietary Guidelines should be available on the menu to accommodate their needs. Patients who are obese, and are eating well, may benefit from avoiding energy dense foods. Patients who are obese and not eating well may need to prioritise recovery from illness and address appropriate weight loss as a long-term issue.[2]	The general ward diet should be suitable for people with diabetes, obesity and patients requiring diets consistent with Australian Dietary Guidelines. Dietary management may vary across public health facilities depending on patient cohort. All diets need to provide access to consistent amounts of carbohydrate containing foods throughout the day, by providing similar amounts within meals and mid-meals offered. The Standards limit the amount of salt in some dishes which are often high in salt, such as soup, and limit the number of times high salt hot dishes can be served. The standards limit the amount of fat in some dishes which are often high in fat, such as main dishes and desserts and limit the number of times higher fat hot dishes can be served. Ensure patients with diabetes, including those who require texture-modified diets, have access to carbohydrate containing mid-meals including fruit, biscuits and milk mid-meals. Patients at risk of overnight hypoglycaemia may require a late evening snack, preferably a low GI food/fluid, for example milk, custard, or yoghurt. Artificially sweetened cordial should be available for patients with diabetes. Artificial sweeteners should be available for patients who prefer them. Fried and high fat foods should be minimised to promote appropriate weight loss. Low fat milk is a better option for patients wishing to lose weight. Unsaturated fat is preferable to saturated fat, for example margarine is preferable to butter, for cardiovascular health. The Standards limit the amount of salt in some dishes which are often high in salt, such as soup, and limit the number of times high salt hot dishes can be served. One of the 2 hot choices should be suitable for patients needing or wanting to avoid high salt foods. Desserts with small amounts of sugar are acceptable, especially those which are milk-based due to the influence of protein on glycaemic index.

References for Diabetes, obesity and patients requiring consistent with Australian Dietary Guidelines as inpatients:

1 The University of Sydney. (2020). The GI index and GI database. Retrieved December 23, 2020 from https://www.glycemicindex.com/

2 Dietitians Association of Australia.(2014) *Nutrition manual* (Ninth ed).

Nutritionally at risk

Background/rationale	Considerations for nutrition specifications
Patients are considered 'nutritionally at risk' if they do not regularly eat all of their meals or are assessed to be at risk of malnutrition on admission to hospital. Risk factors include physical difficulty eating and or drinking, acute or chronic illness affecting appetite and food intake, cognitive or communication difficulties, increased nutritional requirements, modification of texture and or fluid, increased length of stay (LOS).[1] Malnutrition is linked to increased mortality, morbidity and LOS, delayed recovery, increased complications and resultant increases in healthcare costs.[2,3] Malnutrition is also linked to apathy and depressed mood, which in itself can inhibit adequate oral intake, mobilisation and rehabilitation. Patients at risk of malnutrition are likely to have a longer length of stay. Nutritional status deteriorates in a significant proportion of individuals over the course of admission in the acute care setting.[1,4,5,6,7,8,9] Elderly people who lose weight during an illness do not regain weight as easily as younger people [10,11] emphasising the significance of avoiding weight loss. Even people who are overweight can become malnourished through poor nutritional intake. Patients' food intake should be monitored and those who regularly do not finish their meals should be able to select suitable high-energy, high-protein choices from the menu as well as high-energy, high-protein mid-meals and fluids.[12] Elderly patients who have smaller but energy and protein enriched meals can significantly improve energy and nutrient intakes.[11] Adults >70 years old have higher protein requirements (>1.2g/kg) to help minimize age related sarcopenia.[13] For optimum protein synthesis evidence suggests that approximately 30g per meal is required, and consumption should be spread equally across 3 main meals.[13] Patients on certain therapeutic diets require further increase in protein levels e.g. Cystic fibrosis, burns.[14] Patients who are 'nutritionally at risk' often need encouragement to eat. These patients may need help to open food containers/packaging and feeding assistance at meals and mid-meals. Patients need to be reassured that eating between meals will not "ruin their appetite" as studies have shown that discretionary intake at meals is not decreased by mid-meal supplements[15]. Toddlers and young children can be particularly fussy when they are in unfamiliar environments and out of their usual routine.	High energy high protein (HEP) diet is imperative for patients identified as 'nutritionally at risk'. HEP diets should include fortified foods (hot cereal, potato, soup, custard), hot breakfast, and nutrient dense mid-meals.[1,16] Food fortification is essential for increasing the nutrient density of foods and fluids without increasing the quantity. Due to small amounts eaten, 3 nutrient-dense mid-meals per day of at least 500kJ/serve and 5g protein/serve are necessary to meet nutrition targets. Suggested items could include cheese and biscuits, cakes or muffins and flavoured milks.[1,16] Patients often eat better early in the day and a cooked breakfast has been shown to result in the highest increase in energy and protein intake.[17] Offer well-liked, easy-to-eat, high-energy, high-protein foods such as hearty soups, wet dishes and milk-based desserts Fortification of starchy vegetables, sauces and soups with additional margarine and/or cream will improve patients energy intake without changing the amount they eat overall.[18] Adequate protein sources should be available at all meals and encourage the even spread across the 3 main meals.[3] Use whole milk and encourage patients to have at least 2 serves per day. Limit low energy, low protein foods, such as broth. Low fat, low sugar products are unsuitable. Milk-based drinks, juice or cordial should be encouraged rather than tea, coffee or water. Desserts are often well accepted and can make a significant contribution to nutritional intake. Some patients' are negatively affected by large serves of food. Where small serves are offered, patients will require nourishing mid-meals to meet their nutritional requirements. Patients who need assistance with meal set-up or eating should receive assistance with all meals, drinks and mid meals. Monitor food intake and refer patients for dietetic assessment and support if intake remains poor. For children, familiar or child-friendly foods may help them meet often increased nutritional demands. The use of fortified dishes and supplements and nutrient- dense snacks is another practical option.[19] Please note for paediatric clients requiring texture modified diets please refer to IDDSI framework.[20]

For paediatric patients, please refer to supplementary guide: *Nutrition Standards for Paediatric inpatients in NSW hospitals.*[19]

Those facilities providing care to an essentially elderly population (acute care and residential aged care) can obtain further guidance with menu planning, auditing and meeting nutrition and hydration needs from the 'Best Practice Food and Nutrition Manual for Aged Care'. [21] This resource is complementary to, and should be used in conjunction with the Standards.

References for Nutritionally at risk:

1 NHS Scotland. (2016). *Food in hospitals: National catering and nutrition specification for food and fluid provision in hospitals in Scotland*, Retrieved December 3, 2020 from https://www.nss.nhs.scot/publications/food-in-hospitals/

2 Smith, P E, & Smith, A E. (1997). High-quality nutritional interventions reduce costs. *Healthcare Financial Management, 51*(8), 66-69.

3 Lassen, K. O., Olsen, J., Grinderslev, E., Kruse, F., & Bjerrum, M. (2006). Nutritional care of medical inpatients: A health technology assessment. *BMC Health Services Research*, *(6)*.

4 Dieticians Association of Australia. (2009). Evidence based practice guidelines for the nutritional management of malnutrition in adult patients across the continuum of care. *Nutrition and Dietetics, 66*(s3), 1-34.

5 Braunschweig, C., Gomez, S., & Sheean P. M. (2000). Impact of declines in nutritional status on outcomes in adult patients hospitalized for more than seven day. *Journal of the American Dietetic Association, 100(11), 1316-1322.*

6 Bruun, L.I., Bosaeus, I., Bergstad, I., & Nygaard, K. (1999). Prevalence of malnutrition in surgical patients: Evaluation of nutritional support and documentation. *Clinical Nutrition*,*18*(3),141-147.

7 Dzieniszewski, J., Jarosz, M., Szczygiel, B., Diugosz, J., Marlicz, K., Linke, K., Lachowicz, A., Ryzko-Skiba, M., & Orzeszko, M. (2005). Nutritional status of patients hospitalised in Poland. *European Journal of Clinical Nutrition*, *59*(4),552-560.

8 Gariballa,S. E. (2001). Malnutrition in hospitalized elderly patients: When does it matter? *Clinical Nutrition,20*(6),487-491.

9 Kondrup, J., Rasmussen, H. H., Hamberg, O., & Stanga, Z.. (2003). Nutritional risk screening (nrs 2002): A new method based on an analysis of controlled clinical trials. *Clinical Nutrition22*(3),321-336.

10 Roberts, S. B., Fuss, p., Heyman, M. B., Evans, W. J., Tsay, R., Rasmussen, H., Fiatarone, M., Cortiella, J., Dallal, G. E., & Young, V. R. (1994). Control of Food Intake in Older Men. *Journal of the American Medical Association, 272*(20),1601-1606

11 Lorefalt, B., Wissing, U., & Unosson M. (2005). Smaller but energy and protein-enriched meals improve energy and nutrient intakes in elderly patients. *Journal of Nutrition, Health and Aging* 9(4),243-7.

12 National Institute for Health and Clinical Excellence. (2009). *Nutrition support in adults: Oral nutrition support, enteral tube feeding and parenteral nutrition.* Retrieved November 17, 2020 from https://www.nice.org.uk/guidance/cg32

13 Bauer, J., Biolo, G., Cederholm, T., Cesari, M., Cruz-Jentoft, A., Morley, J., Phillips, S.,., Sieber, C., Stehle, P., Teta, D., Visvanathan, R., Volpi, E., & Boirie, Y. (2013). Evidence-based recommendations for optimal dietary protein intake in older people: A position paper from the PROT-AGE study group. *Journal of the American Medical Directors Association, 14*(8), 542-559.

14 Queensland Government. (2017). Estimating energy, protein and fluid requirements for adult clinical conditions. Retrieved December 3, 2020 from https://www.health.qld.gov.au/nutrition/clinicians

15 Chapman, I.M., Visvanathan, R., Hammond, A. J., Morley, J. E., Field, J. B., Tai, K., Belobrajdic, D. P., Chen, R. Y., & Horowitz, M. (2009). Effect of testosterone and a nutritional supplement, alone and in combination, on hospital admissions in undernourished older men and women. *American Journal of Clinical Nutrition*. *89*(3),880-889.

16 Queensland Health. (2018). Nutrition standards for meals and menus. Retrieved December 3, 2020 from https://www.health.qld.gov.au/nutrition/nemo_materials/foodservice

17 Barton, A., Beigg, C., Macdonald, I., & Allison, S. (2000). A recipe for improving food intakes in elderly hospitalized patients. *Clinical Nutrition (Edinburgh, Scotland), 19*(6), 451-454.

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19 NSW Agency for Clinical Innovation. (2011). *Nutrition standards for paediatric inpatients in NSW hospitals*. Retrieved December 3,2020 from

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A La Carte/Room Service Menu

An a la carte menu provides patients with full choice from a single menu that is repeated daily. This style of menu is also a suitable base for a room service model.

Emerging evidence from healthcare facilities across Australia shows that a room service model of food service provision improves nutritional intake and patient satisfaction while at the same time decreasing food waste and costs.[1]

A room service model of food provision is particularly suited to short-stay patients (e.g. length of stay 3 days or less) and other specific patient groups for example paediatric patients to minimise the time between ordering and meal delivery thereby optimising nutritional intake minimizing the need for default meals. It is also suited to patient groups where there is frequent movement between wards e.g. maternity patients.

An a la carte menu can be offered in acute care settings. If used for acute care/longer stay patients, a “chef’s special”, “choice of day” and/or “cook/prepared/made to order” options must be included to ensure adequate variety.

An a la carte menu must be reviewed and changed seasonally (at least every 6 months) for variety.

Patients with specific dietary requirements may require additional menu items beyond these recommendations. Specially prepared meals will be required for specific patient groups such as patients who require texture modified diet and those who may be eating poorly as outlined in Nutritional issues for Specific Patient Groups.

Menu Choice and Design

A La Carte Menu for Acute Public Health, Paediatric and Maternity Hospitals

PC – portion control

Cook to order options – available to all patients, especially for patients who experience menu fatigue, nutritionally at risk, require nutritional requirement, special dietary requirement and/or in admission for 3 weeks or more. For more variety, consider to include “chef’s special”, “choice of day” and/or “build your own” options.

Meal times to provide	**Menu Item**	**Menu Design Acute Care Public Hospital (minimum requirement)**	**Menu Design Paediatric and Maternity (minimum requirement)**	**Additional considerations for Paediatric Patients (0-18 years of age)**
All main meals and mid-meals	Fruit (fresh)	3 varieties Include easy to chew options		Texture must be appropriate for age Special consideration must be given to minimize the risk of choking in young children At least one option must be easy chew e.g. banana
	Fruit (canned)	3 varieties Additional choice of prunes (seedless) to be available		Texture must be appropriate for age (e.g. puree for baby diets)

Meal times to provide	Menu Item	Menu Design Acute Care Public Hospital (minimum requirement)	Menu Design Paediatric and Maternity (minimum requirement)	Additional considerations for Paediatric Patients (0-18 years of age)
Breakfast	Cereal (hot)	2 varieties	Minimum 1 variety (porridge)	
	Cereal (cold) Less than 3g fibre per serve	2 varieties		Texture must be appropriate for age. Iron fortified infant rice cereal (no added probiotic) to be available for infants less than one year of age
	Cereal (cold) More than 3g fibre per serve	2 varieties Additional choice of cereal with more than 5g fibre per serve (e.g. All Bran) Gluten free options to be available as additional choice		Texture must be appropriate for age Whole-wheat biscuit must be included in choice
All main meals and mid-meals	Milk (full cream milk)	Available to select as a cold beverage and for cereal		Full cream cow's milk and alternatives not suitable as a beverage for infants less than 1 year of age Lactose free cow's milk and soy milk to be available on request and for patients on therapeutic diets
	Milk (reduced fat (2%) milk)	Available to select as a cold beverage and for cereal Skim milk, and soy milk available on request and to patients on therapeutic diets		Reduced fat cow's milk and alternatives not recommended for children under 2 years of age Lactose free cow's milk to be available on request and for patients on therapeutic diets
Breakfast	Protein (hot) At least 6g protein per serve	3 varieties (one to be vegetarian e.g baked beans) All day breakfast can be made available and offer at lunch and dinner for variety # Cook to order options		
	Protein (hot) Less than 6g protein per serve	3 varieties		
All main meals and mid-meals	Protein (cold)	3 varieties flavoured yoghurt plus natural yoghurt		Texture must be appropriate for age At least one smooth variety of flavoured yoghurt to be available
All main meals and mid-meals	Bread (white)	White/wholemeal/multi-grain bread available—allow to order up to 2 slices Offer bread roll at lunch and dinner for variety Additional choice of fruit toast to be available breakfast and mid-meals Gluten free bread/bread products to be available		
	Bread (wholemeal/ multigrain)			
	Margarine and spread	Butter + margarine + 4 spreads (site specific) Allow selection of 1 PC butter/margarine and 1 PC spread per slice of bread		Honey not suitable for infants less than one year of age due to risk of botulism

Meal times to provide	Menu Item	Menu Design Acute Care Public Hospital (minimum requirement)	Menu Design Paediatric and Maternity (minimum requirement)	Additional considerations for Paediatric Patients (0- 18 years of age)
All main meals and mid-meals	Hot beverages	3 varieties Decaffeinated options to be available		Hot beverages not suitable for young children due to risk of burns/scalds Hot chocolate to be available for children > 13 years. Special consideration must be given to minimise the risk of burns/scalds
	Cold beverages (juice)	2 varieties		Choice to include clear apple juice
	Sugar and sugar substitute	2 varieties Available to select for cereal and hot beverages		Sugar substitutes are not appropriate for children
Lunch and dinner	Soup			
	Group 1 Nutrient dense	5 varieties - seasonal variety required Choice to include some non- meat /alternative protein sources e.g. legumes, tofu for variety.	3 varieties - seasonal variety required Choice to include some non-meat /alternative protein sources e.g. legumes, tofu for variety	Soup is not appropriate for children less than one year of age For children over one year of age special consideration must be given to minimise the risk of burns/scalds
	Group 2 Minimal nutrient value	3 varieties	3 varieties (2 vegetable based e.g. pumpkin, tomato and one clear vegetable broth). Gluten free options to be available.	
Lunch and dinner	Hot meal			
	Group 1 Solid piece of beef, pork, veal, lamb, chicken or fish	4 varieties		Texture of meals must be appropriate for age Small (half) and large serve sizes required to meet nutritional requirements of all ages
	Group 2 Wet dish – meat and sauce, Minimal to no vegetables	7 varieties		
	Group 3 Wet dish – even mix of meat and vegetables	7 varieties (combined)		
	Group 4 Wet dish – even mix of meat, starch and vegetables			
	Vegetarian dish	3 vegetarian and 3 vegan dishes (min 15g protein per serve) for variety		
Hot meal: All day breakfast can be made available and offer at lunch and dinner for variety Cook to order available to all patients–especially for patients who experience menu fatigue, nutritionally at risk, increased nutritional requirements, special dietary requirement and/or admission for 3 weeks or more. Group 2, 3 and 4 must include at least 2 dishes of each meat (i.e: beef, lamb, pork, poultry/chicken and fish) in total.				

Meal times to provide	Menu Item	Menu Design Acute Care Public Hospital (minimum requirement)	Menu Design Paediatric and Maternity (minimum requirement)	Additional considerations for Paediatric Patients (0-18 years of age)
Lunch and dinner	Starch vegetables/ alternatives (cous cous/rice/pasta)	3 starchy vegetables + 5 alternatives (pasta, rice, noodles) Low glycaemic index options to be available eg. basmati rice # Cook to order options	4 varieties of starch vegetables + 4 alternatives (couscous/rice/pasta/noodles) # Cook to order options	Texture must be appropriate for age e.g. pasta spirals
	Fortified starch vegetables/ alternatives	3 fortified starch varieties # Cook to order options		Texture must be appropriate for age
	Vegetables (green/brassica) Vegetables (orange/red)	9 varieties Mixed vegetables can be used for variety	Variety of steamed seasonal vegetables (at least 2 green/brassica and 1 orange) Roast orange/red vegetable to be included as additional option. Mixed vegetables may be used for variety.	Texture must be appropriate for age Vegetables should be cooked until soft to reduce the risk of choking for young children
	Side salad	Side salad can be offered for variety		Salad not suitable for children less than one year of age. Texture should be appropriate for age Special consideration to be given to minimize the risk of choking in young children
Lunch and dinner	Sandwich/roll/wrap/ flatbread	8 varieties of protein (5 varieties meat, 1 variety fish and 2 varieties meat alternatives) 4 varieties salad per menu cycle. Offer white and at least 1 choice of wholemeal/wholegrain/multi-grain sandwich Use wraps and different type of bread for variety Patients should be able to select up to 2 sandwiches per meal time At least 2 contemporary-style wrap fillings (one vegetarian) to be available for variety Gluten free bread/wraps to be available # Cook to order options	"Build your own" sandwich/roll selecting from: 5 varieties meat 1 variety fish 3 varieties meat alternative (minimum 1 vegan) eg. cheese, egg, falafel 5 varieties salad (eg lettuce, tomato, cucumber, avocado, carrot) Offer white and at least 1 choice of wholemeal/wholegrain/multi-grain sandwich Wraps/rolls to be available for variety Provision to select up to 2 sandwiches per meal At least 2 contemporary-style wrap fillings (one vegetarian) to be available for variety Gluten free bread/wraps to be available	Texture should be appropriate for age Special consideration to be given to minimize the risk of choking in young children
Lunch and dinner	Salad (as a main meal)	10 varieties of protein (6 varieties meat, 2 varieties fish and 2 varieties meat alternatives). 5 varieties starch per menu cycle. 5 varieties of legume per menu cycle. 6 varieties of vegetables/ salad per menu cycle (3 different colours of vegetables per serve). Offer PC Salad dressing as option At least 2 contemporary style salads (including	"Build your own salad selecting from: 5 varieties meat 1 variety fish 3 varieties meat alternative (min 1 vegan) e.g. cheese, egg, falafel, legumes 5 varieties salad (e.g lettuce, tomato, cucumber, avocado, carrot) At least of 1 variety of starch based salad (e.g. rice/pasta/couscous/noodle) and at least 1 contemporary style salad (including vegetarian/vegan options)	Salad not suitable for children less than one year of age. Texture should be appropriate for age. Special consideration must be given to minimize the risk of choking in young children

		vegetarian/vegan options) to be offered for variety # Cook to order options	Offer PC Salad dressing as option	
	Condiments	Portion control salad dressings and other condiments e.g. tomato sauce, mayonnaise to be available as optional choice		

Meal times to provide	Menu Item	Menu Design Acute Care Public Hospital (minimum requirement)	Menu Design Paediatric and Maternity (minimum requirement)	Additional considerations for Paediatric Patients (0-18 years of age)
Lunch and dinner	Desserts Group 1	5 varieties	3 varieties	Texture must be appropriate for age
	Desserts Group 2	5 varieties	3 varieties	Texture must be appropriate for age
	Ice cream Custard Yoghurt	Ice cream (2 flavours) Custard (2 flavours) Yoghurt (3 flavours) plus natural yoghurt		Texture must be appropriate for age At least one smooth variety of flavoured yoghurt to be available Soy custard to be available in addition
	Desserts: Allow to order more than 1 dessert per especially for patients who experience menu fatigue, nutritionally at risk require nutritional requirement, special dietary requirement and/or in admission for 3 weeks or more			
Morning tea, afternoon tea, supper	Mid-meal snack Group 1	5 varieties		Texture must be appropriate for age At least 2 varieties of flavoured milk (chocolate and strawberry) to be available in addition in the following serve sizes: 250-375ml for children aged 1-12years 600ml for children 1 aged 3-18 years
	Mid-meal snack Group 2	5 varieties Include low glycaemic index snack choices for variety e.g. raisin toast, multigrain crackers, plain popcorn Allow to order more than 1 snack per mid-meal especially for patients who experience menu fatigue, nutritionally at risk require nutritional requirement, special dietary requirement and/or in admission for 3 weeks or more		

Reference:

1 McCray, S., Maunder, K., Barsha, L., & Mackenzie-Shalders, K. (2018). Room service in a public hospital improves nutritional intake and increases patient satisfaction while decreasing food waste and cost. *Journal of Human Nutrition and Dietetics*.

A La Carte/Room Service Menu for Textured Modified Diet (Pureed, Minced Moist, Soft and Bite Sized)

These recommendations are applicable to all texture modified diets. Patients with certain specific dietary requirements may require a menu beyond these recommendations. Specially prepared meals should be made available for such patients.

The items listed below are specific to texture modified diets and should be used in conjunction with the *Nutrition Standards and Menu Design tables (pages 8-13)* and *Nutritional issues for Specific Patient Group: Patients requiring texture modified food/fluids (page 20).*

PC—portion-control

#P—Pureed options can be considered for Minced and Moist diet, pending Speech Pathology approval.

Meal Times to Provide	Menu Item	Menu Design (minimum requirement)
All main meals and mid-meals	Fruit (canned)	3 varieties #P
Breakfast	Cereal (hot)	At least 3 varieties #P
All main meals and mid-meals	Milk (full cream milk)	Available to select as a cold beverage and for cereal
	Milk (reduced fat milk)	Available to select as a cold beverage and for cereal Skim milk, reduced fat (2%) and soy milk available on request and to patients on therapeutic diets
Breakfast	Protein (hot) At least 6g protein per serve	At least 2 standard varieties Cook to order available to all patients – especially for patients who experience menu fatigue, nutritionally at risk, increased nutritional requirement, therapeutic dietary requirement and/or in admission for 3 weeks or more #P
	Protein (hot) Less than 6g protein per serve	
All main meals and mid-meals	Protein (cold)	At least 3 varieties yoghurt
All main meals and mid-meals	Hot beverages **thickened hot beverages at clinical discretion*	2 varieties
	Cold beverages (juice)	2 varieties
Lunch and Dinner	Soup Group 1 – Nutrient dense	5 varieties - seasonal variety required Choice to include some non-meat /alternative protein sources e.g. legumes, tofu for variety. #P
	Soup Group 2 – Minimal nutrient value	3 varieties #P
Lunch and Dinner	Hot meal	
	Texture modified Group 1 Wet dish—meat and sauce, minimal to no vegetables	Group 1: 7 varieties Group 2: 7 varieties Group 1 and Group 2 must include at least 2 dishes of each meat – beef, lamb, pork, chicken and fish Cook to order available to all patients – especially for patients who experience menu fatigue, nutritionally at risk, increased nutritional requirement, therapeutic dietary requirement and/or in admission for 3 weeks or more
	Texture Modified Group 2 Wet dish—even mix of meat and vegetables	
	Fortified starch Vegetables/alternatives	2 varieties #P
	Vegetables (green/brassica)	3 varieties
	Vegetables (orange/red)	4 varieties

<table>
<tr><td colspan="3">Hot Meal
Cook to order available to all patients – especially for patients who experience menu fatigue, nutritionally at risk increased nutritional requirement, therapeutic dietary requirement and/or in admission for 3 weeks or more</td></tr>
<tr><td rowspan="4">Lunch and dinner</td><td colspan="2">Dessert</td></tr>
<tr><td>Group 1</td><td rowspan="3">Group 1: 3 varieties
Group 2: 3 Varieties
Ice cream (2 flavours)
Custard (2 flavours)
Yoghurt (as breakfast)
Allow to order more than 1 dessert per meal especially for patients who experience menu fatigue, nutritionally at risk, increased nutritional requirement, therapeutic dietary requirement and/or in admission for 3 weeks or more
#P</td></tr>
<tr><td>Group 2</td></tr>
<tr><td>Ice cream*
Custard
Yoghurt

*ice cream not suitable for patients requiring thickened fluids</td></tr>
<tr><td rowspan="4">Morning tea, afternoon tea, supper</td><td>Mid-meal snack
Group 1</td><td>2 varieties
#P</td></tr>
<tr><td>Mid-meal snack
Group 2</td><td>2 varieties
#P</td></tr>
<tr><td>High energy high protein supplement beverage</td><td>3 varieties</td></tr>
<tr><td>Ice cream*
Custard
Yoghurt

*ice cream not suitable for patients requiring thickened fluids</td><td>Ice cream (2 flavours)
Custard (2 flavours)
Yoghurt (as breakfast)</td></tr>
<tr><td colspan="3">Allow to order more than 1 snack per mid-meal especially for patients who experience menu fatigue, nutritionally at risk increased nutritional requirement, therapeutic dietary requirement and/or in admission for 3 weeks or more</td></tr>
</table>

Using the Standards in Menu Development

The goal of hospital menu planning is to offer food that is appropriate to the nutrition needs and medical circumstances of the patients. Hospital menu design has been identified as a contributing factor to high food wastage and poor/inadequate nutritional intake.

The following section highlights aspects of the menu design process that need to be considered at each site as they can affect intake and subsequently nutritional status.

Identify the patient profile

Prior to developing the menu, the population profile for each hospital needs to be documented to confirm nutritional requirements and menu content. Age, gender, length of stay, along with cultural and religious backgrounds, are all factors that determine the nutritional requirements of patients and influence menu design in the public hospital sector.

Define the menu format

Consider the fact that acutely ill patients with a lack of appetite find it difficult to eat enough to meet their nutritional requirements. The menu provided in hospital needs to be designed to support adequate consumption of food for the hospital patient.

Factors that affect intake — Menu-based

Menus must accommodate varying food preferences, eating habits and appetite by offering patients adequate choice to achieve their energy and nutrient goals.

A typical hospital menu would offer patients three meals and three mid meal snacks from which to obtain energy and nutrients. The menu pattern described in the Standards is based upon a traditional cycle menu with choice at each meal.

With respect to cycle menus, the length of the menu cycle typically reflects the patient population and average length of stay.

Repetition within specific menu items also needs to consider average length of stay noting that there may be groups of patients with an extended length of stay within a hospital with a short average length of stay.

Using seasonal foods where possible will enhance quality and variety and reduce menu monotony over long periods.

Studies have shown the recommended energy and protein targets have been achieved by using smaller portions of increased energy/protein density foods, a cooked, hot breakfast and between meal snacks[1,2,3] and by providing menu choice.[4,5]

Factors that affect intake — Non-menu

Other aspects of menu design and food service operations that can influence patient satisfaction, nutrient intake and nutritional status include:

- Optimising plate presentation with respect to combinations of flavour, texture, temperature, colour and shape
- Limiting the length of time between meals
- Patients regularly miss meals (11-27% meals) [6,7]
- As far as possible avoid interruption of meal periods by appointments and consultations or, if necessary, provide food at an alternative time
- Provide packaging that is easy-to-open. Alternately arrange for staff or volunteers to assist patients during the meal service. Food service providers should be aware of the legislation by the Government of South Australia Single Use and Other Plastic Products (Waste Avoidance) Act, 2020[8].
- Ensure the system supports all staff involved with the meal service in their efforts to encourage patients to eat and to respond to their individual requests.

Identify patients with a poor appetite

The minimum Standards reflect the needs of the patient with a reasonable appetite and intake. A proportion of patients will experience nausea, a decrease in appetite, nausea, changes in taste perception and have illnesses or treatments that increase their nutrition needs and create the potential for the patient to become malnourished, impacting on their recovery and length of stay.

The menu needs to incorporate strategies to accommodate patients with varying food preferences, eating habits and appetite (see page 26, Nutritional Issues for Specific Patient Groups—Nutritionally at Risk).

Furthermore, hospital systems need to provide a mechanism for identifying these patients, ideally before their nutritional situation affects their recovery. Malnutrition screening tools and monitoring of patients' nutritional intake along with strategic use of menu monitors and nutrition assistants can assist in identifying and monitoring these patients.

References for Using the Standards in Menu Development:

1 Olin, A. Ö., Österberg, P., Hädell, K., Armyr, I., Jernström, S., & Ljungqvist, O. (1996). Energy-enriched hospital food to improve energy intake in elderly patients. *Journal of Parenteral and Enteral Nutrition*, *20*(2),93–97.

2 Barton, A., Beigg, C., Macdonald, I., & Allison, S. (2000). High food wastage and low nutritional intakes in hospital patients. *Clinical Nutrition (Edinburgh, Scotland), 19*(6), 445-449.

3 Gall, M., Grimble, G., Reeve, N., & Thomas, S. (1998). Effect of providing fortified meals and between-meal snacks on energy and protein intake of hospital patients. *Clinical Nutrition (Edinburgh, Scotland), 17*(6), 259-264.

4 Kowanko, I., Simon, S., & Wood, J. (2001). Energy and nutrient intake of patients in acute care. *Journal of Clinical Nursing, 10*(1), 51-57.

5 National Health and Medical Research Council. (2013). *Eat for health:* Australian dietary guidelines. Retrieved July 29, 2014 from https://www.eatforhealth.gov.au/guidelines

6 Eastwood M. (1997). Hospital food. New England Journal of Medicine, *336*(17),1261-1262.

7 NSW Institute of Hospital Catering. *Food Service Guidelines for Healthcare*, 1997.

8 Single Use and Other Plastic Products (Waste Avoidance) Act 2020 (SA). Retrieved March 18, 2021 from https://www.replacethewaste.sa.gov.au/legislation-explained

Supporting Evidence

Information for Health Professionals

The following sections provide the background data utilised in each step of the development of the Standards.

Data from Health System Performance, SA Health

The age, gender, culture and length of stay for patients in South Australian hospitals provided the focus for the development of the 'reference person' utilised for the Standards. This data was provided by Data and Reporting Services, Health System Performance, SA Health.

- Reflects separations for Public Hospitals in 2018/19
- Does not include Episode of Care: 5–Unqualified Newborn, 6–Qualified Newborn, 7–Hospital at Home/Rehabilitation at Home, 99–Bundled Newborn, P-Posthumous
- '3,8,9–Other' includes: 3–Palliative Care, 8–Psychogeriatric Care, 9–Geriatric Evaluation and Management, M—Consolidated National Mental Health episode

Table 1: Separations by age group for Public Hospitals in South Australia during 2018-19

Episode of Care	Age Group									Total
	00-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85+	
1 Acute	33,029	24,930	40,828	34,035	47,500	60,934	73,173	65,369	35,968	415,766
2 Maintenance Care		9	18	18	84	212	615	1,195	1,600	3,751
4 Rehabilitation	10	49	92	136	306	588	927	1,102	633	3,843
3, 8, 9—Other	146	2,611	3,232	2,924	2,334	1,933	1,554	1,881	1,736	18,351
Total	33,185	27,599	44,170	37,113	50,224	63,667	76,269	69,547	39,937	441,711
%	7.51%	6.25%	10.00%	8.40%	11.37%	14.41%	17.27%	15.74%	9.04%	

Table 2: Separations by Sex for Public Hospitals in South Australian during 2018-19

Episode of Care	Sex		Total
	Male	Female	
1 Acute	204,755	211,1010	415,766
2 Maintenance Care	1,638	2,113	3,751
4 Rehabilitation	1,977	1,866	3,843
3, 8, 9—Other	9,408	8,943	18,351
Total	217,778	223,932	441,711
%	49.30%	50.70%	

Table 3: Separations by Country of Birth for Public Hospitals in South Australia during 2018-19

Episode of Care	Country of Birth										Total
	Americas	Not adequately described	North Africa and Middle East	North-West Europe	North-East Asia	Oceania and Antarctica	South-East Asia	Southern and Central Asia	Southern and Eastern Europe	Sub-Saharan Africa	
1 Acute	1,972	14,305	4,324	45,749	3,303	299,732	9,274	8,028	25,708	3,371	415,766
2 Maintenance Care	18	257	28	657	8	2,132	36	24	581	5	3,751
4 Rehabilitation	23	143	31	686	18	2,518	39	34	333	18	3,843
3, 8, 9—other	84	1,408	153	1,883	103	13,493	219	132	760	116	18,351
Total	2,097	16,113	4,536	48,975	3,432	317,880	9,568	8,218	27,382	3,510	441,711
%	0.47	3.65	1.03	11.09	0.78	71.97	2.04	1.42	6.88	0.65	

Table 4: Separations by Length of Stay, including Average (ALOS) for overnight stay patients excluding Obstetrics by age group for Public Hospitals in South Australian during 2018-19

Episode of Care	Age Group									Total
	00-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85+	
1 Acute	41,197	29,577	39,962	44,891	77,580	121,067	153,099	170,761	132,295	807,429
2 Maintenance Care	2	3	3	3	4	5	5	5	6	4
4 Rehabilitation		262	542	1,369	4,035	6,581	19,378	20,734	29,171	82,072
3, 8, 9—Other		33	30	81	49	32	33	18	19	23
Total	154	1,247	2,843	3,736	8,072	15,971	18,288	20,550	12,902	83,763
%	15	26	32	27	27	27	20	19	20	22

Table 5: Separations grouped by Length of Stay for Public Hospitals in South Australia during 2018-19

LOS Days	Number	Cumulative %	%
7	7,334	1.66%	1.66%
8	5,573	2.92%	1.26%
9	4,138	3.86%	0.94%
>=10	31,351	10.96%	7.10%
<7	393,315	89.04%	89.04%
Total	441,711	100%	100%

The Reference Person

Once the features of the patient population in South Australian hospitals were identified the patient could be described in terms necessary for the development of nutritional requirements.

The process of developing the Standards has involved further definition of the population group—adult in-patient—with respect to gender and body weight in order to estimate macronutrient requirements, specifically energy and protein.

For the purposes of the Standards the reference person chosen is based upon the needs of an adult in-patient defined as

Table 6: Reference person

Gender	Male	Female
Body weights (kg)	76	65

Gender

The requirements for the macronutrients, energy and protein are, in part, a function of gender and age.

Body weight

In the absence of data on body weights for the patient population in South Australia, the body weight nominated for the reference person, 76kg is consistent with the Nutrient Reference Values (NRV) data for a male aged 70+ years and 65kg for a female 19-50 years

The significance of body weight in assessing macronutrient needs reinforces the need for professionals at each facility to assess the patient/resident population at their facility including gender and body weight to confirm any variation to the Standards for their facility.

Nutrient goals and strategies

The *Nutrient Reference Values for Australia and New Zealand Including Recommended Dietary Intakes* (NRV) published by the National Health and Medical Research Council in 2006[1] guided the development of the macro and micronutrients for the nominated Reference Person.

The NRVs define several levels of nutrient requirements associated with a range of nutrient goals. The NRV have been used to guide targets for macro and micronutrients within the Standards and rationale for each nutrient target is outlined in Table 8.

Macronutrients

The adequate provision of macronutrients is essential for the prevention of malnutrition amongst hospitalised patients. Inadequate energy and protein intakes compromise nutritional status, which, in association with illness, contributes to a slow recovery or threaten life.

Micronutrients

Older people, the chronically sick, the critically ill and cancer patients were identified as particularly vulnerable to vitamin and mineral deficiencies.[5,6,7] Patient intakes may be inadequate due to increased needs, insufficient food choice, processing losses and low food intake[5]. The micronutrients at risk were identified as Vitamin C, folate, calcium, iron and zinc.[5,6,7]

Overall

Mechanisms must be in place to achieve higher micronutrient intakes where required for specialised groups such as pregnant and lactating women and patients recovering from injury or trauma. Strategies for these situations can include access to

- Larger serves
- Appropriately designed mid-meals
- Appropriate beverages at meal and/or mid-meals
- Additional items e.g. dairy-based desserts and fresh fruit, long stay options
- Fortified food

The following tables outline macronutrient and micronutrient goals, strategies and the rationale for the recommendations.

Table 7: Macronutrient goals, strategies and rationale

Reference person modelling using male 76kg with exception of Iron which female reference person has higher requirements.

Nutrient	Goal	Strategy	Rationale
Energy	8000—9500KJ 105–125 kJ/kg/day	Core menu items must be of adequate energy density to allow those with small appetite/intake to achieve the recommended daily energy intake. Individuals will vary with respect to their energy requirements. In order for patients to achieve higher energy intakes e.g. young men, pregnant and lactating women and the malnourished, the menu must provide opportunities to access additional food such as: > Access to large (extra) serves > Access to nourishing mid-meal snacks	Insufficient energy intake is a common cause of poor nutritional status. This is particularly true for elderly patients. Low energy intake reduces the effectiveness of treatment and further delays recovery.[2] Based on the NRV value for a 76kg male with a PAL of 1.2, the estimated requirement is 8000kJ per day. A review of studies reporting data on approximately 1,200 patients with varying diagnoses concluded that most patients can be fed adequately with energy up to 120% of estimated BEE.[3] Based on this, a range was chosen for energy requirements.
Protein	90 (g/day) >1.2g/ kg/day	The protein density of core menu items must be adequate to allow those with small appetite/intake to achieve the recommended daily protein intake. Mechanisms for patients to achieve higher protein intakes e.g. for young men, pregnant and lactating women, the malnourished, will be required. Suggestions include: > Access to large (extra) serves > Access to nourishing mid-meal snacks > High protein foods and fluids e.g. soup, desserts > Fortified foods	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 [4], and sufficient dietary protein optimises wound healing rates. The Nutrient Reference Values (NRV), Recommended Daily Intake (RDI) is 0.75g—1.07g/kg/day and Estimated Average Rate (EAR) is 65g/day.[1] However, requirements are increased in the malnourished, with certain diseases and during treatments. For hospitalised patients a range of 1.0 to 1.5g/kg/day has been recommended.[5] For resting state or non-stressed hospitalised patients .07g/kg/day, moderately stressed/uncomplicated postoperative patients 1.0-1.3g/kg/day and severely stressed >1.5g/kg/day. For optimum protein synthesis evidence suggests that approximately 30g per meal is required, and consumption should be spread equally across 3 main meals.[7] The range chosen for the Standards aims to cover the greater majority of hospitalised patients. This includes the non-stressed elderly to those recovering from surgery. It is expected that patients requiring higher values of protein (>1.5g/kg/day) would be identified and monitored through an effective hospital nutrition screening, referral and assessment system.
Fat	Menu items should not routinely be low in total fat	The menu will allow patients to select lower saturated fat options. Fat composition will be a determinant of the appropriateness of commercially sourced products. Monounsaturated and polyunsaturated fats are to be used in food preparation. [7] A choice of monounsaturated or polyunsaturated spreads and butter are to be available.	Low fat diets are not appropriate for a large proportion of hospital patients, such as the acutely or chronically ill, or the undernourished, who require diets with increased energy and nutrient density.[5] A lower fat diet could put at risk the provision of essential fatty acids and fat soluble vitamins for long stay patients. Therefore, menus 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 e.g. those with cardiovascular disease or obesity. The optimal range for total fat was from 20-35% with 8-10% of energy from saturated and trans fat together[1] For a hospital population the upper limit for dietary fats may need to be reconsidered and increased.

Nutrient	Goal	Strategy	Rationale
Fluid	2.1 to 2.6 litres/day	Water is to be available at the bedside to all patients for whom it is clinically suitable. A selection of beverages based on patient preferences is to be available at meals and mid-meals.	The effects of poor fluid intake and dehydration include diminished physical and mental performance and constipation. In the Australian climate older adults are at particular risk of dehydration. The NRVs have set an AI for water of 2.1 to 2.6 litres/day includes plain drinking water, milk, coffee, tea and other drinks.[1]
Fibre	30g/day	The menu is to allow patients to achieve a fibre intake of 30g/day by offering high fibre foods from a range of sources including: > Offer at least 2 varieties with a fibre content of at least 3g total fibre per serve > Wholemeal/multigrain bread at all meals as an alternative to white > Fruit (fresh, canned), at least 2 serves > Vegetables, at least 5 serves/day	Fibre is essential for the functioning of the digestive tract.[6] 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, increases expenditure on laxatives and nursing workloads. The NRVs have set the Adequate Intake (AI) for fibre at 30g/day for older adult men.[1] The action of fibre in preventing constipation is dependent on an adequate fluid intake.[7]

Table 8: Micronutrient goals, strategies and rationale

Nutrient	Goal	Strategy	Rationale
Vitamin C	45mg/day	Include a specific source of vitamin C in the standard menu.	Several studies have identified hospital patients deficient in vitamin C.[5,6] As there are large losses of vitamin C in hospital food service handling, processing and cooking, the Standards recommend a specific source of vitamin C in addition to the normal diet should be made available for patients.[5] RDI 45mg/day[1]
Folate	400 ug/day	Common sources of folate include cereals, cereal products and dishes based on cereals. Leafy vegetables, fruit or fruit juices (fortified especially) are also a source of folate. All plain, fancy and sweet breads, rolls, bagels, bun, muffins, flat breads made with yeast and flour mixes are fortified with folic acid.	It is recognised that people with poor food intake are at risk of inadequate folate intake. This can include the elderly, the hospitalised[5] and pregnant women. As for vitamin C, there are large losses of folate in cooking and processing.[5] RDI 400 ug/day[1]
Calcium	1,300 mg/day	The preferred food source of calcium is dairy products that provide the most readily utilised source of calcium [7] Milk based desserts make a valuable contribution in terms of energy, protein and calcium.	The goal 1,300mg/day also meets the RDI for women > 51 years (a majority of hospitalised patients are women over 50yrs and men over 70yrs). This meets the RDI and does not exceed the UL for other age groups and pregnant or lactating women (RDI 1,000mg/day). RDI 1,300mg/day[1]
Iron	13mg/day	At least 2 hot meals per day to be meat-based and at least one meal per day to be beef or lamb (good sources of haem-iron).	Iron is recognised as one of the at-risk nutrients in the Australian food supply.[1] RDI 8mg/day for all men and women 19-51 years.[1] RDI 18mg/day for women 19-50 years[1]In order to meet the requirements of the hospital population a target of 13mg was used. Vegetarians/Vegans should be offered a source of vitamin C at each meal to improve iron absorption.
Zinc	14mg/day	Ensuring energy and iron intake is sufficient in the menu will assist in meeting the zinc requirement.	Zinc is a significant mineral with respect to wound healing and immune function.[7] People with low energy consumption have been found to be at risk of zinc deficiency.[7] RDI 14mg/day[1] Vegetarians may need zinc intakes about 50% greater[1]

Nutrient	Goal	Strategy	Rationale
Sodium	Intake limit	A menu that provides for a choice of food that does not exceed 100 mmol/day (2,300mg/day). The menu needs to ensure patient flavour acceptance is retained while monitoring sodium levels.	In Australia the average sodium intake has been estimated to be approximately 3600mg/day significantly above the NRV suggested dietary target recommendations for sodium (2000 mg/day).[1] The Upper Intake Limit (UIL) has been removed for sodium micronutrient in 2017 NRV update. Given the need to optimise intake for patients while in hospital and avoid reducing intake from food that does not meet patient expectations, the SA Menu Standards have continued to nominate 100 mmol/day (2,300mg/day) as the maximum sodium intake/day. The standards aim to ensure that patients can choose adequate foods to allow them to achieve a sodium intake less than 100 mmol/day (2,300mg/day), while also allowing for some foods with a higher sodium content which offer nutrient density and are well accepted by patients who are eating poorly.

References for Supporting Evidence:

1 National Health and Medical Research Council. (2006). *Nutrient reference values for Australia and New Zealand including recommended dietary intakes*. Retrieved November 15, 2020 from https://www.nhmrc.gov.au/about-us/publications/nutrient-reference-values-australia-and-new-zealand-including-recommended-dietary-intakes

2 Olin, A. O., Osterberg, P., Hadell, K., Anrmyr, I., Jernstrom, S., & Ljunjjvist, O. (1996). Energy-enriched hospital food to improve energy intake in elderly patients. *Journal of Parenteral and Enteral Nutrition, 20*(2), 93-97.

3 Miles, J. (2006). Energy Expenditure in Hospitalized Patients: Implications for Nutritional Support. *Mayo Clinic Proceedings, 81*(6), 809-816.

4 Truswell, A. (1990). Recommended nutrient intakes: Australian papers. *Sydney: Australian Professional*.

5 Queensland Government. (2017). Estimating energy, protein and fluid requirements for adult clinical conditions. Retrieved December 3, 2020 from https://www.health.qld.gov.au/nutrition/clinicians

6 Simon, S. (1991). A survey of the nutritional adequacy of meals served and eaten by patients. *Nursing practice (Edinburgh, Scotland)*, *4*(2), 7-11.

7 Bauer, J., Biolo, G., Dederholm, T., Cesari, M., Cruz-Jentoft, A., Morley, J., Phillips, S., Sieber, C., Stehle, P., Teta, D., Visvanathan, R., Volpi, E. & Boirie, Y. (2013). Evidence-based recommendations for optimal dietary protein intake in older people: A position paper from the PROT-AGE study group. Journal of the Americal Medical Directors Association, 14 (8), 542-559.

Seven-Day Menu Model

To assess the ability of the Standards to meet the nutritional requirements of the nominated reference person, a sample hospital menu was analysed for nutrient content. The results were compared to the macro and micro nutrient targets outlines in Table 8 and 9 for the nominated reference person.

The following sections detail the menu that was analysed for this step in the process, the results of that analysis and finally a discussion of variations from the nutrient requirements.

Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Breakfast: Weetbix x2 Milk, regular 150ml Bread, wholemeal 1 slice Margarine 10g Jam, strawberry 13.6g Sugar 6g Peach, canned, drained 140g Tea, black 180ml Milk, full cream 15ml Yoghurt 125g	**Breakfast:** Weetbix x2 Milk, regular 150ml Bread, wholemeal 1 slice Margarine 10g Jam, strawberry 13.6g Sugar 6g Peach, canned, drained 140g Tea, black 180ml Milk, full cream 15ml Yoghurt 125g	**Breakfast:** Weetbix x2 Milk, reduced fat 150ml Yoghurt, reduced fat with fruit 125g Peach, canned, drained 120g Bread, wholemeal 1 slice Margarine 10g Jam, strawberry 14g Juice, orange 110ml Tea, black 180ml Milk, full cream 15ml	**Breakfast:** Weetbix x2 Milk, regular 150ml Juice, orange 110ml Sugar 3g Milk, full cream 15ml Yoghurt, reduced fat, berry 150g	**Breakfast:** Weetbix x2 Milk, regular 150ml Juice, orange 110ml Sugar 3g Milk, full cream 15ml Yoghurt, reduced fat, berry 150g	**Breakfast:** Weetbix x2 Milk, regular 150ml Juice, orange 110ml Sugar 3g Milk, full cream 15ml Yoghurt, reduced fat, berry 150g	**Breakfast:** Juice, orange, 100ml Yoghurt, reduced fat with fruit 125ml Weetbix x2 Milk, reduced fat 150ml Tea, black 150ml Milk, full cream 15ml Bread, wholegrain, toasted 1 slice Margarine 10g Jam, regular 14g
Lunch: Potato and Asparagus soup 180g Chicken, thigh, no skin 90g Gravy, regular 60g Potato, plain 90g Carrot, regular, fresh 60g Zucchini, fresh 60g Pepper, black 1.7g Apple and Rhubarb Pie 90g Custard, regular 60g Tea, black 180ml Milk, full cream 15ml Sugar, white 3g	**Lunch:** Fish cakes 200g Gravy, regular 60g Potato, plain 90g Carrot, regular, fresh 60g Zucchini, fresh 60g Pepper, black 1.7g Apple and Rhubarb Pie 90g Custard, regular 60g Tea, black 180ml Milk, full cream 15ml Sugar, white 3g	**Lunch:** Roast chicken 100g Carrot 60g Broccoli 60g Potato, mashed 90g Fruit salad, fresh 120g Custard, regular 100g Tea, black 180ml Milk, full cream 15ml	**Lunch:** Curried lentil and pumpkin soup 180g Bread, wholemeal 2 slices Beef, roast 45g Margarine 10g Tomato, 2 slices Side salad 100g Custard, vanilla 100ml Juice, orange 110ml	**Lunch:** Cream of vegetable soup 180g Bread, wholemeal 2 slices Cheese 45g Margarine 10g Tomato, 2 slices Side salad 100g Custard, vanilla 100ml Juice, orange 110ml	**Lunch:** Cream of mushroom soup 180g Bread, wholemeal 2 slices Cheese 45g Margarine 10g Beetroot, canned 2 slices Side salad 100g Custard, vanilla 100ml Juice, orange 110ml	**Lunch:** Chicken Mornay 150g Potato, mashed 90g Cauliflower, steamed 60g Peas, frozen, steamed 60g Bread, wholegrain 1 slice Margarine 10g Custard, regular 100g Tea, black 150ml Milk, full cream 15ml

Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Dinner: Irish Stew 130g Sweet Potato Wedges 90g Peas, green, frozen 60g Cauliflower, fresh 60g Pepper, black 1.7g Bread, wholemeal 1 slice Margarine 10g Custard, regular 100g Tea, black 180ml Milk, full cream 15ml Sugar, white 3g	**Dinner:** Potato and Leek soup 180g Roast beef 90g Sweet Potato Wedges 90g Peas, green, frozen 60g Cauliflower, fresh 60g Pepper, black 1.7g Bread, wholemeal 1 slice Margarine 10g Custard, regular 100g Tea, black 180ml Milk, full cream 15ml Sugar, white 3g	**Dinner:** Pea and Ham soup 180g Bread, wholemeal 2 slices Beef, roast 45g Margarine 10g Side salad, no dressing 100g Apricot Cheesecake 115g Tea, black 180ml Milk, full cream 15ml	**Dinner:** Chickpea casserole 230g Green beans, fresh 60g Cauliflower, fresh 60g Steamed rice 90g Custard, vanilla 60ml Fruit salad, canned, drained 120g Bread, wholemeal 1 slice Margarine 10g Sugar 3g Milk, full cream 15ml	**Dinner:** Beef stroganoff 150g Green beans, fresh 60g Carrot, fresh 60g Potato, mashed 90g Custard, vanilla 60ml Fruit salad, canned, drained 120g Bread, wholemeal 1 slice Margarine 10g Sugar 3g Milk, full cream 15ml	**Dinner:** Vegetable frittata 200g Pumpkin, fresh 60g Zucchini, fresh 60g Potato, plain 90g Custard, vanilla 60ml Fruit salad, canned, drained 120g Bread, wholemeal 1 slice Margarine 10g Sugar 3g Milk, full cream 15ml	**Dinner:** Cream of chicken and vegetable soup 180g Roast beef 45g Margarine 20g Mustard, Dijon 1tsp Bread, wholegrain 2 slices Salad, garden, with dressing 100g Fruit salad, canned, drained 90g Custard, regular 60g Tea, black 150ml Milk, full cream 15ml
Snacks: Milk, full cream 150ml Biscuit, sweet, commercial, plain x2 small Cheese, cheddar 20g Crackers, Jatz x3 Fruit, fresh x1 Juice 110ml Tea, black 180ml Milk, full cream 15ml Tea, black 180ml Milk, full cream 15ml	**Snacks:** Milk, full cream 150ml Biscuit, sweet, commercial, plain x2 small Cheese, cheddar 20g Crackers, Jatz x3 Fruit, fresh x1 Juice 110ml Tea, black 180ml Milk, full cream 15ml Tea, black 180ml Milk, full cream 15ml	**Snacks:** Biscuit, arrowroot x2 Scone, cheese x1 Banana, fresh x1 Milk, full cream 150ml Tea, black 180ml Milk, full cream 15ml Tea, black 180ml Milk, full cream 15ml Tea, black 180ml Milk, full cream 15ml Water, tap 1000ml	**Snacks:** Milk, full cream 150ml Juice, orange 110ml Sugar 3g Milk, full cream 15ml Biscuit, sweet, commercial, plain x2 small Fruit, fresh x1 Cheese, cheddar 20g Crackers, Jatz x3	**Snacks:** Milk, full cream 150ml Juice, orange 110ml Sugar 3g Milk, full cream 15ml Biscuit, sweet, commercial, plain x2 small Fruit, fresh x1 Cheese, cheddar 20g Crackers, Jatz x3	**Snacks:** Milk, full cream 150ml Juice, orange 110ml Sugar 3g Milk, full cream 15ml Biscuit, sweet, commercial, plain x2 small Fruit, fresh x1 Cheese, cheddar 20g Crackers, Jatz x3	**Snacks:** Milk, full cream 150ml Cheese, regular, tasty 20g Crackers, Jatz x3 Fruit salad, canned, drained 120g Biscuit, arrowroot x2 Tea, black 180ml Milk, full cream 15ml Tea, black 180ml Milk, full cream 15ml Water, tap 1000ml

Menu Model–Analysis Summaries

	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Average	Target
Energy (kJ)	9387	9846	8885	8830	9189	9222	9888	9321	7600
Protein (g)	98	112	101	91	97	82	94	96	90
Fibre (g)	37	37	30	45	40	44	30	37	30
Vitamin C (mg)	189	219	181	232	206	228	132	198	45
Folate (ug)	638	622	687	610	590	615	478	606	400
Calcium (mg)	1212	1203	1229	1341	1375	1446	1288	1299	1300
Iron (mg)	12	14	15.7	15	14	14	14	14	13
Zinc (mg)	13	15	13	14	13.5	12	15	14	14
Sodium (mg)	2395	2365	1826	1914	2260	2402	2134	2185	<2300

Reference person modelling using male 76kg with exception of Iron which female reference person has higher requirements.

Menu Model–Discussion

The results of the analysis of the model menu indicated the sample menus met or exceeded the target macro and micronutrients in Table 7 and 8.

The results of the analysis of the menu model met the targets with the exception of:

Calcium

The menu average was 1299mg which is just below the 1300mg RDI. The range was 1203mg- 1446mg. This suggests menu development needs to carefully consider its calcium content as it could easily be inadequate for the hospital population. Calcium is a significant nutrient throughout life and is an essential nutrient for development and maintenance of bone health.

Iron

The menu average was 14mg which met the target of 13mg. This target meets the RDI 8mg/d for all men and women >51yo. Consideration needs to be given to women <51yo if they are a significant proportion of the hospital population to ensure their iron requirements are met, especially if they are a longer admission. Iron is a significant micronutrient throughout life, iron deficiency can have significant adverse outcomes for patients.

Zinc

The menu average (14mg) met the RDI (14mg) for zinc, however the range was 12-15mg. While the menu meets the zinc requirement for the majority of patients it could be a risk for a small proportion of the population. The significance of this result needs to be assessed by each site.

Zinc is a significant nutrient for the hospital population as it plays a major role in wound healing.

Along with calcium essential micronutrients for hospitals with populations or sub-populations that are susceptible to the impact of a low zinc, calcium and iron intake, the Food and Menu Standards may need revision to include additional foods rich in these nutrients at a specified frequency on the menu.

Sodium

The average did not exceed 2300mg/day for sodium, however, the range was at times above (up to 2400mg).

Given the prevalence of hypertension and diseases related to high blood pressure in the community, foods with a lower sodium content should be incorporated into the menu and this needs to be considered during menu development to ensure the average remains <2300mg/day.

Summary

The analysis conducted for the Standards is limited by:

- the assumption that all food is consumed. Conducting regular consumption audits would provide the feedback necessary to assess nutritional intake and the popularity of menu items.
- Subsequent revisions of the Standards need to:
    - review the requirement for and availability of zinc, calcium, iron and sodium.
    - undertake an analysis of current menus on offer across SA Health Public Health Facilities to confirm the results from this initial assessment; and
    - evaluate the menu analysis and the Standards in light of available consumption audit results.

For more information

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