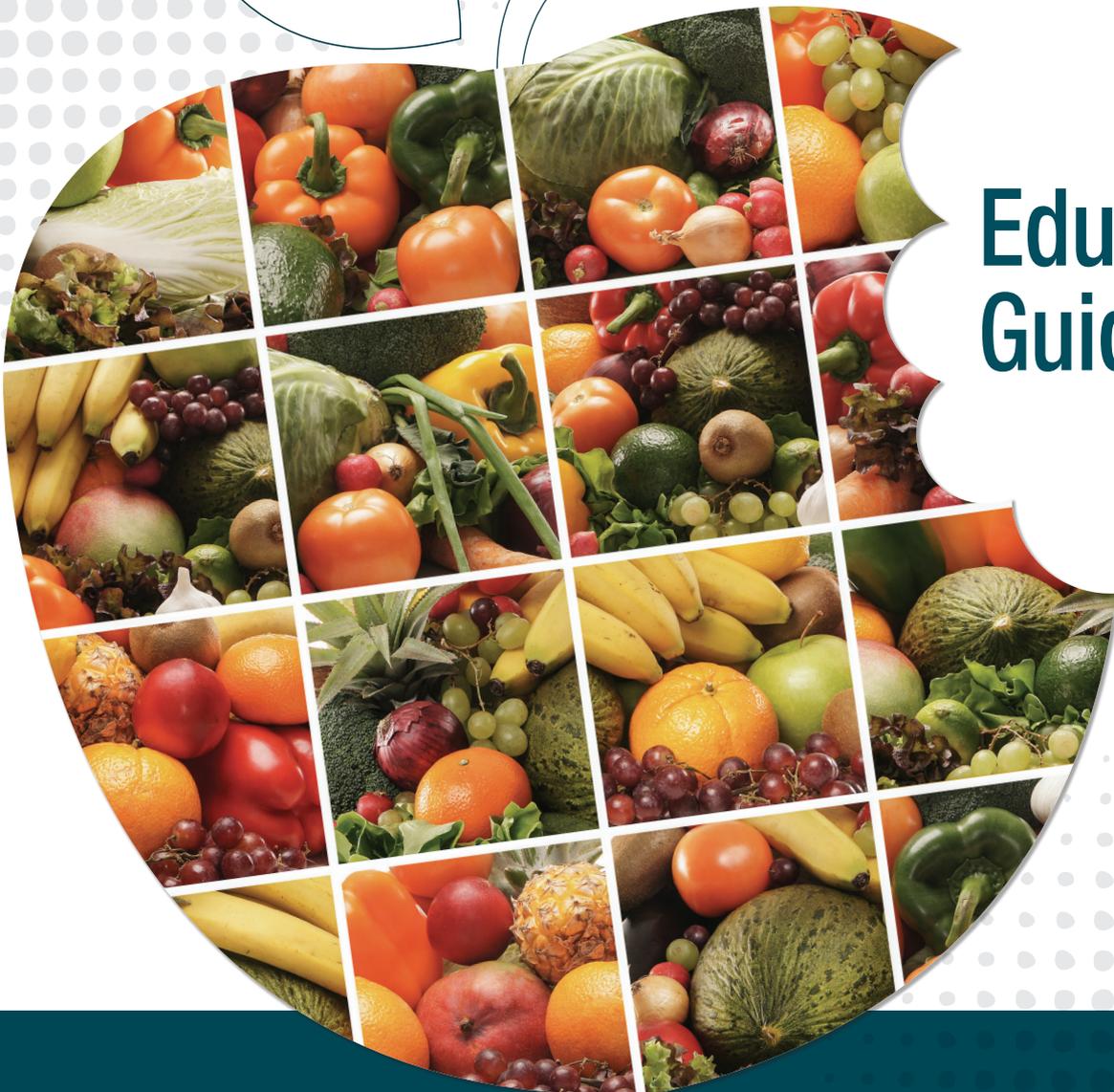




Australian Government
National Health and Medical Research Council
Department of Health and Ageing

EAT FOR HEALTH



Educator Guide



Australian Government

National Health and Medical Research Council

Department of Health and Ageing

EAT FOR HEALTH

Educator Guide

Information for nutrition educators

2013

Publication Details

Publication title:	Eat For Health Educator Guide
Published:	February 2013
Publisher:	National Health and Medical Research Council
NHMRC Publication reference:	N55b
Online version:	www.nhmrc.gov.au/guidelines-publications/n55b
ISBN Online:	1864965800
ISBN Print:	1864965797
Suggested citation:	National Health and Medical Research Council (2013) <i>Australian Dietary Guidelines Educator Guide</i> Canberra: National Health and Medical Research Council.
Disclaimer:	<p>For information on individuals with health conditions or specific dietary needs, including the frail elderly, please contact an Accredited Practising Dietitian. The Dietitians Association of Australia has more information at www.daa.asn.au.</p> <p>The Guideline is designed to provide information to assist decision-making and is based on the best available evidence at the time of development of this publication.</p>

Copyright

© Commonwealth of Australia 2016



All material presented in this publication is provided under a Creative Commons Attribution 4.0 International licence (www.creativecommons.org.au), with the exception of the Commonwealth Coat of Arms, NHMRC logo and any content identified as being owned by third parties. The details of the relevant licence conditions are available on the Creative Commons website (www.creativecommons.org.au), as is the full legal code for the CC BY 4.0 International licence.

Attribution

Creative Commons Attribution 4.0 International Licence is a standard form licence agreement that allows you to copy, distribute, transmit and adapt this publication provided that you attribute the work. The NHMRC's preference is that you attribute this publication (and any material sourced from it) using the following wording: Source: National Health and Medical Research Council.

Use of images

Unless otherwise stated, all images (including background images, icons and illustrations) are copyrighted by their original owners.

The Australian Guide to Healthy Eating artwork must be reproduced in full, without alteration.

Contact us

To obtain information regarding NHMRC publications or submit a copyright request, contact:

E: nhmrc.publications@nhmrc.gov.au

P: (02) 6217 9000

How to use this resource

To ensure Australians can make healthy food choices, we need dietary advice based on the best scientific evidence on food and health. The Eat for Health Program has been developed as a single comprehensive program relevant to all healthy Australians.

This document has been developed to provide more detailed information on the amounts and types of foods for optimal health and wellbeing. It is intended for dietitians, nutritionists, primary and secondary school teachers and other health educators with the aim of discussing food choices that minimise the risk of developing diet-related conditions and contribute to overall health in the long term.

Specifically, this document provides nutrition educators with information on the *Eat for Health Program* including:

- An understanding of the evidence-base used to develop the *Eat for Health Program*.
- How to make use of materials in the *Eat for Health Program* for counselling, classroom teaching, community education, health promotion, menu evaluation and development.
- How to guide healthy eating patterns, develop healthy eating plans and what these look like.

Additional educational materials

In addition to the *Educator Guide* the following resources are included in the *Eat for Health Program*:

- *Australian Dietary Guidelines*
- *Infant Feeding Guidelines*
- A review of the evidence to address targeted questions to inform the revision of the *Australian Dietary Guidelines (Evidence Report)*
- A modelling system to inform the revision of the *Australian Guide to Healthy Eating (Food Modelling System)*
- *Infant Feeding Guidelines Literature Review*
- *Australian Guide to Healthy Eating*
- Summary booklets
- Brochures on healthy eating for adults, children, infants and during pregnancy
- Promotional posters targeting the general Australian population and Aboriginal and Torres Strait Islander population.

All resources and further information can be downloaded from the interactive website www.eatforhealth.gov.au.

Table of contents

CHAPTER 1

What is the <i>Eat for Health Program</i>?	1
Introduction	1
Infant Feeding Guidelines	2
Australian Dietary Guidelines	3
Australian Guide to Healthy Eating	6

CHAPTER 2

The nutritional rationale underpinning the <i>Eat for Health Program</i>	7
Messages and visuals used in the <i>Eat for Health Program</i>	8

CHAPTER 3

The Five Food Groups	11
Enjoy plenty of vegetables, including different types and colours and legumes/beans every day	11
Fruit	13
Grain (cereal) foods, mostly wholegrain and/or high cereal fibre varieties	14
Lean meats and poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans	16
Milk, yoghurt, cheese and/or their alternatives, mostly reduced fat	17
Water	19

CHAPTER 4

What about other foods and drinks?	21
Allowance for unsaturated spreads and oils	21
Discretionary choices	22
What about mixed foods?	24

CHAPTER 5

Energy and nutrient requirements	27
Foundation Diets	27
Total Diets	27

CHAPTER 6

Planning for a healthy diet	37
Developing a personal healthy eating plan	37
Visually adapting the information	38
What about those who are overweight and wish to achieve a healthy weight?	40

CHAPTER 7

What about infants and toddlers?	43
Infants	43
Toddlers	44
Supporting mothers	44

CHAPTER 8

Achieving healthy dietary patterns	45
Influences on food choices	45
How to eat a diet low in saturated fat	45
How to choose low salt foods and use salt sparingly	46
Reducing added sugars	46
How to maximise fibre intake	47
Food labels	48
How to understand food labels	49
Preparing and storing food safely	50

APPENDIX 1

Sample daily meal plans for men and women	51
Glossary	53
References	59

CHAPTER 1

What is the *Eat for Health Program*?

Introduction

There are many ways for Australians to achieve dietary patterns that promote health and wellbeing and reduce the risk of chronic disease. Diet is arguably the single most important behavioural risk factor that can be improved to have a significant impact on health.^{1, 2}

As the quality and quantity of foods and drinks consumed has a significant impact on the health and wellbeing of individuals, society and the environment, better nutrition has a huge potential to improve individual and public health outcomes and decrease healthcare costs. Optimum nutrition is essential for the normal growth and physical and cognitive development of infants and children. In all Australians, nutrition contributes significantly to healthy weight, quality of life and wellbeing, resistance to infection, and protection against chronic disease and premature death.

Most of the burden of disease due to poor nutrition in Australia is associated with excessive intake of energy-dense and relatively nutrient-poor foods high in energy (kilojoules), saturated fat, added sugars or salt, alcohol, and/or inadequate intake of nutrient-dense foods, including vegetables, fruit and wholegrain cereals.^{2, 3} Deficiency of some nutrients such as iodine, folate, iron and vitamin D is also of concern for some Australians.^{4, 5, 6}

Poor nutrition is associated with ill-health. Many diet-related chronic diseases such as cardiovascular disease, type 2 diabetes and some forms of cancer are major causes of death and disability among Australians.⁷ More than one-third of all premature deaths in Australia are the result of chronic diseases that could have been prevented.⁷ Many of these are mediated by overweight and obesity.

Dietary recommendations can be effective in directing people to the types of food they should consume. In Australia we also need to focus on the amount of food consumed. Overconsumption, even of nutritious foods, can lead to excessive energy intake compared with energy needs and thereby an increase in body weight.

Aim

The *Eat for Health Program* has been developed for good health and wellbeing, using the latest evidence to develop public health nutrition guidelines and educator and consumer nutrition resources (see Figure 1). It includes practical information to help Australians and their health professionals work out the types and amounts of foods they should eat each day based on age, gender, body size, activity level and other factors, such as pregnancy and breastfeeding status.

Scope and target audience

The information contained in the *Eat for Health Program* relates to people of all ages and backgrounds in the general healthy population, including those people with common diet-related risk factors such as being overweight.

This program does not apply to people with medical conditions requiring specialised dietary advice, or to frail elderly people who are at risk of malnutrition.

Figure 1 Relationship between the documents in the Eat for Health program

EAT FOR HEALTH PROGRAM		www.eatforhealth.gov.au	
<p>Evidence products</p> <ul style="list-style-type: none"> • <i>A Review of the Evidence to Address Targeted Questions to Inform the Revision of the Australian Dietary Guidelines</i> (2011) • <i>A Modelling System to Inform the Revision of the Australian Guide to Healthy Eating</i> (2011) • <i>Review: Nutritional Requirements and Dietary Advice Targeted for Pregnant and Breastfeeding Women</i> (2013) • <i>Infant Feeding Guidelines Literature Review</i> (2012) • 2003 edition of the Dietary Guidelines (rescinded) 	<p>Guidelines</p> <ul style="list-style-type: none"> • <i>Australian Dietary Guidelines</i> (2013) • <i>Infant Feeding Guidelines</i> (2012) 	<p>Health professional resources</p> <ul style="list-style-type: none"> • <i>Australian Dietary Guidelines</i> • <i>Infant Feeding Guidelines</i> • <i>Australian Guide to Healthy Eating</i> (Food Modelling Tool) • Educator's guide • Summary booklet for the <i>Australian dietary guidelines</i> • Summary booklet for the <i>Infant Feeding Guidelines</i> • Brochures for infants, children, pregnant women and adults • Posters • Interactive web tools • Healthy eating information such as fact pages and tips 	<p>Consumer resources</p> <ul style="list-style-type: none"> • <i>Australian Guide to Healthy Eating</i> (Food Modelling Tool) • Summary booklet for the <i>Australian Dietary Guidelines</i> • Brochures for infants, children, pregnant women and adults • Posters • Interactive web tools • Healthy eating information such as fact pages and tips

Infant Feeding Guidelines

Australia is a nation in which breastfeeding is protected, promoted, supported and valued by the whole of society.

Breastfeeding is the backbone of early nutrition and provides major public health benefits. The nutrition and growth of infants has an important effect on early morbidity and mortality and there is increasing evidence of medium and long-term effects on health and longevity.

All health workers should promote breastfeeding in the community and ensure that best practice is followed. This will include providing families with all of the information and support they need for breastfeeding or when mothers choose to use infant formula.

The *Infant Feeding Guidelines*⁸ is aimed at health workers to assist them provide consistent advice to the general public about breastfeeding and infant feeding. It supports optimum infant nutrition, providing a review of the evidence and clear evidence-based recommendations on infant feeding.

The *Infant Feeding Guidelines* are relevant to healthy, term infants of normal birth weight (>2500g). Although many of the principles of infant feeding described in this document can be applied to low birth weight infants, specific medical advice is recommended for pre-term and underweight infants.

For further information on the content and process, download the *Infant Feeding Guidelines* from www.eatforhealth.gov.au.

Infant Feeding Guidelines Literature Review

The *Infant Feeding Guidelines Literature Review*⁹ used a systematic approach to the literature on infant feeding and provides the scientific basis for the recommendations in the *Infant Feeding Guidelines*.

For further information on the review of the evidence, download the *Infant Feeding Guidelines Literature Review* from www.eatforhealth.gov.au.

Australian Dietary Guidelines

The *Australian Dietary Guidelines*¹⁰ provide information on the types and amounts of foods, food groups and dietary patterns that aim to promote health and wellbeing, and reduce the risk of diet-related conditions and chronic disease. The *Australian Dietary Guidelines* are for use by health professionals, policy makers, educators, food manufacturers, food retailers, researchers and all those interested in health and nutrition.

The content of the *Australian Dietary Guidelines* applies to all healthy Australians, as well as those with common health risks such as excess weight. It does not apply to people who need special dietary advice for a medical condition, or to the frail elderly.

The *Australian Dietary Guidelines* are an evolution of the *2003 Dietary Guidelines series*, building upon their evidence and science base. New evidence was assessed to determine whether associations between food, dietary patterns and health outcomes had strengthened, weakened or remained unchanged.

The methods used to analyse the evidence were in accordance with international best practice. The *Australian Dietary Guidelines* were further informed by substantial advances in the methodology for guideline development and usability since publication of the previous series.

For further information on the content and process, download the *Australian Dietary Guidelines* from www.eatforhealth.gov.au.

Evidence Report – “A review of the evidence to address targeted questions to inform the revision of the Australian dietary guidelines”

The Evidence Report¹¹ used a systematic approach to a literature review to answer targeted questions on food, diet and disease/health relationships published in the peer-reviewed nutrition literature from 2002–2009.

Critical appraisal processes were followed to ensure rigorous application of the review methodology. Data were extracted from included studies and assessed for strength of evidence, size of effect and relevance of evidence according to standardised NHMRC processes. The components of the body of evidence—evidence base (quantity, level and quality of evidence); consistency of the study results; clinical impact; generalisability; and applicability to the Australian context—were rated as excellent, good, satisfactory or poor according to standard NHMRC protocols.

A minimum of five high quality studies were required before a graded evidence statement was made. The Evidence Statements were graded A to D according to standard NHMRC protocols.

- Grade A (convincing association) indicates that the body of evidence can be trusted to guide practice.
- Grade B (probable association) indicates that the body of evidence can be trusted to guide practice in most situations.
- Grade C (suggestive association) indicates that the body of evidence provides some support for the recommendations but care should be taken in its application.
- Grade D indicates that the body of evidence is weak and any recommendation must be applied with caution.

In this way, the *Evidence Report* was used to develop the graded Evidence Statements included in the *Australian Dietary Guidelines* and evidence covered in Chapter 3 of this document. This document can be downloaded from www.eatforhealth.gov.au.

Food Modelling System – “A modelling system to inform the revision of the Australian Guide to Healthy Eating”

The *Food Modelling System*¹² updates the information provided in the Core Food Groups (1995).¹³ It describes a range of computer-generated diets that translate key recommended dietary intakes included in the NHMRC *Nutrient Reference Values*¹⁴ into dietary patterns to describe common types, combinations and amounts of foods that can deliver nutrient requirements for each age and gender group of different height and activity levels in the Australian population.

The dietary patterns were developed in consideration of the inter-relationships between nutrients, foods, food groups and whole diets, with the aim of producing sets of food groups that combined to produce what are called *Foundation Diets*. A range of models including omnivore and lacto-ovo vegetarian dietary patterns were developed and primarily omnivorous dietary patterns were used to inform the *Eat for Health Program*.

The modelling also took into account usual patterns of intake using national nutrition surveys as well as primary factors such as chronic disease. After consideration of existing scientific literature, some consideration was also given to factors such as social equity and food culture to ensure that the models were practical and realistic.

The *Foundation Diets* include only foods from the Five Food Groups and an allowance for unsaturated spreads and oils and are designed to provide all the nutrient needs of a particular age, gender or life stage within the energy needs of the smallest, and most inactive member of that group. *Foundation Diets* can be built upon to develop a *Total Diet* for an individual, which reflects the additional energy requirements related to the individual's body size and activity levels, while allowing some flexibility for personal food preferences. These increased energy requirements may be met by adding more serves of the Five Food Groups or unsaturated spreads and oils or discretionary choices.

Some of the complexities of the modelling have been simplified for the final presentation of the *Australian Guide to Healthy Eating* and *Australia Dietary Guidelines* (see page 6). For example, several different subgroups of vegetables were modelled but the final recommendation of serves per day is for the 'vegetable and legumes/beans group' as a whole, with additional advice to choose across the various subgroups.

The *Food Modelling System* is discussed further in this document and can be downloaded from www.eatforhealth.gov.au.

Australian Dietary Guidelines

- GUIDELINE 1** To achieve and maintain a healthy weight, be physically active and choose amounts of nutritious food and drinks to meet your energy needs.
- Children and adolescents should eat sufficient nutritious foods to grow and develop normally. They should be physically active every day and their growth should be checked regularly.
 - Older people should eat nutritious foods and keep physically active to help maintain muscle strength and a healthy weight.

- GUIDELINE 2** Enjoy a wide variety of nutritious foods from these five groups every day:
- Plenty of vegetables, including different types and colours, and legumes/beans
 - Fruit
 - Grain (cereal) foods, mostly wholegrain and/or high cereal fibre varieties, such as breads, cereals, rice, pasta, noodles, polenta, couscous, oats, quinoa and barley
 - Lean meats and poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans
 - Milk, yoghurt, cheese and/or their alternatives, mostly reduced fat (reduced fat milks are not suitable for children under the age of 2 years)
- And drink plenty of water.

- GUIDELINE 3** Limit intake of foods containing saturated fat, added salt, added sugars and alcohol.
- Limit intake of foods high in saturated fat such as many biscuits, cakes, pastries, pies, processed meats, commercial burgers, pizza, fried foods, potato chips, crisps and other savoury snacks.
 - Replace high fat foods which contain predominantly saturated fats such as butter, cream, cooking margarine, coconut and palm oil with foods which contain predominantly polyunsaturated and monounsaturated fats such as oils, spreads, nut butters/pastes and avocado.
 - Low fat diets are not suitable for children under the age of 2 years.
 - Limit intake of foods and drinks containing added salt.
 - Read labels to choose lower sodium options among similar foods.
 - Do not add salt to foods in cooking or at the table.
 - Limit intake of foods and drinks containing added sugars such as confectionary, sugar-sweetened soft drinks and cordials, fruit drinks, vitamin waters, energy and sports drinks.
 - If you choose to drink alcohol, limit intake. For women who are pregnant, planning a pregnancy or breastfeeding, not drinking alcohol is the safest option.

- GUIDELINE 4** Encourage, support and promote breastfeeding.

- GUIDELINE 5** Care for your food; prepare and store it safely.

Australian Guide to Healthy Eating

The *Australian Guide to Healthy Eating* (AGTHE) is a food selection guide and the primary educational and promotional tool in the *Eat for Health Program*. It converts the scientific knowledge of food composition and nutritional requirements for optimal health and wellbeing into a practical guide representing the proportion of the Five Food Groups recommended each day. A population level approach to food guidance has been used to develop the AGTHE, considering the food intakes and diet-related health problems of the population as a whole.

The development of the AGTHE was informed by the *Food Modelling System*¹² and *Australian Dietary Guidelines*.¹⁰ It is designed for healthy Australians, including those with common health risks such as being overweight. The AGTHE does not apply to people with specific medical conditions which require specialised dietary advice, nor the frail elderly who are at risk of malnutrition.

The AGTHE can be downloaded from www.eatforhealth.gov.au.


Australian Government
National Health and Medical Research Council
Department of Health and Ageing
www.eatforhealth.gov.au

Australian Guide to Healthy Eating

Enjoy a wide variety of nutritious foods from these five food groups every day.
Drink plenty of water.



Grain (cereal) foods, mostly wholegrain and/or high cereal fibre varieties

Vegetables and legumes/beans

Fruit

Milk, yoghurt, cheese and/or alternatives, mostly reduced fat

Lean meats and poultry, fish, eggs, tofu, nuts and seeds and legumes/beans

Use small amounts

Only sometimes and in small amounts

CHAPTER 2

The nutritional rationale underpinning the *Eat for Health Program*

The *Eat for Health Program* groups foods primarily on the basis of their type and nutrient contribution. The main distinguishing nutrients for each of the Five Food Groups are shown in Table 1, although foods within each group also make significant contributions of other dietary components. Note that the grouping system is a simplification for educational purposes and the foods within each group can vary.

The model on which the Five Food Groups is based assumes that foods within each grouping are eaten in types not too dissimilar to the average intakes in Australia. The amounts recommended for consumption were determined using the *Food Modelling System*¹² and are based on the nutrient requirements for each age and gender group of different height and activity levels in the population.

Table 1 Nutritional characteristics of the Five Food Groups

Food Group name	Grain (cereal) foods, mostly wholegrain and/or high cereal fibre varieties	Vegetables and legumes/beans	Fruit	Milk, yoghurt, cheese and/or alternatives, mostly reduced fat	Lean meat and poultry, fish, eggs, tofu, nuts and seeds, legumes/beans
Main distinguishing nutrients	carbohydrate protein iron dietary fibre thiamin folate iodine	beta-carotene and other carotenoids vitamin C folate dietary fibre	vitamin C dietary fibre	calcium protein riboflavin vitamin B ₁₂	protein iron zinc vitamin B ₁₂ (animal foods only) long chain omega 3 fatty acids
Other significant nutrients*	energy magnesium zinc riboflavin niacin vitamin E	Carbohydrate (potato, sweet potato, sweet corn, legumes) magnesium iron potassium	carbohydrate folate beta-carotene potassium	energy fat carbohydrate magnesium zinc potassium	dietary fibre (plant foods only) energy essential fatty acids niacin vitamin E (seeds, nuts)

* Some foods from the Five Food Groups (such as some bread, breakfast cereal and most cheese) can also contribute significant amounts of sodium

Messages and visuals used in the *Eat for Health Program*

Enjoying healthy choices

The message to enjoy a wide range of nutritious foods and to drink plenty of water recognises the importance of appreciating the social, sensory and personal aspects of food and drink.

This message also emphasises that foods should be chosen from a range within and across each of the Five Food Groups on average every day (for example, averaging out over a week and across different times of the year). Eating healthy food should be an enjoyable experience.

Following the key recommendation to ensure variety is important for several reasons including:

1. Eating from a variety of food groups on average every day, in the proportions recommended, is likely to result in a diet containing sufficient amounts of all nutrients essential for health. This will also decrease the risk of consuming too much of any particular food component and minimise intakes of foods that should be eaten less often. It is not necessary to eat from each food group at every meal.
2. The foods in each food group vary in the amount of particular nutrients and other beneficial components they provide, and so achieving nutritional adequacy also depends on eating a variety of food from within each group. For example, in the vegetables and legumes group, orange vegetables such as carrots and pumpkin contain significantly more beta carotene than potatoes. Similarly, kangaroo, beef, lamb, mussels and oysters are a better source of iron than most of the other foods in the meat, fish, poultry, eggs, tofu, nuts and seeds, legumes/beans group. Nuts and seeds have more vitamin E and several other nutrients compared with animal foods in this same group. By selecting a variety of foods each day, over the week and at different times of the year, there is a greater likelihood of obtaining sufficient quantities of all nutrients.
3. Eating a variety of foods of different biological origin is also believed to be beneficial to health in many ways, such as:
 - Dietary fibre is a constituent of plant foods that contributes to health, for example, dietary fibre from oats or barley may be beneficial in causing a modest reduction in blood cholesterol level whereas dietary fibre from wheat may assist bowel function.
 - Eating cruciferous vegetables such as broccoli, cabbage, cauliflower, brussels sprouts and bok choy may be associated with protection against some cancers.
 - Some foods containing saturated fat may increase blood cholesterol levels, with high levels being a risk factor for cardiovascular disease. Choosing foods from a variety of biological sources (both animal and vegetable) helps ensure a variety of fats in the diet and a balance of the different types of fats.

What about “healthy” fats such as unsaturated spreads and oils?

Fats can increase the taste and textural pleasure of food and some oils made from fruits, seeds, grains or nuts contain fatty acids that are essential for health. Foods containing essential fatty acids may also provide vitamins A, D and E. The types of fats we include have different effects on our health, but all fats are high in kilojoules, so the types and amounts of foods containing fat should be chosen carefully.

All Australians should include some foods that contain unsaturated fats in their usual dietary patterns. The amounts depend on individual energy needs. The dietary modelling used to inform the *Eat for Health Program* included an allowance for unsaturated spreads and oils to be included in the diet.¹² See Chapter 4 for more information.

What are ‘discretionary choices’?

Foods in this category should be used only sometimes and in small amounts. Foods included as ‘Discretionary choices’ are not needed to meet nutrient requirements and do not fit into the Five Food Groups. Many discretionary choices are also high in kilojoules, saturated fat, added sugars, added salt or alcohol. However, they can contribute to the overall enjoyment of eating, often in the context of social activities and family or cultural celebrations. To help avoid gaining excessive weight, most Australians need to be thoughtful about portion sizes of discretionary choices. These foods should always be considered as ‘extras’ in the context of energy requirements and when selecting a healthy eating pattern.

Where does water fit in?

Water is an essential dietary component and can be obtained from a wide variety of sources including plain water, tea and coffee, liquid foods such as soups. Solid foods also supply water, especially many vegetables. More fluid is needed with physical activity and in hot weather. Plain water is the best way to quench thirst, and tap water that meets NHMRC *Australian Drinking Water Guidelines*¹⁵ is the most appropriate and affordable choice.

Proportion of the Five Food Groups in the diet

The foods that form the basis of a healthy diet are shown in the AGTHE, where the size of each segment of the circle is a visual representation of the recommended proportion of the diet from each food group, based on the average recommended daily serves for men and women 19–50 years of age.

These proportions do not equate to the relative weight of foods to be eaten each day as food group serve sizes vary across groups. For example, vegetable serves are 75g while fruit serves are 150g. Information using the guide to achieve a healthy eating pattern and total energy needs is contained in Chapters 5 and 6.

Foods illustrated for each of the Five Food Groups

The ranges of foods illustrated in the Five Food Groups in the *Eat for Health Program* were chosen to:

- reflect foods commonly consumed in Australia
- represent the range of foods within each food group
- be affordable
- reflect the nature of the food supply, including fresh and packaged foods
- offer ideas for shifts towards healthier eating, that include increasing variety and using wholegrain and lower fat products
- be consistent with the recommendations for choosing foods that are high in dietary fibre, low in saturated fat, without added sugars and minimal or no added salt.

CHAPTER 3

The Five Food Groups

The *Australian Dietary Guidelines* provide evidence-based advice about the amount and types of foods we need to eat for health and wellbeing. The *Australian Dietary Guidelines* are the source for the health-related statements outlined within this chapter.¹⁰

It is helpful to get to know what foods and drinks fit within the Five Food Groups and the recommended serving sizes and serves per day required for optimal health and wellbeing.

What is a 'serve'?

The 'serve size' is a set amount that doesn't change. It should be used along with the 'serves per day' information to work out the total daily amount of food required by individuals from each of the Five Food Groups.

What is a 'portion size'?

'Portion size' is different. This is the amount individuals actually eat and this will depend on energy requirements. Individuals who eat portions that are smaller than the 'serve size' will need to eat from the food group more often. Those individuals whose portion sizes are larger than the 'serve size' will need to eat from that food group less often.

Enjoy plenty of vegetables, including different types and colours and legumes/beans every day

Vegetables come from many different parts of plants, including the leaves, roots, tubers, flowers, stems, seeds and shoots. Some varieties which are not strictly vegetables from the botanical aspect, are included in this group because they are used as vegetables. For example, tomatoes and pumpkin are the fruit of the plant and sweet corn is a grain/cereal, but these are included in the vegetable group.

Legumes are the seeds of plants from the Leguminosae family. These vegetables are eaten in the immature form as green peas and beans, and the mature form as dried peas, beans, lentils and chick peas.

Including plenty of vegetables of a variety of different types and colours, and legumes/beans in the diet can provide a range of nutrients that may help reduce the risk of obesity and some chronic diseases including heart disease and some cancers. Because of their low energy density, diets which are high in a variety of vegetables and legumes/beans are especially important in helping to maintain a healthy weight. See Table 2 for examples of vegetables and legumes/beans.

Vegetables and legumes/beans are a good source of vitamins, minerals, dietary fibre and legumes/beans and a few vegetables, such as potatoes, sweet potatoes and green peas, also provide carbohydrate. All vegetables provide vitamin C, with capsicum, broccoli, cauliflower, cabbage, Asian greens and tomatoes particularly high in this vitamin. Dark green and orange vegetables like spinach, broccoli, carrots and pumpkin are an especially good source of carotenes with beta carotene converted in the body to vitamin A. Green vegetables (including some salad vegetables), beetroot, cauliflower, asparagus, dried peas, beans and lentils are good sources of folate. Legumes/beans are also a good source of protein, iron, zinc and carbohydrate.

Over the week, include the following sub-groups in the diet:

- dark green or cruciferous vegetables such as bok choy, spinach, broccoli, cauliflower, cabbage, brussels sprouts
- orange vegetables such as sweet potato, pumpkin, carrots
- salad vegetables such as lettuce, tomato, cucumber, capsicum
- starchy vegetables such as potatoes, sweet potato, taro, corn
- legumes such as dried peas, beans, lentils, chick peas.

Choose vegetables in season as they will be more readily available, and of higher quality and better value. Fresh, frozen, canned or dried varieties are part of this group, but choose canned varieties without added salt where available. Limit intake of fried vegetables such as potato and vegetable chips and crisps which add extra kilojoules. Chips and crisps are included in discretionary choices, see Chapter 4.

How much from the vegetables, legumes/beans group is needed?

The minimum recommended intake ranges from 2½ serves a day for 2–3 year olds to 4½ serves a day for 4–8yr olds, 5 serves a day for older children and adolescents, 5–6 serves for adults including pregnant women and 7½ serves for lactating women.

Additional amounts can be included as desired but extra quantities of starchy vegetables will depend on energy needs (age, activity levels and body size). Use the information in Chapter 5 to work out the minimum number of serves individuals should include each day.

Table 2 Examples of vegetables and legumes/beans

Dark green or cruciferous	Root/tubular/bulb vegetables	Legumes/beans	Other vegetables
Asparagus	Artichoke	Black beans	Avocado
Basil	Bamboo shoots	Black-eyed beans	Bitter melon
Broccoli	Beetroot	Borlotti beans	Capsicum
Brussels sprouts	Carrots	Cannellini beans	Celery
Broccoflower	Cassava	Chickpeas	Chilli
Bok choy and other Asian greens	Celeriac	Faba beans	Choko
Cabbages, all types, including red	Fennel	Lentils	Cucumber
Cauliflower	Garlic	Lima beans	Eggplant
Chicory	Ginger	Lupin beans	Green beans
Chives	Leeks	Pinto beans	Green peas
Kale	Onions	Red kidney beans	Mushrooms
Lettuce such as cos, mignonette	Parsnip	Split peas	Okra
Parsley	Potato	Soy beans	Pumpkin
Silverbeet	Radish	Tofu	Sprouts
Snowpeas	Shallots		Squash
Spinach	Spring onions		Sweetcorn
Water spinach	Swede		Tomato
	Sweet potato		Zucchini
	Taro		
	Turnip		

What is a serve of vegetables (100–350kJ)?

A serve of vegetables is approximately 75g:

- ½ cup of cooked green or orange vegetables (for example broccoli, spinach, carrots or pumpkin)
- ½ cup cooked, dried or canned beans, peas or lentils (preferably with no added salt)
- 1 cup of green leafy or raw salad vegetables
- ½ cup of sweetcorn
- ½ medium potato other starchy vegetables (for example sweet potato, taro or cassava)
- 1 medium tomato

Fruit

A wide variety of fruit is available in Australia. Most fruit forms from the flower and contains the seeds of the plant. Some vegetables such as pineapple or rhubarb are included in this group because they are used as fruit. Most fruit is sweet because of its natural sugars.

Including fruit in the diet each day may help to reduce the risk of some chronic diseases, including heart disease and some cancers. Because of their low energy density, diets which include relatively higher amounts of fruit may also help to maintain a healthy weight. See Table 3 for examples of fruit.

Fruit is a good source of vitamins, including vitamin C and folate. Fruit also provides potassium, dietary fibre and carbohydrates in the form of natural sugars. Edible skins are especially high in dietary fibre, but dietary fibre is also in the fruit flesh.

All fresh, frozen and canned fruits are part of this group but for canned varieties look for varieties that are canned in fruit juice rather than with added sugars or syrup. However, the fruit juice used for canning can be high in naturally occurring sugars.

Fruit juices belong to this group, but most have lost the dietary fibre found in fresh fruit. Fruit juices are also acidic and frequent consumption may increase the risk of dental erosion. Dried fruit can be used but because it has a lower water content, it is more energy dense than fresh fruit. Dried fruit can also stick to the teeth and increase the risk of dental decay.

Eat a wide variety of fruit such as:

- pome fruits such as apples and pears
- citrus fruit such as oranges, mandarins and grapefruit
- stone fruit such as apricots and peaches
- tropical fruit such as bananas, mangoes, pawpaw, and pineapple
- berries
- other fruits such as grapes or passionfruit.

Choose fruits in season for better value, quality and availability.

How much from the fruit group is needed?

The minimum recommended amount ranges from 1 serve a day for 2–3 year olds to 1½ serves a day for 4–8 year olds, and 2 serves a day for all older children, adolescents and adults, including pregnant and lactating women. Additional amounts can be included depending on energy needs (age, activity levels and body size). Use the information in Chapter 5 to work out the minimum serves per day individuals will need.

What is a serve of fruit (350kJ)?

A serve of fruit is about 150g, for example:

- 1 medium apple, banana, orange or pear
- 2 small apricots, kiwi fruits or plums
- 1 cup diced or canned fruit (with no added sugar)
- or occasionally as a substitute for other foods in the group
- ½ cup (125ml) 100% fruit juice (no added sugar)
- 30g dried fruit (for example 4 dried apricot halves or 1½ tablespoons of sultanas)

Table 3 Examples of fruit

Citrus	Pome	Tropical	Berries	Stone	Other
Grapefruit	Apple	Banana	Blackberry	Apricot	Feijoa
Lemon	Loquat	Guava	Blueberry	Cherry	Fig
Lime	Pear	Mango	Loganberry	Nectarine	Grapes
Mandarin	Quince	Melon	Raspberry	Peach	Kiwifruit
Orange		Pineapple	Strawberry	Plum	Lychee
Tangerine		Pawpaw			Melons
		Rambutan			Passionfruit
					Pomegranate

Grain (cereal) foods, mostly wholegrain and/or high cereal fibre varieties

Foods in this group come from grains like wheat, oats, rice, rye, barley, millet, quinoa and corn. The grains can be cooked and eaten whole, rolled, ground into flour to make a variety of cereal foods such as bread, pasta and noodles, or made into breakfast cereals.

Consumption of grain (cereal) foods, mostly wholegrain and/or high cereal fibre, may help reduce the risk of heart disease, type 2 diabetes, excessive weight gain, and some cancers. See Table 4 for examples of grain (cereal) foods.

The nutrients provided by the foods in this group include carbohydrates, protein, dietary fibre and a wide range of vitamins and minerals including folate, thiamin, riboflavin, niacin, vitamin E and iron.

Some foods in this group may have nutrients added during processing. For example, in Australia, food regulations require that vitamin B1 (thiamin) and folic acid be added to wheat flour used for breadmaking. Salt used in breadmaking must be iodised. Most breakfast cereal manufacturers also voluntarily add some vitamins and minerals to their products.

This group includes both refined and wholegrain varieties of grain (cereal) foods. Wholemeal or wholegrain varieties are preferable because they provide more dietary fibre, vitamins and minerals than refined grain (cereal) foods.

Grain (cereal) foods which have relatively large amounts of added fats and sugars and/or salt such as cakes, muffins and biscuits are not included in this group but are classified under discretionary choices.

Table 4 Examples of grains (cereal) foods

Breads	Breakfast cereals	Grains	Other products
Crispbreads	Ready to eat:	Barley, pearl barley	Crumpets
Damper	Muesli (untoasted)	Buckwheat	Noodles
English muffins	Oats	Bulgur	Pasta
Focaccia	Porridge	Corn, polenta	Popcorn (plain)
Lavash	Whole wheat biscuits	Cous cous	
Naan	Wholegrain and/or high cereal fibre flaked cereals	Flours made from grains	
Pita and other flat breads		Millet	
Rye		Quinoa	
White		Rice	
Wholegrain		Rye	
Wholemeal		Semolina	
		Sorghum	
		Spelt	
		Triticale	
		Wheat	
		Wheatgerm	

How much from the grains (cereal) foods group is needed?

The minimum amount needed ranges from 4 serves a day for 2–8 year olds to 7 serves a day for older adolescents. For women, recommended intake ranges from 3 serves a day for those over the age of 70, to 6 serves a day for women less than 50 years of age. Recommended intake of grain (cereal) food for pregnant and breastfeeding women is 8–9 serves a day. For men, recommended intake ranges from 3 serves a day for those over the age of 70 years to 6 serves a day for younger men.

Additional amounts can be included depending on energy needs (age, activity levels and body size). Use the information in Chapter 5 to work out the minimum serves per day individuals will need.

To some people these quantities may seem generous; however, some of the serving sizes are modest and the recommended quantities of these foods, like those in each of the other food groups, should be consumed in preference to discretionary choices.

What is a serve of grain (cereal) foods (500kJ)?

- 1 slice of bread (40g)
- ½ medium roll or flat bread (40g)
- ½ cup cooked rice, pasta, noodles, barley, buckwheat, semolina, polenta, bulgur or quinoa (75–120g)
- ½ cup cooked porridge (about 120g)
- 2/3 cup wheat cereal flakes (30g)
- ¼ cup muesli (30g)
- 3 crispbreads (35g)
- 1 crumpet (60g) or a small English muffin or plain scone (35g).

**Choose mostly wholegrain and/or high cereal fibre varieties*

Lean meats and poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans

The wide variety of foods in this group includes all kinds of lean meats, poultry, fish, eggs, tofu, nuts, seeds and legumes/beans. In general, the foods in this group are a good source of many nutrients including protein, iron, zinc and other minerals and vitamins of the B group. Vitamin B₁₂ is only found in animal-based foods unless it has been added to fortify a plant-based product. Nuts and seeds can also provide valuable essential fatty acids and vitamin E. See Table 5 for examples of lean meats and poultry, fish, eggs, tofu, nuts and seeds and legumes/beans.

Within this group, lean meats are a particularly good source of iron, zinc and vitamin B₁₂. Consumption of no more than 455g per week of cooked lean red meat is recommended since regular consumption of large quantities of red meat (100–120g/day) may be associated with an increased risk of colorectal cancer.

The iron and zinc in lean meat, poultry and fish is more easily absorbed by the body than the iron and zinc from eggs and plant foods. Iron is especially important during infancy and for growing children, adolescent girls, pregnant women, women of child-bearing age and endurance athletes.

Fish and seafood are a valuable source of long chain omega-3 polyunsaturated fatty acids, although the amount varies with the species. Fish such as herrings, sardines and salmon and all Australian fish and seafood are regarded as 'good sources'. Some imported fish may have lower levels of long chain omega-3 polyunsaturated fatty acids compared with Australian seafood. Regular consumption of fish may be associated with reduced risk of heart disease, stroke, dementia and age-related macular degeneration. Include about 2 serves of fish or seafood a week. Meat from grass-fed animals also contains some long chain omega-3 fatty acids but at a lower level than in most fish.

Fresh, frozen and canned varieties of meats, poultry or fish are in this group, but choose canned varieties that are low in fat and without added salt. Processed meats high in fat or sodium such as salami or mettwurst are not part of this food group. They are classified as discretionary choices, see Chapter 4 for further information.

Sausages vary in their composition, and may include cereals and other components. They may count as a meat serve if they are salt and fat reduced and made mostly from lean meat, or as a discretionary choice for regular sausages.

Eggs provide a low cost, easy to prepare source of protein and other nutrients.

Legumes provide many of the same nutrients as meats, poultry, fish and eggs so have been placed in this food group, as well as with the vegetables group. Nuts and seeds can provide protein, essential fatty acids and a range of minerals, vitamins and phytochemicals but servings are smaller due to their more concentrated kilojoule content. For those who do not eat meat, fish, dairy foods or eggs, including nuts/seeds, and legumes (or tofu) and grains in meals can provide adequate protein and other nutrients. Lacto-ovo vegetarian diets that include milk products, eggs, nuts/ seeds, and legumes can provide all of the essential nutrients required for health.

Table 5 Examples of lean meats and poultry, fish, eggs, tofu, nuts and seeds and legumes/beans

Lean meats	Lean poultry	Fish, seafood	Eggs	Nuts and seeds	Legumes/beans
Beef	Bush birds	Clams	Chicken eggs	Almonds, Brazil nuts, cashews, chestnuts,	All beans
Kangaroo	Chicken	Crab	Duck eggs	hazel nuts, macadamia nuts, pine nuts,	Chickpeas
Lamb	Duck	Fish		peanuts, pecans, pistachios, walnuts	Lentils
Lean, lower salt sausages	Emu	Lobster		Nut spreads	Split peas
Pork	Goose	Mussels		Pumpkin, sesame and sunflower seeds	Tofu
Veal	Turkey	Oysters		Tahini	
		Prawns			
		Scallops			

How much from the Lean meat and poultry, fish, eggs, nuts and seeds, legume/beans group is needed?

The serves for children and adults ranges from 1 to 3 serves a day depending on age to 3½ serves a day recommended in pregnancy when extra protein, iron and zinc are required.

One choice might be to select up to half the serves from this food group as lean meat – this equates to a weekly total intake of approximately 455g cooked weight (600–700g raw weight) for older children, adolescents and adults.

Choose around 2 serves a week of fish or seafood, especially oily fish.

Other choices include lean poultry, eggs or tofu, legumes, seeds or nuts.

If all animal-based choices are omitted from the diet, alternative iron/zinc-rich choices will include legumes, tofu, nuts/seeds, wholegrains and green vegetables.

Whole nuts and seeds are not recommended for children aged 3 years or under because of potential choking problems. Paste from nuts and seeds such as peanut butter can be included after 6 months of age.

Use the information in Chapter 5 to work out the minimum serves per day individuals will need.

What is a serve of lean meat and poultry, fish, eggs, tofu, nuts and seeds, legumes/ beans (500–600kJ)?

- 65g cooked lean meat (about 90–100g raw weight of beef, veal, lamb, pork, kangaroo or goat)
- 80g cooked poultry (about 100g raw weight of skinless chicken or turkey)
- 100g cooked fish fillet (about 115g raw weight) or small can of fish
- 2 large eggs (120g)
- 1 cup (150g) cooked or canned legumes/beans such as lentils, chick peas or split peas (preferably with no added salt)
- 170g tofu
- 30g nuts, seeds or peanut or almond butter or tahini or other nut or seed paste (no added salt)

Some people may like to eat meat, poultry or fish in larger serve sizes than the sample serves above. This is easily accommodated by adjusting serve sizes or numbers of serves over the week. For example, instead of a 65g cooked serve of lean meat each day, 130g cooked weight could be included every second day.

Milk, yoghurt, cheese and/or their alternatives, mostly reduced fat

Milk, yoghurt and cheeses are important foods and their consumption may help reduce risk of high blood pressure, heart disease, stroke, type 2 diabetes and some cancers. The foods in this group are an excellent source of calcium; very few other foods in the Australian diet contain as much of this important nutrient. These foods are also a good source of other nutrients including protein, iodine, riboflavin and vitamin B₁₂. See Table 6 for examples of milk, yoghurt, cheese and/or their alternatives.

However, the milk, yoghurt, cheese group can increase the saturated fat and energy content of a diet if mostly full fat products are chosen. Therefore, the best choices for most people two years and over, are low or reduced fat milk, yoghurts and cheeses.

A wide range of milk and yoghurt products is available with varying fat levels. Milk can be fresh, dried, evaporated, or UHT long-life.

Full fat cheese should be limited to two to three serves a week, or replaced with cheeses that have reduced levels of fat. Some cheeses such as cottage cheese or fetta have less calcium than most other cheeses per unit weight. Fetta can also be particularly high in salt.

Other milk-based products such as ice cream and fromage frais and dessert style custards contribute some calcium to the diet, but may be relatively high in saturated fat and added sugar. These products are therefore classified under as discretionary choices.

For most adults, the best choices are reduced fat milk, yoghurts and cheeses.

Infants under the age of 12 months should not be given cow's milk as a drink, although this can be served in small quantities with cereal and in meals. Breastmilk or specially prepared infant formula should be given to infants under 12 months of age as the main milk source.

Regular full fat milk, yoghurts and cheese varieties should be used between the ages of 1–2 years. At this age children receive a large proportion of their energy needs from milk, and using reduced fat varieties could limit the energy needed for growth. After 2 years of age, when children are eating a more varied diet, reduced fat varieties of milk and alternatives are suitable.

Alternatives to milk, yoghurt and cheese can be used in place of dairy products, but choose varieties with added calcium, such as calcium-enriched soy or rice drinks. Check the nutrition information panel on the label of these products to ensure they contain at least 100mg of added calcium per 100ml. Some foods from other groups can also be used to compensate for the use of these alternative foods. For example, canned fish with bones (such as sardines, herrings or salmon), almonds or tofu are rich sources of calcium. Seafood (especially mussels, oysters and prawns) and many plant foods (especially seeds, grain-based foods, and vegetables) also contain smaller amounts of calcium.

Some people elect to follow a dairy food free or milk-free diet because of a diagnosed or suspected milk allergy, an intolerance to lactose (the natural sugar in milk), or out of concern that milk increases mucous production. If allergies and intolerances are diagnosed by a doctor and dairy products must be avoided, an Accredited Practising Dietitian can advise about alternative sources of calcium. There is no scientific evidence of a link between milk and mucous production.

How much from the Milk, yoghurt, cheese and alternatives group is needed every day?

The minimum recommended amount of milk, yoghurt, cheese or alternatives ranges from 1½–2 serves a day for children up to 8 years old, 2½–3½ serves a day for older children and adolescents; 2½ serves a day in younger adults, pregnant and breastfeeding women; and from 3½–4 serves a day in older adults, particularly women.

Use the information in Chapter 5 to work out the minimum serves per day individuals will need.

Some additional serves from this group can be included in the overall diet instead of discretionary choices, to account for the additional energy needs of more active people and/or those who are taller.

Table 6 Examples of milk, yoghurt, cheese and/or their alternatives

Milks	Yoghurt	Cheese
All long life milks	All yoghurts including reduced fat or full cream, (without added sugar)	Cheddar
All reduced fat or full cream milks, preferably unflavoured types	Soy yoghurt (calcium fortified)	Edam
Buttermilk		Gouda
Evaporated milk		Ricotta
Powdered milk		Soy cheeses (calcium fortified)
Soy or other beverages (fortified with at least 100mg calcium/100ml)		

What is a serve of milk, yoghurt, cheese and alternatives (500–600kJ)*?

- 1 cup (250ml) fresh, UHT long-life or reconstituted powdered milk or buttermilk
- ½ cup (120ml) evaporated milk
- 2 slices, or 4x3x2cm piece (40g) hard cheese
- ½ cup (120g) ricotta cheese
- ¾ cup (200g tub) yoghurt
- 1 cup (250ml) soy beverage or beverages made from rice or other cereals which contain at least 100mg of added calcium per 100ml

*Choose mostly reduced fat varieties

If you do not consume any foods from this group, try the following foods, which contain the same amount of calcium as a serve of milk, yoghurt, cheese or alternatives (*note: the energy content of some of these serves may be higher so take account of this in the overall diet*)

- 100g (about ½ cup) almonds with skin
- 45g sardines, canned in water (about 1–2 sardines)
- 75–80g (about ⅓ cup) canned pink or Australian salmon with bones

Seafood, especially mussels, oysters and prawns and most plant foods, especially seeds, grain-based foods and green leafy vegetables also contain smaller amounts of calcium.

Water

Water is essential for life. It is required for digestion, absorption and transportation, as a solvent for nutrients, for elimination of waste products and to regulate body temperature. Water is constantly lost from the body and needs to be replaced.

Water requirements vary with age and at some life stages. Water turnover is higher in infants and young children than in adults. Breast milk or infant formula should be the main drink in the first 12 months. Exclusively breastfed infants do not require additional fluids up to 6 months of age. For formula-fed infants, cooled boiled tap water may be used if additional fluids are needed from birth. From around 6 months, small amounts of cooled boiled water can supplement breast milk.

Pregnant and breastfeeding women have a slightly increased water requirement compared with other women because of the needs of the foetus or baby and other changes that occur in the body during pregnancy and lactation.

Older people can experience dehydration if they have an inadequate intake of water or other drinks. The normal decline in kidney function with age, plus hormonal changes, decreased perception of thirst, some medications, cognitive changes, limited mobility and increased use of diuretics and laxatives may lead to reduced hydration in older people. These changes may be normal adaptations of the ageing process but the outcomes of dehydration in the elderly are serious and include cognitive impairment, functional decline, falls or stroke.

How much water is needed?

Adequate fluid consumption is an integral component of a healthy diet. Water is a good source of fluids and has the advantage of not adding energy to the diet. The NHMRC *Nutrient Reference Values*¹⁴ contain guidance on the intake of water that can be consumed over the course of a day. However there is no single recommended intake, as water requirements at any one time will vary depending on climate, physical activity, body surface area and individual metabolism. Total water requirements include the water content of foods as well as fluids.

The following intakes can be used as a general guide for fluids: about 4–5 cups of fluids a day for children up to 8 years, about 6–8 cups for adolescents, 8 cups for women (9 cups in pregnancy and lactation) and about 10 cups for men.

It is preferable to meet most fluid needs by drinking plain water. Many commonly consumed fluids such as tea and coffee provide water, although large quantities can have unwanted stimulant effects in susceptible people. Australian tap water is an ideal option because it is inexpensive and meets high palatability and hygiene standards.¹⁴ Most tap water in Australia is fluoridated, which has been shown to be a safe and effective public health measure. Fluoridation of tap water provides an additional benefit for development of strong teeth and bones, making it a good choice to ensure adequate hydration.

CHAPTER 4

What about other foods and drinks?

Allowance for unsaturated spreads and oils

Fats in the diet provide energy and some provide essential unsaturated fatty acids and fat-soluble vitamins such as vitamins A and E. Fats can be categorised as saturated fats, polyunsaturated fats and monounsaturated fats. Polyunsaturated fats can be further divided into omega-3 and omega-6 types.

Where possible, replace foods containing saturated fats with foods that have polyunsaturated and monounsaturated fats, which can benefit blood cholesterol levels. Essential unsaturated fatty acids are found in foods from the main food groups, especially from seeds, nuts, avocado, fish, lean grass-fed meat, poultry, some eggs, legumes/beans and oats. Sunflower, safflower, soybean, cottonseed, sesame, corn and grapeseed oils, and spreads made from these oils, contain predominantly polyunsaturated fats. Canola, macadamia nut, peanut, rice bran and olive oils, and spreads made from these oils, contain mainly monounsaturated fats.

Including small amounts of polyunsaturated and monounsaturated spreads and oils in cooking or in salad dressing or using a spread, or small amounts of nuts and seeds, can provide essential fatty acids and some fat-soluble vitamins.

How much unsaturated spreads and oils can I include in my diet?

The foods that provide unsaturated fat are also high in kilojoules, so the amount consumed will usually need to be small to be in balance with total energy needs, see Chapter 5. The modelling¹² used to inform the *Eat for Health Program* included an allowance of unsaturated spreads and oils or extra quantities of the nuts and seeds from which they are made as follows:

- 4 serves [28–40g] per day for men less than 70 years of age
- 2 serves [14–20g] per day for women over 18 years of age and men older than 70 years of age
- 2 serves [14–20g] per day for adolescents 14–18 years of age
- 1½ serves [11–15g] per day for children 12–13 years
- 1 serve [7–10g] per day for children 3–12 years of age
- ½ serve [4–5g] per day for children 2–3 years of age.

What is a serve of unsaturated spreads and oils (250kJ)?

- 10g polyunsaturated spread
- 10g monounsaturated spread
- 7g monounsaturated or polyunsaturated oil, for example olive, canola or sunflower oil
- 10g tree nuts or peanuts or nut pastes/butters.

Discretionary choices

Discretionary choices are not an essential or necessary part of our dietary patterns. These foods and drinks appear in the bottom right-hand corner of the *Australian Guide to Healthy Eating* (see page 6).

Discretionary choices are high in saturated fat (natural or added) and/or added sugars or salt or alcohol. These foods and drinks can contribute many kilojoules and displace other more nutritious foods from the diet. Many have low levels of essential nutrients. Consumption of foods and drinks high in saturated fat, added sugars, added salt or alcohol may be associated with increased risk of obesity and chronic disease such as heart disease, stroke, type 2 diabetes, and some forms of cancer. However, when consumed in occasional small amounts, these foods and drinks can add to variety and enjoyment. See Table 7 for examples of discretionary choices.

Australian adults get nearly 36% and children get nearly 41% of their kilojoules from these foods^{16, 17}. This distorts the diet and if these foods are included, they should be chosen only occasionally and in small amounts.

How many discretionary choices can individuals include in a healthy diet?

The pattern of intakes from the Five Food Groups recommended for people of varying age/gender and life stages outlined in Chapter 5 will provide all the nutrients required. To meet their kilojoule (energy) needs, those who are not above their healthy weight, and are more active or taller than others will need extra food over this basic recommendation.

The ideal choice is to make up any extra energy needs from foods in the basic Five Food Groups, particularly wholegrain cereals, vegetables, including legumes/beans and fruit. However, some discretionary choices can be used. For most people 0 to 3 serves a day will be suitable, depending on age, height and activity level.

For children or adults who are the youngest in their age band and also largely inactive, there is little or no room for these foods in the diet if excess weight gain is to be avoided.

For younger children, up to about 8 years of age, discretionary choices are best avoided or limited to no more than ½ serve a day unless the child is taller or more active, in which case they could have 0–2 serves a day.

Older children and adolescents who are more active and not above their healthy weight range, could have extra servings from the Five Food Groups and/or a combination of 0–2½ serves a day of discretionary choices. Older adolescents who are still growing and/or very active could increase discretionary choices up to 3 serves or more a day.

For adults, the recommendation ranges from 0 to 2–3 serves a day for men and 0 to 2–2½ serves a day for women depending on activity and height.

Note that many foods in the discretionary choices category have the potential to contribute to dental decay and so should be consumed when teeth can be cleaned soon after consumption.

What types of food are included in this category?

Table 7 Examples of foods and drinks in the ‘discretionary choices’ category

Higher added sugars	Higher saturated fat	Higher saturated fat and added sugars	High alcohol
Energy drinks	Bacon, ham	Biscuits	Beer
Fruit drinks	Butter, cream, ghee	Cakes	Liqueurs
Honey	Certain tacos, nachos, enchilada	Chocolate/bars	Mixed alcoholic drinks
Jams, marmalade	Commercially fried foods	Dessert style custards	Port
Some sauces	Commercial burgers	Doughnuts	Sherry
Sports drinks	Crisps and extruded snacks	Iced buns	Spirits
Sugar	Dairy blends	Ice cream	Wines
Sugar confectionary	Frankfurts	Muesli bars	
Sweetened soft drinks and cordials	Fried hot chips	Puddings	
Sweetened waters and iced teas	Meat pie or pastie	Slices	
Syrups	Pastry	Some confectionary	
	Pizza	Some sauces	
	Processed meats	Sweet muffins	
	Quiche	Sweet pastries	
	Salami/mettwurst	Sweet pies and crumbles	
	Sausages (regular)		
	Some crackers		
	Some sauces		
	Spring roll		

What is a serve of discretionary choices?

A serve of *discretionary choices* provides about 600 kJ.

Examples are:

- 2 scoops (75g) ice-cream
- 2 slices (50–60g) processed meats, salami or mettwurst
- 1½ thick or 2 thin (50–70g) regular sausages
- ½ snack size packet (30g) salty crackers or crisps
- 2–3 (35g) sweet biscuits
- 1 (40g) doughnut
- 1 slice (40g) plain cake or small cake-type muffin
- 5–6 (40g) sugar confectionary/small lollies
- 1 tablespoons (60g) jam/honey
- ½ small bar (25g) chocolate
- 2 tablespoons (40g) cream
- 1 tablespoon (20g) butter
- 200ml wine (2 standard drinks; but note this is 1 glass for most Australian wines)
- 60ml spirits (2 standard drinks)
- 600ml light beer (1½ standard drinks)
- 400ml regular beer (1½ standard drinks)
- 1 can (375ml) soft drink
- ¼ (60g) commercial meat pie or pastie
- 12 (60g) fried hot chips

None of these foods are necessary for a healthy diet.

Alcohol

Alcoholic drinks fit into the discretionary category as they have no essential nutrients to contribute. They should be consumed only in small amounts or not at all. Alcohol is not recommended for children, adolescents or pregnant or breastfeeding women.

Even small amounts of alcohol can be associated with increased risk of some cancers. Alcoholic drinks such as beer, wines, spirits and fortified wines increase the energy content of the diet while diluting the density of nutrient intake. In particular, sugar-sweetened alcoholic drinks may increase the risk of excessive weight gain.

If alcohol is included in the diet, its intake should be limited. The NHMRC *Australian Guidelines to Reduce Health Risks from Drinking Alcohol*¹⁸ recommend that for healthy men and women, drinking no more than two standard drinks on any day reduces the lifetime risk of harm from alcohol-related disease or injury. In addition, drinking no more than four standard drinks on a single occasion reduces the risk of alcohol-related injury arising from that occasion.

For children, the guidelines advise parents and carers that children under 15 years of age are at the greatest risk of harm from alcohol and that for this age group, not consuming alcohol is especially important. For young people aged 15–17 years, the safest option is to delay the initiation of drinking for as long as possible.

For women who are pregnant, planning a pregnancy or breastfeeding, not drinking is the safest option.

What about mixed foods?

Mixed foods and meals can be classified into the Five Food Groups and discretionary choices if you know what they are made from and the cooking methods used. Examples are given below in Table 8.

Table 8 Estimating serves for mixed foods

	Grain (cereal) foods	Vegetables legumes/ beans	Fruit	Milk yoghurt cheese and alternatives	Lean meats and poultry, fish, eggs, tofu, nuts and seeds legume/bean	Unsaturated spreads and oils	Discretionary choices
Beef salad sandwich							
Bread (2 slices)	2 serves						
Beef (65g)					1 serve		
Tomato 3 slices (40g)		½ serve					
Lettuce and cucumber (¼ cup)		¼ serve					
Polyunsaturated margarine (2 teaspoons)						1 serve	
Total serves	2 serves	¾ serve	–	–	1 serve	1 serve	–

	Grain (cereal) foods	Vegetables legumes/ beans	Fruit	Milk yoghurt cheese and alternatives	Lean meats and poultry, fish, eggs, tofu, nuts and seeds legume/bean	Unsaturated spreads and oils	Discretionary choices
Pizza							
Flour (¾ cup)	3 serves						
Vegetable oil (1 tablespoon)						1 serve	
Cheese (40g)				1 serve			
Tomato (38g)		½ serve					
Mushroom, capsicum and onion		¼ serve					
Pineapple (75g)			½ serve				
Chicken (40g)					½ serve		
Total serves	3 serves	¾ serve	½ serve	1 serve	½ serve	1 serve	–
Hamburger with a bucket of hot chips							
Medium bread roll or bun	2 serves						
Lean beef patty, fried in oil (100g)					½ serve	1 serve	
Tomato, onion, lettuce (35g)		½ serve					
Hot chips (bucket)							2 serves
Total serves	2 serves	½ serve	–	–	½ serves	1 serve	2 serves

CHAPTER 5

Energy and nutrient requirements

Few people eat exactly the same way each day and it is common to have a little more on some days than others, but the average recommendations are provided per day in this Chapter to help make it easier to put into practice. There are many different ways to combine foods according to the *Eat for Health Program* to meet nutritional requirements and produce health benefits. For sample meal plans, see Appendix 1.

Foundation Diets

In the *Eat for Health Program*, dietary patterns based on the Five Food Groups were derived for people over 6 months of age and called *Foundation Diets*. They provide the nutrient needs for a particular age, gender or lifestyle group but within the energy needs of the least active and smallest person in that group.¹²

The dietary patterns take into account factors such as current dietary intakes, cultural acceptability, some aspects of environmental sustainability and factors that affect food security (availability, accessibility and affordability). The aim is to formulate dietary patterns that are practical, realistic and achievable.

The dietary patterns were modelled on a weekly basis, as it is not necessary to eat exactly the same way each day. It is possible to have a bit more on one day and a bit less on another. However, in the tables, the recommendations are shown on a per day basis as this may be easier for people to remember and implement.

Total Diets

To account for their height, age and physical activity level, many people need more food than indicated in the relevant *Foundation Diet*. The dietary patterns which meet energy requirements are called *Total Diets*. For the smallest, least active adults in each age and gender group and the youngest least active children in each age and gender group, the *Foundation Diets* are the same as the *Total Diets*; that is, these groups cannot consume any additional foods beyond the *Foundation Diets* without exceeding energy requirements and contributing to excess weight gain.¹²

In this Chapter there are tables to help people estimate how much extra energy they will need depending on their height, age (especially for children) and activity levels.

Ideally, most of the additional foods for *Total Diets* should be chosen from vegetables and legumes/beans, fruit and grain (cereal) foods, nuts and seeds but some extra choices could also come from milk, yoghurt, cheese and alternatives, lean meats and poultry, fish, eggs and/or unsaturated spreads and oils. Extra choices could also come from discretionary foods. Table 9 shows approximately how many kilojoules are in a serve of the various food groups so people can choose any additional foods they would like to make up their energy needs. This allows more flexibility in food choice than previous Australian food guides.

For people who are not above their healthy weight, in a given category, the more active as well as older (children) or taller (adult) people have more flexibility in their food choices.

What do different levels of physical activity mean?

Sedentary activities mainly involve sitting or lying down, using little energy.

Light activities include standing and moving around in the home, workplace or community.

Moderate activities require some effort but you can still have a conversation. For example, walking briskly, gentle swimming or social tennis.

Vigorous activities make you huff and puff, so talking is difficult. Vigorous activities include jogging, aerobics and sports like football and netball.

How many kilojoules are in a serve of a particular food group, allowance for unsaturated spreads and oils and discretionary choices?

Not all food groups provide the same amount of energy per serve, see Table 9 below.

A serve of the grain (cereals) food group; milks, yoghurt, cheese and alternatives group; lean meats, poultry, fish, eggs and alternatives group; or discretionary choices group will provide about 500–600kJ. About 2 serves of fruit, and from 2 serves (for starchy vegetables) to 5 serves (of green leafy vegetables) of different varieties in the vegetables group will provide about 500–600kJ.

Table 9 Average kilojoule content for one serve of the Five Food Groups, allowances and discretionary choices

Food Group	Recommended serve size	Kilojoules per serve
Grain (cereal) foods	1 slice of bread or ½ medium roll or flat bread (about 40g) or ½ cup cooked rice, pasta, noodles or ½ cup cooked porridge or polenta or 2/3 cup breakfast cereal flakes (30g) or ¼ cup muesli (30g) or 3 crispbreads or 1 crumpet (60g) or 1 small English muffin or scone (35g) ½ cup cooked barley, buckwheat, semolina, cornmeal, quinoa or ¼ cup flour	500
Vegetables		
Green leafy and brassica	75g (½ cup) cooked green or brassica or cruciferous vegetables	100
Orange	75g (½ cup) cooked orange vegetables	150
Other/salad	75g (1 cup) raw green leafy vegetables	100
Starchy	75g starchy vegetables (e.g. 1 small potato or ½ medium potato or equivalent of sweet potato, taro, sweet corn or cassava)	250
Legumes/beans	75g (½ cup) cooked dried or canned beans, chickpeas or lentils (preferably with no added salt)	350

Food Group	Recommended serve size	Kilojoules per serve
Fruit	150g (1 piece) of medium-sized fruit e.g. apple or banana or orange or pear or 150g (2 pieces) of small fruit e.g. apricots or kiwi fruit or plums or 150g (1 cup) diced, cooked or canned fruit or 125ml (½ cup) 100% fruit juice (only to be used occasionally as a substitute for other foods in the group) or 30g dried fruit e.g. 4 dried apricot halves or 1½ tablespoons of sultanas (only to be used occasionally as a substitute for other foods in the group)	350
Milk, yoghurt, cheese and alternatives	250ml (1 cup) milk – fresh, UHT long life, reconstituted dried or calcium enriched soy drink or 125ml (½ cup) evaporated unsweetened milk or 200g (¾ cup or 1 small carton) yoghurt or 40g (2 slices or 4x3x2cm piece) hard cheese e.g. cheddar or 120g ricotta	500 – 600
Lean meat & poultry, fish, eggs, tofu, nuts and seeds, legumes/beans	65g cooked lean meats e.g. beef or lamb or pork or venison or kangaroo or ½ cup of lean mince or 2 small chops or 2 slices of roast meat (about 90–100g raw weight) or 80g cooked poultry e.g. turkey or chicken (about 100g raw weight) or 100g cooked fish fillet (about 115g raw weight) or 1 small can of fish (no added salt, not in brine) or 2 large eggs (120g) or 1 cup (150g) cooked beans, lentils, chickpeas, split peas or canned beans (preferably with no added salt) – legumes/beans can be eaten in larger amounts if used as a part of the meats group or 170g tofu or 30g nuts or seeds or nut/seed paste (no added salt)	500 – 600
Other foods	Recommended serve size	Kilojoules per serve
Unsaturated spreads and oils	10g polyunsaturated spread 10g monounsaturated spread 7g monounsaturated or polyunsaturated oil, for example olive, canola or sunflower oil 10g tree nuts or peanuts or nut pastes/butters	250
Discretionary choices	Discretionary choices are not an essential or necessary part of our dietary patterns – see Chapter 4 for further information	600

Total Diets for children and adolescents

The dietary patterns provided in Table 10 provide the nutrients and energy needed for all children and adolescents of smallest height with least active activity levels.

Additional serves of the Five Food Groups or unsaturated spreads and oils or discretionary choices are needed only by children and adolescents who are taller, more active or in the higher end of a particular age band, to meet additional energy requirements; see Tables 11 and 12.

Table 10 Recommended number of serves for children and adolescents

Recommended average daily number of serves from each of the Five Food Groups*							Additional serves for more active, taller or older children and adolescents
	Age	Vegetables and legumes/beans	Fruit	Grain (cereal) foods, mostly wholegrain and/or high fibre cereal varieties	Lean meats and poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans	Milk, yoghurt, cheese and/or alternatives, mostly reduced fat	Approx. number of additional serves from the Five Food Groups or unsaturated spreads and oils or discretionary choices
Boys	2–3	2½	1	4	1	1½	0–1
	4–8	4½	1½	4	1½	2	0–2½
	9–11	5	2	5	2½	2½	0–3
	12–13	5½	2	6	2½	3½	0–3
	14–18	5½	2	7	2½	3½	0–5
Girls	2–3	2½	1	4	1	1½	0–1
	4–8	4½	1½	4	1½	1½	0–1
	9–11	5	2	4	2½	3	0–3
	12–13	5	2	5	2½	3½	0–2½
	14–18	5	2	7	2½	3½	0–2½
Pregnant		5	2	8	3½	3½	0–3
Breastfeeding		5½	2	9	2½	4	0–3

* Includes an allowance for unsaturated spreads or oils and nuts or seeds: ½ serve [4–5g] per day for children 2–3 years of age, 1 serve [7–10g] per day for children 3–12 years of age, 1½ serves [11–15g] per day for children 12–13 years of age, and 2 serves [14–20g] per day for adolescents 14–18 years of age and for pregnant and breastfeeding girls.

Additional energy required in addition to the *Foundation Diet* amounts for boys

To identify the additional kilojoules required in addition to the *Foundation Diets* for boys who are within their healthy weight, look down Table 11 on the left hand side for the right age and then across for the physical activity level. This will show how many additional kilojoules will be needed each day in addition to the *Foundation Diet*.

For example a 7 year old boy with moderate activity will need an extra 2600kJ a day. This could be an extra 2 grain (cereal) serves (1000kJ) plus an extra fruit serve (350kJ) plus an extra serve of beans (350kJ) an extra milk serve (600kJ) and half a serve of a discretionary choice (300kJ), or any other preferred combination.

Table 9 will help you to determine how many extra serves a day of the various groups can be chosen for this kilojoule level.

Table 11 Additional energy required in addition to the *Foundation Diet* amounts for boys

Extra kilojoules needed in addition to <i>Foundation Diets</i> for each age group with a range of physical activity levels				
Boys Age (yrs)	Inactive	Light activity	Moderate activity	High activity
2	0	600	1200	1800
3	600	700	1400	2000
4	0	700	1400	2100
5	300	1000	1800	2600
6	600	1400	2200	3000
7	900	1800	2600	3500
8	1200	2100	3000	4000
9	0	1000	2000	2900
10	500	1500	2500	3600
11	900	2000	3100	4200
12	0	1100	2300	3400
13	500	1800	3000	4200
14	0	1300	2600	3900
15	600	1900	3300	4700
16	1000	2500	3900	5400
17	1400	2900	4400	5900
18	1600	3200	4700	6300

Additional energy required in addition to the *Foundation Diets* for girls

To identify the additional kilojoules required in addition to the *Foundation Diets* for girls who are within their healthy weight, look down Table 12 on the left hand side for the right age and then across for the physical activity level. This will show how many additional kilojoules will be needed in addition to the *Foundation Diet*.

For example a 7 year old girl with moderate activity will need an extra 2500kJ a day. This could be from 2 extra fruit serves (700kJ) plus an extra milk serve (600kJ) plus an extra 2 grain (cereal) serves (1000kJ) and an extra 2 serves of salad vegetables, or any other preferred combination.

Table 9 will help you to determine how many extra serves a day of the various groups can be chosen for this kilojoule level.

Table 12 Additional energy required in addition to the *Foundation Diets* for girls

Extra kilojoules needed in addition to <i>Foundation Diets</i> for each age group with a range of physical activity levels				
Girls age (yrs)	Inactive	Light activity	Moderate activity	High activity
2	0	600	1200	1800
3	600	800	1300	1900
4	0	700	1300	2000
5	300	900	1700	2400
6	600	1300	2100	2800
7	900	1700	2500	3300
8	1200	2100	2900	3800
9	0	900	1800	2700
10	300	1200	2100	3100
11	600	1600	2600	3600
12	0	1100	2100	3200
13	400	1500	2600	3700
14	0	1100	2200	3400
15	100	1300	2500	3600
16	300	1400	2600	3800
17	300	1500	2700	3900
18	400	1600	2800	4000

Total Diets for adults

The dietary patterns provided in Table 13 provide the nutrients and energy needed by all men and women of smallest height with least active activity levels.

Additional serves of the Five Food Groups or unsaturated spreads and oils or discretionary choices are needed only by adults who are taller or more active to meet additional energy requirements; see Tables 14 and 15.

Table 13 Recommended number of serves for men and women

Recommended average daily number of serves from each of the Five Food Groups*							Additional serves for taller or more active men and women
	Age	Vegetables and legumes/beans	Fruit	Grain (cereal) foods, mostly wholegrain and/or high fibre cereal varieties	Lean meats and poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans	Milk, yoghurt, cheese and/or alternatives, mostly reduced fat	Approx. number of additional serves from the Five Food Groups or unsaturated spreads and oils or discretionary choices
Men	19–50	6	2	6	3	2½	0–3
	51–70	5½	2	6	2½	2½	0–2½
	70+	5	2	4½	2½	3½	0–2½
Women	19–50	5	2	6	2½	2½	0–2½
	51–70	5	2	4	2	4	0–2½
	70+	5	2	3	2	4	0–2
Pregnant	(19–50)	5	2	8½	3½	2½	0–2½
Breastfeeding	(19–50)	7½	2	9	2½	2½	0–2½

* Includes an allowance for unsaturated spreads or oils and nuts or seeds: 4 serves [28–40g] per day for men less than 70 years of age; 2 serves [14–20g] per day for women and older men.

Additional energy required in addition to the *Foundation Diets* for men

To determine the additional kilojoules required in addition to the *Foundation diets* for men who are within their healthy weight, look down Table 14 on the left hand side for the right age band and height and then across for the activity level. This will show how many additional kilojoules will be needed in addition to the *Foundation Diet*. If the height falls between two height categories, estimate the needs of the person from the heights either side.

For example a 35 year old man who is 180cm tall with moderate activity will need an extra 3800kJ a day. This could be from an extra 4 grain (cereal) serves (2000kJ) plus one extra starchy vegetable (350kJ) plus one extra serve of unsaturated spreads or oils (250kJ) and two discretionary choices (1200kJ), or any other preferred combination.

Table 9 will help you to determine how many extra serves a day of the various groups can be chosen for this kilojoule level.

Table 14 Additional energy required in addition to the *Foundation Diets* for men

Additional kilojoules needed in addition to <i>Foundation Diets</i> for men of increasing height in each age group with a range of physical activity levels				
Men Age band and height (cm)	Inactive	Light activity	Moderate activity	High activity
Men 19–30				
160	0	1300	2600	3900
170	700	2000	3400	4800
180	1300	2800	4300	5800
190	2100	3600	5200	6800
Men 31–50				
160	0	1300	2500	3800
170	500	1800	3200	4500
180	1000	2400	3800	5300
190	1500	3000	4500	6000
Men 51–70				
160	0	1100	2200	3300
170	400	1600	2900	4100
180	900	2200	3500	4900
190	1400	2900	4200	5600
Men 70+				
160	0	1000	2100	3100
170	500	1600	2700	3900
180	1000	2200	3400	4600
190	1600	2900	4100	5400

Additional energy required in addition to the *Foundation Diets* for women

To determine the additional kilojoules required in addition to the *Foundation Diets* for women who are within their healthy weight, look down Table 15 on the left hand side for the right age band and height and then across for the activity level. This will show how many additional kilojoules will be needed over the *Foundation Diet*. If the height falls between two height categories just estimate the needs of the person from the heights either side.

For example a 35 year old woman who is 170cm tall with high activity will need an extra 4100kJ serves a day. This could be an extra 4 grain (cereal) serves (2000kJ) plus an extra 2 fruit serves (700kJ) plus an extra starchy vegetable (350kJ); an extra legume serve (350kJ) and an extra salad vegetable (100kJ) plus 1 discretionary choice (600kJ), or any other preferred combination.

Table 9 will help you to determine how many extra serves a day of the various groups can be chosen for this kilojoule level.

Table 15 Additional energy required in addition to the *Foundation Diets* for women

Additional kilojoules needed in addition to <i>Foundation Diets</i> for women of increasing height in each age group with a range of physical activity levels				
Women Age band and height (cm)	Inactive	Light activity	Moderate activity	High activity
Women 19–30				
150	0	1100	2100	3100
160	600	1700	2800	4000
170	1300	2500	3700	4900
180	1900	3200	4500	5800
Women 31–50				
150	0	1100	2100	3100
160	300	1400	2500	3600
170	700	1800	3000	4100
180	1000	2200	3400	4600
Women 51–70				
150	0	1000	2000	2900
160	400	1400	2400	3500
170	700	1800	2900	3800
180	1100	2200	3400	4500
Women 70+				
150	0	900	1800	2800
160	400	1300	2300	3300
170	700	1800	2800	3800
180	1200	2200	3300	4400

CHAPTER 6

Planning for a healthy diet

Developing a personal healthy eating plan

Determine the right *Foundation Diet* plan according to age and gender using Table 10 for children and adolescents or Table 13 for adults. Remember that the *Foundation Diet* also includes an allowance for unsaturated spreads and oils – see Chapter 4.

Determine how many extra kilojoules are needed for the specific age of children or height for adults and for the estimated physical activity levels as per Tables 11 and 12 for children and adolescents or Table 14 and 15 for adults.

Convert the extra kilojoules required into number of serves of additional foods needed using Table 9, based on preferred eating patterns but remembering to choose mainly from the Five Food Groups, especially the vegetables and legumes/beans, fruit and grains (cereals) groups.

Construct a *Total Diet* pattern and compare it to current eating patterns to see what changes may need to be made and what changes would be most realistic.

Remember, this guide is only approximate. The best guide as to whether children or adults are eating appropriate amounts for their lifestyle is whether their weight is stable. People should be encouraged to weigh themselves regularly and adjust their food intake or physical activity levels, if needed. For sample meal plans, see Appendix 1.

Example: 35 year old women who is 160cm and moderately active

Extra kilojoules needed (from Table 15) = 2500kJ.

Remember this is an estimate of requirements only– the best guide as to whether you are eating appropriate amounts of food overall for your lifestyle is whether your weight is stable.

	Grain (cereal) foods-mostly wholegrain and/or high cereal fibre	Vegetables and legumes/beans	Fruit	Milk, yoghurt, cheese and alternatives (mostly reduced fat)	Lean meat and poultry, fish, eggs, tofu, nuts, seed and legumes/beans	Allowance of unsaturated spreads or oils	Additional serves of the Five Food Groups or unsaturated spreads or oils or discretionary choices
Foundation Diet	6	5	2	2 ½	2 ½	2	
Additional food groups	2 (1000kJ)	2 (~500kJ)	1 (350kJ)	0	0	1 (250kJ)	½ (300kJ)
Total Diet	8	7	3	2 ½	2 ½	3	½

Try filling out the table below for yourself:

My minimum number of serves from the five food groups (Table 10 for children and adolescents or Table 13 for adults) = (put into the 'Foundation Diet' row)

My allowance for unsaturated spreads or oils (from Chapter 4) = (put into the 'Foundation Diet' row)

My extra energy needs (Tables 11 and 12 for children and adolescents or Table 14 and 15 for adults) =

My limit for additional serves (from Table 9) = (put into the 'Additional Food Groups row')

Remember to choose mainly from the Five Food Groups, especially the vegetables and legumes/beans, fruit and grains (cereals) groups.

	Grain (cereal) foods – mostly wholegrain and/or high cereal fibre	Vegetables and legumes/beans	Fruit	Milk, yoghurt, cheese and alternatives (mostly reduced fat)	Lean meat and poultry, fish, eggs, tofu, nuts, seed and legumes/beans	Allowance of unsaturated spreads or oils	Additional serves of the Five Food Groups or unsaturated spreads or oils or discretionary choices
Foundation Diet							
Additional food groups							
Total Diet							

Visually adapting the information

A food selection guide such as the AGTHE has limitations and cannot address all the factors which determine food choice, especially as the eating patterns of individuals and families are continually shaped and changed by a variety of personal, social and cultural influences.

Food choices can only be made from the available food supply, taking account of constraints such as the household food budget and the time and skills available to shop, prepare and cook food.

The AGTHE may be less appropriate for some groups in Australia with different eating styles and health problems. However, the AGTHE has been designed to be flexible, so that people with specialist knowledge of the needs of different target groups can adapt it appropriately.

The template version on the following page can be used to produce a guide which includes appropriate foods for use with different target groups. These might include children, adolescents, pregnant and breastfeeding women, low income groups, families, non-English speaking groups, different cultural and ethnic groups, Aboriginal and Torres Strait Islander peoples, the elderly, elite athletes and sports people.

Suggested approach for adapting the information

1. Describe the common food items eaten by the individual or group members.
2. Place the listed foods into the Five Food Groups or unsaturated spreads and oils or discretionary choices sections based on their similarity to the foods listed in Chapter 3 and Chapter 4.
3. Base the eating pattern chosen on the eating habits of the individual or group for whom the guide is being adapted.

Template for adapting the Australian Guide to Healthy Eating

Add your own images of foods to the template to match the eating patterns of your audience.

Australian Government
National Health and Medical Research Council
Department of Health and Ageing

www.eatforhealth.gov.au

Australian Guide to Healthy Eating

Enjoy a wide variety of nutritious foods from these five food groups every day.
Drink plenty of water.



Use small amounts



Only sometimes and in small amounts



What about those who are overweight and wish to achieve a healthy weight?

Most Australian adults and around a quarter of our children are now overweight or obese. Being overweight greatly increases the risk of high blood pressure, muscle, bone and respiratory disorders and chronic disease including type 2 diabetes, heart disease, stroke and some cancers, and reduces life expectancy. Being underweight also carries health risks.

Overweight people, especially children and adolescents, can also face social discrimination, low self-esteem, poor body image and depression. Children who are overweight tend to become overweight adults, especially if their parents are also overweight.

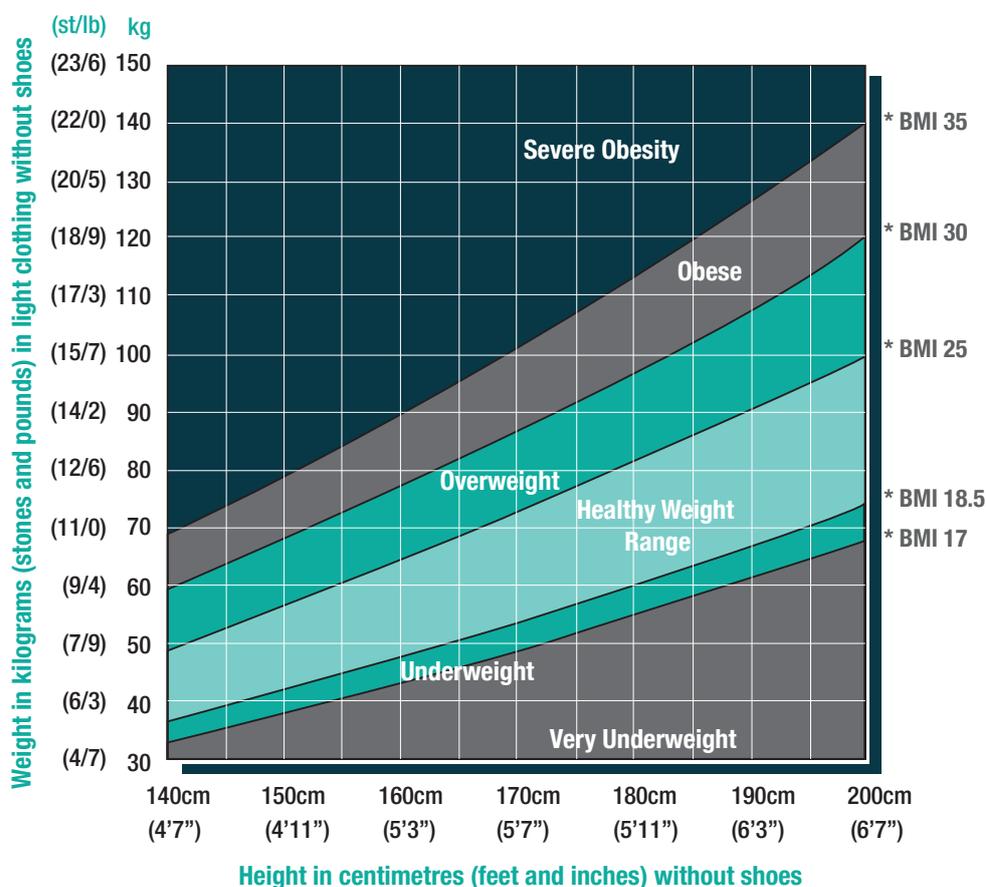
The following guide is only approximate. The best guide as to whether adults are eating appropriate amounts for their energy requirements is whether their weight is stable. The best guide as to whether children are eating appropriate amounts for their energy requirements is whether their growth is normal.

How do you know if an adult is overweight or obese?

BMI chart for adults

Adults can use the following graph as a rough guide to assess weight status. It may not be appropriate for those who have a high muscle mass due to elite sport or physical activity.

1. Find your weight on the left and your height at the bottom of the chart.
2. From your height and weight, trace along the lines until they meet.
3. The point where the lines meet will tell you what BMI range you are in.



$$* \text{ Body Mass Index (BMI) } = \frac{\text{Weight (kg)}}{\text{Height}^2 \text{ (metres)}}$$

Waist/hip measurement

Another way for adults to measure their weight-related health risk is with a tape measure. This can be done by measuring between the lowest rib and the top of the hip bone, roughly in line with the belly button.

Your waist measurement	Your weight-related health risk
Men less than 94cm Women less than 80cm	Your weight-related health risk is low.
Men between 94–102cm Women between 80–88cm	Your weight-related health risk is increased, especially if your BMI is more than 25 too.
Men more than 102cm Women more than 88cm	Your weight-related health risk is high.

What dietary patterns will help attain a healthy weight?

A healthy eating pattern and an active lifestyle are most beneficial to health and maintenance of healthy body weight. For adults whose body weight is above that suggested in the healthy weight-for-height range, food and energy intake can be reduced to lose weight. It would also be beneficial to increase activity levels.

To achieve weight loss, unless the individual is of small body size and is largely sedentary, the *Foundation Diet* for their age/gender group will provide their nutrient needs but with less energy than usual needs. Thus, consuming the *Foundation Diet* for their age/gender group should lead to gradual weight loss.

Restrictive dieting beyond adhering to the *Foundation Diets* is not recommended, especially for children and adolescents whose nutritional needs are high due to growth.

What about physical activity?

There is increasing evidence that a healthy diet reduces the risk of excessive weight gain. However, the combination of healthy dietary patterns and increasing physical activity is more effective for weight loss and maintenance of weight loss than just restricting energy intake.

Refer to the Physical Activity Guidelines for children (5-12 years), young people (13-17 years) and adults (18-64 years) at www.health.gov.au.

How much weight loss?

Adhering to *Foundation Diets* represents a daily reduction of up to 2,000kJ for the average size person in each age/gender group doing light physical activity. This should result in a weight loss of around 0.5kg per week or 1–4kg per month.

How can weight loss be maintained?

Weight loss is most likely to be maintained where dietary and physical activity habits suit personal lifestyle and are healthy, acceptable and sustainable.

The overall dietary patterns are important. People should be encouraged to focus on appropriate portion sizes of the basic, healthy foods in the *Foundation Diets* and try to avoid consuming discretionary choices.

What if someone is overweight and has a chronic disease or if they are obese?

Adhering to *Foundation Diets* will assist weight loss in most people. However, those who are obese or overweight with associated health problems such as cardiovascular disease or type 2 diabetes, should seek advice from their doctor or an Accredited Practising Dietitian – a range of treatment options are available. Further guidance on managing overweight and obesity in a clinical setting can be found in NHMRC's *Clinical practice guidelines for the management of overweight and obesity in adults, adolescents and children*.¹⁹

What about overweight children and adolescents?

Children and adolescents need enough nutritious food to grow and develop normally. At these life stages the focus is on maintaining a rate of physical growth that is consistent with the expected norms for age, gender and stage of physiological maturity. Physical growth is best assessed clinically by weight, length or height, and at specific ages, other measurements such as head circumference.

Management of overweight and obesity in childhood is recommended to reduce risk of associated conditions, and of being overweight and developing chronic disease in later life. Individual assessment and clinical supervision is recommended to ensure appropriate growth and development for all overweight and obese children and adolescents.

Adhering to the *Foundation Diets* and avoiding discretionary foods and drinks, is recommended for children and adolescents. However, dietary restriction beyond this may result in nutrient deficiencies and sub-optimal growth and development. Following the *Foundation Diet* should help maintain body weight while the child grows in height, thus 'normalising' BMI for age.

CHAPTER 7

What about infants and toddlers?

Infants

The recommended dietary patterns for infants and toddlers are provided below. These dietary patterns are a guide only, as the needs of each individual infant or toddler may vary. For all infants, recommended nutrient intakes are based on the nutrient profile of breast milk for infants up to 6 months and on estimates of the nutrients provided by breast milk or formula and complementary foods for infants 6–12 months of age. Assessing whether growth and development is appropriate will help to determine whether dietary intake is adequate or excessive for the individual child.

Infants up to around 6 months

It is recommended that infants should be exclusively breastfed to around 6 months. If this is not possible, commercial infant formula should be used. Exclusive feeding means that infants are given breast milk and nothing else during this time. Exclusively breastfed infants do not require additional fluids up to 6 months of age. For formula-fed infants, cooled boiled tap water may be used if additional fluids are needed. Any breastfeeding at all is beneficial.

Infants from 6–12 months

Breastfeeding should continue until the baby is 12 months old, or for as long as the mother and infant desire. If formula fed, the infant should continue to drink formula until 12 months of age.

From around 6 months, small amounts of cooled boiled water can supplement breast milk or infant formula. Consuming any other drinks in the first 12 months may interfere with an infant's intake of breast milk or infant formula and is not recommended.

Introduction of first foods should begin around 6 months, starting with iron fortified infant cereal and/or iron rich foods such as puréed meat or tofu, followed by other foods from the Five Food Groups. Introduce different tastes and textures as the baby grows.

Cow's milk should not be given as a main drink to infants under 12 months of age. Cows' milk may be served in small quantities in foods, with cereals and as plain custards without added sugars.

By 12 months of age, infants should be consuming a wide variety of nutritious foods enjoyed by the rest of the family. All milk given to children over 12 months should be pasteurised.

The recommended dietary patterns for infants aged 7–12 months are shown in Table 16 below. While it is recommended to introduce solid foods from around 6 months of age, it may take around a month to reach the ranges outlined in Table 16.

Table 16 Sample daily food patterns for infants aged 7–12 months

Food	Serve size	Serves a day	Serves a week
Vegetables and legumes/beans	20g	1½–2	10–14
Fruit	20g	½	3–4
Grain (cereal) foods	40g bread equivalent	1½	10
Infant cereal (dried)	20g	1	7
Lean meats, poultry, fish, tofu, eggs	30g	1	7
Breast milk or formula	600ml	1	7
Yoghurt/cheese or alternatives	20ml yoghurt or 10g cheese	½	3–4

* An allowance for unsaturated spreads or oils or nut/seed paste of ½ serve (4–15g) per day is included, however whole nuts and seeds are not recommended at this age because they may cause choking.

Toddlers

Toddlers 1 to 2 years of age

The recommended dietary patterns for toddlers aged around 1–2 years are shown in Table 17 below. There may be some variations in nutritional needs due to different activity levels, however the table below provides a general guide for children at this age. Appropriate growth and development will also indicate whether food intake is at an appropriate overall level for an individual child.

Foods with a high risk of choking such as whole nuts, seeds, raw carrot, celery sticks and chunks of apple should be avoided for the first 3 years as their size and/or consistency increases the risk of inhalation and choking. However nut pastes and nut spreads can be offered to infants from around 6 months of age.

Table 17 Sample daily food patterns for toddlers

Food	Serve size	Serves a day
Vegetables and legumes/beans	75g	2–3
Fruit	150g	½
Grain (cereal) foods	40g bread equivalent	4
Lean meats, poultry, fish, tofu, eggs, legumes	65g	1
Milk, yoghurt, cheese and/or alternatives	250g milk equivalent	1–1½

* An allowance for unsaturated spreads or oils or nut/seed paste of 1 serve (7–10g) per day is included. Whole nuts and seeds are not recommended for children of this age because of the potential choking risk.

Supporting mothers

Many mothers need support from their partners, family, friends and the broader community to assist them breastfeed their babies, particularly during the first six months.

It is important for new mothers to eat well when they are breastfeeding. New mothers may be dealing with lack of sleep as well as extra nutrient needs.

Public spaces like shopping centres and restaurants, and workplaces can support breastfeeding mothers by providing facilities for their use. Breastfeeding should be promoted as being the natural, normal and healthy way to feed infants. However, support should be provided to all mothers, no matter what feeding choices they make for their babies.

Child health nurses, lactation consultants, doctors and other health professionals can provide help if mothers and families are having problems with infant feeding.

CHAPTER 8

Achieving healthy dietary patterns

Influences on food choices

Australia is a developed nation and most people have access to a wide variety of affordable, nutritious foods. However, where people live and how they live can also influence what is eaten.

It can be difficult for those on limited incomes, as the cheapest foods may not be the best choices for health and wellbeing. Australians living in rural and remote areas may also have difficulty accessing nutritious foods, especially perishable items including vegetables and fruit. Food security may be a challenge for some groups, particularly Aboriginal and Torres Strait Islanders.

Foods which are readily available in communities and most heavily advertised are often discretionary choices which are high in saturated fat, added sugars, added salt and alcohol.

How to eat a diet low in saturated fat

Saturated fats can be harmful to health. They adversely affect blood cholesterol levels and are associated with increased risk of heart disease. Saturated fats are found in butter, lard and dripping, coconut and palm kernel oils, fatty meats, some vegetable oils (hydrogenated for use in baked foods and processed foods). Lesser amounts are found in meat and full fat milk products, especially cheese.

Unsaturated fats are an important part of a healthy diet. These fats help reduce the risk of heart disease and lower cholesterol levels (among other health benefits) when they replace saturated fats in the diet.

Low fat diets (even those low in saturated fat) are not suitable for children less than 2 years old due to their relatively high energy requirements. For children over two years of age, adolescents and adults, a diet low in saturated fat is recommended.

Discretionary choices

Limit those foods which contain high levels of saturated fats such as:

- Butter, cream, lard and dripping, coconut and palm or palm kernel oils
- Cakes, biscuits, pastries, chocolate, potato crisps and other high-fat snack products
- Processed meats such as salami or mettwurst
- Fatty meats, including most sausages
- Takeaway foods, for example commercial burgers, pizzas, chicken, chips and fried foods cooked in hydrogenated vegetable oil.

Five Food Groups

Within the Five Food Groups, saturated fat is mainly found in meat, poultry, eggs, milk, yoghurt and cheese.

To reduce the saturated fat from these groups:

- Trim visible fat from meats
- Remove skin and fat pads from chicken
- Use reduced fat milk, yoghurt and cheese (children under two years should use full fat milk products as they need the extra energy for growth)
- Use small amounts of unsaturated spreads or oils in preference to other cooking fats.

How to choose low salt foods and use salt sparingly

Salt is sodium chloride and salt is the main contributor of sodium in the diet. Excessive sodium intakes increase blood pressure, and may increase the risk of heart disease and stroke.

As many foods include added salt, those with high energy requirements need to take care with their food choices to achieve a low sodium intake.

Discretionary choices

Limit those foods which contain high levels of salt such as marinades and sauces (soy or fish sauces are particularly high in salt), salty snack foods like potato crisps, crackers, salty spreads like Vegemite™, Marmite™, savoury biscuits, prepared soups and salted foods such as liquid stock or stock cubes.

Five Food Groups

Avoid adding salt during food preparation or at the table. Limit the amounts of higher salt foods and balance them with other foods from within the same food group which are lower in salt. Avoid using salt in food preparation or at the table. Add herbs, spices and other low salt flavourings, like no added salt tomato paste, to cooking in place of salt. See Table 18 for higher and lower salt choices within the Five Food Groups and further information in this Chapter on how to read food labels.

Table 18 Examples of higher and lower salt, five food group choices

Food group	Higher salt choices	Lower salt choices
Grain (cereal) foods, mostly wholegrain and/or high cereal fibre	Most breads; higher salt breakfast cereals, higher salt crispbreads	Home cooked rice, pasta and noodles, polenta, couscous, quinoa, lower salt breads, rolled oats, muesli and some breakfast cereals, some crispbreads
Milk, yoghurt, cheese and/or alternatives	Most cheese	Milk and yoghurt, ricotta and reduced salt cheeses
Vegetables and legumes/beans	Canned vegetables and beans, antipasto vegetables	Fresh vegetables, canned varieties without added salt
Lean meats & poultry, fish, eggs, tofu, nuts and seeds, legumes/beans	Fish or legumes/beans canned in salt (brine) or oil	Fresh cooked meats/fish, fish canned in water without added salt legumes/beans (dried or canned without added salt), eggs, tofu, unsalted nuts and seeds

Reducing added sugars

Added sugars can increase the energy content of the diet and dilute nutrient intake. High or frequent intake of foods and drinks containing added sugars can lead to tooth decay in both children and adults. Recent evidence shows that intake of sugar-sweetened drinks can increase the risk of excessive weight gain in both children and adults.

Foods and drinks that are artificially sweetened can provide a useful alternative to those high in added sugars. However, artificially sweetened soft drinks are acidic and may erode tooth enamel.

Infants should be put to bed without a bottle or the bottle should be taken away when the infant has finished feeding. Do not let the infant keep sucking on the bottle.

Discretionary choices

- Particularly limit intake of drinks with added sugars including sweetened soft drinks and cordials, energy drinks, sports drinks, vitamin waters and fruit drinks.
- Limit those foods which contain added sugar including confectionary (lollies), syrups and sweetened sauces and dressings, jam, cakes, biscuits, sweet muffins, doughnuts, slices, puddings, sweet pastries, pies and crumbles, ice-cream, chocolate and muesli bars.

Five Food Groups

- Within each food group choose mainly foods with little or no added sugar.
- Choose foods containing added sugars less often. This includes foods like sweetened breakfast cereals, fruit canned in syrup, flavoured milks and flavoured yoghurts.

How to maximise fibre intake

Many Australians do not get enough fibre through their dietary patterns. The dietary guidelines encourage the consumption of foods high in dietary fibre such as vegetables, especially legumes, fruit and wholegrain foods. Fibre is important for health, helps prevent some chronic diseases and helps with weight control.

Follow the *Australian Guide to Healthy Eating* and use the information in Chapter 5 to choose the appropriate number of serves based on age and sex from plant foods (wholegrains, vegetables, legumes, fruit, seeds, nuts), to provide an adequate intake of dietary fibre.

Discretionary choices

- Limit discretionary choices as these tend to be low in fibre and may take the place of some of the serves from the high fibre food groups.

Five Food Groups

- Fruit should be chosen as fresh or canned fruit. Most fruit juices have little or no dietary fibre.
- Use wholegrain breads and breakfast cereals, brown rice and wholemeal pasta more often than white or more refined varieties.
- Eat edible skins on fruit and vegetables, where appropriate.
- Include legumes, nuts and seeds.
- Swap some meat or chicken for cooked/canned legumes or grated vegetables.

Try to avoid making up for a low fibre eating pattern by using fibre supplements or foods with concentrated fibre such as brans or psyllium husk. You may get enough fibre, but not the different types of fibres and other essential nutrients provided by a variety of vegetables, legumes, fruits, wholegrain breads and cereals, nuts and seeds.

Three main types of dietary fibre fit into the categories of insoluble fibre, soluble fibre and resistant starch.

Insoluble fibre

Insoluble fibre is particularly good for the digestive system. It is bulky and absorbs water so it is filling for few kilojoules, keeps stools soft and bulky and bowels regular. It also helps prevent some bowel problems such as diverticular disease, haemorrhoids and constipation. Plant foods high in dietary fibre are also associated with a reduced risk of bowel cancer.

Foods high in insoluble fibre include wholegrain breads and cereals, fruit, vegetables (especially the skins), legumes/beans, and nuts and seeds. Vegetables and fruits have the added advantage of being low in kilojoules.

Soluble fibre

Soluble fibre works differently. It still contributes to satiety but can also have favourable effects on blood cholesterol and blood glucose levels. Foods high in soluble fibre include fruits, vegetables, legumes, barley and oats.

Resistant starch

When resistant starch travels undigested to the large intestine it is processed by 'good' bacteria and the by-products help keep the bowel lining healthy. Foods rich in resistant starch include under-ripe bananas, cooked potato that has been cooled, legumes such as chickpeas and lentils, wholegrain products such as rye bread and pasta cooked to the al dente stage.

Food Labels

Read ingredient lists and nutrition information panels to compare the nutritional content of packaged foods.

This information can be used to choose between seemingly similar foods, such as different types of breakfast cereals, crispbread, canned fish, canned vegetables, yoghurts, and pre-prepared meals such as lasagne or pizza.

All packaged foods (with some minor exceptions) must display a nutrition information panel. This will state servings per pack and serving size and can be used to compare between different brands or types of similar food choices. Check whether the serving size corresponds with what you are likely to eat. Some labels use unrealistic serving sizes.

A food label must show a list of ingredients present (except water). They are listed in descending order of their proportion by weight in the food. If water is added, the label should state 'water added'.

Added substances are also listed as ingredients of a food and are identified by a class name or a chemical name or a code number. Food additives include colours, flavours, antioxidants, preservatives, and emulsifiers.

The resource on the following page can be used to explain the different components of food labels.

How to understand food labels

What to look for...

Don't rely on health claims on labels as your guide. Instead learn a few simple label reading tips to choose healthy foods and drinks, for yourself. You can also use the label to help you lose weight by limiting foods that are high in energy per serve.

Nutrition Information

Servings per package – 16 Serving size – 30g (2/3 cup)	Per serve	Per 100g
Energy	432kJ	1441kJ
Protein	2.8g	9.3g
Fat		
Total	0.4g	1.2g
Saturated	0.1g	0.3g
Carbohydrate		
Total	18.9g	62.9g
Sugars	3.5g	11.8g
Fibre	6.4g	21.2g
Sodium	65mg	215mg

Ingredients: Cereals (76%) (wheat, oatbran, barley), psyllium husk (11%), sugar, rice, malt extract, honey, salt, vitamins.

Ingredients ▲
Listed from greatest to smallest by weight. Use this to check the first three ingredients for items high in saturated fat, sodium (salt) or added sugar.

◀ 100g Column and Serving Size
If comparing nutrients in similar food products **use the per 100g column.** If calculating how much of a nutrient, or how many kilojoules you will actually eat, use the per serve column. But check whether your portion size is the same as the serve size.

Energy
Check how many kJ per serve to decide how much is a serve of a 'discretionary' food, which has 600kJ per serve.

Sugars
Avoiding sugar completely is not necessary, but try to avoid larger amounts of added sugars. If sugar content per 100g is more than 15g, check that sugar (or alternative names for added sugar) is not listed high on the ingredient list.

Other names for added sugar: Dextrose, fructose, glucose, golden syrup, honey, maple syrup, sucrose, malt, maltose, lactose, brown sugar, caster sugar, maple syrup, raw sugar, sucrose.

◀ Sodium (Salt)
Choose lower sodium options among similar foods. **Food with less than 400mg per 100g are good, and less than 120mg per 100g is best.**

Other names for high salt ingredients: Baking powder, celery salt, garlic salt, meat/yeast extract, monosodium glutamate, (MSG), onion salt, rock salt, sea salt, sodium, sodium ascorbate, sodium bicarbonate, sodium nitrate/nitrite, stock cubes, vegetable salt.

Preparing and storing food safely

Foodborne illnesses are caused by contaminated foods. Contaminants include pathogens, environmental contaminants and adulterants. Food poisoning generally occurs when pathogenic micro-organisms multiply to harmful levels as a result of incorrect handling of food, particularly when temperature control is inadequate. Correct handling of food during all stages of its preparation and storage is essential in reducing the risk of contamination and disease.

Most healthy people recover quickly from food poisoning but some people can be seriously ill. Those more at risk include those with a weakened immune system, as well as pregnant women, infants and older people.

The following are examples of foods that are normally considered higher risk because pathogenic bacteria can be present and grow if not stored and prepared safely:

- raw and cooked meat and poultry or foods containing raw or cooked meat and poultry
- dairy products and foods containing dairy products such as cream
- seafood and foods containing seafood
- cooked rice and pasta
- processed fruit and vegetables such as salads
- processed foods containing eggs or other protein-rich ingredients
- foods that contain any of the foods above, for example, sandwiches.

The use of date marking provides a useful guide on the shelf life of a food item in terms of quality and safety. The term 'best-before' indicates the length of time a food should keep before it begins to deteriorate while 'use-by' indicates how long a food can be expected to remain safe provided it has been stored according to any stated storage conditions and the package is unopened.

APPENDIX 1

Sample daily meal plans for men and women

Table 19 Sample daily meal plan for a man aged 19–50yrs of average height, healthy weight and light activity

Food	Weight/portion size	Food group and number of serves
Breakfast		
Wholegrain toast with polyunsaturated margarine	2 slices toast 2 teaspoon margarine	2 grain serves 10g unsaturated spread (1 serve)
Baked beans	½ cup canned beans	1 vegetable serve
Tomato	1 medium tomato	1 vegetable serve
Glass of reduced fat milk	1 cup (250ml)	1 milk/yoghurt/cheese serve
Morning break		
Apple	1 medium	1 fruit serve
Coffee with milk	200ml (small coffee)	¼ milk/yoghurt/cheese serve
Lunch		
Wholegrain sandwich with roast beef, reduced fat cheese and mixed salad with polyunsaturated margarine	2 slices bread 65g roast beef 20g cheese 2 teaspoon margarine 1 cup mixed salad vegetables	2 grain serves 1 meat and/or alternatives serve ½ milk/yoghurt/cheese serve 10g unsaturated spread (1 serve) 1 vegetable serve
Afternoon break		
Unsalted nuts	30g	1 meat and/or alternatives serve
Coffee with milk	200ml (small coffee)	¼ milk/yoghurt/cheese serve
Evening meal		
Fish prepared with olive oil	100g cooked fillet of fish 14g unsaturated oil	1 meat and/or alternatives serves 14g unsaturated oil (2 serves)
Boiled rice	1 cup boiled rice	2 grain serves
Potato	½ medium potato	1 vegetable serve
Carrots	½ cup	1 vegetable serve
Broccoli	½ cup	1 vegetable serve
Evening snack		
Fruit salad and reduced fat yogurt	1 cup diced fresh fruit 100g yoghurt	1 fruit serve ½ milk/yoghurt/cheese serve

Table 20 Sample daily meal plan for woman aged 19–50yrs of average height, healthy weight and light activity

Food	Weight/portion size	Food group and number of serves
Breakfast		
Wholegrain breakfast cereal, with reduced fat milk	60g cereal 1 cup (250ml) reduced fat milk	2 grain serves 1 milk/yoghurt/cheese serve
Reduced fat yoghurt	100g yoghurt	½ milk/yoghurt/cheese serve
Morning break		
Coffee with milk	200ml (small coffee)	¼ milk/yoghurt/cheese serve
Lunch		
Sandwich with salad and chicken	2 slices bread 40g chicken 1 teaspoon margarine 1 cup salad vegetables	2 grain serves ½ meat and/or alternatives serve 5g unsaturated spread (½ serve) 1 vegetable serve
Apple	1 medium	1 fruit serve
Afternoon break		
Unsalted nuts	30g	1 meat and/or alternatives serve
Coffee with milk	200ml (small coffee)	¼ milk/yoghurt/cheese serve
Evening meal		
Pasta with beef mince and red kidney beans, tomato and green salad with olive oil and vinegar dressing	1 cup of cooked pasta 65g cooked mince 1½ medium tomato ¼ cup kidney beans ½ onion 2 cups green leafy salad 2 teaspoon unsaturated oil	2 grain serves 1 meat and/or alternative serve 1½ vegetable serve ½ vegetable serve 2 vegetable serves 14g unsaturated oil (2 serves)
Evening snack		
Plums and reduced fat yoghurt	1 cup stewed plums 100g yoghurt	1 fruit serve ½ milk/yogurt/cheese serve

Glossary

Adolescents: For the purposes of these Guidelines, an adolescent is someone aged 12–18 years. A marked increase in the rate of growth and development during adolescence increases the need for most nutrients including energy, protein, vitamins and minerals.

Body mass: Body mass and body weight are often used interchangeably to describe the weight of a person's body.

Body mass index (BMI): An index calculated by dividing the weight of an individual (in kilograms) by the square of their height (in metres), BMI is a simple estimate of the body fatness of a human being who does not have abnormal physical characteristics. The World Health Organization and the US National Institutes of Health have recommended that an operational definition of overweight be a BMI of at least 25kg/m² and obesity as a BMI of at least 30kg/m².

A large number of anthropometric measurements and indices have been proposed for assessing and monitoring levels of obesity. Methods used in research studies to measure the percentage of body fat are not practical for regular clinical and community use.

Body weight: See *body mass*.

Brassica vegetables: Vegetables from the Brassica or crucifer family, collectively known as cabbages or mustards and including broccoli, cabbage and brussel sprouts.

Breads: Refers to leavened and unleavened wholemeal, white, mixed-grain, rye and fruit breads, as well as rolls, bagels, English muffins, crispbreads, crumpets and low fat crackers.

Carbohydrates: Carbohydrates are polyhydroxy aldehydes, ketones, alcohols, acids, their simple derivatives, and their polymers with linkages of the acetal type. They can be classified according to their degree of polymerisation and can be divided initially into three principal groups—sugars, oligosaccharides and polysaccharides. Carbohydrates are the least concentrated form of energy providing 17 kilojoules per gram.

Cereals: See *grain foods*.

Cereal fibre: Cereal fibre refers to dietary fibre obtained from core grain-based foods, including bread, breakfast cereals, rice and pasta.

Children: For the purposes of these Guidelines, children are defined as toddlers aged 1–3 years, preschoolers aged 3–5 years and primary school age 6–11 years. It is important for children to receive a nutritious diet that includes all the nutrients they need to grow and develop normally.

Cholesterol: Cholesterol, chemically a sterol, occurs in all the cell membranes of land animals. Brains and egg yolks are very rich in cholesterol, oils and fats from plants never contain it. Eating cholesterol does not necessarily increase cholesterol in human blood plasma because when it is absorbed the liver tends to reduce its own endogenous cholesterol synthesis. About half the body's cholesterol is made in the body from acetate.

Complementary foods: Any food—manufactured or locally prepared—that is suitable as a complement to breast milk or infant formula when either becomes insufficient to satisfy an infant's nutritional requirements.

Complex carbohydrate: See *starch*.

Core food groups: This was a concept of the previous modelling system and included foods that formed the basis of a healthy diet, based on or developed with reference to recommended daily intakes (RDIs).

Cruciferous vegetables: See *Brassica vegetables*.

Dairy food: See *milks, yoghurts and cheeses*.

Dietary fibre: See *fibre*.

Discretionary choices: This includes foods and drinks not necessary to provide the nutrients the body needs, but may add variety. However, many of these are high in saturated fats, sugars, salt and/or alcohol, and are therefore described as energy dense. They can be included sometimes in small amounts by those who are physically active, but are not a necessary part of the diet.

Foods in this category include cakes, biscuits; confectionary, chocolate; pastries, pies; ice confections, butter, cream, and spreads which contain predominantly saturated fats; potato chips, crisps and other fatty or salty snack foods; sugar-sweetened soft drinks and cordials, sports and energy drinks and alcoholic drinks.

Eggs: Eggs are defined as containing a protective shell, albumen (egg white) and vitellus (egg yolk). Eggs are protein-rich foods and in the Guidelines they are classified as a meat alternative.

Exclusive breastfeeding: Means an infant is receiving only breast milk, which includes expressed breast milk and milk from a wet nurse. The infant might also receive medications and vitamins or minerals as required.

Fats: Most of the fats in foods are triglycerides, made up of a unit of glycerol (glycerine) combined with three fatty acids, which may be the same or different. Differences between fats are largely a consequence of the fatty acids they contain, which together make up 90% of the weight of the molecule. Fats in the diet can be 'visible' or 'invisible'. Among visible fats are butter, margarine, cooking oils, and the fat on meat. Invisible fats occur in foods such as cheese, sauces, mayonnaise, biscuits, cakes, pastries and nuts. In most diets, about half the fats are visible and half invisible.

Fats are the most concentrated form of energy, providing 37 kilojoules per gram. They are the chemical form in which most of the energy reserve of animals and some seeds is stored. Cholesterol, a lipid, has important functions in the body as part of all cell membranes, part of the myelin in the brain and nervous system, and the starting material for synthesis in the body of bile acids and adrenocortical and sex hormones. Cholesterol can, however, accumulate in blood and in the inner walls of arteries, leading to disease.

Fibre: Food Standards Australia New Zealand (FSANZ) defines fibre as the fraction of the edible parts of plants or their extracts, or synthetic analogues, that are resistant to digestion and absorption in the small bowel, usually with complete or partial fermentation in the large bowel. This includes polysaccharides, oligosaccharides and lignins, and promotes one or more of these beneficial physiological effects—laxation, reduction in blood cholesterol and modulation of blood glucose.

Fish: See *seafood*.

Flavoured milk: Sweetened flavoured milk provides nutrients but can be high in energy density (due to added flavours and added sugars). Plain milk is preferable.

Food variety: Refers to foods that are biologically diverse or nutritionally distinct from each other. Eating a variety of nutritious foods means consuming different food types in appropriate amounts to attain all the required nutrients without excess energy intake. Variety further refers to choosing a range of items from within each food group, particularly within the plant-based groups (vegetables, fruits and cereals). Variety is an important nutritional principle that, in modern sedentary society, requires a reduction in serve sizes, particularly of more energy-dense foods with limited nutrient content.

Foundation Diet: The Foundation Diet was informed by current scientific evidence derived from the literature, the most current national intake data and the NHMRC 2006 Nutrient Reference Values. The diets were modelled to provide as close to 100% of the RDIs of ten key nutrients as was feasible and to provide the estimated energy requirements of the smallest and very sedentary category (PAL 1.4) for each age and gender group. These Foundation Diets based on low energy requirements were then tested using 100 7-day simulations with the aim that all of the simulations would meet the EARs of the ten key nutrients.

Fruit: Fruit means the edible portion of a plant or constituents of the edible portion that are present in the typical proportion of the whole fruit (with or without the peel or water). Examples include pome fruit such as apples and pears, citrus fruit such as oranges and lemons, stone fruit such as apricots and plums, and berries.

Fruit juice: Fruit juice, including pulp, is a good source of vitamins such as vitamin C and folate and also provides fibre and carbohydrates, particularly natural sugars. Whole fruit is preferable to fruit juice however the occasional use of fruit juice may assist with nutrient intake when fresh, frozen or tinned fruit supply is sub-optimal. Fruit juice is energy-dense and if consumed in excess, it can displace other nutritious foods from the diet and may lead to problems such as obesity.

Frail elderly people: For the purposes of the Eat for Health Program, frail elderly people are defined as older persons (usually over the age of 75 years) with a physical or mental disability that may interfere with their ability to perform activities of daily living independently.

Grain foods: Refers to the entire class of cereal/grain foods, including whole or partially processed cereal grains (e.g. rice, oats, corn and barley), breads, cereals, rice, pasta, noodles, polenta, couscous, oats, quinoa and barley. It excludes cereal or grain-based products with a significant amount of added fat and sugar, such as cakes, pastries, and biscuits.

Infant: For the purposes of these Guidelines, infants are defined as children under the age of 12 months.

Legume/beans: Refers to all forms of edible beans and peas and preparations made from them—dried legumes, legume flour, bean curd, canned legumes, cooked legumes. The better known legumes include butter beans, haricot (navy) beans, red kidney beans, soybeans, mung beans, lentils, chick peas, snow peas, peanuts and various other types of fresh green peas and beans. Legumes are usually cooked because this increases their nutritional value and improves their taste, but are occasionally eaten raw (e.g. snow peas). Legumes are technically a specialised form of fruit (the pod surrounds the seeds and arises from the base of the flower) but because the main food material in legumes is generally the seeds rather than the flesh surrounding the seeds, they are categorised separately.

Limit: Limit is used to emphasise the importance of limiting intake of foods and drinks high in saturated and trans fats, added salt, added sugars and alcohol, due to evidence that these foods are associated with increased risk of obesity and/or chronic disease, including cardiovascular disease, type 2 diabetes and/or some cancers.

Low fat food: Foods that claim to be 'low fat' must meet criteria before a manufacturer is allowed to print this on the food label. A 'low fat' or 'low in fat' product must contain no more than 3g of fat per 100g of food. A liquid must contain no more than 1.5g of fat per 100ml of liquid.

Low salt food: For labelling purposes a low salt food is one with a sodium concentration of up to and including 120 mg per 100g. The following are the conversion factors for the units used to express the sodium content of food:

1 mmol = 23mg

1 gram = 43 mmol

One gram of sodium chloride (NaCl) contains 17 mmol, or 391mg, of sodium.

Meat: Refers to all or part of the carcass of any cattle, sheep, goat, buffalo, kangaroo, camel, deer, goat, pig or rabbit. For the purpose of the Guidelines meat refers to the muscle component only, excluding offal such as liver and kidney.

Meat alternatives: Refers to other protein-rich foods, such as eggs, fish, shellfish, tofu, legumes, nuts and nut pastes, and certain seeds, such as sunflower and sesame seeds.

Milks, yoghurts and cheeses: Generally refers to cow's milk and the yoghurt and cheese produced from it but can also include milks, yoghurts and cheeses from goat and sheep milks.

Milk, yoghurt and cheese alternatives: Inclusion in this 'alternative' category is based primarily on calcium content, although most of the alternatives also provide substantial amounts of protein. Calcium-fortified grain-based beverages, fish whose bones are eaten (such as sardines), and some nuts (such as almonds), contain moderate to good amounts of calcium and protein and in this respect can be considered as alternatives.

Monounsaturated fatty acids (MUFAs): In chemical terms, MUFAs contain one unsaturated bond. MUFAs occur in considerable amounts in olive oil, canola oil and many kinds of nuts.

Mostly: The term 'mostly' is derived from the Food Modelling System, where more than 50% of the food group was made up of a specific characteristic for example reduced fat varieties. This descriptor ensures that the variety of foods chosen not only meet nutrient needs but are also within individual energy requirements.

Nutrient Reference Values (NRVs): Amounts of nutrients required on an average daily basis for adequate physiological function and prevention of deficiency disease (EAR, AI or RDI) or chronic disease prevention (acceptable macronutrient distribution range [AMDR] or suggested dietary target [SDT]). Where possible, an upper level of intake (UL) was also set to specify the highest average daily nutrient intake likely to pose no adverse health effects to almost all individuals in the general population.

Nutritious foods: Refers to foods that make a substantial contribution towards providing a range of nutrients, have an appropriate nutrient density, and are compatible with the overall aims of these Guidelines.

Nuts and seeds: A nut is a simple dry fruit with one or two seeds in which the ovary wall becomes very hard (stony or woody) at maturity, and where the seed remains attached or fused with the ovary wall. Most nuts are indehiscent (not opening at maturity). Any large, oily kernel found within a shell and used in food may be regarded as a nut. Examples include almonds, pecans, walnuts, brazil nuts, cashew nuts, chestnuts, hazelnuts, macadamia nuts, pine nuts and pistachio nuts.

The term 'nut' is applied to many seeds that are not botanically true nuts. These may include cape seed, caraway, chia, flaxseed, linseed, passionfruit, poppy seed, pepita or pumpkin seed, sesame seed and sunflower seed.

Older adults: For the purposes of these Guidelines, older adults are defined as healthy people aged 65 years and over, not including frail elderly people.

Omega-3 long chain polyunsaturated fatty acids (LCPUFAs): Omega-3 LCPUFAs have the first double bond in the n-3 position. The best known are those in fatty fish, their names abbreviated to EPA (20:5 eicosapentaenoic acid) and DHA (22:6 docosahexaenoic acid). Another omega-3 LCPUFA, ALA (18:3 alpha-linolenic acid), occurs in considerable amounts in canola and flaxseed oils and in walnuts. Omega-3 LCPUFAs are suggested to be protective in cardiovascular health.

Pasta and noodles: Includes a wide range of Italian and Asian products based on sheets of dough made from flours—usually wheat or rice flour—and water, sometimes with egg added. Examples are plain spaghetti, lasagne, fettuccine, udon and Hokkien noodles, rice paper and wonton wrappers. The term excludes some instant noodles and flavoured pasta mixes with significant amounts of added fat and salt.

Physical activity: Any structured or incidental body movement (light, moderate or vigorous) that causes the muscles to work and uses more energy than the person would use if resting.

Physical inactivity: Physical inactivity (or sedentary behaviour) is defined as a state in which body movement is minimal, such as sitting time while watching television, reading, working at a computer, talking on the telephone, driving a car, or meditating.

Phytochemicals: Substances found in plant materials which may confer some health benefits and which include a number of chemical categories such as carotenoids, flavonoids and isoflavonoids, polyphenols, isothiocyanates, indoles, sulphoraphane, monoterpenes, xanthin, and non-digestible oligosaccharides.

Plenty: This term is used judiciously to encourage increased consumption of a variety of vegetables (particularly non-starchy varieties).

Polyunsaturated fatty acids (PUFAs): PUFAs contain two or more (poly) double (unsaturated) bonds. Foods with a high PUFA content are liquid at room temperature that is, they tend to be 'oils'. The most common PUFA is linoleic acid (18:2) whose first double bond is in the n-6 position. It occurs in seed oils including sunflower oil, safflower oil and corn oil. Smaller amounts of PUFAs with the first double bond in the n-3 position also occur in the diet. The best known are those in fatty fish, their names abbreviated to EPA (20:5 eicosapentaenoic) and DHA (22:6 docosahexaenoic). Another omega-3 PUFA, ALA (18:3 alpha-linolenic), occurs in considerable amounts in canola and flaxseed oils and in walnuts.

Poultry: Refers to chicken, duck, turkey and all other avian foods except eggs.

Quinoa: See *grain foods*.

Red meat: The muscle meat from cattle, sheep, pig, goat and kangaroo. Note that although pork is not considered red meat for marketing purposes in Australia, it is classified as red meat in the international literature, and has been treated as red meat for the purpose of these Guidelines.

Reduced fat products: For a food to be labelled 'reduced fat', it must contain at least 25% less fat than is present in the same quantity of the reference food.

Refined grain (cereal) foods: Refers to highly processed grain (cereal) foods where the outer layer of the grain is lost during processing. These also include cereal or grain-based products with a significant amount of added fat and sugar, such as cakes, pastries, and biscuits.

Regularly: The term 'regularly' is used in discussions on weight management and growth. In this content, taking measurements such as weight or height every month provide a fair indication of change. Measurements taken more frequently than this are often not a true picture of your weight and/or growth.

Salt: Dietary salt is an inorganic compound consisting of sodium and chloride ions. It is found naturally in many foods, but it is also added to many foods because of its preservative and flavouring characteristics. Research has shown that both the sodium and the chloride can be detrimental to health when consumed in excess. About 90% of all the sodium added to food is sodium chloride, so dietary intake of sodium approximates intake of sodium chloride for practical purposes. Sodium in the diet of Australian adults comes mostly from processed foods, although sodium added in cooking, at the table, in medications and naturally present in foods can contribute to the total dietary intake.

Australian adults are recommended to limit their intake of sodium to less than 2,300mg per day. This is equivalent to about 6g of salt, or one and a half teaspoons.

Saturated fatty acids (SFAs): In chemical terms, SFAs contain no double bond—that is, they are fully saturated with hydrogen. Foods that predominantly comprise SFAs are usually solid at room temperature (e.g. butter, fat on meat). SFAs are the main type of fatty acid in milk, cream, butter and cheese, in some meats (most of the land animal fats), and can also be found in considerable amounts in some oils such as in palm and coconut oil. When the SFAs palmitic (16:0), myristic (14:0) and lauric (12:0) predominate in the diet they tend to raise plasma cholesterol.

Seafood: Refers to seafood (including fish) that is safe for human consumption and is produced or traded commercially in Australia, including seafood exports and imports.

Simple carbohydrate: See *sugars*.

Sodium: See *salt*.

Solid foods: All foods other than liquids—includes semi-solid/pureed foods, finger foods and family foods.

Standard drink: A standard drink contains 10 grams of alcohol—equivalent to 12.5ml of alcohol.

Starch: FSANZ defines starch as a complex carbohydrate (polysaccharide) containing a mixture of two molecules: amylose and amylopectin. Starch is determined chromatographically after enzymatic treatment of a de-sugared extract of the food.

Sugars: Conventionally used to describe monosaccharides and disaccharides such as sucrose, glucose and fructose, which can be found naturally in foods or can be added in processing. Sugars is the term used in the analysis of the 1995 National Nutrition Survey. Sugar, by contrast, is commonly used to describe purified sucrose, as are the terms refined sugar and added sugar. Added sugars may also include other sugars such as glucose, fructose and corn syrup.

Tofu: Tofu is made from soybeans, water and a coagulant, or curdling agent. Tofu is a protein-rich food and in these Guidelines it is classified as a meat alternative.

Total Diet: Progression from Foundation Diets to Total Diets can occur when total energy needs are greater than the energy provided by a Foundation Diet for a particular age and sex group. General principles were determined to ensure that diets remained within acceptable limits for percentage of energy from fat and the various fat components, protein and carbohydrate (AMDRs), the ULs and SDTs for chronic disease prevention. The principles allow free addition of vegetables, including legumes, fruits, nuts and seeds, and cereal foods. The principles also encourage a variety of choice of additional foods while defining the choices allowed in the modelling for the meat, milk, yoghurt and cheese products and unsaturated margarines and oils categories. 'Discretionary choices' can be included but they do not need to be included in the diet, and Total Diets without inclusion of any 'discretionary choices' were also modelled for all age and sex groups.

Unsaturated fatty acid: See *monounsaturated fatty acids and polyunsaturated fatty acids*.

Vegetables: Vegetable means the edible portion of a plant or constituents of the edible portion that are present in the typical proportion of the whole vegetable (with or without the peel or water). Examples include: leafy green vegetables (spinach, lettuce, silverbeet and bok choy), members of the crucifer or Brassica family (broccoli, cabbage, and brussel sprouts), starchy root and tuber vegetables (yams and potatoes), and edible plant stems (celery and asparagus), gourd vegetables (pumpkin, squash and cucumber), Allium vegetables (onions, garlic and shallots), and sweet corn.

Wholegrain: This term applies to products which uses every part of the grain including the outer layers, bran and germ even if these parts are separated during processing and regardless of whether the grain is in one piece or milled into smaller pieces.

The term wholegrain may apply to whole and intact grains as found in some bread and crisp breads, puffed or flaked grains in some breakfast cereals, coarsely milled or kibbled wheat found in breads such as pumpnickel and ground grains such whole wheat flour used to make wholemeal bread.

Whole foods: This refers to foods themselves for example fruit, vegetables, bread, pasta, lean meat, milk, yoghurt and not the food component for example calcium, iron, protein.

References

1. Rayner M, Scarborough P. The burden of food related ill health in the UK. *J Epidemiol Community Health* 2005;59(12):1054–7.
2. National Public Health Partnership. *Eat well Australia: an agenda for action for public health nutrition, 2000–2010*. Canberra: National Public Health Partnership; 2001.
3. National Preventative Health Taskforce. *Australia: the healthiest country by 2020 – National Preventative Health Strategy – the roadmap for action*. Canberra: Commonwealth of Australia; 2009.
4. Lee AJ, Bailey AP, Yarmirr D, O’Dea K, Mathews JD. Survival tucker: Improved diet and health indicators in an Aboriginal community. *Aust J Public Health* 1994;18(3):277–85.
5. Crowley S, Antioch K, Carter R, Waters AM, Conway L, Mathers C. *The cost of diet-related disease in Australia: a discussion paper*. Canberra: Australian Institute of Health and Welfare, 1992.
6. Access Economics. *The growing cost of obesity in 2008: three years on*. Canberra: Diabetes Australia, Access Economics, 2008.
7. Australian Institute of Health and Welfare. *Premature mortality from chronic disease*. AIHW Bulletin no. 84. Cat. no. AUS 133. Canberra: Australian Institute of Health and Welfare, 2010.
8. National Health and Medical Research Council. *Infant Feeding Guidelines*. Canberra: Commonwealth of Australia; 2012.
9. National Health and Medical Research Council. *Infant Feeding Guidelines Literature Review*. Canberra: Commonwealth of Australia; 2012.
10. National Health and Medical Research Council. *Australian Dietary Guidelines*. Canberra: Commonwealth of Australia; 2013.
11. National Health and Medical Research Council. *A review of the evidence to address targeted questions to inform the revision of the Australian dietary guidelines*. Canberra: Commonwealth of Australia; 2011.
12. National Health and Medical Research Council. *A modelling system to inform the revision of the Australian Guide to Healthy Eating*. Canberra: Commonwealth of Australia; 2011.
13. National Health and Medical Research Council. *The core food groups: the scientific basis for developing nutrition education tools*. Canberra: Commonwealth of Australia, 1995.
14. National Health and Medical Research Council, Australian Government Department of Health and Ageing, New Zealand Ministry of Health. *Nutrient reference values for Australia and New Zealand including recommended dietary intakes*. Canberra: Commonwealth of Australia; 2006.
15. National Health and Medical Research Council. *Australian Drinking Water Guidelines 6*. Canberra; 2011.
16. Rangan AM, Randall D, Hector DJ, Gill TP, Webb KL. Consumption of ‘extra’ foods by Australian children: types, quantities and contribution to energy and nutrient intakes. *Eur J Clin Nutr* 2008;62(3):356–64.
17. Rangan AM, Schindeler S, Hector DJ, Gill TP, Webb KL. Consumption of ‘extra’ foods by Australian adults: types, quantities and contribution to energy and nutrient intake. *Eur J Clin Nutr* 2009;63(Oct 29):865-71.
18. National Health and Medical Research Council. *Australian guidelines to reduce health risks from drinking alcohol*. Canberra: Commonwealth of Australia; 2009.
19. National Health and Medical Research Council. *Clinical practice guidelines for the management of overweight and obesity in adults, adolescents and children*. Melbourne: Commonwealth of Australia; 2013.

