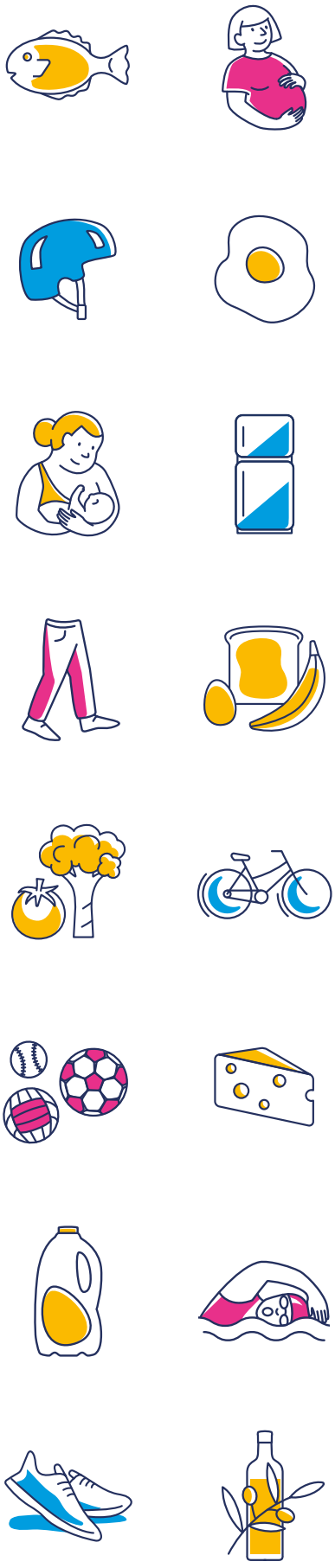
Eating and Activity Guidelines

for New Zealand Adults



Updated 2020

MINISTRY OF HEALTH
MANATŪ HAUORA

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Kupumua
Foreword

What we eat and how active we are plays an important part in our overall health and wellbeing.

This is underscored by the Global Burden of Disease Study which highlights that over a third of health loss can be prevented by addressing common risk factors such as smoking, harmful use of alcohol, obesity, unhealthy diet and physical inactivity.

These risk factors contribute to the growing burden of non-communicable diseases in our communities (such as type 2 diabetes, cardiovascular disease, and a range of cancers) and are key drivers of health inequities in our population, including for Māori and Pacific peoples.

Of course, improvements in eating well and staying active are not only important for physical health, they are fundamental to good mental wellbeing too, and together support our goal of Pae Ora – Healthy Futures for all New Zealanders.

Reliable information, built on evidence and expert advice, is a vital part of making progress in this important area of our wellbeing. That's where this document comes in. The *Eating and Activity Guidelines for New Zealand Adults* (the Guidelines) provide evidence-based recommendations on healthy eating and physical activity for New Zealand adults.

The Guidelines are written for health practitioners and others who provide advice on nutrition and physical activity to the public.

In this edition, the Guidelines have been refreshed and updated to include advice for pregnant and breastfeeding women. This is an important addition, because factors such as a mother's diet, activity levels and weight gain throughout her pregnancy have a bearing on the wellbeing of the mother and baby. Therefore, pregnancy offers a window of opportunity to positively influence the lifelong health of a child.

For the first time, we have provided recommendations for being safely and comfortably physically active during pregnancy. Advice also reinforces that breastfeeding is the ideal and optimal way to feed a baby, but it is important to acknowledge that women cannot do this alone. We all need to do our part to create an environment that supports women to breastfeed in order to improve breastfeeding rates in Aotearoa/New Zealand and to support women who are unable to breastfeed.

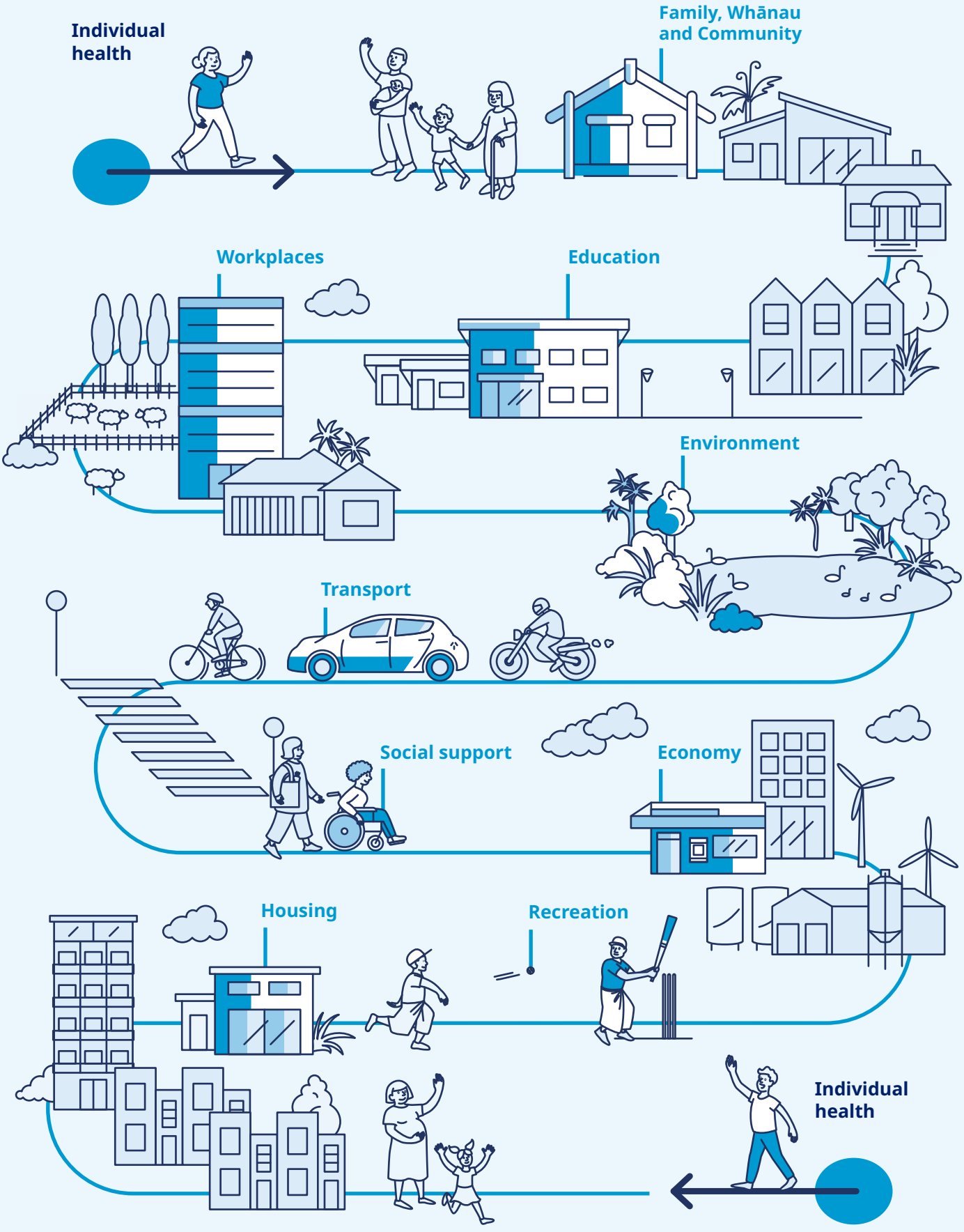
The Guidelines are the result of a lot of hard work and I am grateful for the support and advice from the Technical Advisory Group made up of maternal and child nutrition specialists, including Māori and Pacific experts, who advised the Ministry on the maternal statements and the evidence on which they are based.

As a next step, the Ministry will develop education resources for the public that are founded on Māori and Pacific world views.

Ngā mihi

Deborah Woodley
Deputy Director-General
Population Health and Prevention

Many factors contribute to health



Health influences all of life

Mō ēnei Aratohu
About these Guidelines

These Guidelines provide the current evidence-based recommendations on healthy eating and physical activity for New Zealand adults, including pregnant and breastfeeding women. To be concise, we focus on the detail practitioners need at a glance: that is, what people need to eat or do, a summary of the rationale – 'why' – and a little on how to put the recommendations into practice. More information for the public on how to follow the guidance is available in a series of supporting health education resources (www.healthed.govt.nz).

Many different factors contribute to people's food and physical activity choices, and ultimately their health. These include social, cultural, economic, accessibility, practical and personal factors and it is important to acknowledge that many of them are not under people's direct control. Differences in these underlying factors contribute significantly to the inequity in relation to diet, physical activity and health in New Zealand.

The recommendations in the Guidelines are based on nutrient intakes and activity levels that are consistent with good physical health. The Guidelines can be applied broadly, including to guide health promotion programme planning for populations and to help individuals to choose healthy eating patterns. When providing advice based on the Guidelines, we recommend that you consider the diverse social and cultural backgrounds of New Zealanders. Providing collective or family-focused advice may be more effective than focusing on the individual for some groups.

He Korowai Oranga, the Ministry of Health's Māori Health Strategy incorporates the concept of pae ora, healthy futures for Māori, as its overall aim. Pae ora is a holistic concept that includes three interconnected elements – mauri ora (healthy individuals), whānau ora (healthy families) and wai ora (healthy environments). Pae ora is a tool to help health practitioners think beyond narrow definitions of health, to consider the individual, the family or collective and the environment. As such, it is a useful model to draw on when considering the wider determinants of health and wellbeing. Mauri ora focuses on the need to provide the individual with what they need to live with good health and tends to be the primary focus of the health and disability system. Whānau ora brings the family into the frame and acknowledges that for many Māori, the whānau is the principal source of strength, support, security and identity. Wai ora recognises the importance of the environment where people live and its impact on the health and wellbeing of individuals, whānau and communities.

For more information on He Korowai Oranga and pae ora, go to: www.health.govt.nz/our-work/populations/Māori-health/he-korowai-oranga

Ngā whakamihi
Acknowledgements

Eating and Activity Guidelines for New Zealand Adults (2015) was written by Louise McIntyre and Martin Dutton, both employed by the Ministry of Health.

The Ministry of Health also wishes to acknowledge the valuable input from internal and external stakeholders who gave feedback on the draft Guidelines.

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The updated Guidelines (2020)

The updated content on pregnancy and breastfeeding in these Guidelines was written by Dr Sally Mackay and Dr Sarah Gerritsen, School of Population Health at the University of Auckland, with guidance from Louise McIntyre, Anna Jackson, Dr Harriette Carr and Dr Mary-Ann Carter from the Ministry of Health and the Maternal, Infant and Toddler Technical Advisory Group.

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The Ministry of Health also wishes to acknowledge

The National Health and Medical Research Council in Australia for permission to use its 2011 report *A Modelling System to Inform the Revision of the Australian Guide to Healthy Eating* to inform the New Zealand advice on serving size.

The Society of Obstetricians and Gynaecologists of Canada and Canadian Society for Exercise Physiology for permission to use its consensus statement *2019 Canadian guideline for physical activity throughout pregnancy* developed by the Guideline Consensus Panel (Mottola et al 2018).

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Break up long periods of sitting

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Pregnant women should aim to do 2½ hours of moderate-intensity physical activity spread over at least 3 days per week (preferably some activity every day)

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For extra health benefits, aim for 5 hours of moderate or 2½ hours of vigorous physical activity spread throughout the week

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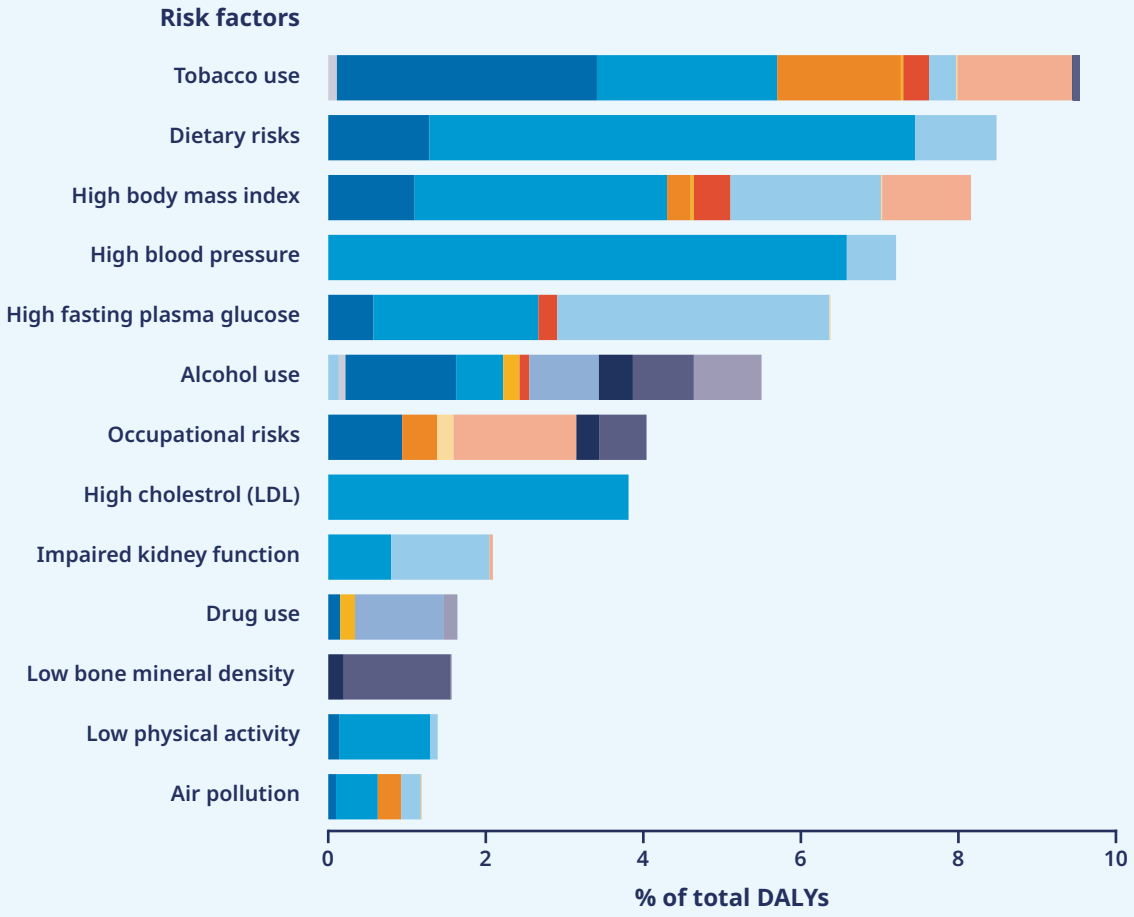
Kupu whakataki
Introduction

Eating a healthy diet and having regular physical activity are essential for the overall health and wellbeing of all New Zealanders.

Adults who eat a healthy diet and are physically active can decrease their risk of developing a number of adult-onset health conditions and diseases and are more likely to maintain a healthy weight. For pregnant and breastfeeding women, eating a nutrient-rich diet along with appropriate and timely vitamin and mineral supplements and exercising regularly are important to optimise the health outcomes for the infant and mother.

Diet, excess weight, physical inactivity and alcohol use, along with the metabolic risk factors linked with them, continue to make substantial contributions to ‘health loss’ among New Zealanders (Figure 1).

Figure 1:
Proportion of health loss in New Zealand 2017, from leading risk factors (as % total DALYs)



Non-communicable diseases

- Cancers
- Cardivascular diseases
- Chronic respiratory diseases
- Digestive diseases
- Neurological disorders
- Mental disorders
- Substance use disorders
- Diabetes and kidney diseases
- Skin diseases
- Sense organ diseases
- Musculoskeletal conditions
- Other non-communicable diseases

Injuries

- Transport injuries
- Unintentional injuries
- Self-harm and interpersonal violence

Communicable, maternal, neonatal and nutritional diseases

Source: Ministry of Health (2020c)

Notes: The percentage of health loss is correct for each cause separately, but the separate percentages cannot be added across causes. DALY = disability-adjusted life year.

Overview of these Guidelines

Eating and Activity Guidelines for New Zealand Adults describes the evidence-based dietary and physical activity recommendations for New Zealand adults aged 19–64 years. These recommendations provide the fundamentals of healthy eating and being active that generally apply for the whole population. The Guidelines were updated in 2020 to include updated recommendations for diet and physical activity for pregnant and breastfeeding women. It is written for health practitioners and others who provide advice on nutrition and physical activity for New Zealand adults.

These Guidelines outline each of the current Eating and Activity Statements for New Zealand adults, the rationale and international evidence underpinning each one and some information for putting them into practice. Apart from an update of more recent data, the general Statements for adults remain the same as the first edition of the Guidelines. They were not part of the review for pregnant and breastfeeding women.

Other features of the updated Guidelines include an acknowledgement that a range of factors can determine food and activity choices and not all of these are within people's control. The concept of pae ora as described in He Korowai Oranga is also suggested as an appropriate framework for a more holistic view of health (see 'About these Guidelines'). In line with this more holistic view of health, for the first time we have added information about the similarities between healthy and sustainable ways of eating (see page 17).

Information for pregnant and breastfeeding women appears in the section on each Statement where information may be different to the general Statements for adults. Note that the advice for pregnant women relates to uncomplicated pregnancies involving just one baby. Women who are pregnant with two or more babies or are considered at high risk of pregnancy complications should seek specialist advice.

The Statements provide evidence-based, population health guidance on eating well and being physically active. This includes guidance on meeting key nutrient needs, maintaining a healthy body weight and decreasing the risk of diseases like cardiovascular disease and cancer. The Statements do not replace advice that health practitioners and physical activity specialists give to an individual patient or client, considering the health and/or other issues relevant to that person.

To access information for the public on putting the Statements into practice, download or order the accompanying health education resources at: www.healthed.govt.nz

Most of the evidence that the Guidelines are based on comes from research on European and North American populations and a 'western' style of diet. However, it is easy to adapt these Statements to fit a range of suitable eating patterns when giving advice to members of any ethnic group in New Zealand's increasingly multicultural population.

How we updated the advice for pregnant and breastfeeding women

The advice in these updated Guidelines replaces the previous *Food and Nutrition Guidelines for Healthy Pregnant and Breastfeeding Women* published in 2006 and partially revised in 2008.

International guidelines, systematic reviews and existing New Zealand guidelines were used to draft preliminary statements. The Maternal, Infant and Toddler Dietary Guidelines Technical Advisory Group (MAT0-2 TAG) of experts in maternal and child nutrition further developed the draft statements before they were tested with the public and practitioners. Additional guidance to support the statements was written and the MAT0-2 TAG, other experts and practitioners reviewed the draft document.

Evidence on the benefits of physical activity for the health of pregnant women comes from the *2019 Canadian guideline for physical activity throughout pregnancy* (Mottola et al 2018).

For an overview of how we developed these Guidelines more generally, see Appendix 1. For further detail, go to the Ministry of Health website: www.health.govt.nz/our-work/eating-and-activity-guidelines

The evidence that underpins the Statements

The Statements are based on the international evidence reviews, reports and guidelines shown in Table 1. The choice of these particular evidence reviews and reports followed discussion between the Ministry of Health, the Eating and Activity Guidelines (EAG) Technical Advisory Group of experts in nutrition and physical activity and the MAT0-2 TAG, who are experts in maternal and infant nutrition and in Māori and Pacific maternal and child health.

Table 1: Summary of the evidence reviews that underpin the Statements

EAG Statement(s)	Sources of evidence
Eating Statements 1, 2 and 3   	**Evidence reviews that underpin the following guidelines and reports:** • 2010 American Dietary Guidelines (US Department of Agriculture and US Department of Health and Human Services 2010) • 2012 Nordic Nutrition Review (Nordic Council of Ministers 2014) • 2013 Australian Dietary Guidelines (NHMRC 2013) • A Series of Systematic Reviews on the Relationship between Dietary Patterns and Health Outcomes 2014 (US Department of Agriculture 2014) **World Cancer Research Fund Report (WCRF and AICR 2007) and Continuous Update Report (WCRF and AICR 2011)** **World Health Organization (WHO) reports:** • Diet, Nutrition and the Prevention of Chronic Diseases (WHO 2003) • Guideline: Sodium intake for adults and children (WHO 2012) • Non-communicable Diseases Global Action Plan (WHO 2013a) • Guideline: Sugars intake for adults and children (WHO 2015a) **Nutrient Reference Values for Australia and New Zealand including Recommended Dietary Intakes (NHMRC 2006)** **World Health Organization e-Library of Evidence for Nutrition Actions (eLENA):** • Fatty acids: long-chain polyunsaturated fatty acid supplementation during pregnancy • Folic acid: periconceptional supplementation to prevent neural tube defects • Iodine supplementation in pregnant and lactating women • Multiple micronutrient supplementation during pregnancy • Caffeine: Restricting intake during pregnancy

EAG Statement(s)	Sources of evidence
Eating Statements 1, 2 and 3 *continued*	**Ministry of Health issues-based documents:** • Companion Statement on Vitamin D and Sun Exposure in Pregnancy and Infancy in New Zealand (Ministry of Health 2013) • How We Eat: Reviews of the evidence on food and eating behaviours related to diet and body size (Gerritsen and Wall 2017) **Australian Dietary Guidelines (NHMRC 2013)** **Nutrient Reference Values for Australia and New Zealand including Recommended Dietary Intakes (NHMRC 2006)** **Review: Nutritional requirements and dietary advice targeted for pregnant and breastfeeding women (NHMRC 2011c)** **The pregnancy and birth to 24 months project: A series of systematic reviews on diet and health (Stoody et al 2019)** **Surveillance report 2017 – Maternal and child nutrition (2008) NICE guideline PH11 (National Institute for Health and Care Excellence 2017)**
Eating Statement 4 (Alcohol) 	**Australian Guidelines to Reduce Health Risks from Drinking Alcohol (NHMRC 2009a)** **Alcohol and Health in Canada: A summary of evidence and guidelines for low-risk drinking (Butt et al 2011)** **Alcohol and Pregnancy: Evidence Summary (HPA 2019)**
Eating Statement 5 (Food safety) 	Evidence to support this Statement comes from a range of peer-reviewed scientific literature and reports as described in the section on Eating Statement 5.
Eating Statement 6 (Breastfeeding) 	**World Health Organization e-Library of Evidence for Nutrition Actions (eLENA)** • Exclusive breastfeeding for optimum growth, development and health of infants and toddlers • Continued breastfeeding for healthy growth and development of children • Obesity: Exclusive breastfeeding to reduce the risk of childhood overweight and obesity **World Health Organization Long-term effects of breastfeeding: a systematic review (Horta and Victora 2013)**

EAG Statement(s)	Sources of evidence
Body Weight Statement 	**Evidence as for Eating Statements 1, 2 and 3** • Clinical Guidelines for Weight Management in New Zealand Adults (Ministry of Health 2017) • Guidance for Healthy Weight Gain in Pregnancy (Ministry of Health 2014b) • Weight Gain during Pregnancy: Reexamining the guidelines (Institute of Medicine and National Research Council 2009)
Activity Statements 	**Australia's Development of Evidence-based Physical Activity Recommendations for Adults (18–64 years) (Brown et al 2012)** **World Cancer Research Fund Report (WCRF and AICR 2007)** **Canadian Society for Exercise Physiology's *2019 Canadian guideline for physical activity throughout pregnancy* (Mottola et al 2018). For a summary, see: https://csepguidelines.ca/guidelines-for-pregnancy/**

For more detail on the evidence base for the Statements, see the individual sections on Eating, Body Weight and Activity Statements and Appendix 2, as well as the Ministry of Health website: www.health.govt.nz/our-work/eating-and-activity-guidelines

Kōrero Aratohu Kainga me Korikori mā ngā Pakeke o Aotearoa **Eating and Activity Guidelines Statements for New Zealand Adults**

Making good choices about what and how much you eat and drink and being physically active are important for good health.

Eating Statements

Enjoy a variety of nutritious foods every day including:

1

plenty of vegetables and fruit

grain foods, mostly whole grain and those naturally high in fibre

some milk and milk products, mostly low and reduced fat

some legumes[1], nuts, seeds, fish and other seafood, eggs, poultry and/or red meat with the fat removed

1 Legumes include lentils, split peas, chickpeas and cooked dried beans (eg, kidney beans, baked beans).

Choose and/or prepare foods and drinks: 2

with unsaturated fats (canola, olive, rice bran or vegetable oil, or margarine) instead of saturated fats (butter, cream, lard, dripping, coconut oil)

with little or no added sugar

that are low in salt (sodium); if using salt, choose iodised salt

that are mostly ‘whole’ and less processed

Make plain water your first choice over other drinks 3

If you drink alcohol, keep your intake low 4

Stop drinking alcohol if you could be pregnant, are pregnant or are trying to get pregnant

When breastfeeding, it is best to be alcohol-free

Eating Statements continued...

Buy or gather, prepare, cook and store food in ways that keep it safe to eat

5

Take extra care to protect yourself from foodborne illness if you are pregnant

Encourage, support and promote breastfeeding

6

Body Weight Statement

Making good choices about what you eat and drink and being physically active are important to achieve and maintain a healthy body weight

When you are pregnant, talk to your midwife or doctor about the right amount of weight to gain during pregnancy. This amount is different for each person.

Being a healthy weight:

- helps you to stay active and well
- reduces your risk of developing type 2 diabetes, heart disease and some cancers.

If you are struggling to maintain a healthy weight, see your doctor and/or your community health care provider.

Activity Statements

Sit less, move more! Break up long periods of sitting

1

Do at least 2½ hours of moderate or 1¼ hours of vigorous physical activity spread throughout the week

2

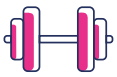
Pregnant women should aim to do 2½ hours of moderate-intensity physical activity spread over at least 3 days per week (preferably some activity every day)

For extra health benefits, aim for 5 hours of moderate or 2½ hours of vigorous physical activity spread throughout the week

3

Pregnant women should seek advice from a health care professional with specialist knowledge about the impact of vigorous-intensity activity if competing in events or if exercising significantly more than Activity Statement 2

Do muscle strengthening activities on at least two days each week



4

Pregnant women may also benefit from doing stretching and pelvic floor muscle training daily

Doing some physical activity is better than doing none

5

All pregnant women without serious health conditions should be regularly physically active through a variety of aerobic and resistance activities

Ngā panoni tikanga kai, tikanga korikori tinana ka tūtohu mā ngā pakeke o Aotearoa
Recommended dietary and physical activity changes for New Zealand adults

Based on the evidence we considered and the resulting Eating and Activity Statements in these Guidelines, we recommend some changes[2] to the eating and activity practices of New Zealand adults. Tables 2 and 3 below summarise these changes.

Table 2: Recommended dietary changes for New Zealand adults

↓ Limit	↑ Increase
Processed meat	Vegetables and fruit
Red meat*	Legumes
Drinks and foods with added sugar	Fish and other seafood
Highly processed foods that are high in refined grains, saturated fat, sugar and salt	Nuts and seeds
	Whole and less processed foods

* Eat less than 500 g cooked red meat per week (equivalent to 700–750 g when raw).

⇄ Exchange	For
Refined grains	Whole grains and high fibre
Butter	Unsaturated vegetable oils and oil-based spreads
Higher-fat milk products	Low-fat milk products
Sugar sweetened beverages	Water, low-fat milk, diet drinks

2 These recommended changes are based on data on average and common levels of food consumption and physical activity. Some New Zealanders may be already meeting some or all of the recommended intake and activity levels.

Table 3: Recommended activity changes for New Zealand adults

Limit	Increase
Prolonged sitting Prolonged screen time	Snacktivity** Light-intensity activity** Moderate-intensity activity** Vigorous-intensity activity**∞ Muscle strengthening activity**

** See Glossary for definitions.

Exchange	For
Driving short distances	Walking, cycling or scooting ∞
Prolonged driving	Regular breaks during driving
Taking a lift or escalator	Using the stairs
Prolonged sitting or screen time	Light activity such as standing and walking
Light activity	Moderate activity
Moderate activity	Longer or more frequent moderate activity Higher-intensity sessions ∞

∞ If pregnant, discuss these activities with your midwife or doctor.

Note: The concept for describing recommended changes in Tables 2 and 3 above, and Tables 4 and 5 in later sections, comes from the *Nordic Nutrition Recommendations 2012: Integrating nutrition and physical activity* (Nordic Council of Ministers 2014).

Ngā Kōrero mō te Kainga me te Taumaha o te Tinana
The Eating and Body Weight Statements

Overall, the evidence considered for the Eating Statements (1–3) and Body Weight Statement (see Table 1 in the Introduction) consistently describes the features of a healthy diet that can lower the risk of developing non-communicable diseases.

Based on this evidence and specific consideration of the body's need for certain amounts of essential nutrients (NHMRC 2006), the Eating Statements describe an eating pattern that:

- includes a lot of vegetables and fruit
- includes whole grains, low- or reduced-fat milk products, legumes, nuts, seeds, fish and other seafood
- is low in processed meats, saturated fat, sodium and sugar-sweetened foods and drinks
- is rich in essential nutrients for the body
- is linked with less excess weight gain (especially when a person eats foods low in energy (kilojoule) density and also has a physically active lifestyle)
- is linked with a lower risk of developing non-communicable diseases such as cardiovascular disease, stroke and cancer.

Healthy eating during pregnancy and while breastfeeding is based on the general healthy eating advice for any adult with an increased requirement for some nutrients as determined by the Nutrient Reference Values (NHMRC 2006) for pregnant and breastfeeding women.

Table 1 and Appendix 2 list the sources of evidence.

Evidence

As Table 1 highlights, the Statements are based on various international evidence reviews, reports and guidelines chosen by the Ministry of Health, the EAG Technical Advisory Group and the MAT0-2 TAG. The various evidence reports informing Eating Statements 1–3 and 6 and the Body Weight Statement used different methodologies and their evidence comes from links between health outcomes and specific foods and overall eating patterns. The combined evidence for each Statement is summarised in the section on that Statement under 'Reasons for the recommendation'.

For document titles and websites related to this evidence, see Appendix 2.

Additional information for the Eating Statements (1–3) and Body Weight Statement has come from general nutrition textbooks such as the *Essentials of Human Nutrition* (4th ed) (Mann and Truswell 2012). We reference any other evidence we have used other than that discussed above.

The sections on Eating Statements 4 (on alcohol), 5 (on food safety) and 6 (on breastfeeding) identify their evidence base.

How the Eating Statements benefit both health and environmental sustainability

Globally, people are increasingly focusing on the way that food is produced and consumed, and the negative impacts the food system is having on the environment. There is an urgent need to promote diets that are healthy and have low environmental impacts. These diets also need to be socioculturally acceptable and economically accessible for all.

Wai ora (healthy environment) is one of the three interconnected elements of pae ora.

> *Wai ora acknowledges the importance of Māori connections to whenua as part of the environments in which we live and belong – and the significant impact this has on the health and wellbeing of individuals, whānau, hapū, iwi, and Māori communities. An environment that is compatible with good health reflects the need for Māori to have access to resources (ie, good housing, safe drinking water, clean air, healthy food) and to live in environments that support and sustain a strong flourishing mauri and a healthy and empowered whānau. (Ministry of Health 2020d)*

The Ministry of Health acknowledges the government sector has more work to do to define what constitutes sustainable healthy diets in the New Zealand context. However, the Statements in these Guidelines broadly align with the principles of healthy and sustainable eating as identified by the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (FAO and WHO 2019).

The Eating and Activity Guidelines:

- describe an eating pattern that is largely plant-based, and allows for moderate amounts of animal-based foods (eggs, dairy, poultry, seafood) and small amounts of red meat
- recommend:
  - exclusive breastfeeding until around six months of age, and continued breastfeeding until two years and beyond
  - eating 'whole and less processed' nutrient-dense foods
  - limiting highly processed foods with saturated fats, added sugar and salt
  - not overeating, and balancing intake with activity to achieve and maintain a healthy weight
  - choosing, preparing, cooking and storing food in a way that optimises food safety and minimises wastage
- allow for cultural preferences and different eating patterns, including those ranging from totally plant-based to a mixed intake of animal- and plant-based foods.

Environmental sustainability includes reducing greenhouse gas emissions, making water cleaner and not wasting it, improving use of the land and soil health and minimising food loss and waste. More research is in progress to weigh the multiple aspects of the environmental, economic and social dimensions of food sustainability to inform a local and global approach to building resilient food systems.


Water
make it your drink of choice
Vegetables
Grains
mostly whole grain and those naturally high in fibre
Fruit
Milk & milk products
mostly low and reduced fat
Legumes (e.g. lentils and beans), seeds, fish, seafood, eggs, poultry and/or lean red meat

Kōrero Kainga 1
Eating Statement 1

Enjoy a variety of nutritious foods every day including:

plenty of vegetables and fruit

some milk and milk products, mostly low and reduced fat

grain foods, mostly whole grain and those naturally high in fibre

some legumes[3], nuts, seeds, fish and other seafood, eggs, poultry and/or red meat with the fat removed

By eating a variety of foods each day, people are more likely to get the essential nutrients they need to stay healthy and lower their risk of developing non-communicable diseases. Different foods provide different types and amounts of nutrients; no single food or food group provides all the nutrients the body needs.

Healthy eating patterns involve eating a range of foods from the four food groups described above. The four food groups provide a framework for eating in a way that meets the body's needs. Each food group contains foods with some common key nutrients (see Appendix 4). The Guidelines allow for a flexible eating pattern that allows people to choose their own foods. It is also easy to adapt the recommendations to suit different cultures, food preferences and budgets.

3 Legumes include lentils, split peas, chickpeas and cooked dried beans (eg, kidney beans, baked beans).

Healthy eating patterns are particularly important before conception, during pregnancy and while breastfeeding, because pregnant and breastfeeding women have extra nutrient requirements. Healthy eating patterns can lower the risk of hypertensive (high blood pressure related) disorders of pregnancy (such as pre-eclampsia and eclampsia) and gestational diabetes, as well as improve birth outcomes (USDA 2019) and the long-term health of the child (Horta and Victora 2013; Horta et al 2015; Koletzko et al 2019).

Pregnant and breastfeeding women who follow strict vegetarian or vegan diets may need extra information and support to ensure they are meeting their protein, iron, vitamin B12 and calcium requirements. We recommend they eat a range of foods from each food group, including iron-fortified foods, and if vegan, use plant-based milk alternatives fortified with vitamin B12 and calcium (ideally soy milk as it is higher in energy and protein).

The evidence is not strong enough to recommend avoiding certain foods while pregnant and breastfeeding as a way of reducing colic or wind in an infant.

Specific food safety guidelines apply to pregnant women.

For detailed advice, see the Eating Statement 5 section.

Pregnant or breastfeeding women do not need to avoid foods associated with allergy to prevent their baby from developing an allergy

Recent international guidelines encourage pregnant and breastfeeding women to eat foods associated with allergies, unless they have an allergy to the food themselves. Avoiding foods while pregnant or breastfeeding is not associated with the prevention of allergies in infants (Joshi et al 2019).

The most common foods associated with allergy are milk, eggs, fish, seafood, peanuts, nuts, sesame, soy and cereals containing gluten.

Eating Statement 1

Enjoy a variety of nutritious foods every day including: plenty of vegetables and fruit

Reasons for the recommendation

Vegetables and fruit provide vitamins, minerals and dietary fibre as well as many other phytonutrients (beneficial chemicals found in plants).

- Examples include folate in green leafy vegetables; pro-vitamin A (carotenoids) in yellow, orange, red and green vegetables; and potassium in a wide range of vegetables and fruit.
- Eating vegetables and fruit:
  - can help prevent excess weight gain and obesity as most vegetables and fruit are low in energy (kilojoules) and generally high in dietary fibre compared with many other foods
  - protects the body against non-communicable diseases such as heart disease, stroke and some cancers.

Evidence points particularly to the value of non-starchy vegetables in the diet. For example, the World Health Organization's recommendation on vegetables does not include starchy vegetables (WHO 2003). However, potatoes and other starchy vegetables, such as kūmara and taro, are traditional staples in many people's diets. Some also have cultural significance. Starchy vegetables provide nutrients such as carbohydrate and some vitamins and minerals to the diet and can be filling. However, they tend to be denser in energy (kilojoules) so it is healthier to have more non-starchy vegetables than starchy vegetables on the plate.

Why eating vegetables and fruit is especially important for pregnant and breastfeeding women

Eating plenty of vegetables during pregnancy and when breastfeeding can provide important nutrients like folate, as well as vitamin C which helps in absorbing iron. It can also help to establish healthy taste preferences in the infant. When a woman eats bitter vegetables (for example, broccoli, rocket, watercress, pūhā, and taro leaf) during pregnancy and while breastfeeding, it can improve a child's acceptance of vegetables in early childhood (Gerritsen and Wall 2017).

Folate is found naturally in green leafy vegetables (like spinach, broccoli, pūhā, watercress and bok choy), citrus fruits, cooked dried beans and peas, wholegrain bread and breakfast cereals. Some breads and breakfast cereals are fortified with folic acid.

It is difficult to get enough folate from natural sources to reduce the risk of a neural tube defect, such as spina bifida, occurring during pregnancy. Women who are planning pregnancy should take a folic acid supplement daily for at least four weeks before pregnancy and continue for the first 12 weeks (first trimester) of pregnancy (see page 39 'Folic acid').

Vitamin C is found in a range of fruits and vegetables (for example, kiwifruit, oranges, broccoli, red capsicum, berries, kūmara, tomato and silver beet) and can help the body to absorb non-haem iron found in plant-based foods when eaten at the same time. This is especially important for vegetarian and vegan mothers given that iron requirements increase during pregnancy and non-haem iron is not absorbed as well as the haem iron found in animal foods.

What New Zealand adults are doing

In 2018/19, approximately half of New Zealand adults ate the recommended quantities[4] of either vegetables or fruit, and only one-third (33 percent) ate the recommended amounts of both[5].

53%

ate three or more servings of vegetables a day

Less likely to eat the recommended amounts of vegetables

Men, Pacific and Asian adults and adults living in the most socioeconomically deprived areas.

52%

ate two or more servings of fruit a day

Less likely to eat the recommended amounts of fruit

Men, Māori adults and adults living in the most socioeconomically deprived areas.

Source: Ministry of Health (2019)

4 The 2018/19 New Zealand Health Survey (Ministry of Health 2019) provides data for adults from 15+ years of age. The Guidelines define adults as 19–64 years.

5 The recommended intake of vegetables and fruit at the time of data collection was defined as eating at least three servings of vegetables each day and at least two servings of fruit each day.

What pregnant women in New Zealand are doing

In the Growing Up in New Zealand study[6]:

27%

ate four or more servings of vegetables a day

82%

ate two or more servings of fruit a day

25%

had six or more servings of vegetables and fruit each day

Less likely to eat the recommended amounts of vegetables and fruit[7]

Younger women (under 30 years of age).

Source: Morton et al (2014)

6 The Growing Up in New Zealand longitudinal study recruited over 6,500 women in pregnancy in late 2008–2009 from Auckland, Counties Manukau and Waikato District Health Boards. The birth characteristics of the cohort are closely aligned with all New Zealand births between 2007 and 2010.

7 The recommended intake of vegetables and fruit for pregnant women at the time of data collection was defined as eating at least four servings of vegetables each day and at least two servings of fruit each day.

Choosing vegetables and fruit

For information on the recommended number of servings of vegetables and fruit, and for serving size examples, see Appendix 3.

Seasonal fresh vegetables and fruit are a great choice in a healthy eating pattern. Frozen and canned vegetables and fruit are other good options. They can be fast to prepare, good value for money and a healthy way to include vegetables and fruit in daily meals.

- If choosing canned vegetables or fruit, look for those with the least sodium (salt) or sugar by comparing the labels of similar foods.
- Try growing vegetables and fruit or gather varieties growing wild such as watercress.
- Store vegetables and fruit carefully to keep their flavour, quality and nutrients.
- Wash vegetables and fruit before eating them. When possible, wash rather than peel them so that you eat the nutrients that are in and near the skin of vegetables and fruit.
- Lightly cooking vegetables and fruit (rather than overcooking) helps them retain more nutrients.
- For advice on dried fruit and fruit juice, see the information box 'Fruit juice and dried fruit are high in sugar' under Eating Statement 2.

For advice for pregnant women, see Eating Statement 5 about preparing and consuming foods (including vegetables and fruit) safely.

Eating Statement 1

Enjoy a variety of nutritious foods every day including: grain foods, mostly whole grain and those naturally high in fibre

Reasons for the recommendation

Eating whole grain and high-fibre grain foods is linked with a lower risk of cardiovascular disease, type 2 diabetes, weight gain and some cancers, such as bowel cancer.

- Whole grain and high-fibre grain foods provide energy (mainly from carbohydrate but also some protein), dietary fibre, vitamins including B group vitamins (except B12) and vitamin E (found particularly in wheatgerm) and minerals, such as magnesium, calcium, iron, zinc and selenium.
- Grains are a big part of diets around the world and for this reason they are considered dietary staples. They are generally affordable and easily available foods that give people some of the nutrients they need.
- Whole grains and those high in naturally occurring fibres provide better health benefits than more refined grains. In the definition of the Food and Agriculture Organization of the United Nations and World Health Organization (Mann et al 2007), dietary fibre is described as, and limited to, polysaccharides that are part of the plant cell wall, indicating fibre that is a naturally occurring part of the plant.

Background

Grain foods, also known as cereals, come from plants. Some of the grains that New Zealanders commonly eat are wheat, rice, oats, rye and barley. Less commonly eaten are millet, maize (corn) and more recently spelt (a type of wheat).

Defining whole grains

There is no one universally agreed definition of the term whole grain. Many people use 'whole grains' or 'intact grains' to mean grains that still have their key parts intact – that is, the bran, endosperm and germ (see Figure 2). In the Food Standards Code[8] definition (FSANZ 2014), whole grain includes milled, dehulled, cracked, flaked or ground grains that contain the bran, endosperm and germ in the same proportions as the intact grain.

8 The Food Standards Code sets standards for foods commercially available in New Zealand and Australia, which must be followed by law. The Code contains standards for food additives, food safety and labelling.

What New Zealand adults are doing

Many New Zealand adults[9] eat bread as a source of grain. In the 2008/09 New Zealand Adult Nutrition Survey:

10–14%

of adults usually ate heavy-grain bread (which has the most whole grains)

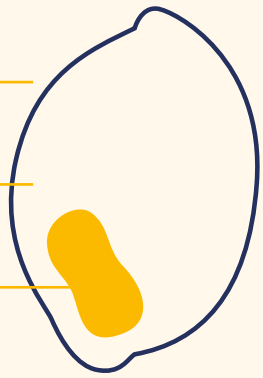
Figure 2: Key parts of a grain

Anatomy of a grain

Bran: protects the seed
Fibre, B vitamins and minerals

Endosperm: energy for the seed
Carbohydrates, some protein, some B vitamins

Germ: nourishment for the seed
B vitamins, vitamin E, minerals, phytochemicals



The bran and germ are removed when whole grains are refined.

Whole grains are naturally high in dietary fibre and provide energy (kilojoules), vitamins and minerals. Based on the Food Standards Code definition, examples of whole grain products are: whole wheat flour, wheat flakes, bulgur wheat, whole and rolled oats, oatmeal, oat flakes, brown rice, whole rye and rye flour and whole barley.

9 The 2008/09 Adult Nutrition Survey (University of Otago and Ministry of Health 2011) provides data for adults from 15+ years of age. The Eating and Activity Guidelines define adults as 19–64 years.

Defining refined grains

Refined grains have had most or all of the bran and germ removed, leaving only the endosperm. They provide more energy (kilojoules) but fewer nutrients and much less fibre. Refined grains include white rice and are found in white bread, white pasta and many breakfast cereals (for example, puffed rice). Foods like cakes, muffins, scones, pies and sweet or savoury biscuits are often made using refined grain products with added sugar and fat.

Not enough evidence about 'added-fibre' breads

Fibre-enriched (or 'added-fibre') bread is typically made from refined white flour that has had fibre such as inulin and polydextrose added to it. There is not yet enough evidence to know whether this type of fibre-enriched bread is as beneficial to health as naturally occurring fibre. Choosing products that still have their fibre intact, such as whole grain breads, is a better option.

What New Zealand adults are doing

Most adults ate more refined bread

25–30 percent ate white bread, and 50 percent ate light-grain breads.

More likely to eat white bread

Māori and Pacific adults and adults living in socioeconomically deprived areas.

Grain foods, especially breads, are one of the key sources of dietary fibre for New Zealand adults

However, current data shows dietary fibre intake is lower than recommended:

- the average dietary fibre intake for New Zealand adults is 20 g a day
- recommendations (NHMRC 2006) suggest that adults should eat 25–30 g of dietary fibre every day and that ideally, to prevent non-communicable disease, women should have 28 g and men should have 38 g.

Choosing grain foods, mostly whole grain and those naturally high in fibre

For information on the recommended number of servings of grain foods, and for serving size examples, see Appendix 3.

Few of the grain food products currently available are 100 percent whole grain.

Most have refined or milled/processed grains added to make them easier to eat or digest. To increase your intake of whole grains, where possible, choose grain foods that have the greatest amount of whole grain, such as:

- whole grain bread, whole grain cereals like oats (porridge) and whole wheat biscuits, brown rice and wholemeal pasta
- foods made from whole wheat flour, wheat flakes, whole barley, whole rye and rye flour.

Compare the nutrition information panel on food labels of similar foods to find out which have more fibre per 100 g.

Constipation is common during pregnancy

To reduce constipation, it can help to eat a high-fibre diet, including whole grain cereals, fruit, vegetables and legumes, as well as to drink plenty of water and be active.

For advice for pregnant women, see Eating Statement 5 about preparing and consuming foods (including rice) safely.

Eating Statement 1

Enjoy a variety of nutritious foods every day including: some milk and milk products, mostly low and reduced fat

Reasons for the recommendation

Milk and milk products are highly nutritious and contain protein, vitamins and minerals. Specific vitamins include riboflavin, vitamins A, D and B12, while minerals include calcium, phosphorus, zinc and iodine.

- Milk and cheese contribute saturated fat to the diet (Ministry of Health 2012).
- The Ministry of Health recommends that adults choose low- and reduced-fat milk and milk products to reduce their intake of saturated fat and total energy (kilojoules).

Background

Defining low- and reduced-fat milk and milk products

The Food Standards Code (FSANZ 2014) defines low fat as 1.5 g (or less) of fat per 100 ml of liquid (ie, 1.5 percent fat), and 3 g (or less) of fat per 100 g of solid food (ie, 3 percent fat). Based on these criteria, the only low-fat milk products are trim (0.5 percent) or trim calcium-enriched (0.1 percent) milk, low-fat yoghurts (0.4 percent) and 'lite' cottage cheese (0.6 percent). Standard cottage cheese, at 3.5 percent fat, does not meet these criteria, although it is low in fat (and saturated fat) compared with standard cheese (37 percent).

'Reduced' fat or 'lite' products must have at least 25 percent less fat than the standard product (FSANZ 2014). Reduced-fat milk has around 1.5 percent fat, compared with 3.3 percent for homogenised and 4 percent for full-cream milk.

Fat content of cheese

Most cheeses are high in fat, much of which is saturated. For example, mild cheddar has around 37 g of fat per 100 g; 24 g of that fat is saturated. A few cheeses have less fat, such as feta (20 percent), standard Camembert (22 percent) and Edam (27 percent), although these are still high-fat foods. Ricotta cheese at 11 percent fat is a moderate-fat food.

Other milk products not included in this food group

Butter, cream and products like cream cheese and sour cream are made from milk fat so have high levels of saturated fat and are low in protein and calcium. ‘Reduced-fat’ or ‘lite’ versions of these products are still relatively high in saturated fat. Ice cream and sweetened condensed milk do contain some protein and calcium but are generally high in fat and contain added sugar.

Non-dairy milk alternatives

While most New Zealand milk products come from dairy cows, some come from goats and sheep and these are very similar nutritionally to cows’ milk.

Plant-based milk alternatives made from soy, rice, oats or nuts provide non animal-based options. Plant-based milk alternatives are not naturally high in calcium and other nutrients found in cows’ milk such as vitamin B12 and riboflavin. If using plant-based milk alternatives to replace dairy products, choose products that have these nutrients added, in particular calcium.

Pregnant and breastfeeding women – alternatives to cows’ milk products

For pregnant and breastfeeding women who only eat plant-based foods, it is important to choose a plant-based milk fortified with calcium and vitamin B12 (unless receiving vitamin B12 supplements from a doctor). Most commercial plant-based milk alternatives are fortified with calcium but only some are fortified with vitamin B12 so check the ingredients list and the nutrition information panel. We recommend soy milk rather than rice, oat or nut milk because it is higher in protein than these other milk alternatives.

Choosing milk and milk products, mostly low and reduced fat

For information on the recommended number of servings of milk and milk products, and for serving size examples, see Appendix 3.

Choose some low-fat milk products (eg, green- or yellow-label milk, low-fat yoghurt) or milk alternatives with added calcium (eg, soy or rice milk with added calcium).

- Using reduced-fat (light-blue-label) milk can be a good step towards low-fat options.
- Use low-fat milk:
  - with breakfast cereals like wheat biscuits or porridge
  - in hot drinks like tea and coffee
  - for cooking, such as when making custard or rice pudding.

Evaporated milk, ultra-heat treated (UHT) milk and dried milk powder (made up following the instructions on the packet) are alternatives to fresh milk. Choose reduced- or low-fat options.

If eating cheese, choose low- or moderate-fat cheeses, or low- or reduced-fat hard cheese varieties. Eat cheese in small amounts or less frequently.

Sugar has been added to some milk products, such as flavoured milk and many yoghurts. Although they may be lower in fat, some of these products contain a lot of sugar and so they have more energy (kilojoules).

For advice for pregnant and breastfeeding women, see Eating Statement 5 about consuming foods (including milk and milk products) safely.

What New Zealand adults are doing

In the 2008/09 New Zealand Adult Nutrition Survey[10]

50%

(about half) of New Zealand adults usually used reduced-fat or trim (low-fat) cows' milk

Less likely to use low- or reduced-fat milk

Younger adults, men, Māori and Pacific adults and those living in more socioeconomically deprived neighbourhoods.

What pregnant women in New Zealand are doing

In the Growing Up in New Zealand study:[11]

58%

of pregnant women had three servings of milk and milk products a day

Less likely to have the recommended number of servings of milk and milk products[12]

Pacific and Asian women.

Source: Morton et al (2014)

10 The 2008/09 Adult Nutrition Survey (University of Otago and Ministry of Health 2011) provides data for adults from 15+ years of age. The Eating and Activity Guidelines define adults as 19–64 years.

11 The Growing Up in New Zealand longitudinal study recruited over 6,500 women in pregnancy in late 2008–2009 from Auckland, Counties Manukau and Waikato District Health Boards. The birth characteristics of the cohort are closely aligned with all New Zealand births between 2007 and 2010.

12 The recommended intake of milk or milk products for pregnant women at the time of data collection was at least three servings each day.

Eating Statement 1

Enjoy a variety of nutritious foods every day including: some legumes[13], nuts, seeds, fish and other seafood, eggs, poultry and/or red meat with the fat removed

Reasons for the recommendation

Eating patterns that include legumes, nuts, fish and other seafood are linked with a lower risk of cardiovascular disease, type 2 diabetes, weight gain and some cancers.

- Legumes, nuts and seeds are rich in nutrients and high in fibre and are a source of protein. Some types of nuts are useful sources of specific nutrients (eg, almonds provide calcium and Brazil nuts provide selenium). Nuts are high in unsaturated fats, but eating a small amount (around 30 g) each day should not cause excess weight gain, especially if you eat them instead of other, less healthy foods (Tey et al 2012).
- Fish and seafood are good sources of iodine.
- Oily fish such as salmon, tuna, mackerel and sardines and some seafood like mussels are good sources of omega-3 fatty acids. Omega-3 is linked with a lower risk of heart disease and stroke (Heart Foundation 2012).
- Eggs provide useful nutrients and can be part of a healthy diet for adults in general (Heart Foundation 2016).
- Poultry (eg, chicken) is a good source of protein and some minerals, including iron and zinc. Poultry has a variable fat content depending on the type of bird, but as most of it occurs in and around the skin, it is easy to remove (Mann and Truswell 2012).
- Red meat is an excellent source of key nutrients like iron (in an easily absorbed form) as well as zinc. Low iron levels are a problem for some New Zealanders, particularly young women. (Also see advice for pregnant and breastfeeding women under ‘Folic acid, iodine, vitamin D and iron, page 38.)
- The World Cancer Research Fund (WCRF) reports that eating more than 500 g of cooked red meat (equivalent to 700–750 g when raw) each week is linked with a higher risk of colorectal cancer (WCRF and AICR 2007, 2011).
- Eating processed meat (eg, salami, bacon, ham and luncheon) is also linked with a higher risk of colorectal cancer (WCRF and AICR 2007, 2011). In addition, processed meats can be high in fat and salt.

13 Legumes include lentils, split peas, chickpeas and cooked dried beans (eg, kidney beans, baked beans).

Background

This food group contains a wide range of foods from both vegetable and animal sources. These foods provide a range of nutrients to the diet but the key nutrient they all provide is protein.

Choosing legumes, nuts, seeds, fish and other seafood, eggs, poultry and/or red meat with the fat removed

For information on the recommended number of servings of legumes, nuts or seeds, fish and other seafood, eggs, poultry or red meat, and for serving size examples, see Appendix 3.

Add legumes and/or vegetables to meat dishes to include more plant foods in the diet and also to make the same amount of meat go further. For example, add lentils or cooked kidney beans to mince dishes; or cabbage, frozen peas and carrots to stews or boil-ups. In this way, you can get extra servings for a lower cost.

Eating a variety of different types of nuts and seeds provides a range of important nutrients to the diet (Tey et al 2012).

- Choose unsalted, raw nuts and seeds or those toasted without added fat (dry roasted).
- Replace less healthy foods, such as crisps or a snack bar, with a small handful (30 g) of nuts, preferably mixed, each day.
- Use plain, unsalted nut butters, instead of butter or jam.

Fresh fish is ideal but using canned fish or plain frozen fish is a convenient and affordable way to add fish to the diet. Fishing and collecting seafood are popular recreational activities and can have cultural significance for many New Zealanders.

Gathering your own seafood has potential food safety issues. For more information, see New Zealand Food Safety's 'Food safety for seafood gatherers': www.mpi.govt.nz/dmsdocument/1058-food-safety-for-seafood-gatherers

If you eat red meat, eat it no more than three times a week, which amounts to up to around 350–500 g cooked (500 g cooked is around 700–750 g when raw) each week.

- If your serving size is 150 g cooked (around 175 g raw) a day, this means you could eat lean red meat three times each week and still be within the recommended level.

Limit intake of processed meats such as luncheon, salami, ham, bacon and sausages. Instead, use alternative protein-rich sandwich fillings such as hummus, leftover meat, canned tuna or salmon, peanut butter and eggs.

Some foods from this food group are not safe for pregnant women to eat, such as raw animal products, deli meats and hummus. See Eating Statement 5 for more information on food safety during pregnancy.

What New Zealand adults are doing

In the 2008/09 New Zealand Adult Nutrition Survey[14]:

- the amount of legumes adults ate was not reported
- most adults ate fish, chicken and red meat regularly.

42%

of adults ate fresh or frozen fish and other seafood at least once a week

29 percent ate canned fish and other seafood at least once a week.

60%

of adults ate red meat at least three times each week

63 percent of males and 57 percent of females.

85%

of adults ate chicken at least once a week

29%

of adults ate nuts:

- as whole nuts (7 percent), in nut butters (7 percent) and from hidden sources[15] (19 percent)
- in average quantities of 18 g of nuts a day.

Source: Brown et al 2014

14 The 2008/09 Adult Nutrition Survey (University of Otago and Ministry of Health 2011) provides data for adults from 15+ years of age. The Eating and Activity Guidelines define adults as 19–64 years.

15 Hidden sources include nuts as ingredients in dishes or commercial food products such as snack bars.

What pregnant women in New Zealand are doing

In the Growing Up in New Zealand study:[16]

21%

or one in five pregnant women had at least two servings of lean meat, meat alternatives or eggs[17]

More likely to have the recommended number of servings of lean meat, meat alternatives or eggs

Māori, Pacific and Asian women.

16 The Growing Up in New Zealand longitudinal study recruited over 6,500 women in pregnancy in late 2008–2009 from Auckland, Counties Manukau and Waikato District Health Boards. The birth characteristics of the cohort are closely aligned with all New Zealand births between 2007 and 2010.

17 The recommended intake of lean meat, meat alternatives or eggs for pregnant women at the time of data collection was at least two servings each day.

Folic acid, iodine, vitamin D and iron: Advice for women who are planning a pregnancy, pregnant or breastfeeding

Aim to take one 800 µg[18] folic acid[19]-only tablet daily for at least four weeks before pregnancy and until the end of the first twelve weeks of pregnancy.

Take a 150 µg iodine-only tablet daily from the start of pregnancy until you stop breastfeeding.

Only take other supplements on the advice of a doctor or midwife.

- We do not recommend supplements other than folic acid and iodine. A pregnant woman should talk to her midwife, doctor or dietitian if she thinks she is at risk of a deficiency. For example, some women may need iron supplements during pregnancy.
- If a woman has a vegan diet, it is essential she receives vitamin B12 supplements during pregnancy and when breastfeeding. A doctor, midwife or dietitian can advise of supplement requirements.
- Women at risk of vitamin D deficiency should consult their doctor or midwife for advice on vitamin D supplements.

The Guidelines describe a healthy eating pattern for adults, including pregnant and breastfeeding women. This section describes the nutrients for which pregnant or breastfeeding women may be at a risk of deficiency and where supplementation is essential or may be required.

18 The WHO's recommendation is 400 µg. Currently 800 µg and 5 mg tablets are the only subsidised registered medicines available in New Zealand. The 800 µg dose is considered safe (Office of the Prime Minister's Chief Science Advisor and Royal Society Te Apārangi 2018).

19 Folic acid is the synthetic form of folate, which is a B vitamin that occurs naturally in many foods. For more on folate and pregnancy, see 'Why eating vegetables and fruit is especially important for pregnant and breastfeeding women', page 22.

Folic acid

Aim to take one 800 µg folic acid-only tablet daily for at least four weeks before pregnancy and until the end of the first 12 weeks of pregnancy. If a pregnancy is unplanned, start taking a daily folic acid tablet as soon as possible.

Reasons for the recommendation

Folic acid can help to prevent birth defects of a baby's brain and spine (neural tube defects), such as spina bifida. The World Health Organization recommends that to help prevent neural tube defects, all women, from when they plan to become pregnant until the end of the first 12 weeks of pregnancy, need a daily folic acid supplement. A report by the Prime Minister's Chief Science Advisor and the Royal Society Te Apārangi (Office of the Prime Minister's Chief Science Advisor and Royal Society Te Apārangi 2018) states there is compelling evidence that taking folic acid supplements in pregnancy as recommended is considered safe for mother and baby.

Folic acid supplements for women who are pregnant or trying to get pregnant

Pharmacies sell folic acid-only tablets. They cost less if a midwife, doctor, dietitian or nurse practitioner prescribes them. We do not advise taking multivitamins sold for pregnancy instead of or in addition to folic acid supplements. Women following a healthy eating pattern do not need multivitamins, which can be very expensive.

We recommend a higher dose of 5,000 µg (5 mg) of folic acid daily (from 4 weeks before pregnancy and for 12 weeks during pregnancy) in any of these circumstances:

- the woman has a neural tube defect
- she has had a pregnancy affected by a neural tube defect, or a child or a close family member with a neural tube defect
- her partner is affected by or has a family history of neural tube defects
- she is on insulin treatment for diabetes
- she is taking medicines[20] known to affect folate metabolism such as anti-epileptics (eg, carbamazepine or sodium valproate).

For more advice on folic acid and iodine supplements, go to these pages on the Ministry of Health's website:

www.health.govt.nz/your-health/pregnancy-and-kids/pregnancy/helpful-advice-during-pregnancy/folic-acid-iodine-and-vitamin-d

www.health.govt.nz/our-work/preventative-health-wellness/nutrition/folate-folic-acid

20 The Ministry of Health recommends practitioners check any other medicines the woman is currently taking for possible anti-folate effects in the medicine data sheets.

Iodine

Take a 150 µg iodine-only tablet daily from the start of pregnancy until you stop breastfeeding.

Reasons for the recommendation

Iodine is part of thyroid hormones that are needed for growth and development and is essential for normal fetal brain development during pregnancy. Babies get iodine from their mothers so pregnant and breastfeeding women need more iodine than the general population. Because most New Zealand soils are low in iodine, it is also low in locally grown foods.

The Ministry of Health recommends iodine supplements for pregnant and breastfeeding women because studies indicate that New Zealanders are at risk of mild iodine deficiency (Brough et al 2015; Skeaff et al 2005; University of Otago and Ministry of Health 2011).

Iodine supplements for pregnant or breastfeeding women

During pregnancy and while breastfeeding, women should choose foods that are high in iodine **and** take one 150 µg iodine-only tablet every day.

Good sources of iodine from foods are:

- most breads, as iodised salt is added (except to organic and unleavened breads)
- milk and milk products
- eggs
- cooked fish and some shellfish
- red or green seaweed, including nori in sushi (only eat freshly prepared home-made sushi) and karengo.

If using salt in cooking and baking or on the table at home, choose iodised salt.

Iodine, brown seaweed and pregnancy

Brown seaweed, such as kelp, kombu and wakame, contains naturally high and varying levels of iodine. It is typically sold dry and used in soups and stewed dishes, kelp salt and seaweed salads. Because of its high levels of iodine, eat no more than one serving of brown seaweed per week. Avoid kelp supplements and other kelp-based products because of their varying levels of iodine.

Refer to Eating Statement 5 for more information on food safety for pregnant women.

Vitamin D

Pregnant and breastfeeding women who are at high risk of vitamin D deficiency should consult their doctor, midwife or dietitian for advice on vitamin D supplementation.

Reasons for the recommendation

Vitamin D helps the body to use calcium to build and maintain strong bones and teeth and helps with muscle function. If a woman is vitamin D deficient, it is important that she receives vitamin D supplementation to ensure the fetus has enough vitamin D (Ministry of Health 2013). For most people, the main source of vitamin D is through exposing skin to ultraviolet B (UVB) rays from the sun. An adequate intake of vitamin D is difficult to achieve through diet alone, as only a few foods contain vitamin D or are fortified with vitamin D in New Zealand. The best food sources of vitamin D are:

- oily fish, either freshly cooked or canned (eg, salmon, herring, mackerel, sardines)
- fortified foods (eg, margarine, some milks and yoghurts)
- full-fat milk and butter
- egg yolk.

Vitamin D supplements for pregnant and breastfeeding women

If a pregnant woman is at high risk of vitamin D deficiency (see below), consider vitamin D supplements. The subsidised supplement is colecalciferol oral liquid (188 µg per ml or 7,500 international units (IU) per ml). Only small amounts of vitamin D are present in breast milk. If a baby is identified as being at high risk of vitamin D deficiency, it is more effective to give the baby vitamin D than to rely on the breastfeeding mother having vitamin D supplements. In this situation, it may still be appropriate to consider vitamin D supplements for breastfeeding women, to meet their own health needs.

A woman may be at higher risk of being deficient in vitamin D in any one of the following circumstances:

- she has darker skin
- she completely avoids sun exposure for religious, personal or medical reasons, including by applying sunscreen to exposed skin every day
- she has liver or kidney disease, or is on certain medications (eg, some anticonvulsants) that affect vitamin D levels
- she lives in an area south of Nelson-Marlborough in winter.

For more advice on vitamin D during pregnancy, go to: www.health.govt.nz/your-health/pregnancy-and-kids/pregnancy/helpful-advice-during-pregnancy/folic-acid-iodine-and-vitamin-d

For more information on vitamin D, supplements and appropriate sun exposure, see the Ministry of Health. 2013. *Companion Statement on Vitamin D and Sun Exposure in Pregnancy and Infancy in New Zealand*. URL: www.health.govt.nz/publication/companion-statement-vitamin-d-and-sun-exposure-pregnancy-and-infancy-new-zealand

Iron

Women who are pregnant or breastfeeding may require supplements if their iron levels are low. Where women suspect they may be deficient, we advise them to talk to their midwife, doctor or dietitian. Iron supplements are available on prescription and a woman should only take them if she has been diagnosed with iron deficiency.

Reasons for the recommendation

The demand for iron during pregnancy is greater to compensate for the pregnant woman's higher blood volume, and to support healthy fetal development. Iron requirements increase as the pregnancy progresses.

Iron deficiency anaemia is common among New Zealand women of child-bearing age.

In the 2014/15 New Zealand Health Survey, anaemia[21] was present in 5.2 percent of women aged 15 to 24 years, 8.6 percent of women aged 25 to 34 years and 15.6 percent of women aged 35 to 44 years (Ministry of Health 2020b).

21 Anaemia is a deficiency in the number of red blood cells or the quantity of haemoglobin within red blood cells. Anaemia was defined as a haemoglobin concentration of less than 120 g/L in non-pregnant women (WHO 2011).

Optimising dietary iron intake

Eating foods rich in iron every day is important to reduce the risk of maternal anaemia (NHMRC 2006). Haem iron in meat, seafood and chicken is more easily absorbed than the iron in legumes, vegetables and cereals (non-haem iron). Some components of drinks (tannins) and foods (phytates) bind to the non-haem iron in foods so lower the amount of iron the body absorbs. However, consuming vitamin C at the same time increases iron absorption.

- Eat foods rich in vitamin C (eg, citrus fruits, kiwifruit, leafy green vegetables, broccoli, tomatoes, capsicums) to help your body absorb non-haem iron from plant sources.
- The protein in meat also helps iron absorption from plant sources, so eating mixed meals of meat, vegetables and/or grains is the best way of helping the body to absorb as much iron as possible from all of the sources of it in the meal.
- Limit intake of black tea and coffee, and drink between meals rather than at mealtimes because the tannins bind to the iron in foods, which reduces iron absorption.

Foods that contain iron include:

- meat: see Eating Statement 5 for important advice on safe choices of meat
- cooked or canned dried beans (eg, kidney beans, baked beans), chickpeas, lentils, split peas and tofu
- grains: iron-fortified breakfast cereals
- freshly cooked liver, kidney and shellfish. All of these are rich sources of iron. However, liver and kidney contain high levels of vitamin A, which can cause birth defects, so do not eat more than 100 g of them per week during pregnancy. Avoid pâté and raw shellfish because they bring a high risk of food poisoning. Limit Bluff and Pacific oysters and queen scallops to once a month because they contain high concentrations of cadmium.

Other supplements

- We do not recommend taking any other supplements and multivitamins during pregnancy, unless they are clinically indicated.

Reasons for the recommendation

The World Health Organization does not recommend supplements of other vitamins in pregnancy unless a woman is at risk of a deficiency. Eating a wide variety of foods from all food groups, along with getting incidental safe sun exposure, will usually provide the vitamins and minerals a pregnant or breastfeeding woman requires (except folate and iodine).

Some have suggested that pregnant and breastfeeding women may benefit from taking fish oil or omega-3 supplements. However, the World Health Organization states that further research is required before it can make any recommendations in this area. Oily fish such as salmon, tuna, mackerel and sardines and some seafood like mussels are good sources of omega-3 fatty acids, though some of these should be consumed in moderation in pregnancy. See Eating Statement 5 for advice on consuming fish and seafood safely during pregnancy.

What pregnant and breastfeeding women in New Zealand are doing

Folic acid

The Growing Up in New Zealand study found that:

31%

of mothers took folic acid supplements for the recommended period (4 weeks prior to conception to 12 weeks after conception)

13%

of women did not take folic acid supplements either before or during pregnancy

Other supplements

71%

of women took iron supplements during pregnancy

62%

of women took vitamins, multivitamins or mineral supplements during pregnancy

Source: Morton et al (2010)

Nutrient issues to consider for pregnant and breastfeeding vegetarians and vegans

Pregnant and breastfeeding women who follow strict vegetarian or vegan diets may need extra information and/or support to meet protein, iron, vitamin B12 and calcium requirements.

We recommend eating a range of foods from each food group, including iron-fortified foods. For vegans, we also recommend using plant-based milk alternatives fortified with vitamin B12 and calcium (ideally soy milk because it is higher in energy and protein). Consider a referral to a dietitian for specific dietary advice.

Vitamin B12

Vitamin B12 is essential for normal blood and nerve function. Women who are pregnant need enough B12 to meet their own needs and to ensure healthy fetal development. Breastfeeding women are also providing a supply of B12 for their baby via breast milk. As B12 is only found in animal foods and fortified foods, pregnant or breastfeeding women who follow a vegan diet will require B12 supplements even if they are showing no signs of deficiency.

Kōrero Kainga 2
Eating Statement 2

Choose and/or prepare foods and drinks:

with unsaturated fats instead of saturated fats

that are low in salt (sodium); if using salt, choose iodised salt

with little or no added sugar

that are mostly ‘whole’ and less processed

Eating Statement 2

Choose and/or prepare food and drinks: with unsaturated fats instead of saturated

Reasons for the recommendation

The types of fat people consume affect their risk of cardiovascular disease.

- Reducing saturated fat intake and partially replacing it with unsaturated fats, in particular polyunsaturated fats, is linked with a decreased risk of cardiovascular disease (Hooper at al 2015).
- The evidence base underpinning these Guidelines Statements supports eating patterns that include plant- and marine-based fats, but that are low in saturated fat.
- The recommended intake for saturated fat and trans-fats together is no more than 10 percent of total energy (NHMRC 2006; Nordic Council of Ministers 2014).

Background

Fats are found in both animal and plant foods and together they provide fat-soluble vitamins A, D, E and K. Fats contain a mixture of saturated and poly-and mono-unsaturated fatty acids and are categorised according to the proportions of fatty acids and their chemical structure. Animal fats are mostly saturated while plant or vegetable fats are mostly mono- or poly-unsaturated. The exceptions are coconut and palm oil, which contain high levels of saturated fatty acids.

Both saturated and unsaturated fats are very energy-dense. Eating a lot of fat can contribute to excess energy (kilojoules) intake, which in turn can lead to weight gain.

Understanding trans-fatty acids

Trans-fatty acids (TFAs) occur naturally in small amounts in some foods such as butter, cheese and meat. However, most TFAs in foods have been formed during food manufacturing processes such as hydrogenation. Strong evidence indicates that these TFAs increase the amount of low-density lipoprotein (LDL) cholesterol in the blood, which is a major risk factor for coronary heart disease.

The World Health Organization recommends that no more than 1 percent of a person's daily energy intake comes from TFAs. The average intake level of TFAs in New Zealand is an estimated 0.6 percent (FSANZ 2009), which is well below the 1 percent upper level.

Choosing or preparing foods and drinks with unsaturated fats instead of saturated fats

Unsaturated fats come mainly from plants. They are in foods such as seeds, nuts, avocados, canola and olive oil, and plant-based margarines. Some unsaturated fats come from animals, including oily fish like salmon, tuna, mackerel and sardines. Table 4 suggests some ways of reducing the amount of saturated fat you eat and replacing it with unsaturated fats.

Table 4: Ways to eat less saturated fat and make healthier choices

Ways to eat less saturated fat
• Choose meat with little visible fat or remove fat before cooking. • Cook meat in a way that removes rather than adds fat. For example, you could: – grill it – roast or bake it, putting the meat on a rack so fat can drip off during cooking – boil it and skim off the liquid fat that comes to the surface. • Leave the skin on when roasting or grilling chicken to help keep in the moisture, then remove the skin and serve the chicken without it.

Exchange	For
Butter	Margarine or other plant-based spreads
Lard and/or dripping	Water, small amount of plant-based oils, eg, canola
Full-fat milk, high-/full-fat cheese	Low- and reduced-fat milks, reduced-fat cheese
Coconut cream	'Lite' coconut cream or coconut milk or dilute with water
High-fat takeaways	Healthier takeaways, eg, salad-rich kebabs or wraps; vegetable-rich non-fried Asian rice or noodle dishes
Highly processed high-fat convenience foods, eg, some snack bars and crisps	Whole or less processed foods, eg, vegetables, fruit, unsalted nuts

Unsaturated plant oils are preferable to coconut oil

The Ministry of Health recommends using unsaturated plant oils such as olive, canola or rice bran oil, rather than coconut oil, as the main dietary or cooking oil.

The recent heavy marketing of coconut oil is based on misinformation. Much of the research used to promote coconut oil was conducted on animals or with medium-chain triglycerides (MCTs). The evidence on MCT oils cannot be applied to coconut oil as they are different substances.

Only a few studies have looked at the effect of coconut oil on humans. Their findings suggest that coconut oil is better than butter for blood cholesterol levels but not as good as unsaturated plant oils. Coconut oil is around 92 percent saturated fat, which is a very high proportion of its total fat content.

The Heart Foundation considers that when indigenous people consume coconut flesh and milk along with fish and vegetables, and they are also physically active, the coconut consumption is unlikely to put them at risk of cardiovascular disease. They are in a very different situation from people who consume coconut oil along with a typical western diet.

For more information, see the Heart Foundation's 2014 evidence paper, *Coconut Oil and the Heart*, at: www.heartfoundation.org.nz

What New Zealand adults are doing

In the 2008/09 New Zealand Adult Nutrition Survey[22], the average amount of total fat that New Zealand adults consumed was around 34 percent of their total energy. This proportion is just within the recommended range of 20–35 percent (NHMRC 2006). However, too much of this fat was saturated.

13%

Saturated fat contributes around 13 percent of total energy (kilojoules) intake for New Zealand adults

Most of the saturated fat was from butter, milk, 'bread based dishes'[23], cheese and fat added to (including when cooking) 'potatoes, kūmara and taro'.[24]

≤10%

The recommended intake for saturated fat and trans-fats together is no more than 10 percent of total energy

22 The 2008/09 Adult Nutrition Survey (University of Otago and Ministry of Health 2011) provides data for adults from 15+ years of age. The Eating and Activity Guidelines define adults as 19–64 years.

23 'Bread based dishes', as defined in the national nutrition surveys, include sandwiches, filled rolls, hamburgers, hotdogs, pizza, nachos, doner kebabs, wontons, spring rolls and stuffing.

24 The 'potatoes, kūmara and taro' food group in the national nutrition surveys includes high-fat dishes like hot chips, crisps, hash browns, wedges and potato dishes. The fat content comes from added fat during cooking as these starchy vegetables are not naturally high in fat.

Eating Statement 2

Choose and/or prepare food and drinks: that are low in salt (sodium); if using salt, choose iodised salt

Reasons for the recommendation

Having a diet that is low in salt (sodium) is a key part of a healthy eating pattern that is linked with a lower risk of developing non-communicable diseases.

- The World Health Organization strongly recommends consuming less sodium to lower blood pressure and the risk of cardiovascular disease and stroke (WHO 2012).
- New Zealanders consume more sodium than recommended.

Background

Sodium helps to maintain important body functions. Most dietary sodium comes from salt (sodium chloride) in processed foods while about 10–20 percent comes from discretionary salt (eg, salt added during and after cooking) (Brown et al 2009).

Processed foods that are high in sodium include savoury snacks (eg, crisps), processed meat (eg, sausages, bacon, ham and luncheon, salted and canned corned beef), sauces (eg, tomato and soy) and fast foods. Bread contains moderate amounts of sodium but, because people tend to eat it frequently, it is often a major source of sodium in the diet.

Some food manufacturers are working to decrease the amount of salt in their bread products as part of food reformulation programmes. These programmes also involve lowering the salt content of processed meats and breakfast cereals.

For more information, go to: www.heartfoundation.org.nz/professionals/food-industry-and-hospitality/

If using salt, choose iodised salt

Iodine is an essential nutrient and a component of thyroid hormones that is required for normal growth and development.

Most New Zealand soils are low in iodine, so locally produced foods have low concentrations of iodine. As a result, manufacturers have added iodine to table salt in New Zealand since the 1920s to boost the population's iodine levels. Over time, research has improved our understanding of the negative health effects of consuming too much salt so now the Ministry of Health encourages people not to add salt to their food. However, if people do add salt to food or in cooking, we recommend using iodised salt.

In 2009, after iodine deficiency re-emerged in New Zealand, the use of iodised salt in commercial bread-making became mandatory as a way of helping address it. Findings from 2014/15 showed that iodine status was adequate for most of the population. However, women of European/Other ethnicity still had mild iodine deficiency (Ministry of Health 2020b).

For more information, go to: www.health.govt.nz/our-work/preventative-health-wellness/nutrition/iodine

Choosing or preparing foods that are low in salt

Choose 'whole' or less processed foods that are low in sodium, including fresh or frozen vegetables and fruit, meat, fish and poultry.

Choose foods with the lowest amount of sodium by comparing the food labels.

Amount of sodium

- Low-salt foods have less than 120 mg of sodium per 100 g.
- Moderate-salt foods have 120–600 mg of sodium per 100 g.
- High-salt foods have more than 600 mg of sodium per 100 g.

Source: Stroke Foundation (2011)

If you add salt to food, use iodised salt but keep lowering the amount you add over time to get used to the change in taste. Try other ways of enhancing the flavour. For example, use low-salt seasoning such as herbs, spices and/or citrus.

If cooking food with a high-salt content such as corned beef, cook it in water and change the water two or three times to remove excess salt.

Eating Statement 2

Choose and/or prepare food and drinks: with little or no added sugar

Reasons for the recommendation

Having a diet that is low in added sugar is a key part of a healthy eating pattern that is linked with a lower risk of excess body weight and related non-communicable diseases.

- Because consuming free sugars[25] is linked with excess body weight and tooth decay, the World Health Organization strongly recommends that people lower their intake of free sugars to less than 10 percent of their total energy intake. To help prevent tooth decay, the World Health Organization further suggests people lower their intake of free sugars to less than 5 percent of their total energy intake (WHO 2015a).
- Adding sugar increases the energy (kilojoules) content of food and drinks but adds no other useful nutrients.

Background

Sugars are naturally present in a wide range of foods including fruits, grains and milk. Sugars are also added to foods in the form of white, brown or raw sugar, honey, syrups and extracts. Sugary drinks include fruit juice, fruit drinks,[26] powdered drinks, cordial, carbonated or fizzy drinks, energy drinks, sports drinks and flavoured waters. Some of these drink products are now available with intense (artificial) sweetener instead of sugar.

25 The WHO Nutrition Guidance Expert Advisory Group (NUGAG) Subgroup on Diet and Health defines free sugars as 'all monosaccharides and disaccharides added to foods by the manufacturer, cook or consumer, plus sugars naturally present in honey, syrup and fruit juices and fruit juice concentrates' (WHO 2015a).

26 In these Guidelines, the term 'fruit drink' refers to a fruit-flavoured drink with added sugar.

What New Zealand adults are doing

Major sources of added sugars in New Zealanders' diets include:

- non-alcoholic beverages, such as sugary/fizzy drinks, fruit juice and cordial
- sugar and sweets
- baked goods, such as cakes and biscuits.

According to the 2008/09 New Zealand Adult Nutrition Survey[27], New Zealand adults have sugary drinks regularly.

16%

of New Zealand men have soft or energy drinks three or more times each week

8%

of New Zealand women have soft or energy drinks three or more times each week

37%

of New Zealand adults drink fruit juice or fruit drink three or more times each week

More likely to drink sugary drinks

Younger adults drink fruit juice, fruit drink, soft or energy drinks more frequently than older adults.

27 The 2008/09 Adult Nutrition Survey (University of Otago and Ministry of Health 2011) provides data for adults from 15+ years of age. The Eating and Activity Guidelines define adults as 19–64 years.

Fruit juice and dried fruit are high in sugar

Fruit juice is a high-sugar drink as it contains all the naturally occurring sugar found in the many pieces of fruit required to make one glass of juice.

The Ministry of Health recommends eating fresh fruit and drinking plain water rather than drinking fruit juice. Fruit is more filling than juice and provides available vitamins, phytonutrients (beneficial chemicals), fibre and much less sugar than juice.

Dried fruit has had most of its water removed, but also concentrating all the sugar. Without the water, it can be easier to eat numerous pieces at one time so it becomes a very high-sugar snack, sticks more easily to teeth and increases the risk of cavities. We recommend limiting the amount of dried fruit included in the diet.

Choosing or preparing foods and drinks with little or no added sugar

Choose foods with the lowest amount of added sugar.

- Compare the sugar content on food labels.
- Add little or no sugar to foods and drinks.

Choose healthy snacks such as vegetable sticks with a low-fat dip or spread (hummus,[28] cottage cheese or yoghurt-based dips) or fresh fruit instead of sweet biscuits, cakes, chocolate or sweets.

Choose plain water or diet drinks rather than sugary drinks, juice, energy or sports drinks, cordial or powdered drinks.

Diet drinks use intense (artificial) sweeteners instead of sugar and usually contain little or no energy (kilojoules). Plain water is the best choice of drink, but diet drinks in moderation are a better option than sugary drinks.

If drinking sugary drinks, have them only:

- occasionally (less than once each week)
- in small quantities (limit to one glass or dilute with water)
- with food rather than between meals.

28 Hummus is considered a high-risk food during pregnancy. We recommend that pregnant women do not eat hummus.

Eating Statement 2

Choose and/or prepare food and drinks: that are mostly 'whole' and less processed

Reasons for the recommendation

The international evidence that underpins these Eating Statements (see Table 1 in the Introduction section) provides a consistent picture of a healthy eating pattern.

- Diets high in vegetables, fruit, whole grains and grains naturally high in fibre, legumes, nuts, dairy (including low-fat options) and fish and seafood are linked with better health and less non-communicable disease. These diets are low in processed meat, refined grains, saturated fat, sugar-sweetened foods and drinks, and salt/sodium.
- Highly processed foods often have added fat, sugar and/or salt and contain low levels of naturally occurring dietary fibre, vitamins, minerals and other phytonutrients. Research has shown that only the people with the lowest intakes of these foods were close to meeting nutrient goals for preventing obesity and non-communicable disease (Moubarac et al 2012).
- Highly processed food is beginning to dominate the food supply of high-income countries like New Zealand (Baker et al 2020). Healthier eating patterns based on regular, freshly prepared meals are being replaced with frequent snacking on energy-dense (high-kilojoule), fatty, sugary or salty ready-to-eat foods (Monteiro et al 2013; Moubarac et al 2012).
- In this changing food environment, the Ministry of Health considers it important and timely to provide specific advice for health practitioners to support people wanting to make the healthiest choices from the growing range of food available.

Background

Food processing in general is not a problem for health. It has been around in its simpler forms for thousands of years. Advances in processing technology have, in general, led to a food supply that is safer, easier to use and much more varied than in earlier times. However, advances have also increased the availability of products that are highly refined and contain high levels of added saturated fats, sugar and salt. These foods are often appetising, convenient and heavily marketed and come in ready-to-eat forms; all of these characteristics encourage people to eat them.

Alongside the advice in Eating Statements 1, 2 and 3, specific advice and tools that consider the health-promoting properties of processed food are needed to help consumers choose the healthiest options from the increasingly wide range of food and food products now available.

Useful definitions

We offer the definitions below for key terms in this section to help in interpreting the advice that follows.

Processed food

Any food that has been milled, cut, heated, cooked, canned, frozen, cured, dehydrated, mixed, packaged or undergone any other process that alters the food from its natural state. Processing may also involve adding other ingredients to the food (adapted from Dwyer et al 2012). The food groupings below describe food on a continuum of processing: whole foods – less processed foods – highly processed foods.

Whole foods

Foods that are close to their natural state but may have been harvested, washed or cleaned ready for eating or cooking. Examples of whole foods are fresh vegetables and fruit, raw legumes, raw nuts and seeds, eggs, fish, chicken and red meat (with visible fat removed).

Less processed foods

Foods that have undergone some processing, but have kept most of their physical, chemical, sensory and nutritional properties (adapted from Dwyer et al 2012). They are usually processed with the aim of making the food:

- safer – for example, pasteurised milk products
- healthier – for example, low-fat milk, which contains less energy (kilojoules) and less saturated fat than full-fat milk
- more convenient to use – for example:
  - whole grains that have had their outer inedible husks removed but still have the edible parts of their structure
  - wholemeal flour ground from whole grains
  - frozen, packaged vegetables and fruit that may have been frozen quickly to keep their nutrient content
  - canned legumes, vegetables and fruit with no or minimal added sugar and/or salt, which have been prepared and cooked ready for use.

Highly processed food

These foods, or the ingredients used to make them, are heavily processed so they are usually very different from their natural state. Highly processed, ready-to-eat foods tend to be low in naturally occurring nutrients such as vitamins, minerals, fibre and other phytonutrients. They are often high in refined grains, energy (kilojoules), added saturated fat, sugar and/or salt (sodium).

Choosing or preparing whole or less processed foods

The Ministry of Health recommends that people follow an eating pattern based mostly on whole or less processed foods, that is rich in naturally occurring nutrients and has no or very little saturated fat, added sugar and salt.

As often as possible, prepare meals at home using whole and less processed ingredients. Some processed food products can provide convenient, affordable, quick and healthy alternative ingredients for meals.

- Good examples are canned vegetables, fruit, legumes and fish with no or minimal added sugar and/or salt.
- If using processed food products, choose the healthiest options available; for example, products that:
  - are lower in saturated fat, sugar and/or salt
  - contain ingredients that have been minimally processed.

For example, the healthiest bread would have the lowest salt content and the highest fibre content per 100 g on the nutrition label. Also check if whole grains and seeds are visible in the bread.

- Consider the food product as a whole. There is little health benefit in choosing food products that are low in fat but high in refined grains, sugar and salt.

Limit intake of highly processed foods that are high in saturated fat, salt and/or sugar and low in nutrients. These include sweets, sugary drinks, biscuits, cakes, pastries, pies, instant noodles, processed meats, pizza, deep-fried foods, crisps and other savoury snacks. Consider exchanging less healthy for healthier options, as Table 5 shows.

Table 5: Making healthier choices of whole or less processed foods

Exchange	For
High sugar breakfast cereal	Whole grain cereal like porridge or whole wheat breakfast biscuits
White bread	Higher-fibre, whole grain varieties
Dessert-style yoghurt or dairy desserts	Low-fat and low-sugar yoghurt mixed with fresh/frozen fruit
Muesli bars	Fresh fruit or small handful of unsalted nuts
Crisps and cream-based dip	Raw vegetable sticks and hummus
Sugary drink	Glass of chilled water with fresh mint or lemon

The Health Star Rating system

In 2014 New Zealand joined up with Australia's voluntary front-of-pack labelling system, the Health Star Rating system.

This system is designed to help consumers make better-informed, healthy choices quickly and easily when comparing similar packaged food products, such as breakfast cereals.

The Health Star Rating system assesses foods using a star rating scale of ½ to 5 stars. The more stars a food has, the higher its overall nutritional value. Under this system, a food label uses nutrient information icons to show how much energy (kilojoules), saturated fat, sodium (salt) and sugars a product contains per 100 g. It can also show the amount of one other nutrient relevant to that food, such as calcium or fibre.

For more information, go to the Ministry for Primary Industries website: https://www.mpi.govt.nz/food-safety-home/how-health-star-ratings-work/

Kōrero Kainga 3
Eating Statement 3

Make plain water your first choice over other drinks

Reasons for the recommendation

Water is essential to life.

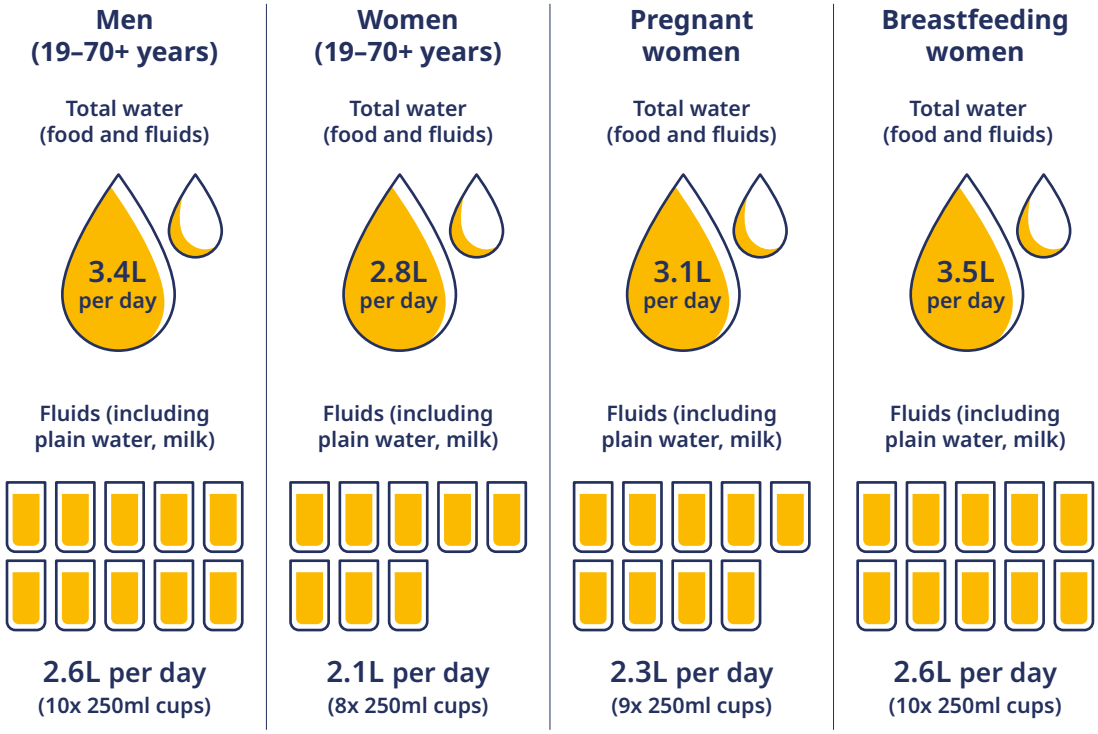
- Plain water is the best choice of drink because in most cases it is exactly what the body needs (along with a varied, healthy diet).
- Plain water contains no energy (kilojoules) so will not increase a person's total energy intake (and ultimately their weight).

Background

The body of an average-sized adult contains approximately 35–45 litres of water, which is around 60 percent of their body weight. The body needs water for key processes like digestion, absorption, transporting food, removing waste and controlling the body's temperature (thermoregulation). Figure 3 identifies how much water adults need each day.

The body gets around 20 percent of its total water intake from solid food (700–800 ml); it also produces around 250 ml from breaking down food within the body. Most of the body's needs come from the fluid a person drinks. The body loses water through skin and lungs (known as insensible water loss), sweat, faeces and urine. The body makes sure it has enough water to function adequately by balancing output with input.

Figure 3: How much total water (from food and fluids) the body needs



Choosing plain water over other drinks

Choose plain, and where possible fluoridated, tap water.

- Drink water that comes from public water systems. Most water supplies in cities and towns are tested frequently and are considered safe to drink. If you have concerns, contact your water supplier.
- If your water comes from a private supply (such as from a well or bore) and you are pregnant or breastfeeding, have your water tested for any contaminants that could harm you and your baby. If testing shows water is high in nitrates, it is not suitable for preparing infant formula.
- If the water supply in your city or town, or your private water supply, contains contaminants:
  - use bottled water for both preparing food and drinking
  - boil water before use – if the contamination in your water is bacterial, this can kill microbes. However, boiling water is not an effective way of removing chemical contaminants.

Fluoridated water

The Ministry of Health strongly supports adding fluoride to water supplies as a safe, effective and affordable way to prevent and reduce tooth decay across the whole population. Most tooth decay is preventable, and water fluoridation is a simple way to prevent it.

For more advice on water fluoridation, go to the Ministry of Health website: www.health.govt.nz/our-work/preventative-health-wellness/fluoride-and-oral-health/water-fluoridation

Having other drinks as a second choice

Low-fat milk (yellow or green label) is a good supplementary drink as it is relatively low in energy and rich in nutrients such as calcium and protein.

Many people enjoy herbal teas, which provide fluid while not adding extra energy.

Black tea and coffee are also popular and evidence indicates that both can benefit health because of properties they contain such as antioxidants. However, both tea and coffee also contain caffeine (a stimulant) and tea contains tannins, which lowers the amount of iron that the gut absorbs. For this reason, the Ministry of Health recommends drinking only moderate amounts of tea and coffee.

For more advice on sugary drinks, see the recommendations on sugar in Eating Statement 2.

For the caffeine content of commonly consumed food and drinks, see Figure 4.

Drink choices for pregnant and breastfeeding women

Pregnant and breastfeeding women need plenty to drink because their blood volume increases during pregnancy and they need fluids to produce breast milk.

Choose, where possible fluoridated, tap water

See advice on 'Choosing plain water over other drinks' on page 61.

Limit caffeine intake to below 200 mg per day during pregnancy. Do not drink energy drinks.

- Caffeine is found in energy drinks, black tea, coffee, fermented beverages (kombucha), chocolate and some soft drinks (eg, cola).
- It takes longer for caffeine to clear from the blood of a pregnant woman compared with other adults (European Food Safety Authority Panel 2015; Lyngsø et al 2017; WHO 2016). High caffeine intake while pregnant may increase the risk of miscarriage, stillbirth and having a baby with a low birthweight. We do not recommend drinking energy drinks and energy shots. These contain high levels of caffeine and other substances for which the risk to pregnant women has not been assessed (Breda et al 2014).

Figure 4: How much caffeine in a standard serving?

* The caffeine content of coffee and tea made at home and at cafés is a rough equivalent and may vary from the stated value in each case.

You will be under the 200 mg limit if in a day you choose any one of these combinations:

- 4 cups of black tea
- 1 cappuccino
- 2 cups of plunger coffee and 1 cup of black tea.

Use herbal teas with caution

- Some herbal teas may be harmful in pregnancy (Health Canada 2019). Avoid these teas: aloe, buckthorn bark, chamomile, coltsfoot, comfrey, juniper berries, Labrador tea, lobelia, pennyroyal, sassafras, senna leaves (alpine tea).
- Herbal teas that pregnant and breastfeeding women can drink in moderation (no more than two to three cups per day) include: ginger, citrus peel/orange peel, echinacea, ginger, lemon balm, linden flower (unless pre-existing cardiac conditions), peppermint, red raspberry leaf (no more than one cup per day in the first three months of pregnancy), rosemary, rose hip.

Do not drink unpasteurised juices or unpasteurised fermented drinks.

Be careful in your choice of fermented drinks and how you store them

- Kombucha, including home-brewed and other fermented drinks like kefir and kvass, can contain low levels of alcohol. Secondary fermentation can occur if you do not refrigerate the drinks.
- Choose fermented drinks with caution or avoid them altogether. Any beverage with 0.5 percent or more alcohol must be labelled as containing alcohol.

Avoid sugary drinks

- Pregnant women need to be particularly careful about oral health (see the information box 'Oral health and pregnancy' below).

Oral health and pregnancy

Women have special health needs during pregnancy, including for oral health. Because they have increased levels of oestrogen and progesterone, pregnant women may have an exaggerated response if bacteria grow in the mouth. This may cause inflammation of the gums, also known as pregnancy gingivitis. Symptoms include redness, bleeding and swelling of the gums. We recommend that pregnant women practise good oral care at home (eg, brushing and flossing teeth twice a day), and also get professional cleaning and attend regular check-ups with their oral health practitioner.

For more information, go to the New Zealand Dental Association website: www.nzda.org.nz/public/your-oral-health/pregnancy

What New Zealand adults are doing

Most town-supplied tap water in New Zealand is safe to drink and widely available. During 2018/19 over 97 percent of New Zealanders[29] received drinking water that complied with all the legislative requirements under the Health Act 1956 (Ministry of Health 2020a).

97%

received drinking water from supplies that met all requirements under the Health Act 1956

What pregnant women in New Zealand are doing

The Growing Up in New Zealand study[30] found:

38%

of women avoided caffeinated beverages at some point during their pregnancy

19%

of women avoided carbonated drinks (fizzy) at some point during their pregnancy

Source: Morton et al (2010)

29 Those on registered networked community drinking water supplies serving over 100 people.

30 The Growing Up in New Zealand longitudinal study recruited women in pregnancy in late 2008–2009 from Auckland, Counties Manukau and Waikato District Health Boards. The birth characteristics of the cohort are closely aligned with all New Zealand births between 2007 and 2010.

Kōrero Kainga 4
Eating Statement 4

If you drink alcohol, keep your intake low

Stop drinking alcohol if you could be pregnant, are pregnant or are trying to get pregnant

When breastfeeding, it is best to be alcohol-free

Reasons for the recommendation

Drinking alcohol increases:

- the risk of accidents and violence
- risk of becoming overweight or obese
- risk of cancer of the mouth, throat, larynx, oesophagus, large bowel, rectum, breast and liver. Alcohol is a known carcinogen
- likelihood of developing noncommunicable diseases, including heart and liver disease
- risk of brain and nervous system damage.

There is no safe level of alcohol use at any stage of pregnancy. Alcohol can harm a developing baby (Carson et al 2010).

Background

Drinking alcohol is a part of many New Zealanders' lives. While many enjoy 'a drink', recommendations on its use need to consider the negative outcomes drinking alcohol contributes to. The evidence shows that the negative cost of drinking alcohol strongly outweighs any benefit.

Advice on the amounts that men and women can drink is based on evidence showing the effect of a number of factors including body size and composition, ability to metabolise alcohol and women's higher risk of developing a range of health conditions than men, when drinking at higher rates.[31]

Alcohol provides more kilojoules per gram than protein, carbohydrate or fat

Alcohol is a concentrated form of energy (kilojoules) with one gram providing 29 kilojoules (or 7 calories). When you add to that the kilojoules from the carbohydrate in many alcoholic drinks or drink 'mixes', drinking alcohol can add more energy to the diet than people are aware of. For example, one small bottle of beer (330 ml) contains 508 kilojoules, and one standard drink of wine (100 ml) has around 350 kilojoules.

31 Te Hiringa Hauora/Health Promotion Agency (HPA) is responsible for giving advice to help people make informed choices about keeping at low risk of alcohol-related accidents, injuries, diseases and death. HPA's advice is based on current scientific research and evidence (HPA 2016).

What New Zealand adults are doing

According to the 2018/19 New Zealand Health Survey[32] (NZHS):

80%

of adults had a drink containing alcohol in the past year. 85 percent men; 76 percent women

Less likely to have drunk in last year, but more likely to be hazardous drinkers

Most socioeconomically deprived.

20%

of adults were hazardous[33] drinkers, men (28 percent) more likely than women (13 percent)

Less likely to have drunk in last year

Asian and Pacific.

32 The 2018/19 New Zealand Health Survey (Ministry of Health 2019) provides data for adults from 15+ years of age. The Eating and Activity Guidelines define adults as 19–64 years.

33 Hazardous drinkers are those who score 8 or more on the Alcohol Use Disorders Identification Test (AUDIT) developed by the World Health Organization. A score of 8 or more represents an established pattern of drinking that carries a high risk of future damage to physical or mental health (Ministry of Health 2014c).

What pregnant and breastfeeding women in New Zealand are doing

The Growing Up in New Zealand study[34] found:

76%

of women who planned their pregnancy drank no alcohol during their pregnancy

66%

of those with unplanned pregnancies reported not drinking during their pregnancy

14%

of those who planned their pregnancy had less than 1 glass a week

11%

of those from the unplanned pregnancy group had less than 1 glass a week

Source: Morton et al (2010)

34 The Growing Up in New Zealand longitudinal study recruited women in pregnancy in late 2008–2009 from Auckland, Counties Manukau and Waikato District Health Boards. The birth characteristics of the cohort are closely aligned with all New Zealand births between 2007 and 2010.

Any alcohol consumption is risky, so if you drink alcohol, keep your intake low

There is no safe level of alcohol intake. From a health perspective, it is best not to drink alcohol. If you choose to drink alcohol, keep your intake low.

To reduce long-term health risks:

- women should drink no more than two standard drinks a day and no more than 10 standard drinks each week
- men should drink no more than three standard drinks a day and no more than 15 standard drinks each week
- both women and men should have at least two alcohol-free days every week.

To lower the risk of injury:

- women should drink no more than four standard drinks on any single occasion
- men should drink no more than five standard drinks on any single occasion.

When not to drink alcohol

The Ministry of Health advises New Zealanders not to drink alcohol when they:

- are driving a vehicle or operating machinery
- have a condition that alcohol could make worse
- are on medication that interacts with alcohol
- feel unwell or depressed
- are under 18 years old[35]
- are about to be physically active or play sport
- could be pregnant, are pregnant or are trying to get pregnant.

For more advice on low-risk drinking, information on standard drinks and more on hazardous drinking, go to: www.alcohol.org.nz

One standard drink =

100 ml glass of wine

330 ml glass of beer

30 ml (nip) spirits

35 Not drinking alcohol is the safest option for children and young people under 18 years. For more information, go to: www.alcohol.org.nz/help-advice/advice-on-alcohol/low-risk-alcohol-drinking-advice

How to reduce the potential health impacts of drinking alcohol

To reduce the potential impacts of drinking on health in the short and long term, New Zealand adults should:

- know what a standard drink is
- set a limit on the number of alcoholic drinks they have each day and each week
- drink low-alcohol or non-alcoholic drinks
- drink slowly
- eat before or while drinking alcohol
- switch between non-alcoholic and alcoholic drinks
- never drink and drive
- set a good example and not get drunk (especially in front of children).

Stop drinking alcohol if you could be pregnant, are pregnant or are trying to get pregnant

Alcohol in a woman's bloodstream passes easily through to the developing baby. The baby is exposed to the same blood alcohol levels as the mother but cannot break down alcohol like an adult can. Alcohol and its byproduct acetaldehyde can damage the developing baby's cells. Alcohol can impair placental blood flow, leading to low oxygen levels for the baby.

Alcohol can affect the developing baby throughout pregnancy, including around the time of conception. Harm is more likely to occur with frequent heavy drinking, but some studies have found lower alcohol intake is linked to poor brain development (NHMRC 2009a).

In New Zealand, two out of every five pregnancies are unplanned (Morton et al 2010) so a woman may be drinking before she knows she is pregnant. It is never too late in a pregnancy to stop drinking. By stopping drinking, a woman increases the chance of her baby being born healthy.

All types of alcoholic drinks, including beer, wine, cider, spirits and ready-to-drink (RTDs), can harm the developing baby. Kombucha and other fermented drinks like kefir and kvass can contain low levels of alcohol. Any brewed soft drink (including kombucha) with 0.5 percent or more alcohol must be labelled as containing alcohol.

Understanding fetal alcohol spectrum disorder

Fetal alcohol spectrum disorder (FASD) describes a spectrum of varied disabilities that can result when a developing baby is exposed to alcohol during pregnancy. FASD can seriously impact the normal physical, neurological and emotional development of a child (Ministry of Health 2015). Having FASD can lead to many lifelong challenges in an individual's daily living (Cook et al 2015) and, over the long term, poor health, educational and social outcomes (O'Leary et al 2013).

No data is available on the prevalence of FASD in New Zealand. However, based on international studies, the Ministry of Health estimates that 3–5 percent of school-aged (5–18 years) children may have FASD. That is, around 1,800 to 3,000 live births per year are likely to be affected by alcohol exposure.

For more on FASD, go to: www.health.govt.nz/our-work/diseases-and-conditions/fetal-alcohol-spectrum-disorder

When breastfeeding, it is best to be alcohol-free

When breastfeeding, it is best to be alcohol-free. Alcohol inhibits the role of the hormone oxytocin in breastfeeding women. This can result in a delayed 'let-down' of milk and decreased milk production (Giglia 2010). Alcohol enters the breast milk and may remain there for several hours after the mother drinks the alcohol. It may negatively impact on the baby's behaviour, making them irritable, unsettled or not able to feed (NHMRC 2009a).

While we do not recommend drinking any alcohol at this time, if a woman chooses to drink alcohol while breastfeeding she should:

- avoid drinking alcohol during the first month of breastfeeding and at least until breastfeeding is well established (NHMRC 2009a)
- consider expressing milk before drinking alcohol to ensure alcohol-free breast milk is available for her baby (NHMRC 2009a)
- wait for at least two hours after one standard drink before breastfeeding again, though the appropriate length of time will vary for individual women depending on their weight and metabolism (NHMRC 2009a). The longer the time between drinking alcohol and breastfeeding, the less the potential impact is for the baby (NHMRC 2009a)
- make sure the baby always has a sober caregiver looking after them who is alert to their needs
- never fall asleep on a bed or sofa with an infant if she has had any alcohol. This applies to any other caregivers as well.

Feed Safe app

The Feed Safe app helps a breastfeeding woman to make safe decisions by using height, weight and alcohol intake to estimate when her breast milk should be free of alcohol. It is based on the official guidelines of Australia's National Health and Medical Research Council. Feed Safe was released in New Zealand in collaboration with WellSouth Primary Health Network.

For more information and to download the app, go to: www.feedsafe.net

For more advice for women on stopping drinking and smoking during pregnancy, go to:

www.health.govt.nz/your-health/pregnancy-and-kids/pregnancy/helpful-advice-during-pregnancy/stop-smoking-drinking-alcohol-and-using-drugs-pregnancy

www.health.govt.nz/your-health/healthy-living/addictions/smoking/stop-smoking

For more advice for health professionals on alcohol in pregnancy, go to:

Te Hiringa Hauora/Health Promotion Agency: www.alcohol.org.nz/alcohol-its-effects/alcohol-pregnancy/alcohol-and-pregnancy-resources/resources-for-health-professionals

Ministry of Health. 2010. *Alcohol and Pregnancy: A practical guide for health professionals*. URL: www.health.govt.nz/system/files/documents/publications/alcohol-pregnancy-practical-guide-health-professionals.pdf

Help and support

If you are finding it hard to stop drinking, we recommend that you speak to your doctor, nurse or another health professional.

For a confidential service, you can also contact the Alcohol Drug Helpline: call 0800 787 797, visit alcoholdrughelp.org.nz or free text 8681, 24 hours, 7 days a week.

Kōrero Kainga 5
Eating Statement 5

Buy or gather, prepare, cook and store food in ways that keep it safe to eat

Take extra care to protect yourself from foodborne illness if you are pregnant

Reasons for the recommendation

Food safety is about making sure that food is safe to eat and does not make people sick.

- It is estimated that around 200,000 New Zealanders suffer a foodborne illness (food poisoning) every year.
- Common causes of foodborne illness are:
  - storing food for too long and at the wrong temperature
  - cooking it at the wrong temperature (undercooking food and inadequately reheating cooked food)
  - cross-contaminating ready-to-eat foods with raw foods
  - using dirty surfaces to prepare food.
- Most foodborne illness is preventable.

Food safety is especially important for pregnant women because developing a foodborne illness might have a more severe impact. In addition to the general symptoms of food poisoning that anyone can experience, foodborne illness in pregnant women can cause miscarriage, stillbirth or premature birth.

Evidence to support this Statement and the more detailed advice below comes from:

- peer-reviewed scientific literature and reports published on the Ministry for Primary Industries websites: www.foodsafety.govt.nz/science-risk
- other reference materials such as the Australian Dietary Guidelines evidence report.

Background

The term 'food safety' generally describes ways of handling, preparing and storing foods that prevent foodborne illness. Performing these techniques safely as part of everyday food handling is the best way to keep food safe and avoid foodborne illness.

Micro-organisms (bugs) that cause illness are called pathogens. These pathogens can be bacteria, fungi, parasites or viruses. Foodborne illness is any illness that results from eating foods contaminated with pathogens or their toxins. The most common health effects of foodborne illness are gastroenteritis, vomiting and/or diarrhoea. Foodborne illness can also cause longer-term illness or even death. Pathogens that most commonly cause an outbreak of foodborne illness (which is when more than two cases of illness are linked to the same source) include norovirus*, Yersinia* spp*, Giardia* spp*, Clostridium perfringens* and *Salmonella* spp.

New Zealand's notifiable disease regulations cover several foodborne illnesses.

For information on rates of foodborne illness, go to the Institute of Environment Science and Research Limited (ESR) Public Health Surveillance website: www.surv.esr.cri.nz

Buy or gather, prepare, cook and store food in ways that keep it safe to eat

Buy or gather, prepare, cook and store food in ways that keep it safe to eat.

When buying food and drink:

- always check the use-by date of each food before buying it
- avoid foods with damaged packaging – for example, dented or swollen tins, ripped packaging, broken seals
- choose undamaged and unripe (or just-ripe) fresh vegetables and fruit.

If gathering food:

- always wash food like pūhā and watercress thoroughly after gathering or buying from others who have gathered it
- before gathering shellfish or other seafood, check with the local regional council, public health unit and the 'marine biotoxin alerts' on the Ministry for Primary Industries website (www.mpi.govt.nz/food-safety/food-safety-for-consumers) for information about any areas contaminated with algal blooms or other hazards.

When storing food:

- keep the fridge at or below 4 degrees Celsius
- store raw meat away from other food, for example, on the bottom shelf of the fridge so the raw meat juices do not drip on to other food
- follow storage advice on labels
- cover leftovers and store them in the fridge (within two hours of cooking) and use within two days of cooking.

When preparing and cooking food:

- always thoroughly wash hands with soap and water, and dry them, before handling food or between handling raw meat and other food
- always prepare food on clean surfaces and with utensils that have been cleaned with hot, soapy water
- reheat any leftovers until they are steaming hot before eating them
- be aware of food that is at higher risk of being contaminated by pathogens – for example, raw meat (including chicken), milk products, fish or shellfish, and sprouts. For these foods:
  - store and cook them safely
  - if in doubt about the safety of the food, throw it out.

Women who are breastfeeding

Food safety advice for women who are breastfeeding is the same as for non-pregnant adults.

Take extra care to protect yourself from foodborne illness if you are pregnant

Food safety is particularly important during pregnancy. Because pregnant women have lower levels of immunity, they are more at risk of foodborne illness. The impact of these bugs in pregnancy can be severe. In addition to the general symptoms of food poisoning that anyone can experience, foodborne illness in pregnant women can cause miscarriage, stillbirth or premature birth.

Listeria monocytogenes, *Toxoplasma gondii*, some strains of *Salmonella* and, occasionally, *Campylobacter* can cause serious problems for pregnant women. While all of these bugs can occur in food, some are also found on or in animals, including household pets, in soil or in water. As well as following the general food safety advice above, pregnant women should wash their hands with soap and water after being around animals, protect themselves against exposure to cat litter and wear gloves while gardening.

A number of high-risk foods are particularly likely to cause foodborne illness. New Zealand Food Safety, which is part of the Ministry for Primary Industries, recommends pregnant women avoid eating some of these foods and take special precautions for others.

For more detail on the foods to avoid, see the links under 'For the latest advice from the Ministry for Primary Industries' below.

Specific issues apply to food safety during pregnancy. For more information, see the New Zealand Food Safety website: www.mpi.govt.nz/food-safety/food-safety-for-consumers/food-and-pregnancy

Heavy metals exposure while pregnant

We recommend limiting exposure to certain heavy metals during pregnancy. These metals include lead (Gardella 2001), mainly from house paint used commonly in New Zealand before 1965, and mercury in certain types of fish and seafood (New Zealand Food Safety 2018). Cadmium can also be concentrated in Bluff and Pacific oysters and queen scallops so pregnant women should limit their intake of these to once a month.

For the latest advice from the Ministry for Primary Industries, go to:

Food safety in pregnancy:
www.mpi.govt.nz/dmsdocument/3675-food-safety-in-pregnancy
www.mpi.govt.nz/dmsdocument/7251-food-safety-in-pregnancy-pullout-guide

Food safety in the home:
www.mpi.govt.nz/dmsdocument/3662-food-safety-in-the-home
www.mpi.govt.nz/food-safety/food-safety-for-consumers/is-it-safe-to-eat/

Food safety when fishing or gathering shellfish:
www.mpi.govt.nz/travel-and-recreation/outdoor-activities/hunting-and-gathering/food-safety-when-fishing-or-gathering-shellfish/

Kōrero Kainga 6
Eating Statement 6

Encourage, support and promote breastfeeding

Breast milk is the ideal food for babies and breastfeeding has multiple benefits for the mother and infant

Everyone has a role to play in supporting mothers to breastfeed, from partners, family, whānau, friends and health professionals to workplaces, early learning services, health facilities and the wider community

Reasons for the recommendation

The World Health Organization recommends breastfeeding for two years or longer for optimum nutrition (WHO 2003). Breast milk is the ideal food for babies because it provides important nutrition plus antibodies, enzymes, hormones and growth factors that cannot be replicated in commercially produced infant formula (Victora et al 2016).

Once breastfeeding is established, many mothers find that, along with other benefits, it is the most convenient and portable and the cheapest way to feed their infant. Breastfeeding is also the most environmentally sustainable option for feeding a baby (Davidove and Dorsey 2019).

Benefits of breastfeeding for the baby include that it:

- helps build a strong emotional bond between the mother and baby, and this bond supports healthy brain development in the baby and reduces the risk of mental health conditions (Horta and Victora 2013)
- boosts the immune system and helps protect the baby against common childhood illnesses, particularly diarrhoeal infections and pneumonia, and hospitalisation (Sankar et al 2015; Scientific Advisory Committee on Nutrition 2018)
- decreases the chance of infant and toddler death and is protective against sudden unexplained death in infancy (SUDI) (Hauck et al 2011; Sankar et al 2015)
- is associated with improved performance in intelligence tests (Horta et al 2015)
- decreases the chance of health problems later in life, such as type 2 diabetes (Horta and Victora 2013; Horta et al 2015; Koletzko et al 2019)
- may reduce the chance of becoming obese in childhood, adolescence and early adulthood (Horta et al 2015).

Benefits of breastfeeding for the mother include that it:

- decreases the chance of developing breast cancer by 26 percent and ovarian cancer by 35 percent among women breastfeeding for more than 12 months compared with women who have never breastfed (Chowdhury et al 2015)
- decreases the chance of developing type 2 diabetes (Aune et al 2014).

Providing support for breastfeeding mothers helps them to breastfeed their baby for longer.

- Women's attitudes towards breastfeeding are influenced by the people around them. Alongside the midwife, the partner and family or whānau play important roles in the ūkaipōtanga (nurturing) process. Their input promotes and optimises women's breastfeeding and contributes to whānau ora, knowledge and skills in supporting mothers (Edwards and Tui Rangipohutu 2014; Gerritsen and Wall 2017).
- Breastfeeding practices are highly responsive to interventions delivered in health systems, communities and homes (Rollins et al 2016). Breastfeeding counselling, group support and education are effective ways of increasing breastfeeding initiation and exclusive breastfeeding (McFadden et al 2017; Sinha et al 2015).
- A kaupapa Māori approach to breastfeeding support, which acknowledges the emotional and practical support of partners and whānau, can protect the breastfeeding relationship (Reinfelds 2015).
- Health care providers influence and support infant feeding decisions at key moments before and after birth and later when challenges occur. When they offer breastfeeding support to women, the women are more likely to breastfeed for longer and exclusively (McFadden et al 2017).

Background

The Ministry of Health recommends that babies are:

- exclusively breastfed to around six months of age, then
- continue to breastfeed up to two years or longer.

The only suitable alternative to breast milk in the first year of life is infant formula. Once a formula-fed baby has turned one year, it is appropriate to transition to standard cows' milk as their main drink.

What New Zealand women are doing

Infants exclusively or fully breastfed at three months:

59%

Total

49%

Highly deprived

48%

Māori

48%

Pacific

61%

Non-Māori

60%

Non-Pacific

Source: *Well Child / Tamariki Ora Quality Indicator Report – March 2020.* URL: https://nsfl.health.govt.nz/dhb-planning-package/well-child-tamariki-ora-quality-improvement-framework

Everyone has a part to play in creating a breastfeeding-friendly environment

Encourage fathers, partners, family, whānau and friends to provide practical support to help mothers breastfeed. For example, they can:

- attend antenatal classes that include information on baby feeding options
- during the night, bring the baby to the mother when baby cries and requires feeding
- offer to help with other children
- help with housework, and prepare meals, drinks and snacks for the mother and her family.

Implementing and Monitoring the World Health Organization International Code of Marketing of Breast-milk Substitutes in New Zealand: The Code in New Zealand

The Ministry of Health's (2007) reference document, the Code in New Zealand, contributes to creating an environment in which mothers can make the best possible feeding choice for their baby, based on impartial information and free of commercial influences, and to be fully supported in doing so.

The Ministry of Health is responsible for monitoring the implementation of two voluntary and self-regulatory codes of practice in the Code in New Zealand: the Ministry's Code of Practice for Health Workers; and the Infant Nutrition Council Code of Practice for the Marketing of Infant Formula in New Zealand.

For more information about the Code in New Zealand, go to: www.health.govt.nz/our-work/who-code-nz

Health practitioners can support breastfeeding before, at the time of and after the birth by:

- providing accurate information on baby feeding options as part of antenatal care
- providing timely and culturally relevant information (Glover 2009)
- encouraging skin-to-skin contact between mother and baby following the birth
- advocating for mother–baby sharing of the same room in maternity services
- supporting the Baby Friendly Hospital Initiative (see information box below)
- providing timely referrals to professional breastfeeding support services such as:
  - a lactation consultant certified by the International Board of Lactation Consultant Examiners
  - breastfeeding group or peer support programmes
  - Plunket's Lactation Consultant Service (Plunketline 0800 933 922, 24 hours)
  - La Leche League (breastfeeding advice and support) https://lalecheleague.org.nz/

Baby Friendly Hospital Initiative (BFHI)

BFHI is an international programme that the World Health Organization and the United Nations Children's Fund (UNICEF) launched in 1991. BFHI aims to ensure all maternity services become centres of breastfeeding support. Worldwide, more than 20,000 hospitals in 156 countries are BFHI accredited.

In New Zealand, all maternity services are required to achieve and maintain BFHI accreditation. Currently 99.85 percent of babies born in national maternity services are delivered in BFHI-accredited facilities. Eighty percent of all babies are exclusively breastfed on discharge from BFHI facilities.

For more information, go to: www.babyfriendly.org.nz

Everyone can encourage:

- community organisations and facilities to be breastfeeding friendly – for more information, go to: www.babyfriendly.org.nz
- workplaces to be aware of and act on their obligations[36] to support employees wanting to continue breastfeeding on their return from maternity leave.

For more information about breastfeeding and work, go to:

www.health.govt.nz/your-health/pregnancy-and-kids/first-year/helpful-advice-during-first-year/breastfeeding-perfect-you-and-your-baby/breastfeeding-and-returning-work

www.healthed.govt.nz/resource/breastfeeding-and-working

www.employment.govt.nz/hours-and-wages/breaks/breastfeeding-at-work/

For more information on parental leave, go to:

www.employment.govt.nz/leave-and-holidays/parental-leave/eligibility/eligibility-table/

36 The Employment Relations (Breaks, Infant Feeding and Other Matters) Amendment Act 2008 requires employers to provide appropriate facilities and breaks for employees who wish to breastfeed during work, where it is reasonable and practicable.

Information on breastfeeding and supporting breastfeeding is available from:

- Breastfeeding NZ – You Tube channel: www.youtube.com/user/breastfeedingnz
- BreastFedNZ App: www.breastfednz.co.nz
- Ministry of Health:

  www.health.govt.nz/our-work/life-stages/breastfeeding

  www.health.govt.nz/our-work/life-stages/breastfeeding/health-practitioners

  www.health.govt.nz/your-health/pregnancy-and-kids/first-year/helpful-advice-during-first-year/breastfeeding-perfect-you-and-your-baby

Kōrero mō te Taumaha o te Tinana **Body Weight Statement**

Making good choices about what you eat and drink and being physically active are important to achieve and maintain a healthy body weight

When you are pregnant, talk to your midwife or doctor about the right amount of weight to gain during pregnancy. This amount is different for each person

Reasons for the recommendation

In recent years, New Zealand's rate of obesity has been one of the highest in the Organisation for Economic Co-operation and Development[37] (OECD 2017).

- The eating pattern described in Eating Statements 1, 2 and 3 is rich in the essential nutrients the body needs. It is linked with less weight gain (especially if the person eats foods that are low in energy density and is also physically active).
- If a person is a healthy weight, they are more likely to stay active and well. They are at lower risk of developing type 2 diabetes, heart disease, some cancers, osteoarthritis, sleep apnoea and fertility problems and are less likely to have a stroke.
- Excess body weight impacts on these diseases because it affects insulin resistance, blood glucose, blood lipids, blood pressure, hormone imbalances and pressure on joints.
- Eating a healthy diet and being a healthy body weight is related to better fertility in women and men (Gaskins and Chavarro 2018; Reynolds and Gordon 2018).
- The first treatment option for losing weight or staying at a healthy body weight should involve a comprehensive lifestyle approach that includes diet, physical activity (including sleep) and behavioural strategies (such as the Food, Activity, Behaviour (FAB) approach) described in *Clinical Guidelines for Weight Management in New Zealand Adults* (Ministry of Health 2017).

37 The OECD provides a forum for governments from its 34 member countries to work together on issues of economic, social and environment importance (www.oecd.org).

Women who are pregnant

Weight gain is expected and normal for women during pregnancy due to the growth of the baby, placenta and amniotic fluid. However, too much extra weight during pregnancy can lead to adverse outcomes for the mother and/or baby (Ministry of Health 2014b).

- By gaining the right amount of weight for her body size, a pregnant woman is more likely to have a healthy pregnancy, normal birth and a healthy baby regardless of her body mass index (BMI) score (Ministry of Health 2014b).
- Gaining too much weight increases the chances that the pregnant woman will have high blood pressure, gestational diabetes and a big baby (Ministry of Health 2014b). Having a big baby can lead to birth complications.
- Gaining too little weight during pregnancy is associated with premature birth and increased risk of a low birthweight baby (Alavi et al 2013; Chung et al 2013).

Table 7 sets out a guide to the appropriate weight gain for women during pregnancy, based on their BMI.

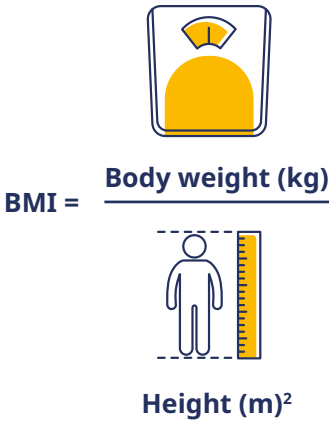
We do not recommend losing weight during pregnancy because this increases the risk of having a low birthweight baby (Catalano et al 2014).

Background

Defining overweight and obese

A person is overweight or obese when their body has abnormal or excessive fat that may harm health. Body mass index is an index that calculates weight in relation to height to give a BMI score that indicates which body weight category a person belongs to (Figure 5). To work out a person's BMI score, divide their weight in kilograms by their height in metres squared (kg/m^2).

Figure 5: Body weight categories



Body weight category	BMI score (kg/m²)	Risk of other diseases
Underweight	≤ 18.5	Low risk of other diseases due to body weight but at higher risk of other health problems
Healthy weight	18.5–24.99	Average risk
Overweight	25–29.99	Increased risk
Obese:	≥ 30	Substantially increased risk:
Obese (class I)	30–34.99	Moderate risk
Obese (class II)	35–39.99	Severe risk
Obese (class III)	≥40	Very severe risk

Source: Adapted from WHO (2000)

For example, to calculate the BMI of someone who is 1.81 metres tall and weighs 88 kilograms, divide 88 by 1.8m squared (1.8 x 1.8 = 3.3) which = 27.

$$\frac{88}{3.3} = \textbf{BMI of 27 (overweight)}$$

To use the Ministry of Health's healthy weight BMI calculator, go to: www.health.govt.nz/your-health/healthy-living/food-activity-and-sleep/healthy-weight/healthy-weight-bmi-calculator

Use the same BMI cut-off points for all adults

The aim of setting BMI cut-off points is to identify people or populations at higher risk of health conditions linked with increasing BMI.

The health risks linked with increasing BMI begin at a BMI of 25 in all population groups and continue to increase as BMI increases. The World Health Organization recommends using the same BMI cut-off points for all adults no matter what their age, sex or ethnicity is (WHO 2000).

BMI is a useful population-level measure of who is overweight and the rate of obesity because it is relatively easy to measure. However, BMI does not differentiate between body weight due to muscle mass and body weight due to fat, so it is only a crude measure of body fatness at an individual level.

Waist circumference provides useful additional information, especially if it seems that people without a high BMI have excess intra-abdominal fat (Table 7). Waist circumference is measured at the midpoint between the lowest rib and the iliac crest (hip).

Table 6: World Health Organization waist circumference thresholds

	Waist circumference threshold	
Risk of metabolic complications	**Male**	**Female**
Average risk	< 94 cm	< 80 cm
Increased risk	94–102 cm	80–88 cm
Substantially increased risk	> 102 cm	> 88 cm

Source: Adapted from WHO (2000)

Table 7: Appropriate total weight gain during pregnancy for different BMI categories

Pre-pregnancy or early pregnancy BMI (kg/m^2)	Total weight gain range during pregnancy (kg)
Underweight (BMI <18.5)	12.5 kg to 18 kg
Healthy weight (BMI 18.5 to 24.9)	11.5 kg to 16 kg
Overweight (BMI 25 to 29.9)	7 kg to 11.5 kg
Obese (BMI 30 or more)	5 kg to 9 kg

Source: Institute of Medicine and National Research Council (2009)

Note: After the first 12 weeks of pregnancy, BMI is less reliable as a way of determining the appropriate trajectory for gaining weight during pregnancy and identifying high-risk pregnancies.

What New Zealand adults are doing

In 2018/19, in New Zealand:

33%

of adults[38] were a healthy body weight

34%

were overweight

31%

were obese

x3

Obesity rates in New Zealand adults

Tripled in the last three decades to 30 percent yet has remained relatively stable since 2012/13.

(Ministry of Health 2014a)

1.8 x

as likely to be obese

Māori were 1.8 times as likely to be obese than non-Māori, and Pacific adults were 2.5 times as likely to be obese as non-Pacific adults.

1.6 x

more likely to be obese than adults living in the least deprived areas

Adults living in the most socioeconomically deprived neighbourhoods.

38 The 2018/19 New Zealand Health Survey (Ministry of Health 2019) provides data for adults from 15+ years of age. The Eating and Activity Guidelines define adults as 19–64 years.

Achieving and staying at a healthy weight

Being a healthy weight is about balancing energy intake with energy expenditure.

People gain weight when they consume more energy than they use. What a person eats and drinks and how much activity they do directly affect whether they gain, lose or stay the same weight.

To avoid gaining excess weight and to lose weight:

- choose nutritious foods that are low in energy (for example, with very little fat and no added sugar)
- drink plain water instead of sugary drinks and/or alcoholic drinks
- eat smaller portions of food
- sit less and move more
- be as active as possible.

For more information on the clinical assessment of overweight or obesity and options for treating weight management, see the *Clinical Guidelines for Weight Management in New Zealand Adults* (Ministry of Health 2017) at: www.health.govt.nz/publication/clinical-guidelines-weight-management-new-zealand-adults

Healthy weight gain for women who are pregnant

- Eat healthy foods and keep active to try to support healthy weight gain.
- Adjust the amount of extra food needed for optimal weight gain during pregnancy. A midwife, doctor or dietitian can advise on the right amount of weight to gain in pregnancy. Table 7 provides a guide.
- A woman does not need much extra food when pregnant. She does not need to 'eat for two'.
- In the first 12 weeks of pregnancy, aim to eat the same amount as usual, focusing on nutrient-dense foods.
- From 12 weeks onwards, energy needs may increase to support the baby's growth. Add an extra healthy snack during the day or extra healthy food to a meal.
- Women who enter pregnancy with excess weight may not need much extra food.

Appetite and other dietary issues during pregnancy

Appetite may vary during different stages of pregnancy. It is important to focus on having nutritious foods. Some pregnant women feel nauseous, especially early in pregnancy, and may experience indigestion, especially later in pregnancy. Cravings can be a normal part of pregnancy. Pregnant women often crave fatty, sugary and salty foods but eating too many of these foods can lead to excess weight gain and replace healthier foods.

Here are some tips for healthy eating during pregnancy.

- Have small, regular healthy meals and snacks and keep drinking fluids (water is best).
- Avoid fatty or spicy food if you are experiencing nausea or indigestion.
- Family and whānau can support pregnant women by preparing meals.
- Strategies that may help you to deal with pregnancy cravings for less healthy foods include chewing sugarless gum, having a hot drink, distracting yourself with another activity, having snacks on hand or switching the food craved to a similar but healthier food (such as a cup of hot chocolate instead of a chocolate bar).

Healthy weight loss for women who are breastfeeding

Breastfeeding can help a woman to return to her pre-pregnancy weight. A healthy diet, regular, moderate-intensity physical activity and gradual weight loss will not reduce a woman's ability to breastfeed or the quantity or quality of her breast milk (National Institute for Health and Care Excellence 2010).

For guidance on optimal weight gain for individual women during pregnancy, refer to: Ministry of Health. 2014. *Guidance for Healthy Weight Gain in Pregnancy*. URL: www.health.govt.nz/publication/guidance-healthy-weight-gain-pregnancy


GS
GK

Te Kōrero Korikori **The Activity Statements**

The Ministry of Health advises that, to live long and healthy lives, New Zealand adults should make regular physical activity part of their lifestyle. They should do a range of activities rather than just one type, as different types of activities are good for health in different ways. For example, aerobic activities are good for the heart, lungs and reducing the risk of developing various non-communicable diseases. In contrast, resistance activities are good for strengthening muscles, increasing lean body mass and reducing the risk of falls. Both aerobic and resistance activities can help improve insulin sensitivity (to varying degrees).

Around the world, physical inactivity is the fourth leading risk factor for non-communicable diseases and is estimated to cause between 3.2 million and 5 million deaths a year, as well as around 27 percent of type 2 diabetes, 30 percent of ischaemic heart disease and 21 to 25 percent of breast and colon cancer (WHO 2015b). This is why it is so important to be physically active.

Physical activity is influenced by the type, context, duration, frequency and intensity of activity. Together these factors are known as the 'five dimensions of physical activity' (see Figure 6). When health practitioners are recommending physical activity for health benefits, they should consider all of these dimensions.

Evidence

Support for the Activity Statements comes from a systematic graded review of evidence from the Australian Government's Department of Health. *The Development of Evidence-based Physical Activity Recommendations for Adults* (18–64 years) (Brown et al 2012) was written in 2012 and released in 2014. It summarises the scientific evidence on the relationship between physical activity and health. It also grades the level of evidence to support the Department of Health's Physical Activity Statements according to the NHMRC's *Additional Levels of Evidence and Grades for Recommendations for Developers of Guidelines* (NHMRC 2009b).

We applied the NHMRC quality rating system to all the Activity Statements. The grades we used are:

- 'convincing association', which indicates that the 'evidence can be trusted to guide clinical practice'
- 'probable association', indicating that the evidence 'can be trusted in most situations'
- 'suggestive association', where 'the body of evidence provides some support for the recommendations but care should be taken in its application' (NHMRC 2009b).

Evidence on physical activity for pregnant women

For pregnant women without serious pre-existing health conditions, regular physical activity is associated with a range of benefits for both the baby and the pregnant woman.

In general, pregnant women should avoid starting new sports and new strenuous activities during pregnancy.

If a pregnant woman has any serious health conditions (see 'Safety considerations in pregnancy' on page 120), she should not undertake moderate or vigorous aerobic physical activity throughout her pregnancy.

Pregnant women should seek advice from their lead maternity carer if they:

- are thinking about increasing the duration or intensity of activity, or starting new activities
- have any serious pre-existing health conditions.

Evidence on the benefits of physical activity for the health of pregnant women comes from the *2019 Canadian guideline for physical activity throughout pregnancy* (Mottola et al 2018).

The Canadian guideline recommendations have been assessed using the Grading of Recommendations Assessment, Development and Evaluation (GRADE) system. The recommendations are graded as strong or weak. Strong recommendations are those where 'most or all pregnant women will be best served by the recommended course of action', while weak recommendations are those where 'not all pregnant women will be best served by the recommended course of action; there is a need to consider other factors such as the individual's circumstances, preferences, values, resources available or settings'.

Figure 6: The five dimensions of physical activity

Duration

The length of time an activity takes

- Dependent on age, intensity and an individual's capacity.
- At least 2½ hours moderate physical activity each week (or equivalent vigorous).
- 'Snacktivity' – bouts of 10 minute activity.

Frequency

The number of times an activity is performed

- Spread physical activity throughout the week.
- Stay physically active for life for continued benefit.

Context

Why, where or how an activity is performed

- Active recreation*, exercise and sport.
- Paid/unpaid work.
- Active transport* (requires a safe environment).
- Activities of daily living* – eg, gardening, housework and shopping.

Type

One activity can involve more than one of the types and the recommended type depends on the risk factors or medical conditions

- Aerobic*.
- Anaerobic*.
- Muscle strengthening/resistance*.
- Weight bearing.

Intensity

The effort required by a person to perform an activity

- Measured in metabolic equivalents (METs). One MET is the energy required to perform core functions for one minute at rest.
- The Statements use the terms 'light', 'moderate' and 'intense' for different levels of physical activity:
  - Most people can do moderate physical activity (3–5.9 METs).
  - They gain extra benefit with vigorous physical activity (>6 METs).
  - Some people may benefit from doing light physical activity (1.5–2.9 METs), which is better than doing no activity.

* See Glossary for a definition of these terms. Source: Adapted from Ministry of Health (2001)

Kōrero Korikori 1
Activity Statement 1

Sit less, move more!
Break up long periods of sitting

Reasons for the recommendation

Based on the NHMRC quality rating system, the evidence for recommending sitting less and moving more is convincing.

The evidence indicates that sitting for long periods during waking time increases the risk of poor general health, type 2 diabetes and a range of weight-related health conditions such as obesity. Prolonged sitting increases insulin resistance and circulating blood sugar levels, and may increase the risk of type 2 diabetes independently of physical activity.

- People who sit for less than eight hours a day in total are more likely to have better health outcomes than those who sit for more than eight hours a day.

Sitting for less time can improve a person's health, even if they are already physically active.

- Sitting for long periods increases the risk of developing non-communicable diseases. Its effect is independent of the time a person spends being physically active.
- Doing 2½ hours of physical activity each week may not be enough to offset the negative effects of prolonged sitting time.

There is not enough evidence to identify the effect of too much sitting on cancer, cardiovascular disease and depression.

Source: Brown et al (2012)

Background

Over the past few decades, New Zealanders have increasingly spent less time being physically active and more time sitting. People are sitting for longer due to the impact of the built environment, transport, technology (computers, laptops, tablets, smartphones, television, DVD, internet and e-readers) and individual preferences. Social norms and the physical environment reinforce these influences. For example, tables and chairs laid out for meetings, office and call centre desks, and theatre, cinema and stadium seating may encourage people to sit more (Owen et al 2011).

Breaking up periods of sitting with regular movement throughout the day is important for good health. People should take regular breaks from sitting in addition to doing 2½ hours of moderate physical activity each week.

Sit less and move more

The benefits that physical activity brings to health begin as soon as a person starts moving.

- View standing and moving as an opportunity, not an inconvenience.
- Replace sitting with gentle physical activity such as standing and walking.

What New Zealand adults are doing

Among New Zealand adults (aged 18–64 years), between 2002 and 2004:

4 hours

a day in total people sat on average

Sitting times for men and women were not significantly different

Higher levels of sitting

Younger, higher-educated and less physically active adults.

Source: Bauman et al (2011)

How to reduce sitting time

- Break up sitting time throughout the day for at least a few minutes every hour, preferably more frequently.
- Limiting the time spent sitting in front of a screen gives more time for physical activity.

At work or study

Break up long periods of sitting by standing up to stretch regularly. Stand during meetings, when taking phone calls or when reading; walk to talk to colleagues instead of phoning, texting or emailing them; and take regular standing breaks from driving. Using a height-adjustable table allows for changing between standing and sitting.

Travelling

Where possible, replace regular car journeys with public transport or active transport. Try walking, cycling or scooting for short trips. Reduce sitting time during travel by standing on buses, trains and ferries. Get off the bus or train one stop early and walk the rest of the way. Take regular breaks when travelling in a car or on a motorbike.

Leisure

Limit television, computer use or other seated activities when at home. During leisure time, turn off the TV or computer and any other screens and go for a walk. Stand up and stretch during advertisement breaks on TV. Stand up while fishing, preparing food, checking emails or making phone calls.

Activity for people with physical disabilities

Some people may not be able to stand due to their health condition, such as people who use wheelchairs or who have limited mobility. For these people, the focus should be on doing regular chair-based activities such as arm cranking, wheelchair circuits, wheeling with friends and wheelchair sports or programmes such as 'Sit and Be Fit' or 'Chairobics'. These activities increase the heart rate and breathing as well as strengthening muscles.

Energetic seated activities can benefit health too

Seated activities that use up a lot of energy such as waka ama/oe vaka, rowing and cycling are excellent ways to get moving and can reduce the risk of developing poor health. These seated activities can help to reduce the risk of developing type 2 diabetes and becoming overweight or obese. In addition, lower limb movements can help offset the negative health effects of prolonged sitting.

Kōrero Korikori 2
Activity Statement 2

Do at least 2½ hours of moderate or 1¼ hours of vigorous physical activity spread throughout the week

Pregnant women should aim to do 2½ hours of moderate-intensity physical activity spread over at least 3 days per week (preferably some activity every day)

Reasons for the recommendation

Based on the NHMRC quality rating system, the evidence is:

- convincing for the recommendation to do at least 2½ hours of moderate or 1¼ hours of vigorous physical activity each week
- probable for the recommendation to spread physical activity throughout the week Doing regular physical activity[39] helps to reduce the risk of developing: type 2 diabetes (whether or not you lose weight); colon, endometrial and postmenopausal breast cancer; and anxiety, depression and stress. It can also help people diagnosed with these conditions to manage them.

Regular physical activity also reduces the risk of dying early from any cause.

Spreading physical activity across the week has the greatest health benefits.

Growing evidence indicates that people can get extra health benefits (for example, a reduced risk of heart disease) by doing some vigorous physical activity rather than just moderate physical activity.

Source: Brown et al (2012)

39 Regular physical activity is doing at least 2½ hours of moderate physical activity or 1¼ hours of vigorous physical activity or an equivalent mix of moderate and vigorous physical activity spread throughout the week.

A strong recommendation (based on moderate-quality evidence), as assessed using the GRADE system, is that pregnant women without pre-existing health conditions should:

- do at least 2½ hours of moderate-intensity physical activity each week
- spread the activity over at least three days per week, but preferably be active every day.

At least 2½ hours of physical activity each week to stay healthy

The exact amount of physical activity needed for good health varies between individuals. However, doing 2½ hours of moderate physical activity (or the equivalent in vigorous activity) each week is the minimum recommended amount for achieving health benefits. This recommendation is based on epidemiological evidence on frequency, duration and intensity of activity.

Background

A finding from a worldwide study shows that physical inactivity is associated with 12.7 percent of all deaths in New Zealand. Physical inactivity also contributes to 7.9 percent of heart disease, 9.8 percent of type 2 diabetes, 13.1 percent of breast cancer and 14.1 percent of colon cancer (Lee et al 2012).

Key reasons for being physically active

Regular physical activity:

- improves the function of the heart, lungs and muscles, improves mental health and makes it easier to do activities of daily living (eg, vacuuming, washing the car and shopping)
- improves sleep, wellbeing and quality of life
- increases levels of social interaction if the physical activity is done with friends, whānau or others.

Spread activity throughout the week

Any physical activity is good for health, but people get even more health benefits from being physically active every day, rather than doing it all on one or two days each week. To get regular physical activity, you can:

- do at least 30 minutes of moderate or 15 minutes of vigorous physical activity on five days each week or an equivalent combination of both
- break up your activity time each day into smaller, more frequent and manageable chunks such as 10 minutes at a time (known as ‘snacktivity’).

Physical activities that are best for health

Aerobic activities are great for the heart, lungs, overall fitness and wellbeing.

Any physical activity that raises the heart rate and makes breathing harder than normal is good for health, no matter what a person's level of fitness is to begin with. For example, walking is a great physical activity for most adults. It increases fitness, costs little or nothing, is low impact on the joints and has a low injury rate. It can also be done almost anywhere, does not require specialist equipment and can help to achieve all of the Activity Statements.

Health benefits of activity in pregnancy

Moderate aerobic and muscle strengthening activities are considered safe for most people and are encouraged in pregnancy as long as the woman does not have any pre-existing health conditions. Evidence does not support the idea that physical activity in a normal pregnancy increases risk of harm. For example, the research has shown that physical activity is not associated with miscarriage, stillbirth, neonatal death, preterm birth, premature rupture of membranes, neonatal hypoglycaemia, low birthweight, birth defects, induction of labour or birth complications.

Some potential benefits of physical activity in pregnancy are that it can improve:

- strength and stamina (heart and lung fitness), which are essential for labour
- muscular strength for carrying the baby and baby-related equipment
- posture, which can help reduce the risk and severity of backache
- circulation, which helps reduce the risk of varicose veins
- mood and post-birth recovery.

Physical activity during pregnancy can also potentially reduce the risk of:

- excess weight gain
- extended labour time
- the need for intervention, pain relief and caesarean section, forceps or Ventouse delivery
- problems such as leg cramps, high blood pressure and constipation
- pre-eclampsia
- gestational hypertension
- gestational diabetes
- urinary incontinence.

Pregnant women with serious pre-existing health conditions should seek advice

Pregnant women who have any serious pre-existing health conditions, or any concerns about physical activity, should discuss them with their lead maternity carer, who will be able to advise them of what they can do or who they should seek advice from.

What New Zealand adults are doing

Among New Zealand adults[40] in 2018/19:

51%

did at least 30 minutes of moderate activity or equivalent[41] spread over 5 or more days in the last week

Less likely to be physically active

Asian and Pacific peoples were less likely to be physically active than non-Asian and non-Pacific peoples.

Less likely to be physically active

People in the most socioeconomically deprived areas were less likely to be regularly physically active than those in the least deprived areas.

More likely to be physically active

Men were more likely to be regularly physically active than women across all age groups.

40 The 2018/19 New Zealand Health Survey (Ministry of Health 2019) provides data from adults aged 15+ years. The Eating and Activity Guidelines define adults as 19–64 years.

41 One minute of vigorous activity is equivalent to two minutes at moderate intensity.

What pregnant women in New Zealand are doing

In the Growing Up in New Zealand study[42]

60%

(approximately) of all mothers were physically active before pregnancy – that is, they fitted the Ministry of Health's definition of being active for at least 30 minutes on 5 or more days a week

- of this group, about 59 percent continued to exercise in their first trimester, and 70 percent of those women continued to exercise into the later stages of their pregnancies.
- among the group of women who were classified as inactive before pregnancy (39 percent), few women (4 percent) became active during pregnancy.

Source: Morton et al (2010)

42 The Growing Up in New Zealand longitudinal study recruited over 6,500 women in pregnancy in late 2008–2009 from Auckland, Counties Manukau and Waikato District Health Boards. The birth characteristics of the cohort are closely aligned with all New Zealand births between 2007 and 2010.

Kōrero Korikori 3
Activity Statement 3

For extra health benefits, aim for 5 hours of moderate or 2½ hours of vigorous physical activity spread throughout the week

Pregnant women should seek advice from a health care professional with specialist knowledge about the impact of vigorous-intensity activity if competing in events or if exercising significantly more than Activity Statement 2

Reasons for the recommendation

Based on the NHMRC quality rating system, the evidence is:

- convincing for the recommendation to do at least 5 hours of moderate or 2½ hours of vigorous physical activity each week for extra health benefits
- probable for the recommendation to spread physical activity throughout the week (Brown et al 2012).

New Zealand adults can achieve extra health benefits by doing 5 hours of moderate or 2½ hours of vigorous physical activity, or an equivalent mix of both, each week. For example, by doing this higher amount of activity, they can do even better at:

- reducing the risk of developing type 2 diabetes
- reducing the risk of gaining excess weight
- reducing depressive symptoms and anxiety
- increasing quality of life and wellbeing.

Activities that give the greatest health benefits

To achieve extra health benefits, people need to do activities that are suitable for overall health and wellbeing (ie, those needed to achieve Activity Statement 2), but for longer, more often or at a higher intensity.

One way to achieve this is through High-Intensity Intermittent (or Interval) Training (HIIT). HIIT involves short periods of vigorous-intensity activity with a brief recovery period in between. It can be an efficient use of time and is good for health as it can improve aerobic and anaerobic fitness, strength, power and speed. It can also increase heart health and insulin sensitivity and reduce blood pressure, cholesterol and abdominal fat.

Further evidence shows that doing more than 5 hours of moderate (or 2½ hours of vigorous) physical activity each week can help prevent and manage some cancers. This evidence is:

- convincing for colon and postmenopausal breast cancer
- probable for endometrial cancer
- suggestive for pre-menopausal breast, lung and ovarian cancer (WCRF and AICR 2007; Brown et al 2012).

Generally, people can gain extra health benefits by increasing what they do in one or more of the five dimensions of activity that Figure 6 describes. That is, they can increase the length or intensity of activity sessions or do more sessions.

When pregnant, very active women, women participating in competitions, and professional or semi-professional sportswomen should seek the advice of an experienced health care professional with specialist knowledge about the impact of vigorous-intensity activity on the health of the mother and baby, in partnership with their lead maternity carer.

Background

Most New Zealand adults who participate in sport and recreation do so for health and fitness reasons (91 percent). Other common reasons for participating in sport and recreation include enjoyment (88 percent) and social aspects (53 percent). Compared with all participants in the survey, Māori are more likely to report cultural reasons as one of the most significant motivators to participate. For Pacific peoples, a particular motivator is sporting performance (Sport New Zealand 2015).

To increase physical activity levels, consider:

- joining a club
- training for an event
- setting personal goals
- improving skills through practice
- encouraging others to participate.

What New Zealand adults are doing

Among New Zealand adults[43] in 2018/19:

45%

did at least 5 hours of moderate activity or equivalent[44] spread over 5 or more days in the last week

Less likely to be very physical active

People in the most socioeconomically deprived areas were less likely to be very physically active than those in the least deprived areas.

More likely to be very physically active[45]

Men were more likely to be very physically active than women across all age groups.

Less likely to be very physically active

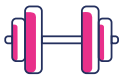
Asian and Pacific peoples were less likely to be very physically active than non-Asian and non-Pacific peoples.

43 The 2018/19 New Zealand Health Survey provides data from adults aged 15 + years. The Eating and Activity Guidelines define adults as 19–64 years.

44 One minute of vigorous activity is equivalent to two minutes at moderate intensity.

45 'Very physically active' means an adult does at least 60 minutes of moderate or 30 minutes of vigorous physical activity on five days each week, or an equivalent combination of both.

Kōrero Korikori 4
Activity Statement 4



Do muscle strengthening activities on at least two days each week

Pregnant women may also benefit from doing stretching and pelvic floor muscle training daily

Reasons for the recommendation

Based on the NHMRC quality rating system, the evidence is either convincing or probable for the recommendation to do some muscle strengthening activities on at least two days each week.

Regular muscle strengthening and weight-bearing activities help to reduce the risk of developing metabolic syndrome, pre-diabetes, osteoporosis and osteoarthritis and of having falls and fractures.

Muscle strengthening activities can be useful in managing osteoporosis and osteoarthritis.

Source: Brown et al (2012)

Some evidence, albeit limited as assessed using the GRADE system, is that pregnant women should do pelvic floor muscle training[46] daily to reduce urinary incontinence.

46 For the greatest benefit, women should get instruction on the proper technique from a pelvic health physiotherapist.

Background

Muscle strengthening activities help to keep the body strong and agile for doing everyday activities such as walking, hanging out the washing, gardening and carrying shopping. People should do muscle strengthening activities in addition to aerobic activities.

Do specific muscle strengthening activities to target all five major muscle groups (arms, legs, chest, abdominals and back) on two or more days each week (WHO 2010).

The best activities for muscle strengthening

Any physical activity that provides resistance to the muscles will maintain or increase muscle strength, mass, power and endurance.

Many people believe that doing muscle strengthening activities means going to the gym to lift weights. However, there are plenty of other ways to strengthen muscles. For example:

- do push-ups, sit-ups and squats at home and at no cost
- carry children or heavy bags of shopping
- try waka ama/oe vaka, rock climbing, aqua aerobics, aqua jogging, walking up hills, climbing stairs or digging in the garden.

Weight-bearing impact activities such as walking, running, jumping and rope skipping are good ways of strengthening muscles and bones.

Aerobic activities with an element of resistance

Aerobic activities such as swimming, walking up hills and cycling up hills or into a head wind can strengthen muscles as they include an element of resistance.

Helpful muscle strengthening activities during pregnancy

Women should do **pelvic floor muscle training** before, throughout and after pregnancy as it helps strengthen the pelvic floor muscles. Strong pelvic floor muscles can help make incontinence and pelvic organ prolapse less likely.

Walking is a great low-impact activity. It helps to maintain physical fitness and may help to ease aching legs or a sore back. Take it slowly and rest as often as you need. Gentle walking in early labour can help encourage the progression of labour.

Low-impact aerobics and yoga can be helpful. Some gyms and yoga practitioners run classes specifically for pregnant women. Avoid excessive stretching as ligaments are softened due to the hormones produced in pregnancy. Stretching should never feel painful.

Kōrero Korikori 5
Activity Statement 5

Doing some physical activity is better than doing none

All pregnant women without serious health conditions should be regularly physically active through a variety of aerobic and resistance activities

Reasons for the recommendation

Based on the NHMRC quality rating system, the evidence is convincing for the recommendation that doing some physical activity is better than doing none.

Doing any physical activity is beneficial for health.

- Generally the more light activity and the less sitting a person can do, the better it is for their health.
- A person benefits more when they do moderate activity as well, even if that activity is less than the 2½ hours recommended in Activity Statement 2 (Brown et al 2012).

A strong recommendation (based on strong-quality evidence), as assessed using the GRADE system, is that pregnant women without serious pre-existing health conditions should combine a variety of aerobic and resistance activities to achieve health benefits.

- Activities of daily living such as housework are usually light physical activity.
- Although these activities will not be enough to meet the recommended 2½ hours of moderate physical activity each week, they will provide some benefits to overall health.
- Importantly, activities of daily living can replace sitting time.

Background

The benefits of regular physical activity to health, longevity, wellbeing and protection from serious illness have long been established. They easily surpass the effectiveness of any drugs or other medical treatment. The challenge for everyone, young and old alike, is to build these benefits into their daily lives (UK Department of Health 2009).

Proportionally, a person who is less physically active to start with makes greater health gains when they increase their physical activity than a person who is already more active. Even small, sustained increases in physical activity can improve health.

Physical activity for pregnant women depends on the individual

As with other New Zealand adults, pregnant women are likely to benefit from a combination of aerobic and muscle strengthening activities. For information on the health benefits associated with physical activity during pregnancy, see Activity Statement 2.

What a woman can do during pregnancy is individual to her. She may need to modify her physical activity level as the pregnancy progresses, and if she finds it constantly tiring and uncomfortable. The woman's physical ability will also change as her baby grows and the weight redistributes so her plans should be flexible and realistic. We encourage the woman to do what she can and return to following these Guidelines when she is able to.

Pregnant women should listen to their bodies so that they slow down and rest when they need to.

Activities for people with health conditions

People with health conditions such as morbid obesity or heart conditions should check with a health practitioner or physical activity specialist to identify appropriate activities for them.

A Green Prescription is one example of a service that can provide personal advice and support on becoming more physically active as part of managing an individual's health. A doctor, practice nurse or other health practitioner who has access to the patient's full medical history can give a Green Prescription.

For more advice on the Green Prescription programme, go to: www.health.govt.nz/our-work/preventative-health-wellness/physical-activity/green-prescriptions

What New Zealand adults are doing

Among New Zealand adults[47] in 2018/19:

14%

did little or no physical activity (less than 30 minutes in total) in the last week

More likely to have done little or no physical activity

Women were more likely than men to have done little or no physical activity in the past last week.

More likely to have done little or no physical activity

People living in the most socioeconomically deprived areas were more likely to do little or no physical activity compared with people in the least deprived areas.

47 The 2018/19 New Zealand Health Survey (Ministry of Health 2014a) provides data from adults aged 15 + years. The Eating and Activity Guidelines define adults as 19–64 years.

Be social

People benefit from physical activity when they do it alone, but they may gain even more benefit when they do it with others. Regular physical activity with family, whānau and friends:

- is good for overall health and can motivate people to stay active
- can reduce the feeling of social isolation and increase social contact with people, which helps to reduce stress levels and increase psychological wellbeing (although the benefits may take time to build up)
- can have positive effects on the health of individuals and communities when people see physical activity as a regular and normal thing to do.

Keep physical activity fun and varied

Try to make physical activity fun and sustainable as this makes regular participation more likely (especially when doing it for longer).

- Change routes and routines every now and then to help avoid boredom.
- Use walking tracks, parks and hills or try a new physical activity or sport.
- Swim at the beach or in the river.
- Walk with family, whānau and friends.
- Break up physical activity into smaller, more manageable chunks (known as 'snacktivity').

Physical activity need not be hard work

Doing some physical activity doesn't need to be hard.

People are more likely to do physical activities regularly when they are enjoyable and easy to add to their daily routine. For example, you can add some physical activity into your daily life by:

- playing actively with your children or grandchildren
- walking, cycling or riding a scooter to places such as work, church, shops, the library, sports training or the fruit and vegetable market
- turning on the music and dancing
- taking the stairs instead of the lift
- doing active jobs around the house such as cleaning, vacuuming, gardening, hanging the washing on the line, mowing the lawn or taking on do-it-yourself (DIY) tasks.

Te whakaaro haumaru mō te korikori tinana
Safety considerations for physical activity

No physical activity is completely risk-free. However, the health benefits of being physically active generally outweigh the risks.

Taking appropriate actions before, during and after physical activity can help to reduce the chances of injury and illness.

Simple ways of reducing the risk of injury and illness during physical activity are to:

- be safe, visible, aware and sun smart – wear appropriate clothing and be physically active in safe, well-lit areas
- use appropriate safety equipment for the activity or sport you are doing
- drink an appropriate amount of plain water
- avoid alcohol immediately before, during and immediately after physical activity.

If people have an existing health condition or have been inactive, they should start off slowly and gradually build up to the physical activity levels that we recommend in the Activity Statements.

Sport and recreation injuries

Low-impact, non-contact activities such as walking, gardening, aqua jogging, aqua aerobics, swimming and golf produce fewer injuries than contact sports (ACC 2014; Brown et al 2012). Adults who have previously injured themselves are also at higher risk of getting another injury than those who have not (ACC 2014).

You can prevent most injuries by improving fitness, warming up, stretching and cooling down properly, and taking appropriate safety precautions when preparing for physical activities (ACC 2014).

If you are considering playing sports, visit the Accident Compensation Corporation (ACC) website. It has a SportSmart plan for reducing the risk of common sporting injuries: www.accsportsmart.co.nz

According to Australia's *Development of Evidence-based Physical Activity Recommendations for Adults (18–64 years)* (Brown et al 2012), generally people who are moderately active on a regular basis have a lower risk of having a heart attack than those who do little or no physical activity. However, it is important to note that, although the chances are very small, people have a higher risk of sudden death or heart attack during vigorous physical activity (Brown et al 2012). Therefore, if you have not been physically active for some time (or ever) and wish to do vigorous physical activity, you should speak to an appropriately trained health practitioner for advice on how to be safe during physical activity.

Safety considerations in pregnancy

Any physical activity carries risks as well as benefits, but the risks associated with regular moderate activity in low-risk pregnancies are small. Risks in pregnancy may include reduced blood supply to the baby, low blood sugar, overheating the baby, premature labour, dizziness or fainting, and strains and sprains.

We advise pregnant women to seek further advice from their lead maternity carer, physiotherapist or sports doctor before starting any new kind of physical activity, if competing in events or if exercising significantly more than these Guidelines recommend.

Pregnant women should stop their activity and seek the advice of their lead maternity carer if they feel discomfort or excessive shortness of breath, dizziness or faintness that does not go away when they rest, severe chest pain, regular and painful uterine contractions, vaginal bleeding, or persistent loss of fluid from the vagina, which indicates rupture of the membranes.

With some conditions, such as a history of miscarriages, poorly controlled hypertension while pregnant, and multiple pregnancy, a woman may need to carefully consider the level and type of activity she undertakes during pregnancy. If a woman has previous or current experience of the serious health conditions listed in Box 1 below, she should not undertake moderate- or vigorous-intensity physical activity during her pregnancy.

See over page for a list of health conditions that present a moderate risk to the mother or baby. Women experiencing any of these conditions should consult with their health practitioner before undertaking physical activity.

Health conditions during pregnancy where women should not undertake physical activity

- Haemodynamically significant heart disease
- Intrauterine growth restriction in current pregnancy
- Poorly controlled hypertension
- Restrictive lung disease
- Cervical insufficiency/cerclage
- Multiple pregnancy at risk of premature labour
- Persistent second- or third-trimester bleeding
- Placenta previa after 26 weeks' gestation
- Premature labour during the current pregnancy
- Ruptured membranes
- Pre-eclampsia/pregnancy-induced hypertension
- Severe anaemia

Health conditions during pregnancy that present a moderate risk to the baby, where aerobic exercise is less advisable

- History of fetal growth restriction, miscarriage, premature birth or labour
- Cervical enlargement
- Unevaluated maternal cardiac arrhythmia
- Chronic bronchitis or other respiratory disorders
- Poorly controlled type 1 diabetes
- Extreme underweight
- Orthopaedic limitations
- Poorly controlled seizure disorder

Safety considerations for women who are breastfeeding

Breastfeeding mothers who are active need to follow the eating advice in these Guidelines and keep hydrated. Their activity level will not affect the amount of milk they produce. Breastfeeding women may need to consider the timing of physical activity; exercising immediately after breastfeeding may be more comfortable.

Papakupu **Glossary**

Active recreation consists of non-competitive activities undertaken for the purpose of wellbeing and enjoyment. Active recreation requires physical exertion above resting level and therefore excludes passive recreational activities such as watching TV, reading and sitting.

Active transport is the use of physical activity to travel from one place to another, eg, walking or cycling.

Activities of daily living (also called incidental activities) are light, everyday activities that people do as part of the normal day. Examples are vacuuming, washing the car and shopping.

Aerobic activities are continuous and rhythmic movement of the major muscles for a sustained period (10 minutes or more). Aerobic activity requires the heart to pump oxygenated blood round the body to the muscles for them to work for a sustained period of time.

Anaerobic activities are short, fast bursts of high-intensity activity that do not require oxygen to the muscles. A byproduct of anaerobic activity is the build-up of lactic acid in the muscles. Anaerobic activities are used to increase strength, speed and power. They include sprinting and weight lifting.

Built environment includes roads, pavements, cycle lanes, buildings, structures, gardens, sports fields, parks and other open spaces built or modified by humans to work, live and play in. The built environment (or lack of) is an essential factor affecting the walkability and bikeability of towns, cities and rural areas.

Carbohydrates are a large group of organic compounds made by plants. They are a form of stored energy and are found in food and some living tissue. Examples are sugars, starch and cellulose.

Cardiovascular disease affects the heart or blood vessels. It includes ischaemic heart attack, peripheral vascular disease, and stroke.

Carotenoids are phytochemicals (plant chemicals) that are found in vegetables and fruit, providing their red and yellow pigments. Many are precursors of, and plant sources of, vitamin A.

Eating pattern is the quantity, proportion and variety or combination of different foods, drinks and nutrients (when available) that a person has in their diet and how often the person usually consumes them.

Essential fatty acids are fatty acids needed for good health but, because they cannot be made in the body, people need to get them from their diet. They include alpha-linolenic acid (omega-3) and linoleic acid (omega-6).

Essential nutrients are substances that people must get from their diet because the body cannot make enough of them to meet its needs.

Exclusive breastfeeding means that the infant receives only breast milk. No other liquids or solids are given – not even water – with the exception of medicines.

Exercise is a subcategory of physical activity that is planned, structured and repetitively performed to improve or maintain physical fitness, physical performance or overall health.

Fast food is commercially prepared, processed food served in snack bars or restaurants as a quick meal or to take away.

Fatty acid is a component of fat that is an even- numbered chain of carbon atoms with hydrogen atoms attached, with a methyl group at one end and a carboxylic acid group at the other. Fatty acids are classified as short chain (fewer than 8 carbons), medium chain (8–12 carbons) and long chain (14 or more carbons).

Fermented drinks are made from the symbiotic culture of bacteria and yeast. Examples are kefir, kombucha and kvass.

Folic acid is a synthetic form of folate that is found in supplements and fortified foods and beverages. It is more bio-available and stable than folate in food.

Food reformulation programmes are where manufacturers of food products adjust their product recipes to make them healthier (usually by decreasing saturated fat, sugar or salt content) while still keeping their consumer appeal.

Free sugars are sugars that are not bound within a plant cell. This includes all sugars added to food during preparation, and they are naturally present in honey, syrups and fruit juices. Free sugars are digested and enter the blood stream more quickly than sugars that are intrinsic, or still bound within a plant cell.

Gestational diabetes is a form of diabetes that can occur in pregnant women. It occurs when the pregnant woman's body cannot produce enough insulin, resulting in high blood sugar.

Hāngi is a traditional Māori method of cooking, where food is placed on top of heated rocks in a pit oven, covered with wet cloths and then buried with soil to cook.

Healthy weight is commonly defined as a body mass index of 18.5 to 24.99 kg/m^2.

Hydrogenation is a process that adds hydrogen atoms to the double bonds of unsaturated fatty acids to increase the degree of saturation of the fatty acid in fat or oil. This increases the melting point of the fat. Manufacturers can use this process to change fat texture in food products and make them last longer.

Incidental safe sun exposure is exposure to the sun from everyday activities. People are often unaware of the exposure.

Inulin is a type of fibre. It is a group of naturally occurring polysaccharides (many glucose molecules linked together) produced by plants.

Intense sweeteners (also known as artificial sweeteners) are a type of food additive that provides little or no energy (kilojoules). Intense sweeteners permitted for use in New Zealand include aspartame, sucralose and stevia.

Intensity is the amount of energy a person needs to perform a physical activity. Intensity is often defined using the metabolic equivalent (MET) of a task.

- **Light-intensity activities** (1.5–2.9 METs) require a person to stand up and move around but do not increase the breathing and heart rate significantly. Examples are activities of daily living such as light housework, light DIY and shopping.
- **Moderate-intensity activities** (3–5.9 METs) make breathing harder than normal but a person should still be able to talk while doing them. Examples are brisk walking on flat ground, cycling (<16 km/h), playing with children, dancing and kapa haka.
- **Vigorous-intensity activities** (>6 METs) make breathing a lot harder than normal and a person would not be able to talk easily while doing them. Examples are brisk walking uphill, fast cycling (>16 km/h), running, fast swimming, and team sports (such as netball, touch, rugby and football).

Iodine is an essential component of thyroid hormones, which play a critical role in maintaining the body's metabolic rate and normal growth and mental development.

Kombucha is a sweet, fizzy drink made of yeast, sugar and fermented tea.

Legumes are the edible seed from the Leguminosae (also called Fabaceae) family. Examples are dried beans, peas, soya beans and lentils. Peanuts are also legumes.

Metabolic equivalents (METs) are a way of measuring how much energy people use, defined as the ratio of metabolic rate (and therefore the rate of energy consumption) during a specific physical activity to a reference metabolic rate. One MET is the energy a person needs to perform core functions for one minute at rest, such as breathing and pumping blood round the body.

Metabolic syndrome is the name for a group of risk factors for heart attack. The risk factors include diabetes and pre-diabetes, obesity, high cholesterol and high blood pressure (IDF 2006).

Muscle strengthening activities (or resistance activities) involve creating resistance to muscle movement in order to help increase skeletal muscle strength, power, endurance and muscle mass.

Neural tube defects are a group of severe birth defects where the brain, spinal cord or the covering of these organs has not developed properly. Spina bifida and anencephaly are the most common types.

Nutrients are substances that give the body the nourishment it needs to live and grow.

Obesity is commonly separated into three classes (WHO 2000):

- **Class 1**, defined as a body mass index of 30 to 34.99 kg/m^2
- **Class 2**, defined as a body mass index of 35 to 39.99 kg/m^2
- **Class 3,** defined as a body mass index of ≥40 kg/m^2.

Occupational activities are physical activities that people do as part of their work. They can help prevent health conditions and improve general health and may count towards achieving the weekly level of physical activity recommended.

Omega-3 fatty acids are polyunsaturated fatty acids found in oily fish, vegetable oils, nuts and seeds. Common omega-3 fatty acids in the body are alpha-linolenic acid, eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA).

Omega-6 fatty acids are polyunsaturated fatty acids found in vegetable oils, nuts and seeds. Common omega-6 fatty acids in the body are linoleic acid and arachidonic acid.

Osteoarthritis is a gradual loss of cartilage in the joints, which can lead to pain and inflammation.

Osteoporosis is a thinning of the bones (or 'porous' bones) resulting from a loss of bone density.

Overweight is weight above the weight that is considered healthy. Overweight is commonly defined as a body mass index of 25–29.99 kg/m^2.

Physical activity is any bodily movement produced by the skeletal muscles that use energy above resting level. It may be general movement or more planned, structured or repetitive movement such as exercise.

Physical inactivity in this document is defined as doing less than 30 minutes of activity each week. Note that physical inactivity is not the same as sedentary behaviour (see below).

Phytonutrients are bio-active chemicals in plant foods that are beneficial for health. Examples are antioxidants and bioflavonoids.

Polydextrose is a manufactured chain of glucose molecules linked together that is classified as a fibre.

Polysaccharides are long chains (≥ 10) of molecules of monosaccharides (glucose, fructose, galactose) linked together. They are classified as either starch (eg, amylose, amylopectin) or non-starch polysaccharides (eg, cellulose, pectin).

Pre-diabetes includes people with haemoglobin A1c (HbA1c) levels in the range of 41–49 mmol/mol.

Proteins are organic compounds that consist of large molecules of one or more long-chain amino acids. Proteins are part of all living organisms and provide structural components of body tissue such as muscle and hair and functional components like enzymes and antibiotics.

Saturated fat is a fat or fatty acid that has no double bonds between the carbon atoms of the fatty acid chain. It is found in the fat of animal products such as milk, cream, butter, cheese and meat, as well as in coconut and palm oil (used in manufactured foods such as pies, biscuits, cakes and pastries).

Sedentary behaviour refers to any waking activity characterised by an energy expenditure ≤1.5 METs and a sitting or reclining posture.

'Sit and Be Fit' and 'Chairobics' are sit-down exercise classes that use low-impact aerobic routines to meet the physical activity needs of people with limited movement.

'Snacktivity' is an approach to activity that breaks up the recommended amount of physical activity into smaller, more frequent and manageable chunks such as 10 minutes at a time.

Structured activities are physical activities or exercises that a club or individual has organised, such as group exercise activities and competitive sports.

Unsaturated fat is a fat or fatty acid in which there are one or more double bonds between carbon atoms of the fatty acid chain. Such fat molecules are: mono-unsaturated if each contains one double bond; and polyunsaturated if each contains more than one double bond.

Ngā tohutoro
References

ACC. 2014. *Preventing Injuries*. URL: www.acc.co.nz/im-injured/preventing-injury/ (accessed 24 September 2014).

Alavi N, Haley S, Chow K, et al. 2013. Comparison of national gestational weight gain guidelines and energy intake recommendations. *Obesity Reviews* 14: 68–85.

Aune D, Norat T, Romundstad P, et al. 2014. Breastfeeding and the maternal risk of type 2 diabetes: A systematic review and dose-response meta-analysis of cohort studies. *Nutrition, Metabolism and Cardiovascular Diseases* 24(2): 107–115.

Baker P, Machado P, Santos T, et al. 2020. Ultra-processed foods and the nutrition transition: global, regional and national trends, food systems transformations and political economy drivers. *Obesity Reviews* 1– 22. URL: https://onlinelibrary.wiley.com/doi/abs/10.1111/obr.13126 (accessed 6 September 2020).

Bauman A, Ainsworth BE, Sallis JF, et al. 2011. The descriptive epidemiology of sitting: a 20-country comparison using the International Physical Activity Questionnaire (IPAQ). *American Journal of Preventive Medicine* 41(2): 228–35.

Breda J, Whiting S, Encarnação R, et al. 2014. Energy drink consumption in Europe: a review of the risks, adverse health effects, and policy options to respond. *Frontiers of Public Health* 2: 134.

Brough L, Jin Y, Shukri NH, et al. 2015. Iodine intake and status during pregnancy and lactation before and after government initiatives to improve iodine status, in Palmerston North, New Zealand: a pilot study. *Maternal & Child Nutrition* 11: 646–55.

Brown IJ, Tzoulaki I, Candeias V, et al. 2009. Salt intakes around the world: implications for public health. *International Journal of Epidemiology* 38: 791–813.

Brown RC, Tey SL, Gray AR, et al. 2014. Patterns and predictors of nut consumption: results from the 2008/09. New Zealand Adult Nutrition Survey. *British Journal of Nutrition* 112(12): 2028–40.

Brown WJ, Bauman AE, Bull FC, et al. 2012. *Development of Evidence-based Physical Activity Recommendations for Adults (18–64 years).* Canberra: Australian Government Department of Health.

Butt P, Beirness D, Gliksman L, et al. 2011. *Alcohol and Health in Canada: A summary of evidence and guidelines for low risk drinking*. Ottawa: Canadian Centre on Substance Abuse.

Carson G, Cox L, Crane J, et al. 2010. Alcohol use and pregnancy consensus clinical guidelines. *Journal of Obstetrics and Gynaecology Canada* 32(8 Suppl 3): S1–S31.

Catalano PM, Mele L, Landon MB, et al. 2014. Inadequate weight gain in overweight and obese pregnant women: what is the effect on fetal growth? *American Journal of Obstetrics and Gynecology* 211(2): e137.

Chowdhury R, Sinha B, Sankar MJ, et al. 2015. Breastfeeding and maternal health outcomes: a systematic review and meta-analysis. *Acta Paediatrica* 104: 96–113.

Chung GY, Taylor RS, Thompson JMD, et al. 2013. Gestational weight gain and adverse pregnancy outcomes in a nulliparous cohort. *European Journal of Obstetrics and Gynaecology and Reproductive Biology* 167(2): 149–53.

Cook JL, Green CR, Lilley CM, et al. 2015. Fetal alcohol spectrum disorder: a guideline for diagnosis across the lifespan. *CMAJ* 188(3): 191–7.

Davidove ME, Dorsey JW. 2019. Breastfeeding: a cornerstone of healthy sustainable diets. *Sustainability* 11: 4958.

DGAC. 2010. *Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for Americans, 2010, to the Secretary of Agriculture and Secretary of Health and Human Services*. Washington, DC: Dietary Guidelines Advisory Committee, US Department of Agriculture, Agriculture Research Service.

Dwyer JT, Fulgoni III VL, Clemens RA, et al. 2012. Is 'processed' a four-letter word? The role of processed foods in achieving dietary guidelines and nutrient recommendations. *Advanced Nutrition* 3: 536–48.

Edwards H, Tui Rangipohutu I. 2014. Ūkaipōtanga: a grounded theory on optimising breastfeeding for Māori women and their whānau. PhD thesis, Auckland University of Technology, Auckland.

European Food Safety Authority Panel on Dietetic Products, Nutrition and Allergies (NDA). 2015. Scientific opinion on the safety of caffeine. *EFSA Journal* 13(5): 4102.

FAO and WHO. 2019. *Sustainable Healthy Diets – Guiding Principles.* Rome: Food and Agriculture Organization of the United Nations and World Health Organization.

FSANZ. 2009. *Review Report. Trans fatty acids in the New Zealand and Australian Food Supply*. Wellington: Food Standards Australia New Zealand. URL: www.foodstandards.govt.nz/publications/documents/TFAs_ Aus_NZ_Food%20_Supply.pdf (accessed 10 December 2014).

FSANZ. 2014. *Australia New Zealand Food Standards Code*. Wellington: Food Standards Australia New Zealand. URL: www.foodstandards.govt.nz/code (accessed 10 December 2014).

Gardella C. 2001. Lead exposure in pregnancy: a review of the literature and argument for routine prenatal screening. *Obstetrical and Gynecological Survey* 56(4): 231–8.

Gaskins A, Chavarro J. 2018. Diet and fertility: a review. *American Journal of Obstetrics & Gynecology* 218(4): 379–89.

Gerritsen S, Wall C. 2017. *How We Eat: Reviews of the evidence on food and eating behaviours related to diet and body size.* Wellington: Ministry of Health. URL: www.health.govt.nz/publication/how-we-eat-reviews-evidence-food-and-eating-behaviours-related-diet-and-body-size (accessed 2 October 2019).

Giglia R. 2010. Alcohol and lactation: an updated systematic review. *Nutrition & Dietetics* 67: 237–43.

Glover M, Waldon J, Manaena-Biddle H, et al. 2009. Barriers to best outcomes in breastfeeding for Māori: mothers' perceptions, whānau perceptions, and services. *Journal of Human Lactation* 25(3): 307–16.

Hauck FR, Thompson JN, Tanabe KO, et al. 2011. Breastfeeding and reduced risk of sudden infant death syndrome: a meta-analysis. *Pediatrics* 128(1): 103–10.

Health Canada. 2019. Caffeine and pregnancy. URL: www.canada.ca/en/public-health/services/pregnancy/caffeine.html (accessed 20 November 2019).

Heart Foundation. 2012. *Fish, Fish Oils and Heart Health: Evidence paper*. Auckland: Heart Foundation.

Heart Foundation. 2016. *Eggs and the Heart: Evidence paper*. Auckland: Heart Foundation.

Hooper L, Martin N, Abdelhamid A, et al. 2015. Reduction in saturated fat intake for cardiovascular disease. *Cochrane Database of Systematic Reviews* 6: CD011737. DOI: 10.1002/14651858. CDC011737 (accessed July 2015).

HPA. 2016. *Alcohol – the Body and Health Effects*. *A brief overview*. Wellington: Health Promotion Agency. URL: www.alcohol.org.nz/sites/default/files/field/file_attachment/2.1%20AL802_Body%20and%20health%20effects_AUG2016_Online.pdf (accessed 6 September 2020).

HPA. 2019. Evidence summary: alcohol and pregnancy. Wellington: Health Promotion Agency. URL: www.alcohol.org.nz/sites/default/files/images/Evidence%20summary%20-%20alcohol%20and%20pregnancy.pdf (accessed 6 September 2020).

Horta BL, Victora CG. 2013. *Long-term Health Effects of Breastfeeding: A systematic review*. Geneva: World Health Organization.

Horta BL, Loret De Mola C, Victora CG. 2015. Breastfeeding and intelligence: a systematic review and meta-analysis. *Acta Paediatrica, International Journal of Paediatrics* 104: 14–19.

IDF. 2006. The IDF Consensus Worldwide Definition of the Metabolic Syndrome. Brussels: International Diabetes Federation. URL: www.idf.org/e-library/consensus-statements/60-idfconsensus-worldwide-definitionof-the-metabolic-syndrome.html (accessed 14 August 2020).

Institute of Medicine and National Research Council. 2009. *Weight Gain during Pregnancy: Reexamining the guidelines*. Washington, DC: The National Academies Press.

Joshi PA, Smith J, Vale S, et al. 2019. The Australasian Society of Clinical Immunology and Allergy infant feeding for allergy prevention guidelines. *Medical Journal of Australia* 210(2): 89–93.

Koletzko B, Godfrey KM, Poston L, et al. 2019. Nutrition during pregnancy, lactation and early childhood and its implications for maternal and long-term child health: the early nutrition project recommendations. *Annals of Nutrition and Metabolism* 74(2): 93–106.

Lee I-Min, Shiroma EJ, Lobelo F, et al. 2012. Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy. *The Lancet* 380(9838): 219–29. URL: www.sciencedirect.com/science/article/pii/S0140673612610319 (accessed 23 April 2015).

LyngsØ J, HØst C, Ramlau-Hansen, et al. 2017. Association between coffee and caffeine consumption and fecundity and fertility: a systematic review and dose-response meta-analysis. *Clinical Epidemiology* 9: 699–719.

Mann J, Cummings JH, Englyst HN, et al. 2007. FAO/WHO Scientific Update on carbohydrates in human nutrition: conclusions. *European Journal of Clinical Nutrition* 61(Suppl 1): S132–37.

Mann J, Truswell AS (eds). 2012. *Essentials of Human Nutrition* (4th ed). Oxford: Oxford University Press.

McFadden A, Gavine A, Renfrew MJ, et al. 2017. Support for healthy breastfeeding mothers with healthy term babies. *Cochrane Database of Systematic Reviews* (2). DOI: 10.1002/14651858.CD001141.pub5 (accessed 6 September 2020).

Ministry of Health. 2001. *New Zealand Health Strategy. DHB Toolkit: Physical Activity.* Wellington: Ministry of Health.

Ministry of Health. 2007. *Implementing and Monitoring the International Code of Marketing of Breast-milk Substitutes in New Zealand: The Code in New Zealand.* Wellington: Ministry of Health.

Ministry of Health. 2012. *The Health of New Zealand Adults 2011/12: Key findings of the New Zealand Health Survey*. Wellington: Ministry of Health.

Ministry of Health. 2013. *Companion Statement on Vitamin D and Sun Exposure in Pregnancy and Infancy in New Zealand*. Wellington: Ministry of Health. URL: www.health.govt.nz/publication/companion-statement-vitamin-d-and-sun-exposure-pregnancy-and-infancy-new-zealand (accessed 6 September 2020).

Ministry of Health. 2014a. *Annual Report for the Year Ended 30 June 2014 including the Director-General of Health's Annual Report on the State of Public Health*. Wellington: Ministry of Health.

Ministry of Health. 2014b. *Guidance for Healthy Weight Gain in Pregnancy.* Wellington: Ministry of Health.

Ministry of Health. 2014c. *Indicator Interpretation Guide 2013/14: New Zealand Health Survey*. Wellington: Ministry of Health.

Ministry of Health. 2015. *Taking Action on Fetal Alcohol Spectrum Disorder (FASD): A discussion document.* Wellington: Ministry of Health.

Ministry of Health. 2017. *Clinical Guidelines for Weight Management in New Zealand Adults.* Wellington: Ministry of Health.

Ministry of Health. 2019. *Annual Data Explorer 2018/19: New Zealand Health Survey* [Data File]. URL: https://minhealthnz.shinyapps.io/nz-health-survey-2018-19-annual-data-explorer (accessed 6 September 2020).

Ministry of Health. 2020a. *Annual Report on Drinking-water Quality*. Wellington: Ministry of Health.

Ministry of Health. 2020b. Biochemical Data Explorer 2014/15: New Zealand Health Survey [Data File]. URL: https://minhealthnz.shinyapps.io/nz-health-survey-2014-15-biomedical (accessed 6 September 2020).

Ministry of Health. 2020c. *Longer, Healthier Lives: New Zealand's Health 1990–2017.* Wellington: Ministry of Health.

Ministry of Health. 2020d. *Whakamaua: Māori Health Action Plan 2020–2025.* Wellington: Ministry of Health.

Monteiro CA, Moubarac J-C, Cannon G, et al. 2013. Ultra-processed products are becoming dominant in the global food system. *Obesity Reviews* 14(Suppl 2): 21–8.

Morton SMB, Atatoa Carr PE, Bandara DK, et al. 2010*. Growing Up in New Zealand: A longitudinal study of New Zealand children and their families. Report 1: Before we are born*. Auckland: Growing Up in New Zealand.

Morton S, Grant C, Wall C, et al. 2014. Adherence to nutritional guidelines in pregnancy: evidence from the Growing Up in New Zealand birth cohort study. *Public Health Nutrition* 17(9): 1919–29.

Mottola MF, Davenport MH, Ruchat S, et al. 2018. 2019 Canadian guideline for physical activity throughout pregnancy. *British Journal of Sports Medicine* 52: 1339–46.

Moubarac J-C, Martins APB, Claro RM, et al. 2012. Consumption of ultra-processed foods and likely impact on human health: evidence from Canada. *Public Health Nutrition* 16(12): 2240–8.

National Institute for Health and Care Excellence. 2010. *Weight management before, during and after pregnancy. NICE Public Health Guidance* 27. Manchester: National Institute for Health and Care Excellence.

National Institute for Health and Care Excellence. 2017. *Surveillance report 2017 – Maternal and child nutrition (2008) NICE guideline PH11*. London: National Institute for Health and Care Excellence.

NHMRC. 2006. *Nutrient Reference Values for Australia and New Zealand including Recommended Dietary Intakes*. Canberra: National Health and Medical Research Council; Wellington: Ministry of Health.

NHMRC. 2009a. *Australian Guidelines to Reduce Health Risks from Drinking Alcohol*. Canberra: National Health and Medical Research Council.

NHMRC. 2009b. *NHMRC Additional Levels of Evidence and Grades for Recommendations for Developers of Guidelines*. Canberra: National Health and Medical Research Council.

NHMRC. 2011a. *A Modelling System to Inform the Revision of the Australian Guide to Healthy Eating.* Canberra: National Health and Medical Research Council.

NHMRC. 2011b. *A Review of the Evidence to Address Targeted Questions to Inform the Revision of the Australian Dietary Guidelines*. Canberra: National Health and Medical Research Council.

NHMRC. 2011c. *Review: Nutritional requirements and dietary advice targeted for pregnant and breastfeeding women.* Canberra: National Health and Medical Research Council. URL: www.eatforhealth.gov.au/sites/default/files/files/the_guidelines/n55n_pregnancy_breastfeeding_review.pdf (accessed 1 November 2019).

NHMRC. 2013. *Australian Dietary Guidelines*. Canberra: National Health and Medical Research Council. URL: www.eatforhealth.gov.au/sites/default/files/files/the_guidelines/n55_australian_dietary_ guidelines.pdf (accessed 17 August 2020).

Nordic Council of Ministers. 2014. *Nordic Nutrition Recommendations 2012: Integrating nutrition and physical activity*. Copenhagen: Nordic Council of Ministers. URL: https://www.norden.org/en/publication/nordic-nutrition-recommendations-2012 (accessed 1 May 2015).

New Zealand Food Safety (Ministry for Primary Industries). 2018. Mercury levels in fish. URL: www.mpi.govt.nz/food-safety/food-safety-for-consumers/whats-in-our-food/safe-levels-of-contaminants-in-food/mercury-levels-in-fish/ (accessed November 2019).

OECD. 2017. *Organisation for Economic Cooperation and Development: Obesity Update*. URL: www.oecd.org/health/health-systems/Obesity-Update-2017.pdf (accessed 11 August 2020).

Office of the Prime Minister's Chief Science Advisor and Royal Society Te Apārangi. 2018. *The Health Benefits and Risks of Folic Acid Fortification of Food: A report by the Office of the Prime Minister's Chief Science Advisor and the Royal Society Te Apārangi.* Wellington: Office of the Prime Minister's Chief Science Advisor & Royal Society Te Apārangi.

O'Leary C, Leonard H, Bourke J, et al. 2013. Intellectual disability: population-based estimates of the proportion attributable to maternal alcohol use disorder during pregnancy. *Developmental Medicine & Child Neurology* 55(3): 271–7.

Owen N, Sugiyama T, Eakin E, et al. 2011. Adults' sedentary behavior: determinants and interventions. *American Journal of Preventive Medicine* 41(2): 189–96. URL: www.sciencedirect.com/science/article/pii/S0749379711003229 (accessed 23 April 2015).

Parnell WR, Blakey CW, Smith C. 2012. *Secondary Analysis of Adult Nutrition Survey 2008/09 for Intake of Beef and Lamb for the New Zealand Population and for Consumers*. Report No. 2012.138. LINZ Nutrition and Activity Research Unit, Dunedin: University of Otago.

Reinfelds MA. 2015. Supporting the breastfeeding journey of Māori women and their whānau in Taranaki. Master's thesis, Massey University, Wellington.

Reynolds R, Gordon A. 2018. Obesity, fertility and pregnancy: can we intervene to improve outcomes*? Journal of Endocrinology* 239: R47–R55.

Rollins N, Bhandari N, Hajeebhoy N, et al. 2016. Why invest, and what will it take to improve breastfeeding practices? *The Lancet* 387: 491–504.

Sankar MJ, Sinha B, Chowdhury R, et al. 2015. Optimal breastfeeding practices and infant and child mortality: a systematic review and meta-analysis. *Acta Paediatrica* 104: 3–13.

Scientific Advisory Committee on Nutrition. 2018. *Feeding in the First Year of Life*. London: Crown.

Sinha B, Chowdhury R, Sankar M, et al. 2015. Interventions to improve breastfeeding outcomes: systematic review and meta-analysis. *Acta Paediatrica* 104(467): 114–34.

Skeaff SA, Ferguson EL, McKenzie JE, et al. 2005. Are breast-fed infants and toddlers in New Zealand at risk of iodine deficiency? *Nutrition* 21(3): 325–31.

Smith C, Gray AR, Mainvil LA, et al. 2015. Secular changes in intakes of foods among New Zealand adults from 1997 to 2008/09. *Public Health Nutrition* 18(18): 3249–59. DOI: 10.1017/ S1368980015000890 (accessed 6 September 2020).

Sport New Zealand. 2015. *Sport and Active Recreation in the Lives of New Zealand Adults: 2013/14 Active NZ Survey*. Wellington: Sport New Zealand.

Stoody E, Spahn J, Casavale K. 2019. The pregnancy and birth to 24 months project: a series of systematic reviews on diet and health. *American Journal of Clinical Nutrition* 109 (Suppl 7): S685–S697.

Stroke Foundation of New Zealand. 2011. *Slash the Salt*. URL: www.stroke.org.nz/resources/slash-the-salt.pdf (accessed 6 September 2020).

Tey S, Brown R, Chisholm A. 2012. *Nuts and Heart Health: Evidence paper*. Auckland: Heart Foundation. URL: https://www.heartfoundation.org.nz/resources/nuts-and-heart-health-evidence-paper (accessed 6 September 2020).

UK Department of Health. 2009. *On the State of Public Health: Annual Report of the Chief Medical Officer*. London: Crown.

University of Otago and Ministry of Health. 2011. *A Focus on Nutrition: Key findings of the 2008/09 New Zealand Adult Nutrition Survey*. Wellington: Ministry of Health.

US Department of Agriculture. 2014. *A Series of Systematic Reviews on the Relationships between Dietary Patterns and Health Outcomes*. United States Department of Agriculture. URL: https://nesr.usda.gov/dietary-patterns-systematic-reviews-project-0 (accessed 6 September 2020).

US Department of Agriculture and US Department of Health and Human Services. 2010. *Dietary Guidelines for Americans, 2010* (7th edition). Washington, DC: US Government Printing Office. URL: https://health.gov/sites/default/files/2020-01/DietaryGuidelines2010.pdf (accessed October 2013).

Victora C, Bahl R, Barros A, et al. 2016. Breastfeeding in the 21st century: epidemiology, mechanisms, and lifelong effect. *The Lancet* 387: 475–90.

WCRF and AICR. 2007. *Food, Nutrition, Physical Activity, and the Prevention of Cancer: A global perspective*. Washington, DC: World Cancer Research Fund and American Institute for Cancer Research.

WCRF and AICR. 2011. *Continuous Update Project Report. Food, Nutrition, Physical Activity, and the Prevention of Colorectal Cancer*. Washington, DC: World Cancer Research Fund and American Institute for Cancer Research.

WHO. 2000. *Obesity: Preventing and Managing the Global Epidemic*. Geneva: World Health Organization.

WHO. 2003. *Diet, Nutrition and the Prevention of Chronic Diseases: Report of a Joint WHO/FAO Expert Consultation*. WHO Technical Report Series, No. 916. Geneva: World Health Organization.

WHO. 2010. *Global Recommendations on Physical Activity for Health*. Geneva: World Health Organization.

WHO. 2011. *Haemoglobin concentrations for the diagnosis of anaemia and assessment of severity.* Vitamin and Mineral Nutrition Information System. Geneva: World Health Organization.

WHO. 2012. *Guideline: Sodium intake for adults and children*. Geneva: World Health Organization.

WHO. 2013a. *Global Action Plan for the Prevention and Control of Noncommunicable Diseases*. Geneva: World Health Organization. URL: www.who.int/nmh/events/ncd_action_plan/en/ (accessed 23 September 2014).

WHO. 2015a. *Guideline: Sugars intake for adults and children*. Geneva: World Health Organization.

WHO. 2015b. *Health Education and Promotion: Physical activity, background*. Geneva: World Health Organization. URL: www.emro.who.int/health-education/physical-activity/background.html (accessed 1 May 2015).

WHO. 2016. *WHO Recommendations on Antenatal Care for a Positive Pregnancy Experience.* Geneva: World Health Organization. URL: www.who.int/reproductivehealth/publications/maternal_perinatal_health/anc-positive-pregnancy-experience/en/ (accessed 6 September 2020).


5

Ngā āpitihanga
Appendices

Āpitihanga 1
Appendix 1:
How we developed these Guidelines

Figure A1: Process of revising and updating the Maternal (Pregnant and Breastfeeding) Eating and Activity Statements

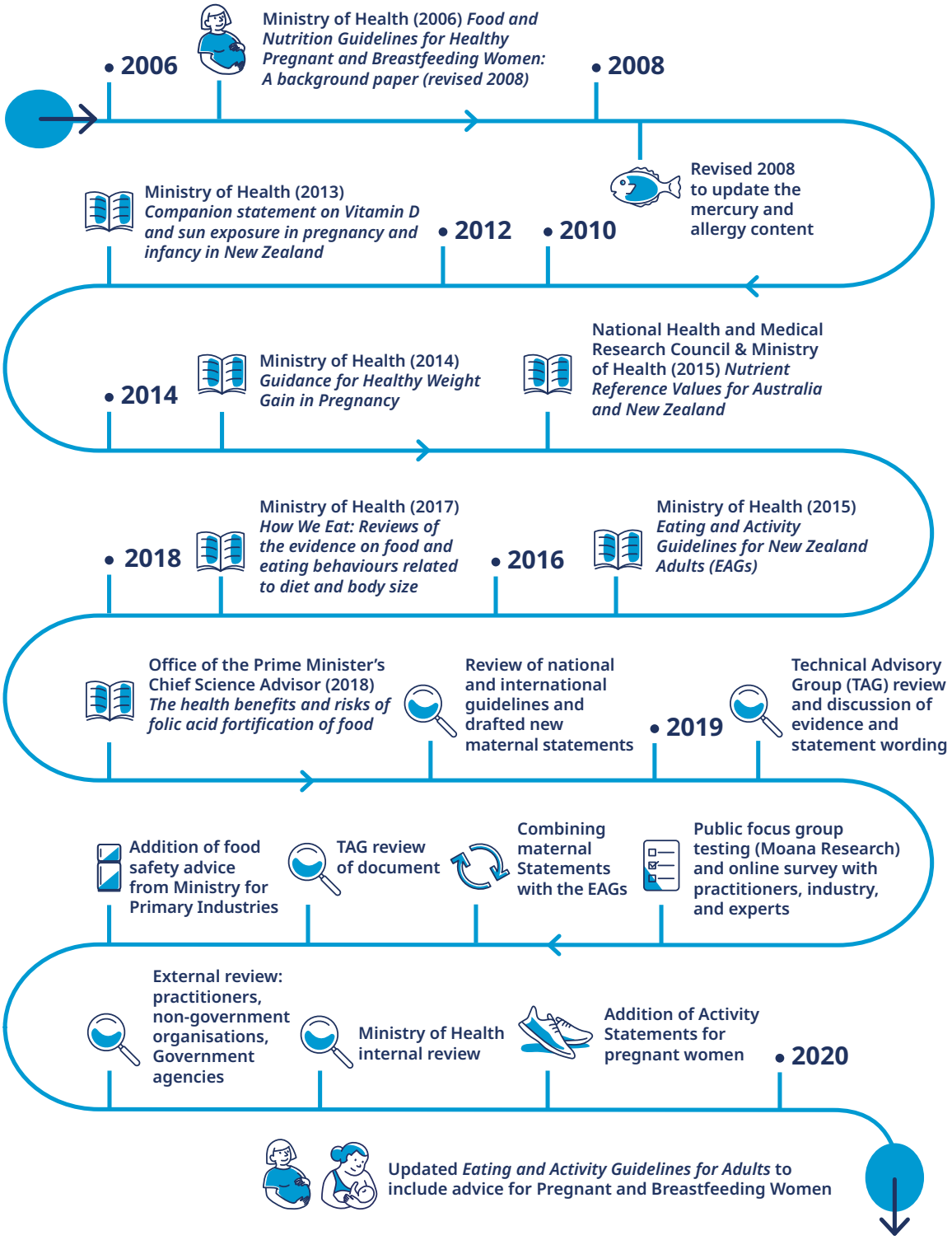
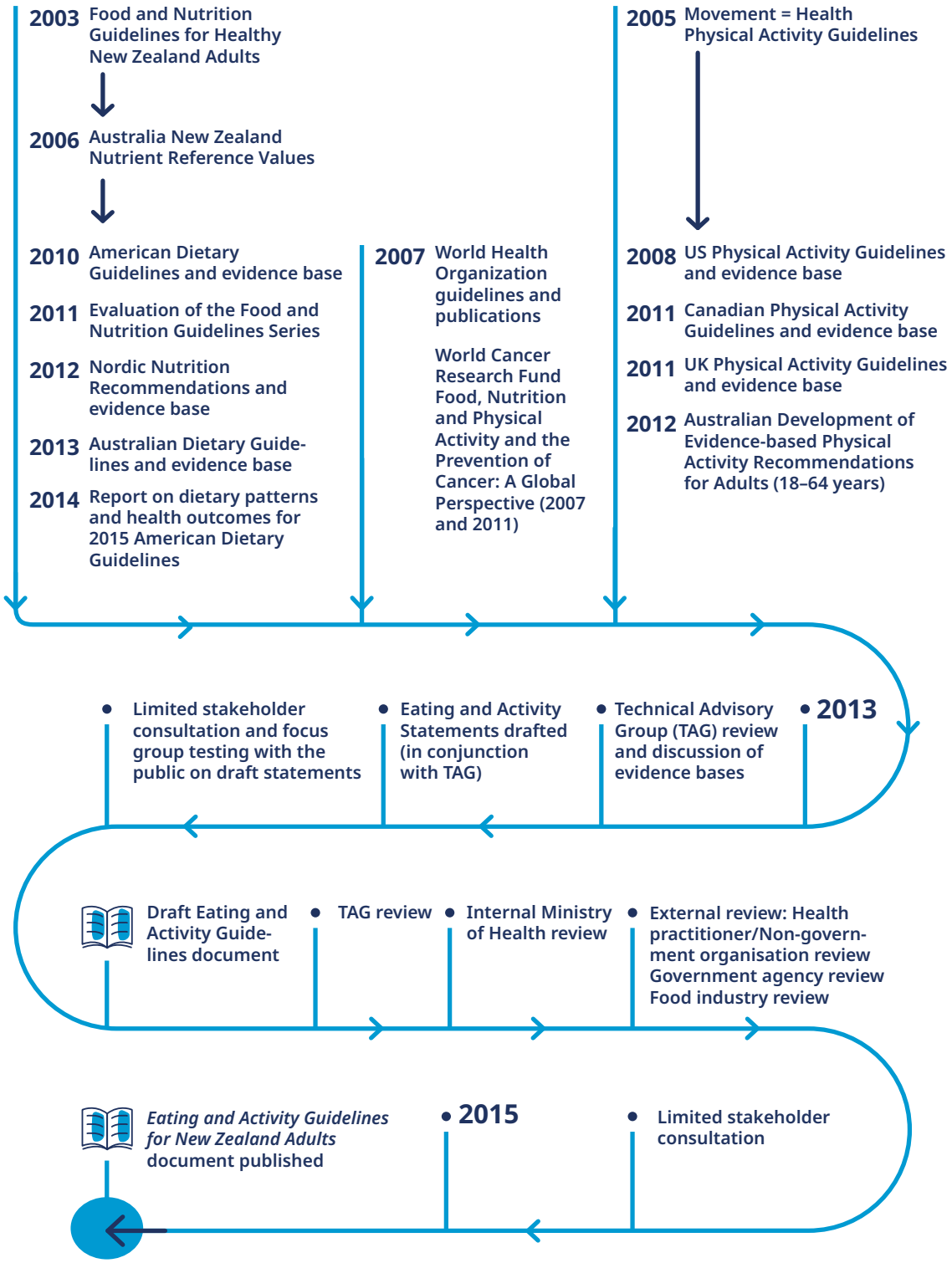


Figure A2: Process of developing the first edition of the *Eating and Activity Guidelines for New Zealand Adults*



Āpitihanga 2
Appendix 2: Evidence for the Eating and Body Weight Statements

The various evidence reports that these Guidelines refer to used different methodologies and their evidence comes from associations between health outcomes and specific foods and overall eating patterns. The 'Reasons for the recommendation' section for each Statement describes the combined evidence for that Statement.

For more specific and detailed information on the evidence supporting the Eating Statements, see the following documents and websites.

American Dietary Guidelines 2010

(US Department of Agriculture and US Department of Health and Human Services 2010)

- Report of the Dietary Guidelines Advisory Committee on the Dietary Guidelines for American, 2010, to the Secretary of Agriculture and Secretary of Health and Human Services (DGAC 2010)
- https://health.gov/our-work/food-nutrition/previous-dietary-guidelines/2010

Nordic Nutrition Recommendations 2012

- Nordic Council of Ministers (2014) – Chapter 5: Food, food patterns and health outcomes – Guidelines for a healthy diet (pages 103–135)
- https://www.norden.org/en/publication/nordic-nutrition-recommendations-2012

Australian Dietary Guidelines 2013 (NHMRC 2013)

- A review of the Evidence to Address Targeted Questions to Inform the Revision of the Australian Dietary Guidelines (NHMRC 2011b)
- www.eatforhealth.gov.au

Paper to inform American Dietary Guidelines 2015

- A Series of Systematic Reviews on the Relationship between Dietary Patterns and Health Outcomes (US Department of Agriculture 2014)
- www.nel.gov/publications

World Cancer Research Fund Report 2007 (WCRF and AICR 2007) and Continuous Update Programme (WCRF and AICR 2011)

- www.wcrf.org/dietandcancer

World Health Organization (WHO) reports

- Diet, Nutrition and the Prevention of Chronic Diseases (WHO 2003)
- Guideline: Sodium intake for adults and children (WHO 2012)
- NCD Global Action Plan (WHO 2013a)
- Guideline: Sugar intake for adults and children (WHO 2015a)

Nutrient Reference Values for Australia and New Zealand (NHMRC 2006)

- www.health.govt.nz

The evidence bases for Eating Statement 4 on alcohol and Eating Statement 5 on food safety are highlighted under those specific sections in these Guidelines.

Āpitihanga 3
Appendix 3:
Update to serving size advice

Background

The National Health and Medical Research Council's 2011 report *A Modelling System to Inform the Revision of the Australian Guide to Healthy Eating* (NHMRC 2011a) provides the evidence base for the updated serving size advice for the New Zealand *Eating and Activity Guidelines*. This modelling system translates the Nutrient Reference Values for Australia and New Zealand (NHMRC 2006) into dietary patterns that describe the amounts of various foods needed to meet the estimated nutrient requirements of people of different ages, genders, body size and activity levels using the best available scientific evidence.

Along with energy, ten key nutrients are included in the models. These are protein, thiamine, vitamin A (as retinol equivalents), vitamin C, folate, calcium, iodine, iron, magnesium and zinc. The diets are modelled to provide as close to 100 percent of the recommended dietary intakes of these nutrients as feasible and to provide the estimated energy requirements of the smallest and very sedentary category for each age and gender group. Those who are bigger or more active may need to eat additional servings.

Further information on the modelling can be found at:
https://www.eatforhealth.gov.au/guidelines/guideline-development

Recommended number of daily servings from each of the food groups

New Zealand has adopted the recommendations from the Australian Dietary Guidelines (NHMRC 2013) for the daily number of servings from each of the food groups. There is now a range of recommended numbers of servings for each age and gender, including additional servings for pregnant and breastfeeding women. Refer to Table A1 over page for the recommended number of servings per day from each of the food groups for New Zealand adults.

Table A1:
Recommended number of servings per day from each of the food groups for adults*

		Vegetables	Fruit	Grain foods	Legumes, nuts, seeds, fish and other seafood, eggs, poultry or red meat with fat removed	Milk and milk products	Approximate number of additional servings from the five food groups**
MEN	19–50	●●●●●●	●●	●●●●●●	●●●	●●◖	0–3
	51–70	●●●●●◖	●●	●●●●●●	●●◖	●●◖	0–2.5
	70+	●●●●●	●●	●●●●◖	●●◖	●●●◖	0–2.5
WOMEN	19–50	●●●●●	●●	●●●●●●	●●◖	●●◖	0–2.5
	51–70	●●●●●	●●	●●●●	●●	●●●●	0–2.5
	70+	●●●●●	●●	●●●	●●	●●●●	0–2
PREGNANT		●●●●●	●●	●●●● ●●◖	●●●◖	●●◖	0–2.5
LACTATING		●●●●● ●●◖	●●	●●●●● ●●●●	●●◖	●●◖	0–2.5

● one serving ◖ half serving

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

** Additional servings may be needed for taller or more active men and women

Source: NHMRC (2013)

Serving size examples

Vegetables

A standard serving of vegetables is about 75 g (100–350 kJ), which is about the same as:

- ½ cup cooked vegetables (eg, pūhā, watercress, silverbeet, kamokamo (squash), carrot, broccoli, bok choy, cabbage or taro leaves)
- ½ cup canned vegetables (eg, beetroot, tomato, sweet corn)
- 1 cup green leafy or raw salad vegetables
- ½ medium potato or or similar sized piece of kūmara, taewa (Māori potato), yam (Pacific or NZ), taro, cassava, or green banana (technically a fruit)
- 1 medium tomato.

Grain foods, mostly wholegrain and those naturally high in fibre

A standard serve (500 kJ) is about the same as:

- 1 slice (40 g) wholegrain bread
- ½ medium (40 g) wholegrain roll or flat bread
- ½ cup (75–120 g) cooked rice, pasta, noodles, barley, buckwheat, semolina, polenta, bulgur or quinoa
- ½ cup (120 g) cooked porridge
- ¼ cup (30 g) muesli
- 2 breakfast wheat biscuits
- 2/3 cup cereal flakes (wholegrain where possible)
- 3 (35 g) crispbreads or crackers (wholegrain where possible).

Fruit

A standard serve of fruit is about 150 g (350 kJ),which is about the same as:

- 1 medium apple, banana, orange or pear
- 2 small apricots, kiwifruit or plums
- 1 cup diced or canned fruit (drained and with no added sugar), eg, pineapple, papaya
- 1 cup frozen fruit, eg, mango, berries.

Milk and milk products, mostly low and reduced fat

A standard serve (500–600 kJ) is about the same as:

- 1 cup (250 ml) low or reduced fat fresh, UHT long life, reconstituted powdered milk or buttermilk
- 2 slices (40 g) or a 4 x 3 x 2 cm piece of cheese such as Edam
- ¾ cup (200 g) low- or reduced-fat yoghurt
- 1 cup (250 ml) calcium-fortified plant-based milk alternatives (eg, soy, rice, almond, oat milk) (with at least 100 mg of added calcium per 100 ml).

Legumes, nuts, seeds, fish and other seafood, eggs, poultry and/or red meat with fat removed

A standard serve (500–600 kJ) is about the same as:

- 1 cup (150 g) cooked or canned beans, lentils chickpeas, or split peas (preferably with no added salt)
- 170 g tofu
- 30 g nuts, seeds, peanut or almond butter or tahini or other nut or seed paste (no added salt)
- 100 g cooked fish fillet (about 115 g raw) or one small can of fish
- 2 large (2 x 60 g = 120 g) eggs
- 80 g cooked lean chicken (100 g raw)
- 65 g cooked lean meat such as beef, lamb, pork, veal (90–100 g raw) – no more than 500 g cooked (700–750 g) red meat each week.

The examples provided are suitable for most adults.

Note that some foods may not be suitable during pregnancy.

For more information, see the New Zealand Food Safety website: www.mpi.govt.nz/food-safety/food-safety-for-consumers/food-and-pregnancy

Āpitihanga 4
Appendix 4: Food groups and the nutrients they provide

The Eating Statements in these Guidelines refer to the four food groups. This appendix lists the main nutrients supplied by each food group.

Vegetables and fruit (includes fresh, frozen and canned)

- Carbohydrates
- Dietary fibre
- Vitamins: especially folate (green leafy vegetables such as spinach and broccoli, citrus fruits), pro-vitamin A (carotenoids) (yellow and green vegetables) and vitamin C (dark-green vegetables, most fruit and potatoes)
- Minerals: potassium, magnesium

- Protein (dairy and soy milk)
- Fats: higher proportion of saturated than poly-or mono-unsaturated fats in dairy, especially in full-fat products. Choose low- or reduced-fat products.
- Minerals: calcium, phosphorus, zinc and iodine
- Vitamins: riboflavin, B12, A, D (levels of A and D are naturally lower in low-fat milk products, but addition of A and D up to levels in standard milk products is permitted)
- If choosing plant-based milk alternatives, choose products fortified with calcium, vitamin D and vitamin B12

Grain foods, mostly wholegrain and those naturally high in fibre

- Carbohydrates
- Dietary fibre
- Protein
- Vitamins: all B group (except B12), E (rich in wheatgerm)
- Minerals (particularly in wholegrain foods): magnesium, calcium, zinc and selenium

Legumes, nuts, seeds, fish and other seafood, eggs, poultry and/or red meat with fat removed

- Protein
- Fats: both visible and marbled in meat (mostly saturated fat, cholesterol); mostly unsaturated in seafood, nuts and seeds
- Minerals: iron, zinc, magnesium, copper, potassium, phosphorus and selenium; iodine (particularly in seafood and eggs)
- Vitamins: B12, niacin, thiamine

New Zealand Government